The Keystone Forum on Away-From-Home Foods: Opportunities for Preventing Weight Gain and Obesity

Final Report
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Contents

Executive Summary

Over the past two decades in the United States, obesity has become a public health crisis of epidemic proportions. At present, approximately 64% of all U.S. adults are overweight, including 30% who are obese. Overweight and obesity are associated with increased morbidity and mortality, and also exact significant economic costs. The medical expenses attributable to overweight and obesity are estimated to have reached as high as $92.6 billion per year—roughly 9.1% of total U.S. medical expenditures.[1]

A number of efforts to address and reverse this public health crisis have been and are being undertaken in the public, private, and nonprofit sectors. This report is the final work product of one such effort—the Keystone Forum on Away-From-Home Foods: Opportunities for Preventing Weight Gain and Obesity.

The Keystone Forum was requested and funded by the U.S. Food and Drug Administration.[2] The Forum brought together a wide diversity of participants to develop joint recommendations for action. The participants included representatives from industry, government agencies, civic-sector organizations, and academia. (A complete list of participants can be found in Appendix A of the report.)

The Forum Process

The Keystone Forum on Away-From-Home Foods commenced in December 2004 with a small-group planning meeting. Three full-group plenary sessions were subsequently held in Washington, DC, in 2005, and numerous work group discussions were held between plenary meetings. The Forum was convened and facilitated by The Keystone Center, a nonprofit public policy and dispute resolution organization with offices in Colorado and Washington, DC. The Consensus Building Institute provided additional facilitation expertise, and Larmer Consulting assisted with the compilation and editing of this report.[3]

Keystone Forum participants agreed throughout the process to abide by a set of "operating protocols," which outlined objectives, roles, responsibilities, and a number of discussion principles. Participants were asked to represent their personal views in the discussions and were understood to be speaking on behalf of themselves, not on behalf of their organizations or constituencies. By including their names in Appendix A, Forum participants are indicating that they "generally support" the recommendations and overall content of this report, though they may find some sections more acceptable and compelling than others.

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[1] E.A. Finkelstein, I.C. Fiebelkorn, and G. Wang, "National Medical Spending Attributable to Overweight and Obesity: How Much, and Who's Paying?" *Health Affairs* W3 (2003): 219-226. See www.cdc.gov/nccdphp/dnpa/obesity/economic_consequences.htm.

[2] The content of this publication does not necessarily reflect the views or policies of the U.S. Department of Health and Human Services, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

[3] See www.keystone.org, www.cbuilding.org, and www.larmerconsulting.com.

Forum participants organized the final report, and also this executive summary, into three sections corresponding to the Forum's three primary topics of discussion: (1) Understanding and influencing consumer behavior with regard to away-from-home foods; (2) increasing the availability of lower-calorie products, menu items, and meals at establishments that provide away-from-home foods; and (3) providing consumers with nutrition information regarding away-from-home foods.

The Forum's Purpose, Scope, and Rationale

The purpose of the Keystone Forum on Away-From-Home Foods was to consider what can be done, given what is currently known, to support consumers' ability to manage calorie intake with respect to preventing undue weight gain and obesity, within the scope of away-from-home foods. Forum participants hope that the American public will be the ultimate beneficiary of the Forum's work. Toward that end, participants expect that this report will be useful to foodservice operators and their suppliers, policymakers, public health and medical professionals, culinary professionals, patient and consumer advocates, and research scientists.

The Forum's discussions focused on obesity and away-from-home foods. The term *obesity* was used to refer to overweight and obesity together.[4] Similarly, the term *foods* was frequently used to refer to both foods and beverages. *Away-from-home foods* include full meals and single ready-to-eat items (including take-away foods) purchased at restaurants, prepared-food counters at grocery stores, institutional foodservice settings, and other outlets.[5]

The concepts of *calorie density* and *nutrient density* were important parts of the Forum's approach to caloric intake in the area of away-from-home foods. Calorie density (also known as *energy density*) refers to the amount of calories (i.e., energy) contained in a unit of food (measured by weight, e.g., kcal/g).[6] Nutrient density refers to the amount and availability of nutrients in a unit of food.[7] The Forum focused on assisting consumers with managing appropriate caloric intake pursuant to obesity prevention. However, while appropriate caloric intake is essential to addressing the problem of obesity, it is also important for consumers to get the most nutritional value from their calories.

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[4] The National Institutes of Health define "overweight" in adults as a body mass index (BMI) of 25.0 to 29.9 and "obesity" as a BMI of 30.0 or higher. BMI is defined as the ratio of a person's bodyweight in kilograms divided by the square of his or her height in meters. See www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/risk.htm#limitations.

[5] The topic of school meals was not included in the scope of the Forum's discussions. Although foods sold in schools are a significant source of calories for school-aged children, there was a need to limit the scope of the dialogue to a manageable area of inquiry consistent with the U.S. Food and Drug Administration's own core capabilities and activities.

[6] See www.health.gov/dietaryguidelines/dga2005/report/HTML/G1_Glossary.htm. Less calorie-dense foods are generally those with a higher water content, such as fruits, vegetables, and soups. While *energy density* and *calorie density* can be used interchangeably, this report generally uses the latter term.

[7] See www.diet-and-health.net/glossary.html. Nutrient-dense foods provide substantial amounts of vitamins and minerals, and relatively fewer calories. For an extensive review of literature on nutrient density, see A. Drewnowski, "Concept of a Nutritious Food: Toward a Nutrient Density Score," *American Journal of Clinical Nutrition* 82, no. 4 (2005): 721-732.

The report does not focus on any particular subgroup of the U.S. population. However, participants acknowledged the unique concerns relating to children, since that population group faces significant long-term health consequences due to the obesity epidemic. Therefore, some of the recommendations include consideration of children's unique needs.

Forum participants agreed to consider the role of food in the context of what is known about obesity—in other words, in light of the fact that food, wherever consumed, is a major factor but not the only factor affecting the incidence of obesity. Because obesity and undue weight gain result from sustained energy imbalance (i.e., caloric intake exceeding caloric expenditure), physical activity is also an essential element in obesity prevention and treatment. While this inquiry focused on food choice and consumption, Forum participants recognized that the broad societal effort to reduce obesity incidence must consider both sides of the energy balance equation.

As of this decade, Americans are eating away-from-home foods more frequently and consuming more calories from away-from-home establishments than ever before. Thus, a wider range of less-calorie-dense, more-nutrient-dense food and beverage choices in away-from-home food outlets, coupled with consumer education and information (especially about energy balance), can help Americans to manage their weight more effectively.

While several recent studies have explored various contributors to obesity, as yet there does not exist a conclusive body of evidence establishing a causal link between the availability or consumption of away-from-home foods and obesity. Preliminary research indicates, however, that the consumption of away-from-home foods can be a factor in determining calorie consumption and body weight, and an important one for many individuals. Participants did not seek resolution on this question, but rather focused on proposing implementable solutions to the challenge of obesity.

The Forum's Recommendations

A summary of Forum participants' recommendations follows. Please note that Chapter 1 does not contain recommendations and so is not summarized below. It describes key observations and background regarding changes in the food environment over the past three decades, and it provides an overview of the research base regarding the relationship between away-from-home foods and body weight. Chapters 2 through 4 also include extensive background information, not summarized here, that provides context for the recommendations and suggested implementation steps.

Chapter 2: Understanding and Influencing Consumer Behavior

To reverse the increase in obesity and undue weight gain in the United States, Forum participants believe the current consumer preference for large quantities of calorie-dense foods should shift to an emphasis on intake appropriate to an individual's needs and to increased consumption of

foods lower in calorie density. However, it can be difficult to change consumers' day-to-day food and activity behaviors, despite the potential longer-term consequences of those behaviors. Thus, messages and education programs directed at consumers should be carefully crafted; they must impart the knowledge and skills consumers need, and they must reach and motivate consumers successfully. Also, strategies should be tailored as needed to specific demographic and cultural audiences.

Much of the existing data and information about consumer eating behavior and attitudes is either not specific to away-from-home foods, not sufficiently timely, or not publicly available. Thus, a research agenda is also needed to augment the publicly available knowledge base and inform the continual development of consumer education programs. It must be stressed, however, that while the knowledge base needs to be improved, enough is known to recommend many important actions. Forum participants believe that reasonable strategies to assist consumers with healthy energy intake should be pursued now, and then augmented going forward as new information becomes available.

Forum participants offer seven recommendations for influencing consumer behavior and attitudes.

Recommendation 2.1: Shift the emphasis of marketing. The marketing of lower-calorie and less-calorie-dense foods should increase, accompanied by a reduction in marketing that highlights higher-calorie (or calorie-dense) foods or encourages large portions.

Companies, government, health organizations, and others should expand and align marketing initiatives (both commercial and social) that help consumers to manage their calorie intake. Foodservice companies and venues should use their full range of creativity and resources to promote food choices and eating behaviors that are consistent with healthy weight management. In addition, companies, government, health organizations, and others should conduct market research to determine:

- how best to market low-calorie and less-calorie-dense menu options to different populations in ways that assist consumers with weight management efforts, and
- how to shift the prevailing value proposition away from large portions, and how best to market more appropriate portion sizes to different populations.

Recommendation 2.2: Update marketing standards. Industry, government, health and nutrition experts, consumer representatives, and other stakeholders should work together to review and update standards for marketing away-from-home foods to children.

The Children's Advertising Review Unit (CARU), which is funded by members of industry, could work with key stakeholders from the public, private, and civic sectors to review and update its standards for marketing to children, including the marketing of away-from-home foods. CARU maintains self-regulatory guidelines for children's advertising, and as of this writing has announced an extensive and consultative review of those guidelines.

<u>Recommendation 2.3</u>: Promote low-calorie-dense dietary patterns. Strengthen and/or create education and promotion programs regarding away-from-home foods that promote the consumption of fruits, vegetables, no- and low-fat milk and milk products, whole grains, and foods low in saturated fats and trans-fatty acids, as recommended by the 2005 *Dietary Guidelines for Americans*.[8]

For example, the national 5 A Day for Better Health program could be significantly expanded and strengthened, and the U.S. Department of Agriculture (USDA) could create a federal marketing matching program for promoting fruits and vegetables. Federally sponsored consumer research could be undertaken to develop behavior change strategies for closing the gap between recommended intakes and current consumption.

The Milk Matters program at the National Institute of Child Health and Human Development, as well as the Powerful Bones, Powerful Girls program at the Centers for Disease Control and Prevention, could also be significantly expanded and strengthened to build skills for selecting foods and beverages away from home. The programs could include a large-scale social marketing campaign to promote the intake of three daily servings of low-fat and nonfat milk and milk products, consistent with the Dietary Guidelines.

<u>Recommendation 2.4</u>: Promote enhanced "lifestyle education" programs. Use a combination of social marketing campaigns and consumer education programs to provide "healthy lifestyle" education to help individuals eat more healthfully in today's food environment. Existing campaigns and programs could be enhanced or, as necessary, new ones could be created.

Both campaigns and programs in various sectors should aim to help individuals understand how to make decisions within the food environment healthfully—i.e., how to navigate the wide range of away-from-home food choices available in today's often harried, time-pressed, convenience-driven world. A social marketing campaign should focus on those areas with the most supporting evidence and strongest justification for action.[9] For example, a campaign could seek to change the social value proposition of "more food" to "better-quality food," and/or to promote the concept of energy balance—i.e., balancing caloric intake with physical activity expenditure.

<u>Recommendation 2.5</u>: Review the effectiveness of existing programs. The U.S. Department of Health and Human Services (HHS) and the USDA should, in partnership together, coordinate a comprehensive survey and analysis of existing government-sponsored education and social marketing campaigns related to managing weight gain and reducing obesity in the context of away-from-home foods.

With HHS and USDA as the coordinators and conveners, key federal agencies should pool resources to sponsor a systematic survey and analysis of education and social marketing campaigns directed at consumers who are trying to manage weight gain and obesity. Individual

[8] U.S. Department of Health and Human Services (HHS) and U.S. Department of Agriculture (USDA), *Dietary Guidelines for Americans 2005* (6th ed.) (Washington, DC: HHS and USDA, 2005).
[9] "Social marketing" programs typically seek to improve personal or societal welfare—for example, by promoting healthy eating, active living, avoidance of illegal drug use, or proper use of seat belts.

agencies should be responsible for analyzing the programs they administer. A standard evaluation tool should be developed for assessing the relative success of each program in helping consumers with healthy weight management.

The analysis should seek to identify the target audiences (and any key audiences that have been missed), the kinds of programs implemented, and their effectiveness against criteria developed by the study team, such as ease of understanding by consumers, consumers converting that understanding to action, and costs. The analysis should offer recommendations for how to streamline government efforts to use resources more efficiently, increase the frequency and consistency of messages, and ultimately, more effectively influence consumers' behavior.

Recommendation 2.6: Improve government access to data on consumer behavior and attitudes. Federal agencies should act immediately to increase the access of government researchers and policymakers to syndicated commercial databases. Key agencies should establish recurring line items in their respective budgets, thereby ensuring continual and timely access to the needed commercial data sets.

Key agencies should coordinate needs and resources in order to purchase relevant commercial data sets from syndicated research organizations. Interagency collaboration is needed to ensure adequate funds for an initial purchase, to promote coordinated policies and programs that result from an analysis of the data, and to encourage the widest possible access to the data.

Recommendation 2.7: Ensure public availability of information. A means must be developed for continually improving the publicly available knowledge base regarding consumer interests, attitudes, and behaviors regarding away-from-home foods.

Since government access to commercial data sets, while very important, is typically accompanied by nondisclosure terms that may limit direct analysis of the data by other stakeholders, a collaborative research agenda could also be developed to allow for wider access to timely information regarding consumer behavior and attitudes in the area of away-from-home foods. Alternatively, the scope of existing data-gathering initiatives could be expanded to provide more detail regarding behaviors and attitudes regarding away-from-home foods, both nationwide and within key demographic groups. Data should not only be collected, but it should be analyzed and shared with the public, policymakers, health professionals, and other interested stakeholders.

Chapter 3: Increasing the Availability of Lower-Calorie Products, Menu Items, and Meals

The foodservice industry faces a number of challenges in its efforts to provide menu items and meals that help consumers effectively manage their calorie intakes and thus maintain healthy weight. These challenges can be viewed as opportunities for the industry to take a proactive role in combating the national problem of overweight and obesity. With this in mind, Keystone Forum participants sought to propose some achievable, action-oriented strategies for the foodservice industry, including bold and innovative approaches (in which taste was a non-

negotiable "must") with regard to products, menu items, and meal choices, to assist consumers with managing calorie intake.

To address the Forum's goal of reducing obesity, the recommendations and operational tips provided in the report focus on manipulating the calorie content, including the calorie density, of menu items and meals through several strategies: providing appropriate portion sizes, plate composition, menu pairing, and beverage options; increasing fruits and vegetables; reducing total fat content; and decreasing the use of ingredients that are high in refined starches, added sugars, and saturated and trans fats and low in nutrient density.

Forum participants articulated four recommendations, directed primarily at the foodservice industry, to address these issues. The recommendations are followed by specific operational tips, which are meant to serve as examples of how the recommendations could be implemented and should not be considered all-inclusive.

Recommendation 3.1: Promote the wider inclusion in foodservice of less-calorie-dense menu items and calorie-sparing cooking techniques that are widely accepted by consumers and that take into account constraints on operators.

To implement this recommendation, Forum participants believe that culinary educational facilities should provide chefs and foodservice operators with the necessary education, resources, and skills to produce menu choices that will help customers achieve and maintain a healthy weight. They should, for example, provide educational programs that illustrate how to develop less-calorie-dense menu items and that overcome the perception that healthy menu items lack creativity and flavor. Chefs and restaurateurs should also be encouraged to offer more lower-calorie choices on children's menus.

In addition, appropriate government agencies should, in conjunction with industry, stimulate initial educational and leadership efforts. They should provide grants to help culinary schools develop curricula or other resource materials that reflect the current consensus within the scientific community about cooking methods and approaches that help consumers achieve and maintain a healthy weight.

Finally, the synergy between producers/manufacturers, distributors, and operators should be enhanced, in order to facilitate the purchase and use of the products that are needed to produce new or reformulated menu items and meals, to help consumers manage their energy intake. Chapter 3 suggests numerous ways this could be done; for example, industry leaders and appropriate government agencies should encourage manufacturers to offer foodservice-size packaging for products such as evaporated fat-free milk, lower-fat cheeses, and precut vegetables, all of which can be used to make less-calorie-dense menu items.

Recommendation 3.2: Foodservice providers should develop and promote portion-size, plate composition, and menu-pairing options that help consumers in their efforts to manage their energy intake.

The chapter offers numerous implementation strategies geared toward chefs, menu developers, servers, and customers. For example, these individuals are encouraged to:

- Reduce total calories in mixed dishes by combining moderate reductions in calorie density with changes in portion size.
- Retool menu items to provide lower-calorie-dense choices.
- For sandwiches, offer more fruit and/or vegetable options than just lettuce and tomato. For example, offer roasted red peppers, roasted eggplant, cucumbers, etc.
- Provide more options and promote meal bundles with fruits and vegetables (including salads), while maintaining traditional side options as well.
- Offer several portion sizes of each menu item.
- Adopt approaches to support portion-size reduction and/or curtail emphasis on "bigger means better" messages.

Recommendation 3.3: Foodservice providers should develop, make available, and promote beverage options that help consumers to reduce calorie intake.

To do this, Forum participants suggest that industry leaders:

- Increase the range of low-calorie or zero-calorie beverage choices available to consumers and provide smaller portion sizes (e.g., 10-fluid-ounce sizes, 100-calorie servings, etc.).
- Increase the selection of low-fat or nonfat milk beverages, especially with children's meals.
- In specialty venues such as coffee shops, offer lower-calorie selections and smaller portion sizes of specialty and frozen drinks, in addition to the standard versions.
- Expand the range of beverage options available to consumers to include a wider array of cup and bottle sizes.
- Consider pricing approaches that make smaller sizes and lower-calorie options more appealing.
- For bundled meals, offer lower-calorie beverage options, such as water, and encourage reasonable portion sizes.

Recommendation 3.4: Industry and academia should conduct—collaboratively, if possible—research on the topics and questions listed in Chapter 3. In addition, a specific scientific survey should be conducted about the experiences of operators and restaurateurs in developing menu items that could aid in weight management.

Chapter 3 sets forth a number of potential research questions that should be addressed through collaborative research. The questions address basic research needs as well as suggestions for the development of specific, scientifically sound strategies that will lead to a better-informed public, industry, and academic community. The questions are categorized into four topics: calorie density and portion size; increasing fruits and vegetables; product formulation; and packaging and marketing.

In addition, a scientifically rigorous survey should be conducted after the conclusion of the Forum to gather information from chefs and restaurant owners about their experiences helping customers to manage their weight and health, particularly via product reformulation and innovation.

Chapter 4: Providing Consumers with Nutrition Information

When making decisions about away-from-home foods, consumers often may not have access to nutrition information to inform their selections and eating behaviors pursuant to appropriate calorie intake. Whereas a growing number of foodservice venues voluntarily provide some information about the calorie and nutritional content of their menu items, many do not. Available information may be provided in different formats (e.g., websites, brochures, kiosks), focus on a variety of nutrients (e.g., calories, carbohydrates, fat), and take a variety of forms (e.g., numerical values, symbols, written characterizations of health attributes). In the absence of any nutrition information, consumers typically are unable to assess the caloric content of foods.

Forum participants offer the following two recommendations regarding the provision of nutrition information to consumers.

Recommendation 4.1: Away-from-home food establishments should provide consumers with calorie information in a standard format that is easily accessible and easy to use.

Forum participants believe that information should be provided in a manner that is easy for consumers to see and use as part of their purchasing and eating decisions. Information should be provided for any standard menu item offered on a regular and ongoing basis that is prepared from a standardized recipe, whether the item is an entire meal or a meal component. Non-standard items, including daily specials and experimental items, may be exempted. Information should be provided for the standard menu item as usually offered for sale (i.e., the base product, in the portion size as offered for sale), since most means of providing information cannot easily account for changes due to customization and special orders. Also, information should be accompanied by a caveat regarding variations owing to preparation, customization, and server variability.

Single-store operations and small chains may not be able to provide nutrition information. Other foodservice venues, such as contract dining services, that have variations in sourcing and preparation, or that do not have standard menus, may also have difficulty providing information that is accurate, reliable, and consistent. However, restaurants and other foodservice operators are encouraged to provide the information to the extent feasible.

In addition to these implementation tips, the chapter's discussion of Recommendation 4.1 addresses the cost of providing nutrition information, methods of nutritional analysis, means of delivering the information, possible unintended consequences, and considerations regarding the provision of nutrition information beyond calories, children's needs, and the accuracy of the information.

Recommendation 4.2: Research by multiple sectors should be conducted on how consumers use nutrition information for away-from-home foods; how this information affects their calorie intake at that venue; how and why nutrition information affects operators' decisions, costs, and revenues; and unanticipated consequences.

There is a clear need for more research regarding how the provision of nutrition information, claims (such as "low calorie"), and symbols influence consumer preference and choice for away-from-home food consumption situations. Of particular concern is how, when, and why consumers use nutrition information and claims during their decision-making processes. More specifically, a better understanding is needed of the types of factors that moderate consumers' responses to the provision of nutrition information and claims for away-from-home foods. The chapter concludes with a list of suggested research questions for addressing these topics.

Taken together, the recommendations in this report address important challenges, and also provide opportunities for multiple sectors to have a positive impact on the task of helping consumers manage their energy intake with respect to away-from-home foods. It is hoped that all sectors—public, private, and civic—can take action based on these recommendations and implementing strategies to help address the growing problem of obesity in the United States.

Introduction

Over the past two decades in the United States, obesity has become a public health crisis of epidemic proportions. At present, approximately 64% of all U.S. adults are overweight, including 30% who are obese. Overweight and obesity are associated with increased morbidity and mortality, and also exact significant economic costs. The medical expenses attributable to overweight and obesity are estimated to have reached as high as $92.6 billion per year—roughly 9.1% of total U.S. medical expenditures.[10]

A number of efforts to address and reverse this public health crisis have been and are being undertaken in the public, private, and nonprofit sectors. This report is the final work product of one such effort—the Keystone Forum on Away-From-Home Foods: Opportunities for Preventing Weight Gain and Obesity.

The Keystone Forum has been unique in two ways. First, it brought together a wide diversity of participants in a spirit of collaborative problem-solving. The participants included representatives from the restaurant, on-site contract dining, food manufacturing, and grocery industries; consumer and patient advocacy organizations; the federal government (including the Food and Drug Administration (FDA), the Centers for Disease Control and Prevention (CDC), and the Federal Trade Commission); academia (from the fields of medicine, nutrition, and economics); a local public health department; professional societies; and voluntary health organizations. (A complete list of participants can be found in Appendix A.) Throughout the process, participants sought to share information, explore each others' views, and work toward consensus recommendations that will advance the interests of public health in terms of reducing obesity and overweight.

Second, the Forum focused exclusively on "away-from-home foods"—foods prepared and purchased away from home. A recent report produced by the FDA—titled *Calories Count: Report of the Working Group on Obesity*—highlighted the importance of considering away-from-home foods in efforts to control obesity:

> In light of the growing proportion of American meals consumed outside of the home, it is important to enlist the assistance and support of restaurants in addressing population obesity. Since the late 1990s and projecting through 2004, American households are spending approximately 46% of their total food budget on food consumed outside the home.[11] During 1994-1996, food consumed outside the home, especially from restaurants and quick-service food establishments, contributed 32% of daily intakes of energy calories, 32% of added

[10] E.A. Finkelstein, I.C. Fiebelkorn, and G. Wang, "National Medical Spending Attributable to Overweight and Obesity: How Much, and Who's Paying?" *Health Affairs* W3 (2003): 219-226. See www.cdc.gov/nccdphp/dnpa/obesity/economic_consequences.htm.

[11] Economic Research Service (ERS), "Table 1: Food and Alcoholic Beverages: Total Expenditures," *Food CPI, Prices, and Expenditures* (Washington, DC: ERS, 2003), cited in U.S. Food and Drug Administration (FDA), *Calories Count: Report of the Working Group on Obesity* (Washington, DC: FDA, 2004) (see www.cfsan.fda.gov/~dms/owg-toc.html); and National Restaurant Association, "2004 Restaurant Industry Forecast Executive Summary," www.restaurant.org/research/ forecast.cfm, cited in FDA, *Calories Count*, 2004.

sugars, and 37% of fat.[12] Thus, food consumed away-from-home is an important part of American diets, and more informed dietary choices away-from-home could help reduce calorie over-consumption and the risk of obesity and its associated health problems.[13]

It was this same *Calories Count* report that spurred the formation of the Keystone Forum on Away-From-Home Foods. The report recommended that the FDA "work through a facilitator to provide a forum for stakeholders to seek consensus-based solutions to specific aspects of the obesity epidemic."[14] In response, the FDA in June 2004 asked The Keystone Center—a neutral, nonprofit dispute resolution and public policy organization—to design, convene, and facilitate a forum on away-from-home foods and opportunities for assisting consumers in preventing undue weight gain and obesity.

This report summarizes Forum participants' findings and recommendations. It is hoped that the American public will be the ultimate beneficiary of the Forum's work. Toward that end, Forum participants expect that the report will be useful to a broad array of potential implementers and interested stakeholders, including foodservice operators and their suppliers, policymakers, public health and medical professionals, culinary professionals, patient and consumer advocates, research scientists, and others. The specific intended audiences for the report vary by section and by recommendation.

The Forum Process

The Keystone Forum on Away-From-Home Foods commenced in December 2004 with a small-group planning meeting. The first full-group plenary session was held over the course of two days in April 2005. At that meeting, Forum participants agreed to organize themselves into three work groups in order to address key topics more fully: Consumer Behavior; Products, Menu Items, and Meals; and the Market and Policy Environment. Other work groups and ad hoc small groups subsequently formed to address issues relating to nutrition information, marketing, pricing, and children's needs. The work groups "met" via conference call and e-mail on numerous occasions, and two more plenary sessions were held—one in July 2005 and one in November 2005. All of the plenary sessions were held in Washington, DC. Substantial portions of the first two plenary meetings were open to invited observers; the meetings were otherwise closed for deliberation. Over time, the group moved from information exchange to deliberation to the drafting of proposals, which ultimately led to this final report.

The Keystone Forum on Away-From-Home Foods was convened and facilitated by The Keystone Center, a nonprofit organization with offices in Colorado and Washington, DC.[15] The Keystone Center specializes in bringing together people from the private sector, nongovernmental organizations, academia, and government to address pressing questions and

[12] ERS, "Table 5: Daily Food Consumption at Different Locations: All Individuals Ages 2 and Older," *Daily Diet and Health: Food Consumption and Nutrient Intake Tables* (Washington, DC: ERS, 2000), cited in FDA, *Calories Count*, 2004.
[13] FDA, *Calories Count*, 2004.
[14] Ibid.
[15] See www.keystone.org.

develop consensus on public policy issues that would be difficult to resolve within traditional decision-making processes. The Consensus Building Institute provided additional facilitation expertise, and Larmer Consulting assisted with the compilation and editing of this report.[16] The project was funded solely by the FDA. (The content of this publication does not necessarily reflect the views or policies of the U.S. Department of Health and Human Services, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.)

Keystone Forum participants agreed throughout the process to abide by a set of "operating protocols," which outlined objectives, roles, responsibilities, and a number of discussion principles. Among the principles, for example, participants agreed to keep the discussions civil and constructive, offer solutions rather than just criticisms, keep an open mind, and so forth. Under these protocols, participants had the opportunity to develop a common understanding of the issues, explore their respective interests, and clarify options to help inform future action by decision-makers within industry, government, and civil society. Participants were asked to represent their personal views in the discussions and were understood to be speaking on behalf of themselves and not on behalf of their organizations or constituencies, unless they otherwise indicated.

This report is designed to be an accurate portrayal of Forum participants' discussions and recommendations. By including their names in Appendix A, Forum participants are indicating that they "generally support" the recommendations and overall content of the report, though they may find some sections more acceptable and compelling than others. Therefore, participants may heartily endorse specific sections even while they continue to have concerns or questions about others. During the process of developing this report, greater weight was placed on building agreement around the recommendations, supporting rationales, and suggested implementation steps than around the narrative text that provides background and contextual information. For some topics on which the group did not reach agreement, the various perspectives are characterized.

Participants' organizations are listed in Appendix A for identification purposes only; the listing of an organization's name is not meant to imply official support of the report. Also, participants do not necessarily endorse specific studies or reports cited in this report.

To assist the group in considering specific topics, individual participants or groups of participants frequently consulted existing available literature, and in some cases conducted interviews. This report is not intended to be an "evidence-based report" *per se*, and participants recognize that additional public or proprietary research may exist that they did not identify or were unable to access. The group also recognizes both that additional research is needed to strengthen the knowledge base regarding many issues addressed by the Forum, and that reasonable strategies should be pursued on the basis of the best information available.

[16] See www.cbuilding.org and www.larmerconsulting.com.

The Forum's Purpose, Objectives, and Context of Inquiry

From the outset, the stated purpose of the Keystone Forum on Away-From-Home Foods was to consider what can be done, given what is currently known, to support consumers' ability to manage energy intake with respect to preventing undue weight gain and obesity, within the scope of away-from-home foods.

The objectives of the Keystone Forum were to:

- Identify the state of the evidence, as well as important knowledge gaps, regarding obesity and weight gain prevention and away-from-home foods. (Forum participants were interested in understanding both consumer choice and the environment in which consumers make choices.)
- Identify current opportunities and promising areas of action for preventing weight gain and obesity.
- Identify means for evaluating possible actions.
- Identify areas and opportunities for collaboration across sectors.
- Encourage the formation of collaborations necessary to pursue recommendations.
- Encourage participants and others to take action, as feasible and appropriate, to help people manage their caloric intake from away-from-home foods.
- Disseminate the results of the Forum to other parties who might contribute to implementing the recommendations.

Keystone Forum participants recognize that obesity is a systemic, societal problem requiring a multifaceted set of solutions, and therefore the group did not attempt to assign blame to organizations or individuals. Rather, all participants agreed to work in good faith and with open minds toward collaborative solutions to this shared problem.

Forum participants also agreed to consider the role of food in the context of what is known about obesity—in other words, in light of the fact that food, wherever consumed, is a major factor but not the only factor causing obesity. Because obesity and undue weight gain result from sustained energy imbalance, physical activity is also an essential element in obesity prevention and treatment. While this inquiry focused on food choice and consumption, participants recognized that the broad societal effort to reduce obesity incidence must consider both sides of the energy balance equation.

The Scope of the Discussions

The Forum's discussions focused on obesity and away-from-home foods. As in the FDA's *Calories Count* report, the term *obesity* was used to refer to overweight and obesity together.[17] Similarly, the term *foods* is frequently used in this report to refer to both foods and beverages.

[17] The National Institutes of Health define "overweight" in adults as a body mass index (BMI) of 25.0 to 29.9 and "obesity" as a BMI of 30.0 or higher. BMI is defined as the ratio of a person's bodyweight in kilograms divided by the square of his or her height in meters. See www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/risk.htm#limitations.

The term *away-from-home foods* was used to denote foods prepared and purchased away from home (including take-away foods) that are not generally subject to current federal regulations for food labeling.[18] Such foods include full meals as well as single ready-to-eat items. Points of purchase include restaurants, prepared-food counters at grocery stores, convenience stores, and a variety of institutional foodservice settings.

The report in general does not single out any particular subgroup of the U.S. population. However, participants acknowledged the unique concerns relating to children, since that population group faces significant long-term health consequences due to the epidemic of overweight and obesity. The prevalence of obesity among children and adolescents in the United States has doubled in the past two decades.[19] Now among 6- to 11-year-olds, 13% are above the 95th percentile for body mass index (weight for height), and among 12- to 17-year-olds, 14% are above the 95th percentile, with even higher rates among subpopulations of minorities and the economically disadvantaged.[20] Data from the CDC also indicate that even children less than five years old across all ethnic groups have had significant increases in the prevalence of overweight and obesity.[21] Some recent studies suggest an association between eating away from home and overweight and obesity in children and adolescents.[22] Although a direct causal relationship between away-from-home foods and childhood obesity has not been established, it is clear that away-from-home foods are a significant contributor to the overall energy intake of many children; therefore, the role these foods play in children's nutrition should be examined.[23]

At the outset of this Forum, it was determined that the topic of school meals would not be included in the scope of the discussions. Participants noted that school meals constitute a significant source of calories for school-aged children; approximately 6.5 billion meals are served annually under the jurisdiction of the U.S. Department of Agriculture school meal programs.[24] However, the Forum generally did not consider school meals for the following reasons: (1) there was a need to limit the scope of the dialogue to a manageable area of inquiry that could be addressed productively during the course of three plenary meetings; (2) some participants believed that an FDA-sponsored dialogue could focus most productively and

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[18] Note that the Forum's working definition of "away-from-home foods" aligns more closely with that of the U.S. Department of Agriculture's Economic Research Service than it does with that of the USDA's Agricultural Research Service, which does not include take-away or delivered foods consumed at home.

[19] C.L. Ogden, et al., "Prevalence and Trends in Overweight among U.S. Children and Adolescents, 1999-2000," *Journal of the American Medical Association* 288 (2002): 1728-1732.

[20] R.P. Troiano, et al., "Overweight Prevalence and Trends for Children and Adolescents," *Archives of Pediatrics and Adolescent Medicine* 149 (1995): 1085-1091.

[21] Z. Mei, et al., "Increasing Prevalence of Overweight among U.S. Low-Income Preschool Children: The Centers for Disease Control and Prevention Nutrition Surveillance, 1983 to 1995," *Pediatrics* 101 (1998): e12; and C.L. Ogden, et al., "Prevalence of Overweight among Preschool Children in the United States, 1971 through 1995," *Pediatrics* 99 (1997): e1.

[22] E.M. Taveras, et al., "Association of Consumption of Fried Food Away from Home with Body Mass Index and Diet Quality in Older Children and Adolescents," *Pediatrics* 116 (2005): e518-e524; and O.M. Thompson, et al., "Food Purchased Away from Home as a Predictor of Change in BMI Z-Score among Girls," *International Journal of Obesity* 28 (2004): 282-289.

[23] B.H. Lin, J. Guthrie, and E. Frazao, "American Children's Diets Not Making the Grade," *FoodReview* 24 (2001): 8-17.

[24] See USDA, "National School Lunch Program: Participation and Lunches Served," www.fns.usda.gov/pd/slsummar.htm, accessed March 29, 2006; and USDA, "School Breakfast Program Participation and Meals Served," www.fns.usda.gov/pd/sbsummar.htm, accessed March 29, 2006.

appropriately on aspects of the obesity problem that fall within the FDA's core capabilities and areas of activity; and (3) the topic of foods consumed in schools is sufficiently complex and important (and the parties involved sufficiently different in many cases) to merit treatment in a separate dialogue. In fact, several notable efforts are already underway, including a newly formed Institute of Medicine committee on nutrition standards for foods in schools, which has a report due out in 2006.[25] Nonetheless, it was believed by many participants that some discussion of specific considerations for children was in order, particularly in relation to menu development, providing nutrition information, and food marketing to children. Therefore, some of the recommendations that follow in this report include consideration of children's unique needs.

Key Concepts: Calorie Density and Nutrient Density

Two terms—*calorie density* and *nutrient density*—warrant some explanation, as they underlie the Forum's approach to calorie intake in the area of away-from-home foods. Calorie density (also known as *energy density*) refers to the amount of calories (i.e., energy) contained in a unit of food (measured by weight, e.g., kcal/g).[26]

Nutrient density refers to the amount and availability of nutrients in a unit of food.[27] Knowing the nutrient density of foods allows for the comparison of nutritional value among different foods, regardless of serving size. Nutrient-dense foods provide substantial amounts of vitamins and minerals, and relatively fewer calories. Foods low in nutrient density supply calories but relatively small amounts of nutrients (or sometimes none).[28]

The Forum focused on assisting consumers with managing appropriate caloric intake pursuant to obesity prevention. However, several sections of this report refer to the concept of nutrient density and the importance of various nutritional considerations, to avoid the implication that calories are the only nutritional consideration for a healthy diet. While appropriate caloric intake is essential to addressing the problem of obesity, it is also important for consumers to get the most nutritional value from their calories.

Considerations in Developing Recommendations

Keystone Forum participants developed the following considerations for assessing options to address the current obesity epidemic.

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[25] Institute of Medicine, "Nutrition Standards for Foods in Schools," www.iom.edu/CMS/3788/30181.aspx, accessed March 18, 2006.

[26] See www.health.gov/dietaryguidelines/dga2005/report/HTML/G1_Glossary.htm. While *energy density* and *calorie density* can be used interchangeably, this report generally uses the latter term.

[27] See www.diet-and-health.net/glossary.html. For an extensive review of literature on nutrient density, see A. Drewnowski, "Concept of a Nutritious Food: Toward a Nutrient Density Score," *American Journal of Clinical Nutrition* 82, no. 4 (2005): 721-732.

[28] Modified from the International Food Information Council's glossary of food-related terms at www.ific.org/glossary/glossarynz.cfm. See also www.health.gov/dietaryguidelines/dga2005/report/HTML/G1_Glossary.htm.

1) Various rationales exist for policymakers and others to consider in acting to protect or improve public health. They include, but are not limited to, a favorable cost/benefit ratio, a substantial basis for believing that the action will have the desired effect, and the need to take preventative measures in the face of uncertainty.
2) Obesity prevention strategies ought to be guided by robust and relevant scientific evidence, though science alone is not the deciding factor.
3) Individual choice should be respected.
4) Broad environmental changes need to address both supply and demand. The supply side includes increasing the choices of healthier and less-calorie-dense menu items and meals available in foodservice establishments. Because commercial enterprises are unlikely to subsidize menu items that sufficient numbers of consumers do not want, demand-side considerations include influencing consumer choice through education, marketing, and other means.
5) Decision-makers should be cognizant of the potential unintended consequences of intervening in an area as complex as the eating behavior of individuals.
6) The need for additional research should not preclude reasonable action. As noted in the Institute of Medicine's 2004 report, *Preventing Childhood Obesity: Health in the Balance*, "[t]he obesity epidemic is a serious public health problem that calls for immediate action to reduce its prevalence as well as its health and social consequences. Therefore…actions should be based on the best available evidence—as opposed to waiting for the best possible evidence."[29]

With regard to this last consideration, the best available evidence for obesity prevention and control is grounded in a solid, well-documented knowledge base regarding energy balance. Keystone Forum participants believe that what is needed now is reasonable guidance and action to help make healthy food choices easier for individuals and families.

Decision-makers do not always have the luxury of operating on the basis of absolute scientific certainty. In the prevention and control of obesity, Forum participants agree that we do not have the luxury of waiting for a perfect scientific evidence base for each setting- or population-specific weight-control strategy that could influence an individual's energy balance. As is frequently the case in responding to public health challenges, judgment calls must be made in light of the potential benefits and costs of taking action, and the potential costs of not acting.

All segments of society share responsibility for changing the course of the obesity epidemic. Education and personal responsibility are important parts of the solution, as are changes to the environment in which individuals and families make decisions. The restaurant industry, foodservice professionals, culinary institutions, and food distributors can support an individual's decision-making by expanding opportunities for consumers to effectively manage their energy intake.

In developing recommendations along these lines, Forum participants adopted a "language hierarchy" for assigning weight to each proposed strategy or action. Participants agreed that, in a recommendation:

[29] Institute of Medicine, *Preventing Childhood Obesity: Health in the Balance* (Washington, DC: National Academies Press, 2004).

- "shall" indicates an action meant to be mandated, required, regulated, or demanded;
- "should" indicates an action that is desired, preferred, or sought; and
- "may" indicates an action that one could or might consider—i.e., one of many reasonable options.

This report relies upon the language and spirit of "should" and "may" and avoids use of the word "shall," in keeping with the voluntary nature of the Forum's purview.

Funding the Recommended Actions

Many of the actions recommended by the Forum will require significant resources for implementation. For example, funds will be needed to design and launch (or expand) programs, to assess the effectiveness of various strategies, and to conduct research.

The government, foundations, foodservice companies, and civic-sector organizations can all play a significant role in sponsoring new or enhanced initiatives. Collaborative approaches should be sought where feasible between diverse organizations and sectors, since some actions may be cost-prohibitive if undertaken individually. Some coordination of program resources is already happening within the restaurant industry, among voluntary health organizations, and by organizations such as the Produce for Better Health Foundation. Ultimately, strategies for obesity prevention in the area of away-from-home foods will necessitate broad support and participation from government, the private sector, philanthropies, and civil society.

Chapter 1
Setting the Stage

To set the stage for the chapters that follow, this chapter first describes a number of themes regarding today's business and consumer environment, and then provides some discussion and data on how that environment has changed over the past several decades. The final section in this chapter discusses the relationship of away-from-home foods to body weight.

Key Themes

During months of dialogue and joint consideration of various potential strategies and rationales, Forum participants articulated the following themes regarding today's business and consumer environment. The type and degree of evidence underlying each assertion varies.

1) The health outcomes and health costs of overweight and obesity are critical public health concerns.

2) The environment in which consumers make food choices (including regarding away-from-home foods) has changed dramatically in the last 30 years. (This assertion is explored more fully in the next section.)

3) Domestic agricultural production and imports provide Americans with a wide variety of foods in abundance. It is uncertain whether changing U.S. agricultural policy in ways that affect production patterns would significantly alter American consumers' choices; this may depend on the scale of the changes. For example, it is unclear if shifts in U.S. agricultural policy to encourage greater consumption of fruits and vegetables could affect the availability and pricing of those foods, and what unintended consequences that would have for farmers and their customers. On the other hand, American consumers' changing tastes and preferences certainly affect farmers' production decisions season-to-season and over time.

4) As with any large industry sector, the away-from-home foods sector both responds to consumer demand and seeks to shape and influence that demand by what is offered, how it is offered and priced, and how it is marketed and advertised.

5) Given that even modest increases in calories consumed can have long-term, significant effects on weight and obesity, it is difficult to determine the degree to which various changes in today's environment are responsible for the growing problem of obesity.

6) The research base on obesity is incomplete and imperfect regarding some aspects of the problem, such as the potential effectiveness of specific interventions aimed at assisting consumers with managing their energy intake. While Forum participants propose several priorities for further research, they also recognize that perfect information may never be

possible in some areas given the complexity of the obesity problem and the many variables involved in consumer behavior.

7) Unintended consequences may result from acting on the basis of imperfect knowledge.

8) Psychological and social factors (such as comfort, indulgence, nostalgia, celebrations, and social contact) play a large role in how people eat, including when eating away-from-home foods.

9) As of this decade, Americans are eating out more frequently and consuming more calories from away-from-home establishments than ever before. Thus, it is assumed that a wider range of less-energy-dense, more-nutrient-dense food and beverage choices in away-from-home food outlets, coupled with consumer education and information (especially about energy balance), can help Americans to manage their weight more effectively.

10) To address weight gain in the United States, the current general consumer value proposition should shift away from an emphasis on large-quantity, calorie-dense, low-cost foods and beverages. Adequate physical activity will also need to be an essential part of the solution, to help ensure that individuals increasingly can balance their energy expenditure with their energy intake.

11) Many considerations affect people's food decisions in addition to health and nutrition, including convenience, availability, affordability, and satisfaction. In addition, it is not easy for many individuals to change their day-to-day food and activity choices and habits. People often focus more on short-term benefits than longer-term consequences.

12) Consumers will respond to nutrition information to varying degrees, ranging from those who actively seek and use such information to make food choices to those who will not use it.

13) How overweight and obesity are addressed may have disproportional impacts on diverse populations. Ethnic and cultural factors must be considered. What works in one group may not work in others. Many actions will need to be audience-specific and tailored to specific demographics, geographies, and cultures in order to be effective.

The Changing Environmental Context

On average, Americans are consuming more calories today than they were three decades ago. According to the U.S. Department of Health and Human Services' National Health and Nutrition Examination Survey (an in-person survey), men consumed 2,450 calories per day in 1971, while women consumed 1,542. In 2000, the numbers were 2,618 and 1,877, respectively.[30] Similarly, from food supply data the U.S. Department of Agriculture (USDA) has estimated that average

[30] Centers for Disease Control and Prevention (CDC), "Trends in Intake of Energy and Macronutrients—United States, 1971-2000," *Morbidity and Mortality Weekly Report* 53 (2004): 80-82.

daily per capita energy consumption increased by 12%, or roughly 300 calories per day, between 1985 and 2000.[31]

Many factors have likely contributed to this increase in average caloric intake. Environmental factors—including economic, policy, social, and cultural variables—are among those that affect people's caloric consumption and associated weight and health implications. Other broad factors can be physiological, genetic, and psychological. Understanding the environmental context, however, is an essential part of understanding what choices are available to people and why they make the choices they do.

Among the environmental variables that may affect away-from-home food choices (i.e., that affect why people eat away from home and what and how they eat) are: food costs, technology (production, processing, packaging), consumer demographics (aging, dual-income households, participation of women in the workforce, race/ethnicity), national and household economics (personal disposable income, time use), the availability of quick-service and casual dining restaurants (number and variety), marketing and advertising strategies (amount, quality, effectiveness, types of food marketed, and venue), housing patterns (suburban sprawl), and physical activity expenditures. Many of these environmental variables have changed—some of them dramatically—over the past three decades, as discussed below. Such changes may have had a profound impact on consumers' food choices and eating behavior.[32]

Values and beliefs can also be categorized as environmental factors. For example, many households traditionally ate away from home generally for reasons of celebration, and they viewed the occasion as a special opportunity for indulgence. Today, however, consumer needs and demands—for convenience, affordability, and satisfaction—may be changing faster than relevant consumer values. In other words, people may still subconsciously view dining out mostly as an opportunity for indulgence, even though they are dining out much more often than in the past.

Thus, it is important to consider the environmental context when thinking about the determinants of consumer behavior with regard to away-from-home food and beverage choices. The following are examples of how the environment in which consumers make food choices has changed in recent decades. Some of the examples are specific to away-from-home foods, and some pertain to consumers' broader environment.

- Food on the whole is cheaper for Americans than it used to be. Food expenditure as a percentage of per capita disposable income has fallen.[33]
  - 1970 15.3%
  - 2004 10.8%

[31] J. Putnam, J. Allshouse, and L.S. Kantor, "U.S. Per Capita Food Supply Trends: More Calories, Refined Carbohydrates, and Fats," *FoodReview* 25 (2002): 2-15.
[32] See S.L. Booth, "Environmental and Societal Factors Affect Food Choice and Physical Activity: Rationale, Influences, and Leverage Points," *Nutrition Reviews* 59, no. 3 (Part II) (2001): 21-39.
[33] Economic Research Service (ERS), "Table 8: Food Expenditures as a Share of Disposable Personal Money Income," *Food CPI, Prices, and Expenditures* (Washington, DC: ERS, 2003). See www.ers.usda.gov/briefing/CPIFoodAndExpenditures/Data/table8.htm.

- More of Americans' total food budget is used for away-from-home foods. Out-of-home food expenditures as a percentage of total food expenditures per capita have risen.
  - 1970 26.3%[34]
  - 2002 46.0%[35]

- Americans now have access to more and more opportunities to select and eat away-from-home foods. The total number of foodservice establishments in the United States has almost doubled in the last three decades.[36]
  - 1972 491,000
  - 2004 878,000

- According to USDA food availability data, the number of available calories per person in the food supply has increased during this period of time.[37]
  - 1970-early 1980s 3,200-3,300 calories available per person per day
  - 2000 3,900 calories available per person per day

- Portion sizes in this country have increased both in restaurants and in the home over the past two decades.[38] Although the trend began in the 1970s, larger portion sizes became more common in the 1980s and 1990s.[39]

In addition to changes in the food-related aspects of the environmental context over the past three decades, many Americans have experienced broader changes in various lifestyle-related aspects, which may also contribute to the rising incidence of overweight and obesity.

- Both partners in married households are working more, taking away time from numerous other activities, from exercise to meal preparation at home.[40]

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[34] B. Lin, J. Guthrie, and E. Frazao, *Away-From-Home Foods Increasingly Important to Quality of American Diet,* Agriculture Information Bulletin #749 (Washington, DC: ERS, 1999).
[35] National Restaurant Association, "Restaurant Industry Facts," www.restaurant.org/research/ind_glance.cfm, accessed April 12, 2002.
[36] Personal communication, National Restaurant Association, March 20, 2006. These figures include eating and drinking places and all other categories of commercial and noncommercial restaurant and foodservice establishments. Among the other categories are managed services (contractors), lodging place restaurants, retail hosts, recreation and sports foodservice, school foodservice, health care foodservice, and military foodservice.
[37] ERS, "Food Availability Data," www.ers.usda.gov/Data/foodconsumption/FoodAvailIndex.htm, accessed on February 1, 2005.
[38] U.S. Bureau of the Census, *Statistical Abstract of the United States: 1985*, 114th ed. (Washington, DC: U.S. Bureau of the Census, 1994); U.S. Bureau of the Census, *Statistical Abstract of the United States: 1994,* 105th ed. (Washington, DC: U.S. Bureau of the Census, 1984); J.O. Hill and J.C. Peters, "Environmental Contributions to the Obesity Epidemic," *Science* 280 (1998): 1371-1374; and H. Smiciklas-Wright, et al., "Foods Commonly Eaten in the United States, 1989-1991 and 1994-1996: Are Portion Sizes Changing?" *Journal of the American Dietetic Association* 103, no. 1 (2003): 41-47.
[39] L.R. Young and M. Nestle, "The Contribution of Expanding Portion Sizes to the U.S. Obesity Epidemic," *American Journal of Public Health* 92, no. 2 (2002): 246-249.
[40] American Sociological Association, *News*, November 22, 2004. As one illustration of the impact of this trend, in 1998 women working outside the home spent an average of 6.3 hours per week on a combination of shopping, cooking, and meal clean-up, compared to 11.5 hours for women not working outside the home. Diego Rose, *Who Has Time to Cook? New Directions for Food and Nutrition Policy Research on Household Meal Production*, a

- 1970 53 hours for a married couple's combined out-of-home work week
- 2000 63 hours for a married couple's combined out-of-home work week

- More adults are spending more time commuting each day, diminishing the time available for cooking, exercise, family time, and other activities. The average time commuting to and from work daily, in minutes, has risen.[41]
  - 1980 21.7 minutes each way
  - 2000 24.4 minutes each way

- The variety of venues for product advertising and marketing has proliferated. It includes not only television and print advertising, but also product placement in television shows, films, and video games; toy and other premium give-aways; licensing agreements (tie-ins with television shows and movies); and the internet.[42]
  - 1970 $71.0 million spent on product placement on television
  - 2004 $1.8 billion spent on product placement on television

- Households have the television on almost 25% more than was the case 30 years ago.[43] (This does not take into account time spent in front of computers.)
  - 1970 5 hours 56 minutes per day
  - 2000 7 hours 35 minutes per day

- High school students are less likely to attend physical education class daily than they were a decade ago.[44] The percentage of U.S. schools requiring some form of physical education declines with advancing grade levels, from 50% of 5th grades to only 5% of 12th grades.[45]
  - 1991 41.6% of high school students attended physical education class daily
  - 2003 28.4% of high school students attended physical education class daily

The Relationship of Away-From-Home Foods to Body Weight

The question of whether away-from-home foods contribute to overweight and obesity is an important issue that was considered by the Forum. Participants did not seek resolution on this question, but rather focused on proposing implementable solutions to the challenge of obesity. The following is a general overview of existing scientific literature on the subject.

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presentation given at the Conference on Food and Eating Consequences of Time-Use Decisions, July 13, 2004. See www.farmfoundation.org/projects/documents/Rose.presentation.pdf.

[41] These figures are from the U.S. Census for 1980 and 2000.

[42] PQ Media, *Product Placement Spending in Media* (Stamford, CT: PQ Media, 2005).

[43] Television Bureau of Advertising, "TV Basics: Time Spent Viewing, Households," data drawn from Nielsen Media Research, NTI Annual Averages, http://www.tvb.org/rcentral/mediatrendstrack/tvbasics/08_TimeViewingHH.asp, accessed March 15, 2006.

[44] CDC, Youth Risk Behavior Surveillance System, "Youth Online: Comprehensive Results: Percentage of Students Who Attended a PE Class Daily," http://apps.nccd.cdc.gov/yrbss/SelectLocyear.asp?cat=6&Quest=511, accessed March 15, 2006. Corresponding national data is not available for younger schoolchildren.

[45] CDC, National Youth Risk Behavior Surveys, 1991-2003.

While several recent studies have explored various contributors to obesity, as yet there does not exist a conclusive body of evidence establishing a causal link between the use of away-from-home foods and obesity. However, preliminary research indicates that the consumption of away-from-home foods can be a factor in determining calorie consumption and body weight, and an important one for many individuals. An annotated bibliography of studies examining the relationship between away-from-home foods and body weight is provided in Appendix B.

The research methods employed by these studies include: (1) analysis of existing databases, such as the Continuing Survey of Food Intakes by Individuals, the Nationwide Food Consumption Survey, and Coronary Artery Risk Development in Young Adults; and (2) studies of subpopulations, including healthy-weight adults, pre-menopausal women, children, adolescents, and specific ethnic groups. The studies examine indicators such as eating behaviors in various settings; the frequency of away-from-home food consumption and its relationship with calorie and nutrient consumption and occurrence of obesity/overweight; and the association of fast-food consumption within various age, socio-economic, and ethnic groups with overall diet quality, calorie intake, and obesity in those groups.

The consumption-related factors that these studies generally do not consider in-depth include calorie density, serving and portion sizes, liquid vs. solid calories, speed of caloric intake, and activities that might distract from a focus on eating, such as eating while walking, driving, watching television, and working at a computer.

Selected results from these studies include the following.

- Eating out more frequently is associated with obesity, higher body fatness, and higher body mass index.[46]
- Women who eat out more often (more than five times per week) consume about 290 more calories on average each day than women who eat out less often.[47]
- Eating more fast-food meals is linked to eating more calories, more saturated fat, fewer fruits and vegetables, and less milk.[48]

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[46] M.A. Pereira, et al., "Fast-Food Habits, Weight Gain, and Insulin Resistance (The CARDIA Study): 15-Year Prospective Analysis," *Lancet* 365 (2005): 36-42; E.M. Taveras, et al., "Association of Consumption of Fried Food Away from Home with Body Mass Index and Diet Quality in Older Children and Adolescents," *Pediatrics* 116 (2005): e518-e524; O.M. Thompson, et al., "Food Purchased Away from Home as a Predictor of Change in BMI Z-Score among Girls," *International Journal of Obesity* 28 (2004): 282-289; J.K. Binkley, et al., "The Relation between Dietary Change and Rising U.S. Obesity," *International Journal of Obesity* 24 (2000): 1032-1039; R.W. Jeffery and S.A. French, "Epidemic Obesity in the United States: Are Fast Foods and Television Viewing Contributing?" *American Journal Public Health* 88 (1998): 277-280; and M.A. McCrory, et al., "Overeating in America: Association between Restaurant Food Consumption and Body Fatness in Healthy Adult Men and Women Ages 19 to 80," *Obesity Research* 7 (1999): 564-571.

[47] L.H. Clemens, et al., "The Effect of Eating Out on Quality of Diet in Premenopausal Women," *Journal of the American Dietetic Association* 99 (1999): 422-444.

[48] Taveras, et al., "Association of Consumption of Fried Food," 2005; M. Schmidt, et al., "Fast-Food Intake and Diet Quality in Black and White Girls," *Archives of Pediatrics and Adolescent Medicine* 159 (2004): 626-631; S.A. Bowman and B.T. Vinyard, "Fast-Food Consumers vs. Non-Fast-Food Consumers: A Comparison of Their Energy Intakes, Diet Quality, and Overweight Status," *Journal of the American College of Nutrition* 23, no. 2 (2004): 163-168; S. Paeratakul, et al., "Fast-Food Consumption among U.S. Adults and Children: Dietary and Nutrient Intake Profile," *Journal of the American Dietetic Association* 103 (2003): 1332-1338; S.A. French, et al., "Fast Food Restaurant Use among Women in the Pound of Prevention Study: Dietary, Behavioral and Demographic

- The daily caloric intake of overweight adolescents tends to increase when they consume fast food; however, lean adolescents tend to have no overall increase in calorie intake when they consume fast food.[49]

Few of the existing studies are longitudinal. The majority of the studies focus solely on quick-service (or "fast") foods. The data available, while consistent in their findings, are not adequate to clearly define the extent of the association between away-from-home foods and body weight, and further research is recommended.

Syndicated commercial data presented to the Forum do not show a correlation between frequency of restaurant use and incidence of obesity and overweight. These data define frequent users as persons who eat from restaurants six times or more in a two-week period.[50] However, it was noted that employing a higher threshold for defining frequent users (e.g., four or ten times per week) might result in a correlation.

In the meantime, the away-from-home foods sector is an important area of inquiry in identifying ways to assist consumers with managing their caloric intake and weight. The percentage of the food dollar spent on away-from-home foods has risen steadily since the mid-1970s,[51] and the percentage of calories obtained from away-from-home foods rose from 18% in 1977-78 to 32% in 1994-96.[52] The influences on an individual's caloric intake can be many, but how consumers eat when not preparing food for themselves at home is a vital consideration in the broader societal effort to reduce obesity and overweight.

Correlates," *International Journal of Obesity* 24 (2000): 1353-1359; and Jeffery and French, "Epidemic Obesity," 1998.

[49] C.B. Ebbeling, et al., "Compensation for Energy Intake from Fast Food among Overweight and Lean Adolescents," *Journal of the American Medical Association* 291 (2004): 2828-2833.

[50] The NPD Group, presentation to the Keystone Forum on Away-from-Home Foods, April 26, 2005.

[51] J.F. Guthrie, B.F. Lin, and E. Frazao, "Role of Food Prepared Away from Home in the American Diet," *Journal of Nutrition Education and Behavior* 34 (2002): 140-150. See also www.ers.usda.gov/Briefing/DietAndHealth/data/foods/.

[52] Ibid. See also www.ers.usda.gov/Briefing/DietAndHealth/data/nutrients/table6.htm.

Chapter 2
Understanding and Influencing Consumer Behavior

To reverse the increase in obesity and undue weight gain in the United States, the current consumer preference for large quantities of calorie-dense foods should shift to an emphasis on intake appropriate to an individual's needs and to increased consumption of foods lower in calorie density. However, it can be difficult to change consumers' day-to-day food and activity choices and habits, despite the potential longer-term consequences of those behaviors. Thus, messages and education programs directed at consumers should be carefully crafted; they must impart the knowledge and skills consumers need, and they must reach and motivate consumers successfully. Also, strategies should be tailored as needed to specific demographic and cultural audiences.

Much of the existing data and information about consumer eating behavior and attitudes is either not specific to away-from-home foods, not sufficiently timely, or not publicly available. Thus, a research agenda is needed to augment the publicly available knowledge base and inform the continual development of consumer education programs.

It must be stressed, however, that while the knowledge base needs to be improved, enough is known to recommend many important actions. Forum participants believe that reasonable strategies to assist consumers with healthy energy intake should be pursued now, and then augmented going forward as new information becomes available.

This chapter includes: (1) a characterization of what is known about consumer behavior vis-à-vis away-from-home eating; (2) an overview of existing education and marketing efforts seeking to influence consumer behavior; (3) an overview of existing data-collection efforts; and (4) Forum participants' recommendations for understanding and influencing consumer behavior through commercial and social marketing, educational and nutrition promotion, and research.

What Is Known about Consumer Behavior and Away-From-Home Foods

Consumer behavior (what consumers do, how and why they do it, and what might cause them to make different choices) is an extensive, complex field of research that is undertaken in the public, private, and academic sectors. The subset of this research that is both publicly available and relevant to away-from-home foods and obesity prevention is more limited, and should be examined when developing strategies to assist consumers with weight management.

This section provides a brief overview of the following topics relating to the interrelationships among consumer behavior, away-from-home foods, and obesity and overweight.

- Selected trends in consumer behavior and attitudes regarding the purchase and consumption of away-from-home foods
- Selected success factors in the consumer acceptance of recent product innovations that are reduced calorie or less calorie-dense
- An examination of immediate environmental factors that can contribute to excess calorie consumption among consumers

In developing this section, Forum participants drew from four streams of information: government data; syndicated commercial data presented to the group by The NPD Group; industry perspectives collected by Forum participants through a series of informal case studies; and an emerging body of academic research regarding environmental eating cues like portion size and calorie density.

Trends in Consumer Buying, Food Consumption, and Attitudes

Some of the information in this section related to consumer behavior was gleaned from government research into consumer buying patterns and market trends within the away-from-home foods sector. The remaining was drawn from syndicated commercial research data, which are frequently more specific and up-to-date but typically not publicly available.

Some past trends and future projections include the following.

- The frequency of dining out rose by more than two-thirds over the past two decades, from 16% of all meals and snacks in 1977-78 to 27% in 1995. Consequently, a greater proportion of calories and nutrients now come from away-from-home food sources. Away-from-home foods (including foods sold in schools, restaurants, and other venues) provided 34% of total caloric intake in 1995 (nearly double the 18% in 1977-78) and 38% of total fat intake (vs. 18% in 1977-78).[53]
- The number of meals purchased from a restaurant per person per year increased by 27% between 1984 and 2004.[54]
- Quick-service restaurants had been increasing their share of the away-from-home market until the mid-1990s. In 2002, however, full-service restaurants again accounted for a slightly larger share of total sales.[55]
- Per-capita spending is projected to rise by 18% at full-service restaurants and by 6% at quick-service establishments between 2000 and 2020.[56]

Recent behavioral buying patterns of note include the following.

- 21% of all meals in 2004 were purchased from foodservice establishments.[57]

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[53] B.H. Lin and E. Frazao, *Away-From-Home Foods Increasingly Important to Quality of American Diet*, Agricultural Information Bulletin #749 (Washington, DC: U.S. Department of Agriculture (USDA), 1999). The 1995 data are included here because they are the most recent, despite being a decade old. The figures will be updated by the National Health and Nutrition Examination Survey in approximately four years.
[54] The NPD Group, presentation to the Keystone Forum on Away-From-Home Foods, April 26, 2005.
[55] H. Stewart, et al., *The Demand for Food Away from Home: Full-Service or Fast Food?* Agricultural Economic Report #829 (Washington, DC: USDA, 2004).
[56] Ibid.
[57] The NPD Group, presentation to the Keystone Forum, 2005.

- Quick-service restaurants currently make up nearly three-quarters of total restaurant visits.[58]
- Major chains continue to drive industry traffic growth and have constituted about half of total restaurant traffic in recent years.[59]
- The purchase of fresh supermarket take-out foods (e.g., salads) has increased 12% over the past two years.[60]
- Americans take food from a restaurant more often than they eat on-site.[61]
- Approximately one-fifth of restaurant meals were purchased from a car (e.g., drive-through or curbside) in 2005, up from 14% in 1998.[62]
- The top five most popular foods ordered in restaurants in 2005, for consumption on-site or take out, were:[63]
  - For men—hamburgers, french fries, pizza, breakfast sandwiches, and side salads
  - For women—french fries, hamburgers, pizza, side salads, and chicken sandwiches
  - For students ages 18 to 24—french fries, hamburgers, pizza, Mexican foods, and chicken sandwiches
  - For children under age 6—french fries, chicken nuggets, pizza, hamburgers, and ice cream
- Foods for which consumption levels increased between 2003 and 2004 included: diet soft drinks, chicken nuggets/strips, french fries, cappuccinos and other gourmet coffee beverages, main dish salads, bottled water, burgers, chicken sandwiches, milk, and Mexican food.[64]
- Foods for which consumption levels decreased between 2003 and 2004 included: regular soft drinks, Chinese/Asian/Indian food, side dish salads, regular coffee, alcoholic beverages, seafood, toast/sliced bread, frozen sweets, cakes, pies, and breadsticks.[65]
- A growing dimension of the restaurant business involves providing "grab-and-go" snacks and regular meals during the afternoon and late at night.[66]
- A household's demand for food away from home depends in part on its income and its demographics. Away-from-home expenditures are typically higher for single-person households and households containing multiple adults without live-at-home children.[67]
- Changes in the workforce, including the rise of dual-income households and the increase in women working outside the home, have fueled the drive for take-out meals, drive-throughs, and convenience in food preparation.[68]

Attitudes noted in recent research include the following.

- Consumers cite the taste, value, size of portions, and temperature of food as reasons for their increasing satisfaction with major chain restaurants, whereas satisfaction with independent restaurants has declined slightly in recent years.[69]

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[58] Ibid.
[59] Ibid.
[60] MSI, *The 2005 Gallup Study of Home Meal Replacements* (Princeton, NJ: Multi-Sponsor Surveys, Inc., 2005).
[61] The NPD Group, *20th Annual Eating Patterns in America Study* (Port Washington, NY: NPD Group, 2005).
[62] Ibid.
[63] Ibid.
[64] The NPD Group, presentation to the Keystone Forum, 2005.
[65] Ibid.
[66] E.A. Sloan, "What, When, and Where America Eats," *Food Technology,* January 2006.
[67] Stewart, *The Demand for Food Away from Home,* 2004.
[68] P.M. Anderson, K.F. Butcher, and P.B. Levine, *Maternal Employment and Overweight Children* (Chicago: Federal Reserve Bank of Chicago, 2002).
[69] The NPD Group, presentation to the Keystone Forum, 2005.

- 30% of consumers believe restaurant portions are too large.[70]
- 62% believe that restaurants do not offer enough small portions.[71]
- 61% would like to reduce the amount of food they consume.[72]

Consumer Acceptance of Recent Product Innovations

Foods that are conducive to healthy energy intake are of no benefit if consumers do not opt for them. During the course of the Forum's dialogue, participants developed a series of informal case studies in an attempt to examine the factors involved in the recent consumer acceptance of certain successful, low-calorie or less-calorie-dense products and concepts. The exercise was not intended to yield findings representative of industry as a whole, but rather to assist the group in generalizing about useful ways to gain consumer acceptance, based on a few important recent examples. The full analysis of the case studies is included with this report as Appendix C.

The case studies were developed largely through telephone interviews and some background research, and they were analyzed by Dave McKechnie and Brian Wansink of Cornell University. The interviewees were asked to provide as much concrete detail about success factors as possible, and they were encouraged to speculate if necessary based on their background and expertise. Most interviewees asked that names and identifying facts be withheld from this report.

The exercise considered recent examples (within the past five years) from a variety of settings: eight from the foodservice industry, one of packaged foods, and one of prepared foods sold in grocery stores. The subjects included both specific product innovations and broad menu innovations, all of which were relevant to weight management in that they were lower in calories (or calorie density or saturated fat) than the products they replaced or than similar products on the market. All of the cases were judged to be successful by the innovating companies, as measured by positive reviews from the media and consumers, imitation by competitors, significantly increased sales, and/or steady sales over time.

Overall, the case studies revealed that the companies involved seem to have found success through a combination of:
- substituting lower-calorie ingredients without compromising taste,
- employing cooking techniques that resulted in fewer calories but yielded strong flavor,
- shifting to contemporary packaging,
- using pre-portioned packaging,
- reflecting trends in consumer health interests, and
- relying on words and phrases that imply healthy attributes, without necessarily using explicitly health-oriented language.

The most significant variables involved in the success of these cases appear to be preparation, packaging, and promotion.

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[70] M. Allenson, *Consumer Update: What We Want*, presentation at the Technomic Future Industry Directions Conference, June 2005.
[71] Ibid.
[72] Ibid.

With regard to preparation, for example, one family dining chain substituted vegetables for starches and frequently reduced protein portions. A quick-service chain used lower-calorie sauces and condiments for sandwiches, while a grocery chain used lower-calorie dressings for prepared salads. Finally, a fine-dining chain employed grilling and roasting to create strong flavor without the need for heavy sauces; they also featured plate composition emphasizing nutritional balance.

With regard to packaging, one lower-fat milk consumption campaign used contemporary packaging to change the perception of the product in consumers' eyes. In another case, a food manufacturer offered several reformulated versions of popular products in pre-portioned 100-calorie packs.

The analysis noted two distinct approaches to the successful promotion and positioning of these products. Some of the companies explicitly responded to current trends in consumer health-related interests in the way the products were positioned and promoted (e.g., "low fat," "better for you"). Some then went on to provide practical frames of reference for the consumer—for example, comparing the product to those of competitors, or highlighting "regular-guy" weight-loss success stories.

Other companies, by contrast, used carefully selected words and phrases to imply healthiness without actually using health-related language. They relied instead on terms like "fresh," "locally grown," "not deep fried," and "Mediterranean," as well as taglines like "The Joy of Snacking." By using these types of terms, the companies allowed consumers to make the association with health, while avoiding any suggestion that the product in question might taste inferior to higher-calorie products, or the perception that the product is not satisfying because it is "good for you." Some promotions for products that were—or might be perceived as being—smaller-than-usual portions also emphasized "satisfaction" as an important attribute.

Finally, the analysis posited that consumers may approach different food venues with significantly different mindsets. In a grocery store, a consumer may be more likely to consciously consider value for the dollar in making a choice, but in a restaurant he or she may focus more on taste and satisfaction.

Eating Behaviors—Caloric Intake and Consumers' Immediate Environment

Since obesity is a matter of caloric imbalance, it is essential to identify strategies that can help consumers to understand their food environment and manage their caloric intake. Thus it is important to better understand the drivers of excessive caloric intake. For example, with food in front of them or nearby, what are the immediate triggers or cues that lead many individuals to consume beyond their respective caloric needs?

Recent studies suggest that several factors in the immediate eating environment, including certain properties of foods, affect consumers' eating behavior and are associated with the

overconsumption of calories.[73] In particular, increases in the portion size, calorie density (calories per unit of weight), and variety of available foods are all associated with increased calorie intake. If these factors—and the interplay among them—can be properly understood, they can be used in the development of specific strategies to help consumers reduce the excessive consumption of calories. Since most of the studies examining these "eating cues" were conducted in laboratory settings, it is important that similar research be conducted under market conditions as well. Nevertheless, the existing research suggests several useful propositions about why many consumers have difficulty maintaining an appropriate caloric intake.

Portion Size and Caloric Intake

People tend to consume more—both more food and more calories—when presented with larger portions.[74] The importance of portion size in weight management was stressed in the 2005 *Dietary Guidelines for Americans*:

> Special attention should be given to portion sizes, which have increased significantly over the past two decades (http://hin.nhlbi.nih.gov/portion/index.htm). Though there are no empirical studies to show a causal relationship between increased portion sizes and obesity, there are studies showing that controlling portion sizes helps limit calorie intake, particularly when eating calorie-dense foods....[75]

Portion sizes in this country have increased in both restaurants and the home over the past two decades.[76] In many restaurants, many food and beverage items, such as soft drinks, steaks, and pastries, are now served in portions that are twice or several times as large as the standard serving size defined by the U.S. Food and Drug Administration (FDA).[77] The trend toward larger portion sizes has a powerful economic basis, since large portions provide an important value option for consumers.[78] For foodservice establishments, the actual monetary costs of larger portions can be modest, because the cost of the food itself is modest (on average about 20% of retail costs) relative to labor, packaging, transportation, marketing, and other costs.[79]

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[73] B. Wansink, "Environmental Factors that Increase the Food Intake and Consumption Volume of Unknowing Consumers," *Annual Review of Nutrition* 24 (2004): 455-479.
[74] B.J. Rolls, "The Supersizing of America: Portion Size and the Obesity Epidemic," *Nutrition Today* 38, no. 2 (2003): 42-53; and J.A. Ello-Martin, J.H. Ledikwe, and B.J. Rolls, "The Influence of Food Portion Size and Energy Density on Energy Intake: Implications for Weight Management," *American Journal of Clinical Nutrition* 82 (suppl.) (2005): 236S-241S.
[75] U.S. Department of Health and Human Services (HHS) and U.S. Department of Agriculture (USDA), *Dietary Guidelines for Americans 2005* (6th ed.) (Washington, DC: HHS and USDA, 2005).
[76] U.S. Bureau of the Census, *Statistical Abstract of the United States: 1985*, 114th ed. (Washington, DC: U.S. Bureau of the Census, 1994); U.S. Bureau of the Census, *Statistical Abstract of the United States: 1994*, 105th ed. (Washington, DC: U.S. Bureau of the Census, 1984); J.O. Hill and J.C. Peters, "Environmental Contributions to the Obesity Epidemic," *Science* 280 (1998): 1371-1374; H. Smiciklas-Wright, et al., "Foods Commonly Eaten in the United States, 1989-1991 and 1994-1996: Are Portion Sizes Changing?" *Journal of the American Dietetic Association* 103, no. 1 (2003): 41-47; and L.R. Young and M. Nestle, "The Contribution of Expanding Portion Sizes to the U.S. Obesity Epidemic," *American Journal of Public Health* 92, no. 2 (2002): 246-249.
[77] M.F. Jacobson and J.G. Hurley, *Restaurant Confidential* (New York, NY: Workman Publishing, 2002).
[78] B. Wansink and M. Huckabee, "De-Marketing Obesity," *California Management Review* 47, no. 4 (2005): 6-18.
[79] H. Elitzak, "Calculating the Food Marketing Bill," *Amber Waves*, February 2004: 43.

This trend toward larger portions, affecting both away-from-home and at-home foods, has coincided with increases in the prevalence of obesity.[80] Recent studies indicate that the availability of large portions of food (both meal-related and snack-related) can result in increased caloric intake and therefore can contribute to the growing incidence of obesity. Across a range of different types of foods, the bigger the portion served, the greater is both the weight of food consumed and the calories consumed. Studies conducted in both laboratory and naturalistic settings (e.g., restaurants, cafeterias, and movie theaters) indicate that providing individuals with larger portions of food leads to substantial increases in calorie intake.[81] This effect has been shown for packaged snack foods,[82] foods of amorphous shape such as macaroni and cheese,[83] and foods consumed as a unit such as sandwiches.[84] The effect has also been demonstrated with entrees in a cafeteria[85] and popcorn in a movie theater—even when the popcorn was stale.[86]

The effect of portion size persists beyond a single meal and is sustained from meal to meal. In other words, even when the portion size of all foods served over several days is increased, there is a persistent and significant effect on caloric intake, with no evidence of meal-to-meal adjustment in the consumption of calories.[87]

People generally appear to consume not only more food but also more calories when offered larger portions, and they often report similar ratings of hunger and fullness as those offered smaller portions of the same foods.[88] There is reason to believe, then, that consumers adjust their level of satiety to accommodate greater calorie intake than is needed.

The reasons *why* increased portions can result in greater caloric intake are not yet well understood. One reason may be that people (whether due to visual cues or socialization) tend to eat as much as they can of what they are served, as long as it is palatable; larger portions suggest that larger amounts are "normal" or "appropriate."[89] Another reason may be that people tend to

[80] Young and Nestle, "The Contribution of Expanding Portion Sizes," 2002.
[81] N. Diliberti, et al., "Increased Portion Size Leads to Increased Energy Intake in a Restaurant Meal," *Obesity Research* 12 (2004): 562-568; Ello-Martin, Ledikwe, and Rolls, "The Influence of Food Portion Size," 2005; B.J. Rolls, E.L. Morris, and L.S. Roe, "Portion Size of Food Affects Energy Intake in Normal-Weight and Overweight Men and Women," *American Journal of Clinical Nutrition* 76 (2002): 1207-1213; B.J. Rolls, et al., "Increasing the Portion Size of a Packaged Snack Increases Energy Intake in Men and Women," *Appetite* 42 (2004): 63-69; and B. Wansink and S. Park, "At the Movies: How External Cues and Perceived Taste Impact Consumption Volume," *Food Quality and Preference* 12, no. 1 (2001): 69-74.
[82] Rolls, et al., "Increasing the Portion Size of a Packaged Snack," 2004.
[83] Rolls, Morris, and Roe, "Portion Size of Food Affects Energy Intake," 2002.
[84] B.J. Rolls, et al., "Increasing the Portion Size of a Sandwich Increases Energy Intake," *Journal of the American Dietetic Association* 104 (2004): 367-372.
[85] Diliberti, et al. "Increased Portion Size Leads to Increased Energy Intake," 2004.
[86] B. Wansink and J. Kim, "Bad Popcorn in Big Buckets: Portion Size Can Influence Intake as Much as Taste," *Journal of Nutrition Education and Behavior* 37, no. 5 (2005): 242-245.
[87] B.J. Rolls, L.S. Roe, and J. Meengs, "Larger Portion Sizes Lead to Sustained Increase in Energy Intake over Two Days," *Journal of the American Dietetic Association*, in press (April 2006).
[88] Rolls, Morris, and Roe, "Portion Size of Food Affects Energy Intake," 2002; and Ello-Martin, Ledikwe, and Rolls, "The Influence of Food Portion Size," 2005.
[89] Wansink, "Environmental Factors that Increase the Volume of Food Intake," 2004.

eat in units—that is, they tend to consume (or try to consume) all of a pre-portioned food, such as a sandwich, cookie, or beverage.[90]

Also, consumers are often unable to assess the amount they are eating, even when there is information available about appropriate serving sizes. Gauging appropriate servings is difficult enough that people are often unable to tell the differences in portion size when offered different sizes of the same foods on different days.[91] Survey data and experimental findings indicate that many people let the server determine an appropriate portion[92] and eat accordingly, so that the bigger the portion the more they consume.[93]

The ability to accurately determine appropriate amounts of food to eat is important, but other than piecemeal estimation strategies,[94] there is little research to suggest which methods would be most successful in helping people estimate appropriate serving sizes. One study concluded that the characteristics of people (e.g., gender, age, body weight, level of education) cause differences in the way they estimate portion size, and error in estimating becomes greater as portions increase.[95] In addition, physiologic satiety cues (i.e., feelings of fullness) are readily overridden by food cues, such as large portions, easy access, and the sensory attractiveness of food.[96]

Children may lose the ability to adjust their food intake to meet their energy needs when given larger portion sizes.[97] However, the intake of younger children (age 3 or younger) tends to be relatively unaffected by environmental cues such as portion size.[98] Still, portion size is the single predictor responsible for the greatest amount of variance in daily energy intake for children generally.[99] Children taught to focus on their own fullness tend to adjust their intake better than children rewarded for eating whatever is set before them—i.e., cleaning their plates.[100]

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[90] P.S. Siegel, "The Completion Compulsion in Human Eating," *Psychological Reports* 3 (1957): 15-16; and J.A. Ello-Martin, et al., "Increasing the Portion Size of a Unit Food Increases Energy Intake," *Appetite* 39 (2002): 86.
[91] Rolls, Morris, and Roe, "Portion Size of Food Affects Energy Intake," 2002; L.R. Young and M.S. Nestle, "Portion Sizes in Dietary Assessment: Issues and Policy Implications," *Nutrition Review* 53 (1995): 149-158; and Ello-Martin, et al., "Increasing the Portion Size of a Unit Food," 2002.
[92] Diliberti, et al. "Increased Portion Size Leads to Increased Energy Intake," 2004.
[93] American Institute for Cancer Research, *Awareness and Action: AICR Surveys on Portion Size, Nutrition, and Cancer Risk* (Washington, DC: AICR, 2003). See www.aicr.org/site/DocServer/awarenessandaction_03conf.pdf?docID=106.
[94] P. Chandon and B. Wansink, "Obesity and the Calorie Underestimation Bias: A Psychophysical Model of Fast-Food Meal Size Estimation," *Journal of Marketing Research*, forthcoming (2007).
[95] L.R. Young and M. Nestle, "Variation in Perceptions of a 'Medium' Food Portion: Implications for Dietary Guidance," *Journal of the American Dietetic Association* 98 (1998): 458-459.
[96] V.E. Pudel and M. Oetting, "Eating in the Laboratory: Behavioural Aspects of the Positive Energy Balance," *International Journal of Obesity* 1 (1977): 369-386.
[97] J.O. Fisher, B.J. Rolls, and L.L. Birch, "Children's Bite Size and Intake of an Entrée Are Greater with Large Portions than with Age-Appropriate or Self-Selected Portions," *American Journal of Clinical Nutrition* 77, no. 5 (2003): 1164-1170; B.J. Rolls, D. Engell, and L.L. Birch, "Serving Portion Size Influences 5-Year-Old but Not 3-Year-Old Children's Food Intakes," *Journal of the American Dietetic Association* 1000 (2000): 232-234; and K.L. McConahy, et al., "Food Portions Are Positively Related to Energy Intake and Body Weight in Early Childhood," *Journal of Pediatrics* 140, no. 3 (2002): 340-347.
[98] Rolls, Engell, and Birch, "Serving Portion Size Influences 5-Year Old," 2000.
[99] K.L. McConahy, et al., "Portion Size of Common Foods Predicts Energy Intake among Preschool-Aged Children," *Journal of the American Dietetic Association* 104, no. 6 (2004): 975-979.
[100] L.L. Birch, et al., "Clean Up Your Plate: Effects of Child Feeding Practices on the Conditioning of Meal Size," *Learning and Motivation* 18 (1987): 301-317.

In summary, then, research indicates that portion size influences how many calories a person consumes, and individuals are often unable to accurately assess how much they are eating. Because increased portions are pervasive in our culture, from restaurants to supermarkets to vending machines, it is important to address the issue of portion size to help people choose appropriate amounts of food, given their energy needs.

Calorie Density and Caloric Intake

The Dietary Guidelines indicate that managing portion size is particularly important when consuming calorie-dense foods.[101] While further studies are needed to determine the average calorie density of meals among different sub-sectors of away-from-home meal providers, the fact is that many foods available in large portions in foodservice settings are higher in calorie density than the overall U.S. diet. [102]

When the palatability of the available foods is similar, individuals appear to eat a consistent weight of food despite variations in calorie density.[103] In general, therefore, the lower the calorie density, the lower the calorie intake. In one study, for example, when the calorie density of the available foods was reduced by 30% on the second day, participants decreased their daily energy intake by 30%.[104]

Of all the components of foods, water has the greatest influence on calorie density, since it adds substantial weight without adding calories.[105] Fat, because of its high energy content (9 kcal/g), has a greater influence on the calorie density of a food than either carbohydrate or protein (4 kcal/g). Not all high-fat foods have a high calorie density; the incorporation of water lowers the calorie density of even high-fat foods.

For some foods, reducing the calorie density—either by decreasing the fat content or by increasing water-rich components such as vegetables—may affect the taste and therefore acceptability to the eater. Laboratory-based studies indicate that for other foods, reductions in calorie density do not affect acceptability.[106]

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[101] HHS and USDA, *Dietary Guidelines for Americans*, 2005.
[102] A.M. Prentice and S.A. Jebb, "Fast Foods, Energy Density, and Obesity: A Possible Mechanistic Link," *Obesity Review* 4 (2003): 187-194; J.H. Ledikwe, et al., "Dietary Energy Density Determined by Eight Calculation Methods in a Nationally Representative United States Population," *Journal of Nutrition* 135 (2005): 274-278; and C.B. Ebbeling, et al., "Compensation for Energy Intake from Fast Food among Overweight and Lean Adolescents," *Journal of the American Medical Association* 291 (2004): 2828-2833.
[103] E.A. Bell, et al., "Energy Density of Foods Affects Energy Intake in Normal-Weight Women," *American Journal of Clinical Nutrition* 67 (1998): 412-420; and B.J. Rolls, L.S. Roe, and J.S. Meengs, "Reductions in Portion Size and Energy Density of Foods are Additive and Lead to Sustained Decreases in Energy Intake over Two Days," *American Journal of Clinical Nutrition* 83 (2006): 11-17.
[104] Bell, et al., "Energy Density of Foods Affects Energy Intake," 1998.
[105] Ello-Martin, Ledikwe, and Rolls, "The Influence of Food Portion Size," 2005; and B.J. Rolls, A. Drewnowski, and J.H. Ledikwe, "Changing the Energy Density of the Diet as a Strategy for Weight Management," *Journal of the American Dietetic Association* 105 (2005): 98-103.
[106] Ello-Martin, Ledikwe, and Rolls, "The Influence of Food Portion Size," 2005.

Calorie-dense foods are often the lowest-cost dietary option for the consumer. The calorie density of the diet tends to be linked inversely to diet cost; low-cost diets are frequently energy-dense but nutrient poor.[107]

Reducing the calorie density of the diet appears to be an effective approach for weight management; controlled studies have found an association between a reduced calorie-density diet and reduced calorie intake and body weight. Increasing intake of water-rich (low-calorie-dense) foods, such as fruits and vegetables, while restricting portions of high-calorie-dense foods, can lead to successful weight loss.[108] Also, participants eating less-calorie-dense diets generally report less hunger than dieters who simply reduce their fat intake.

Since both the portion size and the calorie density of foods can affect energy intake, a critical issue is to determine how these influences work together. In one study, 25% reductions in both portion size and calorie density together had a substantial impact on calorie intake, with no increase in reported hunger.[109] Because reductions in portion size and calorie density can add together to provide a bigger effect on calorie intake, a promising approach is to make small changes in both to commonly consumed foods. Since it was also found that reductions in the calorie density of foods were both more effective in reducing energy intake and less noticeable than reductions in portion size, decreasing calorie density while maintaining portion sizes may also provide an acceptable and productive approach to help moderate energy intake.[110] Also, for calorie-dense foods it is particularly important to provide information that could help consumers select appropriate portions.

Palatability, Variety, and Caloric Intake

A greater variety of appealing (and immediately available) foods can contribute to the overconsumption of calories.[111] In general, people tend to eat more of foods that taste good to them. The greater the palatability of a food, the greater is the intake of that food at a meal.[112] While the palatability of a particular food declines as consumption of it increases, the appeal of other foods (with different sensory properties) available at the same eating occasion is not affected. Individuals thus tend to consume more food when the variety (i.e., the number of foods

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[107] E. Andrieu, N. Darmon, and A. Drewnowski, "Low-Cost Diets: More Energy, Fewer Nutrients," *European Journal of Clinical Nutrition* 60 (2006): 434-436; and A. Drewnowski and N. Darmon, "The Economics of Obesity: Dietary Energy Density and Energy Cost," *American Journal of Clinical Nutrition* 82 (2005): 265S-273S.

[108] B.J. Rolls, J.A. Ello-Martin, and B.C. Tohill, "What Can Intervention Studies Tell Us about the Relationship between Fruit and Vegetable Consumption and Weight Management?" *Nutrition Reviews* 62 (2004): 1-17; B. Rolls, et al., "Provision of Foods Differing in Energy Density Affects Long-Term Weight Loss," *Obesity Research* 13 (2005): 1052-1060; and R.L. Weinsier, et al., "Dietary Management of Obesity: Evaluation of the Time-Energy Displacement Diet in Terms of Its Efficacy and Nutritional Adequacy for Long-Term Weight Control," *British Journal of Nutrition* 47 (1982): 367-379.

[109] Rolls, Roe, and Meengs, "Reductions in Portion Size and Energy Density," 2006.

[110] Ello-Martin, Ledikwe, and Rolls, "The Influence of Food Portion Size," 2005; and Rolls, Drewnowski, and Ledikwe, "Changing the Energy Density of the Diet," 2005.

[111] B.J. Rolls, "Sensory-Specific Satiety," *Nutrition Reviews* 44 (1986): 93-101; B.J. Rolls, "Sensory-Specific Satiety and Variety in the Meal," in H. L. Meiselman (ed.), *Dimensions of the Meal: The Science, Culture, Business and Art of Eating* (Gaithersburg, MD: Aspen Publishers, 2000): 107-116; B.J. Rolls, P.M. van Duijvenvoorde, and E.T. Rolls, "Pleasantness Changes and Food Intake in a Varied Four-Course Meal," *Appetite* 5 (1984): 337-348.

[112] L.B. Sorensen, et al., "Effect of Sensory Perception of Foods on Appetite and Food Intake: A Review of Studies on Humans," *International Journal of Obesity* 27 (2003): 1152-1166.

with different sensory properties) available at a meal is increased.[113] As one food begins to lose its appeal, consumers can move on to other choices.[114]

Since most controlled studies of variety and intake have used palatable, energy-dense foods, the results generally show an increase in caloric intake as variety is increased. It is possible, however, that the effect of food variety could be combined with that of calorie density in a strategy to decrease caloric intake. In at least two recent studies, a greater variety of low-calorie-dense foods and less variety of high-calorie-dense foods was associated with lower caloric intakes, lower body fat, and greater weight loss than diets with a greater variety of high-energy-dense foods and less variety of low-energy-dense foods.[115]

Other Factors in Consumers' Immediate Environment

In addition to the cues described above, other factors add to the effect of portion size, causing people to eat more than they need, particularly in a restaurant setting. For example, dining out can affect calorie intake due to the convivial atmosphere, a tendency to choose foods with high energy densities, and in the context of the disinhibiting effects of alcohol consumption.[116]

Some emerging research suggests that other environmental factors may also influence consumers' perceptions of what an appropriate amount to eat is in a certain situation, or may bias or confuse consumers' estimates of how much they have eaten.[117] Examples include: socializing while eating; [118] the visibility or ready availability of food;[119] and distractions (such as reading or watching television while eating).[120] Recent studies also suggest that the size and shape of packaging (including bowls, plates, and glasses) may have a similar effect on the volume of food intake.[121] Studies manipulating package sizes have shown that serving oneself from larger

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[113] Rolls, van Duijvenvoorde, and Rolls, "Pleasantness Changes and Food Intake," 1984.
[114] B.J. Rolls, et al., "Sensory Specific Satiety in Man," *Physiology and Behavior* 27 (1981): 137-142; Rolls, van Duijvenvoorde, and Rolls, "Pleasantness Changes and Food Intake," 1984; and B.J. Rolls, E.A. Rowe, and E.T. Rolls, "How Sensory Properties of Foods Affect Human Feeding Behavior," *Physiology and Behavior* 29 (1982): 409-417.
[115] M.A. McCrory, et al., "Dietary Variety within Food Groups: Association with Energy Intake and Body Fatness in Men and Women," *American Journal of Clinical Nutrition* 69 (1999): 440-447; and H.A. Raynor, et al., "Relationship between Changes in Food Group Variety, Dietary Intake, and Weight during Obesity Treatment," *International Journal of Obesity* 28 (2004): 813-820.
[116] Rolls, "The Supersizing of America," 2003.
[117] Wansink, "Environmental Factors that Increase the Food Intake," 2004.
[118] R. Bell and P.L. Pliner, "Time to Eat: The Relationship between the Number of People Eating and Meal Duration in Three Lunch Settings," *Appetite* 41 (2003): 215-18; J.M. de Castro, "Eating Behavior: Lessons from the Real World of Humans," *Ingestive Behavior and Obesity* 16 (2000): 800-13; and J.M. de Castro and E. Brewer, "The Amount Eaten in Meals by Humans is a Power Function of the Number of People Present," *Physiological Behavior* 51 (1992): 121-25.
[119] J.E. Painter, et al., "How Visibility and Convenience Influence Candy Consumption," *Appetite* 38 (2002): 237-238; A.W. Meyers, et al., "Food Accessibility and Food Choice," *Archives of General Psychiatry* 37 (1980): 1133-1135; and N.D. Volkow, et al., "'Nonhedonic' Food Motivation in Humans Involves Dopamine in the Dorsal Striatum and Methylphenidate Amplifies This Effect," *Synapse* 44 (2002): 175-80.
[120] Wansink, "Environmental Factors that Increase the Food Intake," 2004.
[121] Ibid.; B. Wansink and K. Van Ittersum, "Bottoms Up! Peripheral Cues and Consumption Volume," *Journal of Consumer Research* 30 (2003): 311-19; B. Wansink and K. Van Ittersum, "Illusive Consumption Behavior and the DelBoeuf Illusion: Are the Eyes Really Bigger than the Stomach?" under review; and B. Wansink, "Can Package Size Accelerate Usage Volume?" *Journal of Marketing* 60, no. 30 (1996): 1-14.

packages increases the amount served by 18-48%.[122] Also, individuals who inadvertently over-serve themselves—and therefore eat more—because of the biasing influence of large serving bowls often do not necessarily report feeling fuller or less hungry than those using smaller bowls.[123]

Since consumers' immediate environment influences not only what they eat but how many calories they consume, small structural changes in calorie density, portion size, package design, plate or glass size or shape, and other factors can help reduce the *unknowing* overconsumption of calories. The Forum's recommendations for assisting consumers of away-from-home foods through such environmental adjustments are detailed later in this chapter and in Chapter 3.

Existing Education and Marketing Efforts

Government agencies, nonprofit entities, and private-sector companies all seek to influence the food choices consumers make. Several dozen existing federal programs and numerous civic-sector programs actively seek to influence consumer behavior and attitudes regarding food; many of these programs are relevant to obesity prevention in the area of away-from-home foods. Also, as with any large industry sector, the away-from-home foods sector not only responds to consumer demand but also seeks to shape and influence that demand through what they offer, how they offer it, and how they market and advertise it. Current social marketing efforts and commercial marketing activity are summarized in this section.

Social Marketing and Education

Social marketing programs—whether administered by government entities, civic-sector organizations, or, occasionally, private-sector organizations—deliver messages that aim to bring about voluntary behavior change, often within specific demographic audiences. Social marketing programs typically seek to improve personal or societal welfare—for example, by promoting healthy eating, active living, avoidance of illegal drug use, or proper use of seat belts.

The federal government operates a number of social marketing and public education programs that attempt to influence consumer behavior related to nutrition and food consumption. While some are national in scope, many are relatively small programs (in terms of audience and resources), and most do not benefit from nor rely on any extensive media coverage or promotion. Many of the federal government's campaigns consist of printed or web-based materials provided in language and detail specific to the intended audience (e.g., consumers, health professionals). Two of the larger programs are (1) the Dietary Guidelines for Americans, a joint project of the U.S. Department of Health and Human Services (HHS) and the U.S. Department of Agriculture (USDA), and (2) the "5 A Day" program housed at the Centers for Disease Control and Prevention (CDC) and conducted in collaboration with several national partners.

[122] Wansink, "Can Package Size Accelerate Usage Volume?" 1996.
[123] B. Wansink and M.M. Cheney, "Super Bowls: Serving Bowl Size and Food Consumption," *Journal of the American Medical Association* 293 (2005): 1727-1728.

The civic sector also uses social marketing as part of its obesity-prevention efforts. Most campaigns have been relatively small-scale efforts backed up by local events and grassroots education. In addition, many campaigns have focused on promoting healthful behaviors generally, such as being physically active, as opposed to messages regarding specific food choices. Two exceptions are the Corner Store Project and the 1% Or Less campaign, both of which specifically target food choices.

Private-sector organizations also fund a variety of efforts relevant to weight management. Several programs focus on active living and/or healthy eating, such as America on the Move and the Everyday Choices campaign.[124] Private-sector programs may focus on specific population groups such as school-aged children, specific settings such as worksites, or specific methods such as nutrition services or physical education.

Appendix D contains an overview of selected current or recent programs undertaken by government agencies and civic organizations in the areas of nutrition/obesity and consumer behavior. (The appendix includes some programs that focus on increased physical activity, which, while outside the scope of the Forum, are listed due to their relevance to obesity prevention.) The relative efficacy of these programs is generally not assessed regularly nor systematically, and no standard process exists for conducting such an assessment. The Forum therefore proposes (later in this chapter, as Recommendation 2.5) a comprehensive survey of the federal government's social marketing and education programs that relate to nutrition and obesity prevention.

Forum participants also see a need for more effective social marketing efforts aimed at healthy weight management that are both national in scope and that encompass away-from-home eating. These programs should influence and support behaviors pursuant to obesity prevention. Two specific proposals for launching or enhancing consumer-oriented programs are presented later in this chapter as Recommendations 2.3 and 2.4.

In general, participants believe that such consumer-oriented programs should:

- Increase consumers' awareness of their caloric requirements and the contribution of away-from-home foods to their overall caloric intake.
- Challenge the perception that value for the food dollar is based on volume or quantity.
- Clearly communicate and help people put into practice the principles of balance, moderation, and healthful variety within and between food groups.
- Educate consumers about techniques for lowering their caloric intake, including selecting lower-calorie and less-calorie-dense choices such as fruits and vegetables, low-calorie beverages, and other low-calorie meal components; requesting lower-calorie preparation methods; decreasing portion sizes; and making choices between meal components (for example, choosing an appetizer or dessert, but not both).
- Provide consumers with guidance in selecting and consuming portions appropriate to their caloric needs, given their physical activity levels and other considerations.
- Encourage consumers to look for and ask for calorie information regarding away-from-home foods.
- Challenge the perception that healthy foods lack taste or are less satisfying.

[124] See www.americaonthemove.org and www.everydaychoices.org.

Commercial Marketing

Restaurants spend $4.4 billion annually on advertising ("measured media"), including magazine, newspaper, outdoor, television, radio, and internet advertising. Television advertising on broadcast and cable networks accounts for 84% of those expenditures.[125] In 2004, the restaurant sector accounted for almost half of all food advertising on broadcast television; the sector spent $3.12 billion compared to $3.42 billion spent by other segments of the food and beverage industry.[126] Spending on "unmeasured media"—such as sponsorships, community events, press events, product placements, coupons, viral marketing, e-mail, and text messaging—may account for as much as or more of a restaurant company's marketing budget.[127] Most advertising by restaurants is conducted by the quick-service sector.[128]

Some marketing dollars pay for sponsorships of athletic or social marketing programs. Many of these are noted in the annual reports of major food and restaurant corporations.

Comprehensive marketing data for the entire away-from-home food market are not publicly available. Data are particularly scarce for non-restaurant venues such as on-site contract dining services and prepared food offerings at grocery stores.

Marketing to Children

Each year, companies spend an estimated $10 billion marketing foods and beverages (including away-from-home foods) to children and youth in the United States.[129] Away-from-home food marketing, as with other marketing aimed at kids, is designed to be highly appealing. Ads directed to children feature fun and adventure and are often colorful, musical, and include cartoon and/or other well-loved spokes-characters. Away-from-home food outlets market their products and brands to children using television advertising, toy giveaways, contests, kids' clubs, celebrities, spokes-characters, school fundraisers, and movie and television show tie-ins and cross-promotions.

The overwhelming majority of food advertisements aimed at children are for foods and beverages high in sugars, fat, and/or salt, such as sugary cereals, sweetened drinks, fast food, candy, and chips.[130] Few to no ads are for fruits or vegetables. Fewer than 10% of the ads are for foods low in sugars, fat, and salt.[131]

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[125] Brown, et al., "50th Annual 100 Leading National Advertisers," *Advertising Age,* June 27, 2005.
[126] Ibid.
[127] Ibid.
[128] A.E. Gallo, *Food Advertising in the United States,* Agricultural Information Bulletin #750 (Washington, DC: USDA, 1998).
[129] Institute of Medicine, *Food Marketing to Children: Threat or Opportunity?* (Washington, DC: National Academies Press, 2006).
[130] M. Gamble and N. Cotugna, "A Quarter Century of TV Food Advertising Targeted at Children," *American Journal of Health Behavior* 23 (1999): 361-267; Consumers International, *A Spoonful of Sugar: Television Food Advertising Aimed at Children, An International Comparative Survey* (London: Consumers International, 1996); and K. Kotz and M. Story, "Food Advertisements During Children's Saturday Morning Television Programming: Are

The World Health Organization, the National Academies' Institute of Medicine (IOM), the Children's Advertising Review Unit (CARU), and others have raised concerns that children are uniquely susceptible to food marketing. For example, CARU, part of the Council of Better Business Bureaus (a self-regulatory agency of the food and advertising industries), states: "Children's limited capacity for evaluating information dictates that advertisers have a special responsibility to protect young children from their own susceptibilities," and that a "child may learn practices from advertising which can affect his or her health and well-being."[132] The American Psychological Association concluded that children under eight years of age lack the ability to understand the persuasive intent of commercials.[133] In addition, the IOM found that children as old as 11 years may not activate their defenses against advertising unless explicitly cued to do so.[134]

Recently, the Institute of Medicine undertook the most comprehensive review to date of the influence of food marketing on children. The IOM found that television advertising influences children's food and beverage preferences and purchase requests. It also found that television food and beverage advertising influences consumption and is a contributor to less healthful diets, and that television watching is related to obesity in children. Most of the studies that have been conducted on the effects of food marketing to children have assessed the effects of television advertising and have been done regarding children under the age of 12 years. The statistical association between advertisement viewing and obesity is strong. However, the IOM report found that available studies are unable to determine whether television advertising is a direct cause of obesity among children.[135]

Marketing is a powerful means of reaching consumers—of raising their awareness and of influencing their interests over time. Both commercial and social marketing, whether aimed at adults or at children, should increasingly promote away-from-home food choices and eating behaviors that are consistent with healthy weight management. Recommendations 2.1 and 2.2 address this proposed shift. Recommendation 2.3 calls for a comprehensive consumer education program to promote low-calorie-dense dietary patterns.

Existing Data-Collection Efforts

In addition to taking action now based on what is already known, as discussed in previous sections of this chapter, Forum participants believe it is important to continually improve the knowledge base regarding consumer behavior and away-from-home foods. Much of what can be

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They Consistent with Dietary Recommendations?" *Journal of the American Dietetic Association* 94 (1994): 1296-1300.

[131] H.L. Taras and M. Gage, "Advertised Foods on Children's Television," *Archives of Pediatrics and Adolescent Medicine* 149 (1995): 649-642.

[132] Children's Advertising Review Unit (CARU), *Self-Regulatory Guidelines for Children's Advertising* (New York: CARU, 2003). See www.caru.org/guidelines/guidelines.pdf.

[133] D. Kunkel, et al., *Report of the APA Task Force on Advertising and Children* (Washington, DC: American Psychological Association, 2004).

[134] Institute of Medicine, *Food Marketing to Children,* 2006.

[135] Ibid.

known about consumer behavior regarding away-from-home foods is proprietary and generally not available to this Forum or to most stakeholders, since consumer data has important competitive value to the private sector and is either unavailable or costly. However, several significant government data-collection efforts exist, and some commercial data are shared publicly on a periodic basis.

Government Efforts

The United States has one of the most comprehensive nutrition monitoring programs in the world, and the data collected serves the needs of people in government, academia, nonprofit organizations, health and nutrition advocates, and the private sector. No consistent data-collection mechanism focuses extensively on the consumption of away-from-home foods, however. Thus, federal efforts have leveraged existing data sources to gather information on consumer behavior related to away-from-home foods. These efforts occur primarily in the form of questions added to existing surveys, or the utilization of data from questions not originally focused on away-from-home foods, but that can be analyzed to provide some insight into consumer behavior on that topic. These surveys examine, for example, the number of times per week that individuals consume meals prepared in a restaurant, the location of food consumption, and how often a parent eats out with their child.

Current and recent efforts to collect national data on consumer behavior related to away-from-home food use include the following.

- The National Health and Nutrition Examination Survey (NHANES), conducted by the CDC
- What We Eat in America, a survey conducted by the USDA
- The Continuing Survey of Food Intakes by Individuals, conducted previously by the USDA, now conducted by the CDC as part of NHANES
- The Health and Diet Survey, conducted by the FDA
- The American Time Use Survey (ATUS), conducted by the Department of Labor
- The Early Childhood Longitudinal Study, conducted by the Department of Education

A brief description of each of these programs can be found in Appendix E.

In addition, through its data development initiative, the USDA's Economic Research Service (ERS) has increased its access to private-sector data on the purchase and consumption of selected away-from-home foods (that is, restaurant, fast food, take-out, etc.). These data will be used by the ERS for analyses that will improve public understanding of the factors that determine the purchase and consumption of away-from-home foods and the nutritional consequences of the consumption of those foods. However, the ERS purchased the data under a one-year agreement; it is uncertain at this time whether the information will be obtained regularly going forward.

Federal partners have made other efforts to improve the publicly available data being collected on away-from-home foods. Beginning in 2003-04, NHANES included questions on where food is obtained (e.g., restaurant or fast food vs. from home) and consumed. In 2005, the ERS added some questions to the NHANES on consumer behavior regarding away-from-home foods. As part of its data development initiative, the ERS is developing a flexible consumer behavior

module that will be added to future NHANES, beginning in 2007. Many of the questions that are planned for inclusion in that module address determinants of consumption of away-from-home foods. NHANES data are made publicly available for analysis by the National Center for Health Statistics at the CDC. It is important to note that the additional NHANES questions are part of a one-time, two-year cycle, and will not in themselves allow for an ongoing stream of data.

The ERS also provided funding to add a Food and Eating Behavior Module to the ATUS in October 2005 and continuing through 2006. This module will address issues of where and when Americans are eating. This effort will support the collection of data on "eating as a secondary activity"—that is, eating while driving, watching TV, and so forth. The module will also collect data on height and weight, making it useful for studying associations between obesity and lifestyle issues such as "dashboard dining." As with the NHANES additions, the new ATUS module, while important, will not provide the continuing data necessary to examine trends over time. Such data gathering would require more funding and support.

Commercial Efforts

Some market research firms systematically track consumer food choice and eating behavior. Two notable examples of syndicated, commercially available information sources—both from The NPD Group—are highlighted here.

The NPD Group is a company that develops and provides sales and marketing information to the food and beverage and foodservice industries. The company's National Eating Trends survey monitors the eating and drinking habits of U.S. consumers by tracking the activities of a nationally representative sample of 2,000 households and approximately 5,000 individuals. Each panelist fills out a 14-day diary capturing both household and individual consumption. Each daily diary includes information about food, beverage, additive, and ingredient consumption. The consumption information captured includes the food, form, flavor, special label code, package type, package form, dish position, appliance used, and preparation methods. In addition, the household demographics—e.g., income, education, employment status, number and age of children, race, and census region—are also captured. On the fifteenth day, individuals record their height and weight, diet status and type of diet, medical conditions, vitamin intake, and exercise behavior, allowing for the ability to compare the respondent's health status with their consumption habits.

NPD's Consumer Reporting of Eating Share Trends (CREST) is a syndicated survey that collects consumer information about commercially prepared meals and snacks. A daily online survey is used for capturing data from a large panel of individuals regarding all meals and snacks purchased the day before, either for immediate consumption from commercial restaurants and other retail channels such as convenience stores, supermarkets, and mass merchandisers, or for onsite eating. The online panel is a group of 3,000 adults and 500 teenagers that is demographically and geographically balanced to represent the U.S. population. The CREST survey captures many aspects about a consumer's visit to foodservice establishments, including the outlet visited, foods and beverages purchased, the day of the week, average check size, prior activities, demographics, customer satisfaction, and attitudinal information.

A Coordinated Research Agenda

Forum participants believe that a coordinated research agenda is needed to augment, and continually improve upon, the existing knowledge base that supports efforts to help consumers manage their caloric intake when choosing and consuming away-from-home foods and beverages.

While valuable data can be mined from the existing government surveys, those surveys currently do not provide information on what drives consumer behaviors towards certain products and eating patterns. In addition, the away-from-home food questions generally do not have an ongoing commitment of funds, nor is there a dedicated survey to gather these data. In some cases, the data have been collected but are not available to the public as a precaution to protect the confidentiality of survey participants. Syndicated commercial data could be used to complement current government efforts and provide additional insight into consumer behavior.

Better and more timely information is needed regarding: the choices consumers are making regarding foodservice venues and foods, the values and motivations driving those choices, the factors that motivate changes in behaviors and attitudes, the potential value of nutrition information and other specific interventions, and the best ways to promote changes in products or menus that are relevant to weight management.

A stronger knowledge base in this area will assist with the following.

- Providing policy and program officials with the information necessary to develop and evaluate public efforts to improve diet and health as they relate to the away-from-home food sector
- Better assessment of what messages and messaging strategies might serve as the foundation for campaigns aimed at educating and motivating consumers to make lower-calorie choices
- Better ways to address messages to household decision-makers
- Better understanding of the relative role of away-from-home foods (and how, when, and where people consume them) in the obesity problem
- Developing effective means of stimulating alternative buying and eating behaviors (e.g., testing lower-calorie—or less-calorie-dense—fare in foodservice establishments)

The Forum's proposals regarding a coordinated research agenda are outlined in Recommendations 2.6 and 2.7. A list of questions that should be addressed through further research and analysis, as well as criteria to guide the design of the needed efforts, is included as Appendix F.

The Forum's Recommendations

In this section, Keystone Forum participants offer recommendations on commercial and social marketing, educational and nutrition promotion efforts, and the need for an enhanced research agenda.

Recommendation 2.1

Shift the emphasis of marketing: The marketing of lower-calorie and less-calorie-dense foods should increase, accompanied by a reduction in marketing that highlights higher-calorie (or calorie-dense) foods or encourages large portions.

Companies, government, health organizations, and others should expand and align marketing initiatives (both commercial and social) that help consumers to manage their calorie intake. Foodservice companies and venues should use their full range of creativity and resources to promote food choices and eating behaviors that are consistent with healthy weight management.

In addition, companies, government, health organizations, and others should conduct market research to determine:

- how best to market low-calorie and less-calorie-dense menu options to different populations in ways that assist consumers with weight management efforts, and
- how to shift the prevailing value proposition away from large portions, and how best to market more appropriate portion sizes to different populations.

Recommendation 2.2

Update marketing standards: Industry, government, health and nutrition experts, consumer representatives, and other stakeholders should work together to review and update standards for marketing away-from-home foods to children.

The Children's Advertising Review Unit could work with key stakeholders from the public, private, and civic sectors to review and update its standards for marketing to children, including the marketing of away-from-home foods. CARU, which is funded by members of industry, maintains self-regulatory guidelines for children's advertising, and as of this writing has announced an extensive and consultative review of those guidelines.

Recommendation 2.3

Promote low-calorie-dense dietary patterns: Strengthen and/or create education and promotion programs regarding away-from-home foods that promote the consumption of fruits, vegetables, no- and low-fat milk and milk products, whole grains, and foods low in saturated fats and trans-fatty acids, as recommended by the 2005 Dietary Guidelines for Americans.

The 2005 Dietary Guidelines encourage increased intakes of fruits, vegetables, fat-free or low-fat milk and milk products, and whole grains; the Guidelines also recommend limiting intake of saturated fats and trans-fatty acids.[136] These strategies can help individuals effectively manage

[136] HHS and USDA, *Dietary Guidelines for Americans*, 2005.

caloric intake and thus help maintain healthy weight.[137] The recommended foods are generally low in calorie density (or lower in calories than the products they presumably replace or compete with), and so have an important role to play in healthy weight management.[138] While the strength of the evidence linking increased intake of each of these foods to reduced risk of obesity is variable, they may help to decrease overall caloric intake while increasing nutrient intake if they are consumed in appropriate quantities and displace higher-calorie foods.

Fruits and vegetables are a relatively low-calorie-dense food source, for example, and have been shown to be efficacious in regard to satiation and reductions in calorie intake. While studies examining the relationship of whole grain consumption to weight management and body mass index have yielded inconsistent findings, some studies do suggest that whole grains can play a role in healthy weight management.[139]

While unsaturated fats can be part of a healthful diet, the Dietary Guidelines indicate that individuals should monitor the total amount of fat they consume. Very high intake of total fat (greater than 35% of calories) generally increases saturated fat intake and makes it more difficult to avoid consuming excess calories.[140]

Programs that promote low-calorie-dense dietary patterns should thus be strengthened or created, with evaluation components, to increase consumer demand for the food groups encouraged by the Guidelines, so that consumers will begin to expect and desire more of these foods in their away-from-home eating experiences.

The increased promotion of fruits and vegetables could include the following measures.

- The national 5 A Day for Better Health program could be significantly expanded and strengthened. The program could include a large-scale social marketing campaign to promote fruit and vegetable intake.
- The USDA could create a federal marketing matching program for promoting fruits and vegetables.
- Federally sponsored consumer research could be undertaken to develop behavior change strategies for closing the gap between recommended intakes and current consumption.

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[137] The *2005 Dietary Guidelines Advisory Committee Report* reviews the evidence linking these encouraged food groups to healthy weight management (see www.health.gov/DietaryGuidelines/dga2005/report/HTML/D6_SelectedFood.htm), and explores the relationship between saturated fat intake and caloric intake (see www.health.gov/DietaryGuidelines/dga2005/report/HTML/D4_Fats.htm). 2005 Dietary Guidelines Advisory Committee, *2005 Dietary Guidelines Advisory Committee Report* (Washington, DC: USDA, 2004).

[138] Most fruits and vegetables, for example, are low in calorie density because of their high water and fiber content and their low fat content. The water and fiber content of many vegetables and fruits is well documented. The USDA's website on food composition (www.nal.usda.gov/fnic/foodcomp) lists water, fiber, and many other food components (including calories) for hundreds of vegetables and fruits. In efforts to manage caloric intake, fruits and vegetables can be good substitutes for foods high in calorie density. Also, their consumption is associated with decreased cancer and cardiovascular disease.

[139] 2005 Dietary Guidelines Advisory Committee, "Section 6: Selected Food Groups," *2005 Dietary Guidelines Advisory Committee Report* (Washington, DC: USDA, 2004). See www.health.gov/DietaryGuidelines/dga2005/report/HTML/D6_SelectedFood.htm.

[140] 2005 Dietary Guidelines Advisory Committee, "Chapter 6: Fats," *2005 Dietary Guidelines Advisory Committee Report* (Washington, DC: USDA, 2004). See www.health.gov/dietaryguidelines/dga2005/document/html/chapter6.htm.

The increased promotion of no- and low-fat milk and milk products could include the following measures.

- The Milk Matters program at the National Institute of Child Health and Human Development, as well as the Powerful Bones, Powerful Girls program at the CDC, could be significantly expanded and strengthened to build skills for selecting foods and beverages away from home. The programs could include a large-scale social marketing campaign to promote the intake of three daily servings of low-fat and nonfat milk and milk products, consistent with the Dietary Guidelines.

Recommendation 2.4

Promote enhanced "lifestyle education" programs: Use a combination of social marketing campaigns and consumer education programs to provide "healthy lifestyle" education to help individuals eat more healthfully in today's food environment. Existing campaigns and programs could be enhanced or, as necessary, new ones could be created.

With numerous changes in the food environment, Americans' lifestyles, and schools, many Americans lack the knowledge needed to plan and prepare and/or buy nutritious meals with appropriate levels of calories. Although the Keystone Forum focused on away-from-home foods, participants believe that lifestyle education programs should equip consumers to make informed decisions across the whole spectrum of points of purchase, preparation, and consumption.

Lifestyle education programs could include both social marketing campaigns and new or enhanced curricula and programs in schools and other settings (e.g., parenting courses, workplaces, senior centers). Both the campaigns and programs in various sectors should aim to help individuals understand how to make decisions within the food environment healthfully—i.e., how to navigate the wide range of away-from-home food choices available in today's often harried, time-pressed, convenience-driven world. It could also teach the convenient, economical preparation of low-calorie and less-calorie-dense foods.

Social marketing campaigns should focus on those areas with the most supporting evidence and strongest justification for action. For example, a campaign could seek to change the social value proposition of "more food" to "better-quality food," and/or to promote the concept of energy balance—i.e., balancing caloric intake with energy expenditure.

Recommendation 2.5

Review the effectiveness of existing programs: The HHS and USDA should, in partnership together, coordinate a comprehensive survey and analysis of existing government-sponsored education and social marketing campaigns related to managing weight gain and reducing obesity in the context of away-from-home foods.

Numerous public-, private-, and civic-sector efforts exist to educate consumers broadly about energy balance and how to eat to manage weight gain and obesity. The effectiveness, consistency, and broad impact of these programs, however, are not well known. In addition, no systematic, comprehensive survey of the federal government's social marketing and education programs has been conducted to analyze their consistency, compare their targeted audiences, assess their relative effectiveness, and examine how they could work together.

With decreasing available federal dollars and an increasing problem with obesity and weight gain among both children and adults, the federal government must be efficient and effective with its resources. While numerous consumer-oriented programs may provide "experiments" in how best to reach consumers and positively affect their behavior, little learning will be done across programs and agencies without a thorough evaluation of each program and a more systematic look at such efforts. At present, no widely agreed-upon method exists for analyzing individual efforts and measuring their effectiveness.

Therefore, with HHS and USDA as the coordinators and conveners, key federal agencies should pool resources to sponsor a systematic survey and analysis of education and social marketing campaigns directed at consumers who are trying to manage their weight gain and obesity. Individual agencies should be responsible for analyzing the programs they administer. A standard evaluation tool should be developed for assessing the relative success of each program in helping consumers with healthy weight management.

Though the Forum's scope includes only the away-from-home foods sector, the proposed assessment effort should encompass government-sponsored education programs relating to the entire food environment. In addition to the types of programs characterized in this chapter, for example, consideration should be given to existing food-stamp-related nutrition education efforts. These efforts are included in calculations of how much is spent on nutrition education, they represent a source of funds for providing such information, and they are infrequently studied.

The analysis should seek to identify the target audiences (and any key audiences that have been missed), the kinds of programs implemented, and their effectiveness against criteria developed by the study team, such as ease of understanding by consumers, consumers converting that understanding to action, and costs. Finally, the analysis should offer recommendations for how to streamline government efforts to use resources more efficiently, increase the frequency and consistency of messages, and ultimately, more effectively influence consumer behavior.

Although this recommendation is aimed at federal government agencies, such a review might include an analysis of state-sponsored programs as well as private and nonprofit efforts.

Recommendation 2.6

Improve government access to data on consumer behavior and attitudes: Federal agencies should act immediately to increase the access of government researchers and policymakers to syndicated commercial databases. Key agencies should establish recurring line items in their

respective budgets, thereby ensuring continual and timely access to the needed commercial data sets.

No means presently exists for government to gather and analyze comprehensive data at a national level in the necessary detail, let alone for applying such data in a systematic and coordinated fashion to obesity prevention strategies. Some important efforts are underway, as noted earlier in this section, but much more needs to be done.

Government agencies, civic-sector organizations (such as medical associations and voluntary health organizations), academic researchers, and many foodservice operators lack timely, comprehensive information about consumer motivation and behavior in the away-from-home market. The information that is currently available frequently lags several years behind current societal and market conditions, and lacks needed detail regarding the away-from-home market and specific population groups. Decision-makers and stakeholders need to know much more about what choices consumers are making, what factors determine those choices, and what strategies would help more consumers to make choices consistent with healthy energy intakes.

Therefore, key agencies (e.g., the CDC, FDA, ERS, and the USDA's Center for Nutrition Policy and Promotion) should coordinate needs and resources in order to purchase relevant commercial data sets from syndicated research organizations. Interagency collaboration is needed to ensure adequate funds for an initial purchase of such data sets, to maximize the value of the investment, to promote coordinated policies and programs that result from an analysis of the data, and to encourage the widest possible access to the data in the short term. Going forward, a stable and enduring implementation system is necessary so as to produce trended data over time, creating a framework for understanding changes rather than relying on a snapshot that will quickly lose relevance.

The cost of generating new (and timely) data on the scale needed, whether through new or existing national survey mechanisms, would be prohibitive—and also cost-ineffective, given that much of the data is already being collected by other parties. Significant expansion of existing government mechanisms would necessitate a new employee base, as well as the mobilization of millions of dollars on a recurring basis. Therefore, collaborative purchase of syndicated data is the most cost-effective strategy. (Some participants noted that federal agencies, even working together, should not be expected to accommodate the cost of purchase at current resource levels, particularly when some key agencies are experiencing significant budget reductions.)

Recommendation 2.7

Ensure public availability of information: A means must be developed for continually improving the publicly available knowledge base regarding consumer interests, attitudes, and behaviors regarding away-from-home foods.

Government access to commercial data sets, while very important, is generally accompanied by nondisclosure terms that limit the ways in which the data can directly inform public conversation, and/or that limit analysis by stakeholders outside the federal government. Such

proprietary data restrictions are similar to standard restrictions on confidential data and intellectual property. However, a widely accessible knowledge base is ultimately essential to enable optimal contributions from all parties to the goal of obesity prevention in the area of away-from-home foods. A broad range of stakeholders—including federal, state, local, and tribal governments, smaller industry actors, academic research centers, think tanks, voluntary health organizations, consumer and patient advocacy organizations, medical professionals, educators, and community-serving organizations—have important roles to play in supporting weight management through messages, food products, menu development, policies, and wide-reaching programs to educate and motivate consumers.

Also, while it may be possible to negotiate arrangements whereby commercial data can be shared more widely, there still will be a need to supplement that information flow periodically with qualitative methods such as focus groups, surveys, and town tests.

A collaborative research agenda could thus be developed to focus on consumer behavior and attitudes in the area of away-from-home foods. The feasibility of public-private partnerships for carrying out this effort could be explored, with assistance from philanthropic institutions and in consultation with a diversity of stakeholders. Alternatively, the scope of existing data-gathering initiatives such as NHANES could be expanded to provide more extensive and contemporaneous detail regarding behaviors and attitudes regarding away-from-home foods, both nationwide and within key demographic groups. Data should not only be collected, but it should be analyzed and shared with the public, policymakers, health professionals, and other interested stakeholders.

It is unclear how funds on the required scale would be mobilized to implement this recommendation—especially to allow the research and data acquisition to occur in a centrally coordinated fashion and on a regular, timely basis. Large foodservice companies may have limited incentive to contribute, or even participate, since consumer research data has competitive value; a clear value proposition for business participation must therefore be developed.

Also, if the initiative necessitates a completely new research mechanism (as opposed to augmenting an existing program), it is not clear what type of organization would administer the effort. Speculatively, a partnership that is jointly funded and guided by government agencies, key trade associations, and private foundations, and that is advised actively by a range of independent researchers and other stakeholders, might be developed over time.

Chapter 3
Increasing the Availability of Lower-Calorie Products, Menu Items, and Meals

The foodservice industry faces a number of challenges in its efforts to provide menu items and meals that help consumers effectively manage their calorie intakes and thus maintain healthy weight. These challenges can be viewed as opportunities for the industry to take a proactive role in combating the national problem of overweight and obesity. With this in mind, Keystone Forum participants sought to offer the foodservice industry some achievable, action-oriented strategies, including bold and innovative approaches (in which taste was a non-negotiable "must"), with regard to products, menu items, and meal choices, to assist consumers with managing calorie intake.

Forum participants sought to create recommendations and operational tips that are practical to implement. To address the Forum's goal of reducing obesity, the recommendations focus on manipulating the calorie content, including the calorie density, of menu items and meals through several strategies: providing appropriate portion sizes, plate composition, menu pairing, and beverage options; increasing fruits and vegetables; reducing total fat content; and decreasing the use of ingredients that are high in refined starches, added sugars, and saturated and trans fats and low in nutrient density. These strategies frequently overlap—for example, increasing the amount of fruit and vegetable ingredients in a menu item may also help to reduce overall fat content.

This chapter first describes three key issues relating to products, menu items, and meals: menu design and cooking techniques; portion size, plate composition, and menu pairing; and beverages. The chapter then sets forth four recommendations, along with specific operational tips for implementing the recommendations.

The recommendations and operational tips were developed with the following assumptions in mind.

- The target audience for this chapter is the foodservice industry, including producers and manufacturers, distributors, and foodservice operators. Because significant differences exist among these various sectors of the industry, the operational tips may not apply to all sectors. In addition, the operational tips provide examples for how to implement the recommendations and should not be considered all-inclusive.

- The scope of opportunity addressed in this chapter is limited to:
  - *products*, defined as ingredients produced by manufacturers or growers and then generally sold to distributors for ultimate use by foodservice operators.
  - *menu items*, defined as products or combinations of products in a recipe as they appear on a menu and that are, therefore, controlled by foodservice operators.

- *meals*, defined as any combination of menu items that are sold to customers either individually or in predetermined combinations.

- *Taste* and *freshness* must be primary considerations, from the perspective of the foodservice industry, when seeking to fuel increased consumer demand for menu items and meals that will help with weight management. Market research studies have consistently shown that taste and freshness drive consumer demand for more healthful menu items and meals, rather than claims of "low calorie," "low fat," or other attributes.[141] Many recommendations and strategies in this chapter are based on the use of fresh fruits and vegetables, which understandably can create some constraints with regard to availability, preparation, and costs. For some foodservice outlets, therefore, it may be more feasible to use frozen or canned products, especially, for example, in cooked, multi-ingredient menu items, sauces, and other preparations in which the difference in flavor and texture will not be discernible.

- Education of those in the foodservice industry is a key component to the successful implementation of many of the recommendations.

Forum participants faced the following challenges and issues in the development of this chapter.

- The tone of the chapter is intended to be user-friendly in order to be embraced and accepted by the target audience, the foodservice industry.

- Although reducing calories is the main focus of this report, some, but not all, Forum participants felt strongly that it would not be responsible to put forward calorie-reduction recommendations that do not take nutrient density into consideration. Therefore, in addition to the focus on reducing calories, the recommendations and implementation strategies herein may refer to "healthful" or "healthier" choices for consumers, which is meant to signify foods that are nutrient-dense as well. In addition, as discussed in Chapter 2 and as recommended by the 2005 *Dietary Guidelines for Americans*,[142] the inclusion of whole grains in menu items and meals is encouraged; however, this topic is not addressed in any detail in this chapter.

- Consumer demand for the products, menu items, and meals suggested must exist already. Alternatively, a strategy for reaching out to the public could be developed, so that changes by industry will be accepted. Consumer demand ultimately drives the marketplace at every level within the foodservice industry, from the manufacturer/grower to the distributor to the operator. As discussed in Chapter 2, commercial and social marketing can help to shape demand.

- Some Forum participants noted the need for healthier children's menus in both quick-service and casual dining restaurants. Improved children's menus would include nutrient-dense,

[141] B. Wansink, *Marketing Nutrition: Soy, Functional Foods, Biotechnology, and Obesity* (Champaign, IL: University of Illinois Press, 2005).
[142] U.S. Department of Health and Human Services (HHS) and U.S. Department of Agriculture (USDA), *Dietary Guidelines for Americans 2005* (6th ed.) (Washington, DC: HHS and USDA, 2005). See: www.health.gov/dietaryguidelines/dga2005/document/html/executivesummary.htm.

lower-calorie food choices, such as items containing fruits and vegetables and no- and low-fat dairy products. The issue of age-appropriate portion sizes also should be addressed in children's menus. In general, the healthier food choices made available to adults should be reflected in children's menus as well.

- Cost and price issues are of major concern. Studies reveal that diets low in calorie density are consistent with eating patterns described as healthy using other nutrient-based criteria.[143] Given the current structure of food prices, however, lowering dietary calorie density by replacing fats and sweets with vegetables and fruits can be associated with higher diet costs.[144] Sugar in any form, for example, is a very inexpensive food ingredient, while water-rich foods such as fresh produce, meats, and dairy products can be costly.[145] Such foods cost more to produce, transport, and store and have a shorter shelf life (leading to more spoilage) than dry grains, added sugars, and added fats.[146] As a result, many of the recommendations and operational tips included in this chapter will involve additional cost to the foodservice industry, in terms of both the cost of the products and the cost of operations. It is not clear that industry will be able to pass on all of these additional costs to all consumer segments—especially those at greatest risk for obesity and diabetes—thus making implementation of these recommendations challenging.

Overview of the Issues

The recommendations at the end of this chapter were framed around three central issues: menu design and cooking techniques; portion size, plate composition, and menu pairing; and beverages. Each of these issues presents opportunities for making changes in the away-from-home foods market.

Menu Design and Cooking Techniques

Traditionally, many households ate away from home for reasons of celebration, and they viewed the occasions as special opportunities for indulgence. As a result, foodservice industry systems—including cooking techniques, menu choices, equipment, and operational set-ups—were designed with that focus in mind. Also, when meals were consumed away from home relatively infrequently, their impact on caloric intake was less significant.

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[143] S. Klein, et al., "Weight Management through Lifestyle Modification for the Prevention and Management of Type 2 Diabetes: Rationale and Strategies," a statement of the American Diabetes Association, the North American Association for the Study of Obesity, and the American Society for Clinical Nutrition, *American Journal of Clinical Nutrition* 80 (2004): 257-263; and J.H. Ledikwe, et al., "Food Patterns and Diet Quality of U.S. Adults with a Low-Energy-Dense Diet," *Journal of the American Dietetic Association*, in press.

[144] N. Darmon, A. Briend, and A. Drewnowski, "Energy-Dense Diets Are Associated with Lower Diet Costs: A Community Study of French Adults," *Public Health Nutrition* 7 (2004): 21-27.

[145] A. Drewnowski and S.E. Specter, "Poverty and Obesity: The Role of Energy Density and Energy Costs," *American Journal of Clinical Nutrition* 79 (2004): 6-16.

[146] B. Rolls, A. Drewnowski, and J. Ledikwe, "Changing the Energy Density of the Diet as a Strategy for Weight Management," *Journal of the American Dietetic Association* 105 (2005): S98-S103.

Now, however, the trend toward eating away-from-home foods is steadily increasing; the average consumer now eats 4.2 meals (or approximately 20% of all meals, based on 21 meals per week) outside the home per week, up from 3.9 per week in 1985.[147] (The change is attributable to an increase in take-away foods; Americans are actually eating at restaurants less frequently—93 meals in 1985 versus 80 meals in 2005.)[148] This shift in consumers' lifestyles creates an opportunity for industry to modify its practices. This is not to say that the occasional indulgent meal should be eliminated from menus; however, to combat obesity, menu designs and routine cooking methods need to shift toward approaches that yield a greater percentage of healthier, lower-calorie, and less-calorie-dense menu choices.

By providing customers with new and/or reformulated menu items and meals of lower calorie density, restaurant and foodservice operators will help customers manage their energy balance. Studies show, for example, that consumers may not notice a 25% decrease in calorie density for many foods, and the change may have little effect on palatability.[149] The addition of water-rich foods along with even modest decreases in fat content could reduce the calorie density of many popular foods, such as burgers, pizza, and sandwiches. With such reductions in calorie density, consumers are likely to ingest the same amount of food, but fewer calories, while feeling just as full and satisfied.[150] (It is important to note, however, that the studies on which these statements are based were done in a laboratory setting; therefore it is difficult to discern what consumer acceptance would be in a more natural setting.) Two of the methods by which foodservice operators can reduce the calorie density of new or reformulated menu items and meals are as follows.

- Substituting less-calorie-dense versions of ingredients and products for their more-calorie-dense counterparts (e.g., substituting leaner meat or lower-fat cheese for the full-fat versions).
- Increasing the volume of fruits and vegetables in, and lowering the calorie density of, both individual items (e.g., by adding grated vegetables to meat dishes) and meals (e.g., by increasing the proportion of fruits and vegetables on the plate).

The ability to provide such menu items and meals, of course, is sometimes limited by operational realities. Foodservice operators can identify numerous obstacles that inhibit synergy among producers/manufacturers, distributors, and operators, and that ultimately restrict operators' ability to easily purchase and use the products needed to produce new or reformulated menu items and meals.

[147] R. Ebbin, "Americans' Dining Out Habits," *Restaurants USA*, November 2000. See www.restaurant.org/rusa/magArticle.cfm?ArticleID=138.
[148] Harry Balzer, The NPD Group, *Eating Patterns in America*, presentation given February 1, 2006.
[149] B. Rolls, L. Roe, and J. Meengs, "Reductions in Portion Size and Energy Density of Foods Are Additive and Lead to Sustained Decreases in Energy Intake," *American Journal of Clinical Nutrition* 83 (2006): 11-7.
[150] Ibid. Also, B. Rolls, A. Drewnowski, and J. Ledikwe, "Changing the Energy Density of the Diet," 2005.

Portion Size, Plate Composition, and Menu Pairing

As discussed in the introduction to this report, obesity rates in the United States have increased dramatically over the past 30 years. During that same period, steady and significant increases have been documented in the portion sizes of foods consumed away from home, the number of away-from-home meals Americans are consuming, and Americans' overall calorie intake.[151] Other factors may also have affected obesity rates during this time, including reduced physical activity, the trend for most households to be engaged in the workforce for pay and not have a full-time homemaker, an increase in the number of hours worked, and an increase in the number of single-person households.[152]

Larger portions are common for many foods with a high calorie density, and while a causative link between large portions of calorie-dense foods and obesity remains unproven, the available data support such a link. Indeed, it has been shown that energy intake increases with bigger portions of a variety of types of foods, including those served in distinct units, such as sandwiches[153] and potato chips,[154] and those not served in distinct units, such as macaroni.[155] The size of portions served in restaurants also affects calorie intake; one study found, for example, that when the size of a popular pasta dish was increased by 50%, customers ate 43% more of that dish.[156] Survey data from the American Institute for Cancer Research indicate that many people let the foodservice provider determine an appropriate portion and eat accordingly, so that the bigger the portion, the more they consume.[157]

As discussed in Chapter 2, a possible strategy for moderating the effects of portion size on calorie intake is to combine small decreases in portion size with moderate reductions in calorie density. In a recent study, when both the calorie density and portion size were reduced by 25% over two days, study participants showed a decrease in calorie intake of 812 calories per day.[158]

Large portions are not associated with increased calorie intake in those cases where the food in question is low in calorie density. Studies show that consumption at the start of a meal of a low-

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[151] L.R. Young and M. Nestle, "The Contribution of Expanding Portion Sizes to the U.S. Obesity Epidemic," *American Journal of Public Health* 92, no. 2 (2002): 246-249; L.J. Harnack, R.W. Jeffery, and K.N. Boutelle, "Temporal Trends in Energy Intake in the United States: An Ecologic Perspective," *American Journal of Clinical Nutrition* 71 (2000): 1478-1484; and J.J. Ledikwe, J. Ello-Martin, and B. Rolls, "Portion Size and the Obesity Epidemic," *Journal of Nutrition* 135 (2005): 905-909.

[152] H. Stewart, et al., *The Demand for Food Away from Home: Full-Service or Fast Food?* Agricultural Economic Report #829 (Washington, DC: USDA, 2004).

[153] B. Rolls, et al., "Increasing the Portion Size of a Sandwich Increases Energy Intake," *Journal of the American Dietetic Association* 104 (2004): 367-372.

[154] B. Rolls, et al., "Increasing the Portion Size of a Packaged Snack Increases Energy Intake in Men and Women," *Appetite* 42 (2004): 63-69.

[155] B. Rolls, E. Morris, and L. Roe, "Portion Size of Food Affects Energy Intake in Normal-Weight and Overweight Men and Women," *American Journal of Clinical Nutrition* 76 (2002): 1207-1213.

[156] N. Diliberti, et al., "Increased Portion Size Leads to Increased Energy Intake in a Restaurant Meal," *Obesity Research* 12 (2004): 562-568.

[157] B. Rolls, "The Supersizing of America: Portion Size and the Obesity Epidemic," *Nutrition Today* 38 (2003): 42-53; and American Institute for Cancer Research, *Awareness and Action: AICR Surveys on Portion Size, Nutrition, and Cancer Risk* (Washington, DC: AICR, 2003). See www.aicr.org/site/DocServer/awarenessandaction_03conf.pdf?docID=106.

[158] B. Rolls, L. Roe, and J. Meengs, "Reductions in Portion Size and Energy Density," 2006.

calorie-dense food such as soup[159] or salad[160] actually decreases overall energy intake. This approach of eating low-calorie-dense food at the start of a meal may be an effective strategy for weight management, although it should be noted that it could also raise costs for consumers.

Beverages

Major consumer behavior changes have occurred in the past several years coincident with the obesity epidemic. One such change is an increase in the consumption of sugar-sweetened beverages, which is linked to higher calorie intake and a higher risk for obesity in some but not all studies.[161] A recent study showed that the consumption of caloric beverages (e.g., sugar-sweetened soft drinks, 100% juices, and 1% milk) in contrast to non-caloric beverages (e.g., water or diet soft drinks) with a meal, added calories to the meal without impacting the subject's sense of fullness.[162] Similar results were obtained when caloric beverages were consumed two hours before the meal.[163] It would appear that consuming caloric beverages as opposed to water or other non-caloric beverages is likely to contribute to an excess consumption of calories.

Advice to limit sweetened caloric beverage consumption is consistent with the Dietary Guidelines, which advise consumers to "choose and prepare foods and beverages with little added sugars or caloric sweeteners."[164] That said, Forum participants recognize that the development of obesity involves several dietary factors,[165] and one of those factors is excess caloric intake. A decrease in caloric beverage consumption is just one of many necessary strategies in the effort to reduce obesity.

Soft drinks, which include soda, iced tea, sugary fruit drinks, and other sweetened beverages, are the largest single source of calories in the American diet.[166] As soft drink consumption has increased, so have typical portions available for consumption. In the 1950s, for example, the standard serving size for soft drinks was 6½ ounces. We now have a multitude of choices, including 12-ounce cans and increasingly popular 20-ounce bottles. In addition, fountain sodas of 32 and even 64 ounces are available in many venues. The larger the container, the more soda consumers are likely to drink, particularly when buying single-serving containers.[167] The

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[159] B. Rolls, E.A. Bell, and M.L. Thorwart, "Water Incorporated into a Food but Not Served with a Food Decreases Energy Intake in Lean Women," *American Journal of Clinical Nutrition*, 70 (1999): 448-455.
[160] B. Rolls, L. Roe, J. Meengs, "Salad and Satiety: Energy Density and Portion Size of a First-Course Salad Affect Energy Intake at Lunch," *Journal of the American Dietetic Association* 104 (2004): 1570-1576.
[161] R.A. Forshee and M.L. Storey, "Total Beverage Consumption and Beverage Choices among Children and Adolescents," *International Journal of Food Science and Nutrition* 54, no. 4 (2003): 297-307.
[162] D. DellaValle, L. Roe, and B. Rolls, "Does the Consumption of Caloric and Non-Caloric Beverages with a Meal Affect Energy Intake?" *Appetite* 44 (2005): 187-193.
[163] E. Almiron-Roig and A. Drewnowski, "Hunger, Thirst, and Energy Intakes following Consumption of Caloric Beverages," *Physiology and Behavior* 79, no. 4-5 (2003): 767-73.
[164] HHS and USDA, *Dietary Guidelines for Americans*, 2005.
[165] American Beverage Association, "Obesity," www.ameribev.org/health/obesity.asp, accessed January 25, 2005.
[166] R.P. Troiano, et al., "Energy and Fat Intakes of Children and Adolescents in the United States: Data from the National Health and Nutrition Examination Surveys," *American Journal of Clinical Nutrition* 72 (supp.) (2000): 343S-353S.
[167] B. Wansink and K. van Ittersum, "Bottoms Up! The Influence of Elongation and Pouring on Consumption Volume," *Journal of Consumer Research* 30, no. 3 (2003): 455-463.

introduction of self-serve beverage fountains and free refills may also be having an impact. (It is important to realize, however, that these latter developments are intentional positioning strategies for some restaurants and are an important part of their value proposition to consumers.[168]) Pricing practices also encourage people to drink large servings, as larger portions typically cost less per ounce.[169]

It is also worth mentioning that some specialty beverages, including flavored lattes and milkshakes, often deliver more sugar than do soft drinks. Their calorie content can be unexpectedly high, reaching up to 800 calories per 20-ounce portion. And as with soft drinks, a multitude of size choices are now available, with 16-ounce and 20-ounce lattes and cappuccinos more the norm than the exception. Thus the fat and sugar content of traditionally calorie-free coffee bears watching, as does its potential impact on the development of obesity. Also, as noted in the 2005 Dietary Guidelines, alcoholic beverages supply calories but few essential nutrients, and the caloric content of these beverages can vary widely depending on the volume of the drink, the types of mixers used, and other ingredients used. The Guidelines address issues related to moderate and excess alcohol intake, which were not a subject of discussion by the Forum nor a focus of its proposed recommendations.[170]

The Forum's Recommendations and "Operational Tips"

Forum participants in this section offer four recommendations and numerous operational tips for the consideration of the foodservice industry.

Recommendation 3.1

Promote the wider inclusion in foodservice of less-calorie-dense menu items and calorie-sparing cooking techniques that are widely accepted by consumers and that take into account constraints on operators.

Operational Tips for Recommendation 3.1

1) Culinary educational facilities should provide chefs and foodservice operators with the necessary education, resources, and skills to produce menu choices that will help customers achieve and maintain a healthy weight. Specifically, it is suggested that they do the following.

    - Provide instructional programs to help chefs and restaurateurs develop a solid understanding of (1) the science behind providing food choices that support healthy weight, (2) calorie density, and (3) the principles behind low-calorie-dense food selection and preparation.

[168] B. Wansink and M. Huckabee "De-Marketing Obesity," *California Management Review* 47, no. 4 (2005): 6-18.
[169] National Alliance for Nutrition and Activity (NANA), *From Wallet to Waistline: The Hidden Costs of Super Sizing* (Washington, DC: NANA, 2002).
[170] HHS and USDA, *Dietary Guidelines for Americans*, 2005.

- Provide educational programs that illustrate how to develop less-calorie-dense menu items. For example:
  - Encourage the use of fruit- and vegetable-based sauces in place of high-calorie-dense sauces.
  - Emphasize the moderate use of healthy (i.e., unsaturated) fats, which should be added to a product where they will have the greatest impact on flavor.
  - Encourage the use of fruit-based desserts in place of butter- and cream-based, high-sugar preparations.

- Provide educational programs to help chefs and restaurateurs overcome the perception that healthy menu items lack creativity and flavor. The following are examples of strategies that optimize flavor, taste, and customer appeal.
  - Highlight peak-of-flavor seasonal produce.
  - Explore a variety of world cuisines for inspiration regarding healthy cooking and menu design—specifically, cuisines that are largely plant-based and include innovative ways to enhance flavor and present produce-centered preparations.
  - Highlight the use of high-flavor, low-calorie-dense ingredients such as fresh herbs and spices.

- Encourage chefs and restaurateurs to offer more lower-calorie choices on children's menus. Encourage them to:
  - Consider children's menus to be an extension of the regular menu.
  - Offer more fruits and vegetables on the children's menu.
  - Offer appropriate portion sizes of children's meals.
  - Make lower-calorie beverages the default option with children's meals.
  - Direct this strategy at culinary leaders in the multi-unit sector, who are in the best position to innovate in this part of their menu.

- Include food distributors in discussions about how to implement this recommendation.

2) To help promote the educational priorities described above, appropriate government agencies should:
   - in conjunction with industry, support initial educational and leadership efforts as follows.
     - Convene roundtable discussions at various trade and professional conferences and culinary schools, to engage foodservice operators and chefs in a dialogue about creative ways to offer flavorful and healthier menu items.
     - Convene a "speakers series" in which renowned experts present the findings and recommendations from this report at various trade and professional conferences.

   - Provide grants to help culinary schools develop curricula or other resource materials that reflect the current consensus within the scientific community about cooking methods and approaches that help consumers achieve and maintain a healthy weight.
     - Work to raise awareness within the industry about the need for foodservice operators to be educated about healthy cooking techniques.

3) The synergy between producers/manufacturers, distributors, and operators should be enhanced, in order to facilitate the purchase and use of the products that are needed to produce new or reformulated menu items and meals, to help consumers manage their energy intake.

- Industry leaders, distributors, and other appropriate individuals should initiate conversations with growers regarding opportunities for increased production of the most commonly used fruits and vegetables.

- Industry leaders and appropriate government agencies should encourage manufacturers to develop and promote alternative produce packaging—such as cryovac, sous vide, aseptic, and ready-to-cook packaging—which requires less refrigerator/freezer storage and less preparation time and skill, and improves the sensory quality of the produce (compared to standard freezing and canning methods).

- Industry leaders and appropriate government agencies should encourage manufacturers to offer foodservice-size packaging for products such as evaporated fat-free milk, lower-fat cheeses, and precut vegetables, all of which can be used to make less-calorie-dense menu items.

- Large purchasers and purchasing consortiums, which have the power to influence distribution methods, should:
  - provide incentives to distributors to offer split cases, small quantities (by the piece), and more frequent deliveries for operators with small volume and/or limited storage.
  - provide incentives to distributors to offer partially prepared produce (cleaned, peeled, cut), as well as low-fat and nonfat dairy products.
  - promote a reasonable, but not excessive, price premium for those services requiring substantial additional labor, assuming that consumer demand will permit the premium.

- In appropriate foodservice settings, operators should train employees to clean, peel, and cut fresh produce.

- In appropriate foodservice settings, operators should train employees to ask produce vendors and distributors for advice on the "best buys" in terms of flavor, seasonality, and price.

- Operators should purchase fruits and vegetables in season when possible.

- Operators, including those who operate quick-service and fast-casual restaurants, are encouraged to use fruit- and vegetable-based "limited time offers," such as pumpkin specials in the fall and cranberry specials in the winter.

- Operators should patronize vendors and distributors that will provide them with split cases, more frequent delivery, pre-prepared fruits and vegetables, lean meats, and low-fat and nonfat dairy products.

- Operators should increase their usage of fruits, vegetables, and other products, such as low-fat and nonfat milk and cheese or lean meats, in order to reduce the calorie density of their menu items and meals by a mutually agreed upon percentage.

- The U.S. Department of Agriculture or other appropriate entities should be urged to compare the forecasted demand for fruits and vegetables with actual production levels, and then promote opportunities where an excess supply exists.

Funding Approaches

Funding to implement this recommendation could come from a variety of sources, including governments, foundations, corporations, and associations. Ideally, appropriate government agencies would first fund leadership programs (i.e., "train the trainer" programs) to stimulate initial activity and create awareness of shared long-term industry goals. Costs are difficult to predict, but the focus should be on funding the development of educational resource materials for the foodservice industry, as well as pilot programs to demonstrate success.

Recommendation 3.2

Foodservice providers should develop and promote portion-size, plate composition, and menu-pairing options that help consumers in their efforts to manage their energy intake.

Operational Tips for Recommendation 3.2

The following implementation strategies are geared toward chefs, menu developers, servers, and customers.

1) Reduce total calories in mixed dishes by combining moderate reductions in calorie density with changes in portion size.
   - Bundle menu items or retool the plate to increase or add portions of fruit and vegetables. Some suggest re-portioning the plate so that four key elements—the main dish, fruits, vegetables, and whole grains—each make up one-quarter of the plate.
   - Use small amounts of fish, lean meat, poultry, nuts, legumes, and/or eggs to create "center-of-the-plate" entrees that are largely plant-based (though not necessarily vegetarian).

2) Retool menu items to provide less-calorie-dense choices.
   - Offer lower-calorie condiments, such as mustard, salsa, and full-flavor sauces.
   - Decrease the portion size of calorie-dense spreads and protein sandwich fillings (e.g., tuna salads, chicken salads, etc.).
   - Offer half portions.
   - Offer sandwich alternatives, such as lettuce wraps.

- Where it would not compromise taste, use reduced-calorie or reduced-fat ingredients, such as mayonnaise, cheese, milk, and leaner meats, or use smaller amounts of the calorie-dense ingredients.
- Offer salads with the "extras" on the side (e.g., croutons, bacon bits, cheese, salad dressing).
- Prepare vegetables, fish, and other menu items using more-healthful cooking techniques (e.g., steaming, baking, and grilling), and top them with nutrient-dense, low-calorie sauces and flavor enhancers rather than traditional, calorie-dense sauces.
- Increase opportunities for customers to customize their meals with less-calorie-dense options.

3) For sandwiches, offer more fruit and/or vegetable options than just lettuce and tomato. For example, offer roasted red peppers, roasted eggplant, cucumbers, etc.

4) Provide more options and promote (i.e., "suggestive sell") meal bundles with fruits and vegetables (including salads), while maintaining traditional side options as well.
   - Focus on providing more age-appropriate options for children's meals, including more fruits and vegetables. Also, include low-fat and/or fat-free milk in bundled meals for children.

5) Develop and promote appropriately sized "sampler" plates of bite-sized appetizers and desserts (including a combination of indulgent and healthier options) to be shared, with the goal of thereby reducing the total calorie intake of one's overall meal.

6) Offer several portion sizes of each menu item.

7) Feature ethnic cuisines that inherently encourage small portions, such as tapas, mezze, and dim sum.

8) Adopt approaches to support portion-size reduction and/or curtail emphasis on "bigger means better" messages. For example:
   - Industry could refrain from using value marketing to promote larger portion sizes. Value messages based on "a large amount of food for a fixed price" could be replaced with value messages based on a "small portion of food for a *lower* price." The large size could still be made available if desired.
   - Government, industry, and health groups should conduct joint social marketing campaigns to help people understand appropriate portion sizes for their calorie needs.

Cost Considerations

Smaller portion sizes do not necessarily equate to lower costs, especially if menu items are made more healthful through the addition of fruits and vegetables. Increased costs to execute the above strategies might include food, labor, research and development, and marketing costs, which would be incurred by foodservice operators and most likely passed on to consumers. Some consumers may be willing and able to pay a higher price for these options, but some may be unable or unwilling. Some of these costs (especially for research and development) could be

minimized if they were shared among government agencies, health groups, and industry. As discussed in Chapter 2, marketing and education initiatives are needed to promote the value of these changes to consumers.

Recommendation 3.3

Foodservice providers should develop, make available, and promote beverage options that help consumers to reduce calorie intake.

Operational Tips for Recommendation 3.3

Industry leaders should do the following.

1) Increase the range of low-calorie or zero-calorie beverage choices available to consumers and provide smaller portion sizes (e.g., 10-fluid-ounce sizes, 100-calorie servings, etc.)
   - Where fountain drinks are self-served, provide a wider variety of selections, such as unsweetened flavored waters or seltzer, light or no-calorie lemonade or fruit drinks, unsweetened and/or non-caloric sweetened iced teas, diet colas, and diet non-cola sodas.
   - When serving bottled beverages, a similar range of options should be included, in addition to water.

2) Increase the selection of low-fat or nonfat milk beverages. Although the calories in nonfat milk are equivalent to the calories in sodas and juices, milk provides important nutrients that are lacking in many Americans' diets.[171]
   - Fat-free and 1% milk should be readily available, especially with children's meals.
   - Organizations and government agencies should collaborate on campaigns to encourage low-fat milk consumption and on strategies to close the gap between current consumption levels and the intake levels recommended in the 2005 Dietary Guidelines. A number of communities have conducted "1% Or Less" campaigns, which have resulted in significant increases in low-fat milk sales and consumption.

3) In specialty venues such as coffee shops, offer lower-calorie selections and smaller portion sizes of specialty and frozen drinks, in addition to the standard versions.
   - Where this is already occurring, it would be helpful to compile data on product performance.

4) Expand the range of beverage options available to consumers to include a wider array of cup and bottle sizes.

5) Consider pricing approaches that make smaller sizes and lower-calorie options more appealing.

[171] C.S. Berkey, et al., "Sugar-Added Beverages and Adolescent Weight Change," *Obesity Research* 12, no. 5 (2004): 778-788.

6) For bundled meals, offer lower-calorie beverage options, such as water, and encourage reasonable portion sizes.

Recommendation 3.4

Industry and academia should conduct—collaboratively, if possible—research on the topics and questions listed below. In addition, a specific scientific survey should be conducted about the experiences of operators and restaurateurs in developing menu items that could aid in weight management.

Many of the recommendations above that are geared toward industry are not based on empirical research. As a result, researchers in industry and/or academia should make an effort to validate these recommendations. In so doing, a collaborative effort between these entities would be beneficial to the field. One goal of such a collaborative effort should be to assess the effectiveness of each proposed strategy in restaurant and institutional settings. Strategic partnerships between the scientists conducting the research and the restaurateurs providing the real-world laboratory could help to close the knowledge gaps that currently exist. Some of these knowledge gaps are identified below, followed by information about a preliminary survey that was developed to gather more information about the experiences of operators and restaurateurs in developing menu items that could aid weight management.

Basic Research Needs

The following suggestions focus on research as it relates to the foodservice industry (as opposed to the consumer). They address basic research needs as well as suggestions for the development of specific, scientifically sound strategies that will lead to a better informed public, industry, and academic community. The proposed research will hopefully lead to a fuller body of knowledge that will support and encourage additional changes in products, menus, and meal items to address the problem of overweight and obesity.

Basic research needs and questions are categorized into four topics below: calorie density and portion size; increasing fruits and vegetables; product formulation; and packaging and marketing.

1) Calorie Density and Portion Size
   - What is the relationship between calorie intake, portion size, and satiety in the long term?
   - Can portion sizes be made to more accurately reflect caloric needs, while continuing to deliver acceptable value and an equal level of acceptance by consumers?
   - Is it feasible to reformulate popular menu items to decrease calorie density while maintaining price or preserving, or even increasing, market share?
   - How can reductions in portion size and calorie density be combined to help consumers reduce calorie intake?
   - Can shifts in menu offerings be made to reflect the appropriate balance of foods (i.e., as recommended by the Dietary Guidelines[172])?

[172] HHS and USDA, *Dietary Guidelines for Americans*, 2005.

2) Increasing Fruits and Vegetables
   - Do individuals who consume the amount of produce recommended in the Dietary Guidelines tend to have a healthier weight?
   - What costs are associated with re-portioning the plate to include a greater volume of fruits and vegetables in a meal, and under what conditions will those costs be accepted by the consumer?
   - What fruit and vegetable options are "desirable" in the away-from-home foods market—both in terms of those that consumers will select and those that help to reduce calorie intake? The answers to this question might differ for various sectors (e.g., quick service, fast casual, fine dining).
   - Based on a hypothetical target increase for fruit and vegetable consumption in restaurants, develop a forecasting tool to help predict potential demand for the ten most commonly used fruits and vegetables. Utilize this information to help industry become better equipped to reach the target.

   The following five recommendations were taken from the Produce for Better Health National Action Plan.[173] Forum participants considered them to be relevant to the purposes of this report and therefore have reiterated them here.
   - Fund agricultural research initiatives that address convenience, taste, versatility, and longer-term product quality issues (from farm to table) regarding fruits and vegetables.
   - Support increased research into the role of fruits and vegetables in weight management (including preparation techniques, when and how fruits and vegetables are consumed, and satiety functions).
   - Support increased emphasis on fruit and vegetable research that focuses on increasing consumer consumption.
   - Develop measurement and impact tools to evaluate the effectiveness of various fruit and vegetable consumer marketing initiatives.
   - Support studies of the relative roles various factors play in fruit and vegetable consumption among children and adults—availability, price, education, type of produce, type of other foods offered, age, parental involvement, and media messages.

3) Product Formulation
   - How would operations and product pricing be affected by the recommended product formulation changes in menu items, and how would this affect the cost to the consumer?
   - What attributes of "healthy" products (e.g., lower sodium or fat, flavor, characteristics unrelated to their healthfulness, price, freshness, general quality, etc.) cause them to fail? Can any generalizations be made, or does each product need to be considered on a case-by-case basis?
   - If presented with a wider variety of healthy choices, what decisions will consumers make? And do those decisions have an impact on weight management? (For example, will consumers choose lower-fat cheese on sandwiches, no cheese on salads, low-calorie dressings, low-calorie beverage options, etc.?)

[173] Produce for Better Health Foundation, *National Action Plan to Promote Health through Increased Fruit and Vegetable Consumption* (Wilmington, DE: Produce for Better Health Foundation, 2005).

- What changes in children's menus will impact pediatric overweight and obesity? These changes might include: smaller portion sizes and offering more fruits, vegetables, low-fat dairy products, leaner meats, and lower-calorie beverages.
- Can the history of successes and failures in terms of recent initiatives (over the past two years) by foodservice establishments provide valuable insight into new product offerings or reformulations?

4) Packaging and Marketing
   - What information do consumers either lack or need in order to make informed decisions at the point of consumption?
   - Would it be useful to encourage restaurants to promote the use of "to go" containers with meals so that consumers eat less in one sitting?
   - Are commercial sizes of lower-calorie products (e.g., low-fat cheese, fat-free evaporated milk, etc.) available in sufficient quantity and variety?
   - What information, if any, regarding the nutritional composition of menu items prompts consumers to take action and choose items to manage weight?

Scientific Survey

Keystone Forum participants conducted an informal survey to gather information from chefs and restaurant owners about their experiences helping customers to manage their weight and health, particularly via product reformulation and innovation. The purpose of this unscientific, preliminary survey was to better understand the current thinking in the food industry on these topics. The group hoped to identify some additional recommendations through this exercise. Based on the narrow range of results, however, in which 92 of the 111 responses were from the on-site/contract-feeding sector, participants were not comfortable putting forth concrete recommendations based on these responses.

Forum participants did, however, see promise in these preliminary results and therefore recommend that a scientific survey be conducted after the conclusion of the Forum. Collecting such information from chefs, restaurant owners, managers, and others across the spectrum of industry sectors, as well as researchers and public policy officials, will further public understanding of what changes the restaurant industry might be encouraged to undertake in the future. This type of information could provide guidance to the industry on how to develop menu items that will help consumers manage their weight.

Appendix G contains information about the results of the informal study.

Chapter 4
Providing Consumers with Nutrition Information

When making decisions about away-from-home foods, consumers often may not have access to nutrition information to inform their selections and eating behaviors pursuant to appropriate energy intake. This chapter includes Keystone Forum participants' findings and recommendations regarding how to increase consumer access to such information. The chapter begins with an introduction to the issue of providing nutrition information for away-from-home foods. It then covers four key aspects of the topic: (1) potential objectives for providing such information; (2) special considerations relating to the away-from-home foods sector; (3) consumer use of such information; and (4) the federal government's role in providing such information. The chapter concludes with the Forum's recommendations regarding nutrition information and away-from-home foods.

Introduction to the Issue

Whereas a growing number of foodservice venues voluntarily provide some information about the caloric and nutritional content of their menu items, many do not. Available information may be provided in different formats (e.g., websites, brochures, kiosks), focus on different nutrients (e.g., calories, carbohydrates, fat), and take a variety of forms (e.g., numerical values, symbols, written characterizations of health attributes). Without nutrition information, consumers typically are unable to assess the caloric content of foods.[174]

Consumer interest in nutrition information may vary by type of foodservice venue, consumer demographic characteristics, and other factors. Recent polls suggest that, in general, consumer interest in nutrition information at foodservice establishments is increasing. Four national polls have found that at least 60% of respondents would like calories to be listed on menus or menu boards in chain restaurants.[175] In another recent survey, conducted by ARAMARK, 83% of

[174] W.G. Johnson, et al., "Dietary Restraint and Eating Behavior in the Natural Environment," *Addictive Behaviors* 15 (1990): 285-290; J. Backstrand, et al., *Fat Chance* (Washington, DC: Center for Science in the Public Interest, 1997); and Scot Burton, et al., "To Eat or Not To Eat: Effects of Objective Nutrition Information on Consumer Perceptions of Fast Food Chain's Meal Healthiness, Future Health Concerns, and Meal Repurchase Intentions," *publication pending*.

[175] Lake, Snell, Perry & Associates, "Obesity as a Public Health Issue," a poll commissioned by the Harvard Forums on Health in 2003, with 1,002 respondents nationwide, www.phsi.harvard.edu/health_reform/poll_results.pdf, accessed March 18, 2006; Global Strategy Group, "Menu Board Question," a poll commissioned by the Center for Science in the Public Interest in 2003 with a nationally representative sample of 600 respondents, http://cspinet.org/new/pdf/census_menu_board_question.pdf, accessed March 18, 2006; Time/ABC News poll, conducted May 10-16, 2004, with 1,202 respondents nationwide; and Field Research Corporation, "A Survey of Californians about the Problem of Childhood Obesity," a poll commissioned by the California Endowment in November 2003 with 1,068 respondents in California, www.calendow.org/reference/publications/disparities_in_health.stm, accessed March 18, 2006.

respondents said that restaurants should make nutrition information available for all menu items.[176] The findings from these polls are summarized in Appendix H. (It should be noted that, in general, polling questions may elicit varying responses depending on how the questions are phrased and in what context.)

About half of the nearly 300 largest chain restaurants in the United States provide some kind of nutrition information to their customers in one format or another (such as on websites, posters, packaging, brochures, or kiosks). The National Restaurant Association has launched the Ask Us! program, a voluntary, nationwide, branded effort to help nutrition-conscious customers make informed menu choices. Participating restaurants receive free resources for use in the delivery of nutritional data to customers.

In addition, over the past five years, several government or government-sponsored reports have encouraged the widespread provision of nutrition information to consumers. A 2001 report on obesity from the U.S. Surgeon General called for the "increasing availability of nutrition information for foods eaten and prepared away from home."[177] *Calories Count*, a 2004 report from the Food and Drug Administration's Working Group on Obesity, urged the restaurant industry to launch a "nationwide, voluntary, and point-of-sale nutrition information campaign for consumers," and encouraged consumers to "routinely…request nutrition information in restaurants."[178] A 2004 report on pediatric obesity by the National Academies' Institute of Medicine called for full-service and fast-food restaurants to "provide general nutrition information that will help consumers make informed decisions about food and meal selections and portion sizes."[179]

Evidence regarding how and why consumers use nutrition information is limited. Outstanding questions include how consumers process and use such information, what measurable contribution the information can make to the goal of managing weight gain and obesity, where the point of decision-making is for away-from-home-foods consumers, and what effect information may have on consumer choice, eating behavior, and store revenue. Likewise lacking are data with regard to whether one format or another alters the rate of consumer usage of the information.

Lastly, owing to variance in preparation, sourcing, and other factors, some Forum participants are concerned that nutrition information in the away-from-home foods sector cannot always achieve the same level of accuracy and reliability that consumers expect from packaged food labels. Menu and recipe variability may make the regular provision of nutrition information particularly difficult for at least some foodservice establishments. Culinary education in the

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[176] C. Malone and J. Bland-Campbell (ARAMARK), *New Insights on the Away-From-Home Eating Patterns and Nutritional Preferences of Americans*, presentation at the North American Association for the Study of Obesity Annual Scientific Meeting, October 17, 2005. See www.aramark.com/CaseStudyWhitePaperDetail.aspx?PostingID=420&ChannelID=221.

[177] U.S. Department of Health and Human Services (HHS), *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity* (Rockville, MD: HHS, 2001).

[178] U.S. Food and Drug Administration (FDA), *Calories Count: Report of the Working Group on Obesity* (Rockville, MD: FDA, 2004).

[179] Institute of Medicine, *Preventing Childhood Obesity: Health in the Balance* (Washington, DC: National Academies Press, 2004).

United States teaches chefs to cook by proportion, touch, and feel rather than by following standardized recipes. Indeed, restaurants and foodservice establishments that employ trained chefs typically do not follow recipes. There is concern that, by encouraging all foodservice establishments to provide nutrition information to consumers, those venues that do not use standardized recipes may unintentionally provide erroneous information to consumers.

Potential Rationales for Providing Nutrition Information for Away-from-Home Foods

Forum participants agreed generally on the value of providing nutrition information to consumers, as noted later in Recommendation 4.1, but they did not agree on the rationales for why that information should be provided. The range of views on this topic, outlined here, may help the reader to understand the complexity of the issue and the diverse and sometimes strong views that the topic generates among stakeholders.

Some Forum participants argued that nutrition information should be provided if and when consumers demand it. If consumers demand more nutrition information in restaurants and other away-from-home food outlets, businesses will provide it. Others noted that consumer demand is not static, but can be influenced by commercial marketing and, to a lesser extent, social marketing and government education. Some said that consumers have a right to know about the products they purchase generally, including the nutrient content of away-from-home foods specifically. Some participants, noting the experience of the Nutrition Labeling and Education Act (NLEA, which required certain nutrition information on packaged grocery items), reasoned that by providing nutrition information, away-from-home food providers will be encouraged, out of competition and the desire to promote "healthy" products, to reformulate their products to decrease components such as calories and fat without unduly affecting cost or taste. Thus, whether or not consumers make more healthful choices, they will consume reformulated products with fewer calories and fat.[180]

Forum participants also discussed whether the goal of influencing consumer behavior to help consumers better manage weight gain and obesity was appropriate. Some believe, given that obesity and overweight are significant public health concerns, and their consequences can include both morbidity and mortality, that it is wholly appropriate to actively seek to influence consumers' behaviors. Others believe that consumers' choices must be respected and protected, and that, while providing information in the marketplace was generally appropriate, providing information with the intent of changing consumers' choices was fraught with value judgments about what, why, and how people should eat.

Some Forum participants also stated reasons why nutrition information should potentially not be provided. For example, they said that providing nutrition information (1) might not change consumers' behavior (at least not alone, as already noted in this report, since one specific action is not likely to single-handedly change consumer behavior), (2) might be costly, and (3) might

[180] See E. Golan, et al., "The Economics of Food Labeling," *Journal of Consumer Policy* 24, no. 2 (2001): 117-184 (also published by the U.S. Department of Agriculture (USDA) Economic Research Service (ERS) as Agricultural Economic Report #793, December 2000).

introduce unanticipated changes in consumer demand (i.e., consumers might start avoiding highly profitable items or switch the source of their meals from one outlet to another).

Considerations for the Away-from-Home Sector

For the away-from-home foods industry, providing nutrition information—be it due to requirements, market demand, or for general public benefit—has a variety of implications. Away-from-home foods are exempt from nutrition labeling requirements under the NLEA if they bear no nutrition claims or other nutrition information. (Fresh vegetables and meats are also exempt, as the NLEA applies primarily to packaged foods.) In many foodservice venues, the same meal may be sourced from a variety of regional and varying suppliers, and fresh, raw ingredients may be used. Cooks and chefs may vary ingredients and recipes (and thus calorie contents), for reasons of taste, quality, and availability—from establishment to establishment and even day to day and month to month. Fine dining and other foodservice venues may not use recipes at all. Many types of venues also consider it a business imperative to allow for the customization of orders. Finally, the industry is notable for its vast variety of types of venues—from independent lunch counters to multinational quick-service chains, from daily-use, on-site employee cafeterias to fine-dining establishments. For all these reasons, many stakeholders—within and outside of the industry—believe that any approach to providing nutrition information must take into account variables that are unique to away-from-home foods generally and to specific venues.

Several factors should be considered regarding the provision of nutrition information and its impacts on business, including:

- the type and extent of information provided;
- how meaningful the information is to consumers;
- the time it takes to implement;
- the cost to implement (both direct costs as well as indirect costs such as reformulation, which might result if operators choose to change the nutritional profile of offerings);
- operational practicability and feasibility;
- the potential liability created by voluntarily providing information, or the potential reduction in liability for having widely accepted criteria for the provision of the information;
- impact on speed of service, especially for quick-service restaurants;
- impacts on revenue, market share, and consumer substitution within an establishment, across establishments, and even across sectors;
- the potential benefits and disadvantages of having a level playing field for the provision of nutrition information; and
- the potential value of standards in providing consistency across businesses and companies (and the questions of who should act, who should pay for it, what the parameters should be, and what margin of error is appropriate).

Consumer Use of Nutrition Information

Evidence regarding how and why consumers use nutrition information is limited. However, there is some evidence—gleaned through website hits, brochure disappearance, customer inquiries, consumer focus groups, polls, and in-store experiments—that many consumers generally value the information.

Some Forum participants believe that helpful lessons regarding consumers' use of nutrition information may be drawn from research into the consumer use of nutrition information printed on packaged foods. Three-quarters of adults report using food labels.[181] While studies are limited, existing evidence finds that using food labels is associated with eating more-healthful diets.[182] About half (48%) of people report that the nutrition information on food labels has caused them to change their minds about buying a food product—a 50% increase over the number in a survey conducted before the food labeling law was implemented.[183]

The data collected since the NLEA was implemented in 1994 suggest that people tend to use food label information to compare "like" products rather than to make selections across product lines. For instance, someone may choose one yogurt over another after comparing labels, but they do not tend to choose between yogurt and a cookie by comparing those two labels. Some, but by no means all, Forum participants believe that if consumers use nutrition information similarly, this approach might prove effective in restaurants. Restaurants offer many fewer choices (often 50 to 200 menu items) than supermarkets (often 40,000 to 50,000 products), and all or many items are typically listed together in a single place—on the menu board or menu.

It is estimated that strengthening food labeling can yield significant health and economic benefits. The Food and Drug Administration (FDA) estimated in its rulemaking that requiring trans fat content to be listed on packaged-food labels would avoid more than 240 deaths per year at an initial cost of up to $275 million, and produce benefits totaling between $968 million and $1.97 billion annually in today's dollars, depending on the calculation method.[184] These dollar figures reflect the value of preventing both mortality and morbidity and include saved medical costs plus the dollar value of statistical lives saved and quality-adjusted life-years saved. The U.S. Department of Agriculture (USDA) estimated the economic benefits of extending nutrition labeling to fresh meat and poultry to be $62 million to $125 million per year, though they have

[181] Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), *Healthy People 2000 Final Review* (Hyattsville, MD: CDC, NCHS, 2001).
[182] S.Y. Kim, R.M. Nayga, and O. Capps, "The Effect of Food Label Use on Nutrient Intakes: An Endogenous Switching Regression Analysis," *Journal of Agricultural Resource Economics* 25 (2000): 215-231; M.W. Kreuter, et al., "Do Nutrition Label Readers Eat Healthier Diets? Behavioral Correlates of Adults' Use of Food Labels," *American Journal of Preventative Medicine* 13 (1997): 277-283; and M.L. Neuhouser, A.R. Kristal, and R.E. Patterson, "Use of Food Nutrition Labels Is Associated with Lower Fat Intake," *Journal of the American Dietetic Association* 99 (1999): 45-50, 53.
[183] A.S. Levy and B.M. Derby, *The Impact of the NLEA on Consumers: Recent Findings from FDA's Food Label and Nutrition Tracking System*, paper prepared for the FDA Office of the Commissioner, January 1996.
[184] FDA, "Food Labeling: Trans Fatty Acids in Nutrition Labeling, Nutrient Content Claims, and Health Claims; Final Rule," *Federal Register*, July 11, 2003.

not sought to mandate such labeling.[185] In a recently completed white paper, the authors estimate that the monetary benefit (including lower mortality risk, lower medical expenditures, reduced absenteeism, and increased productivity) for non-Hispanic white women of a decrease in body weight associated with the NLEA ranges from $63 billion to $166 billion over 20 years beginning from 1991, the year after the law was passed.[186]

A key benefit of mandatory nutrition labeling on packaged foods has been the reformulation of existing products and the introduction of new, nutritionally improved products.[187] Between 1991 (before the implementation of the NLEA) and 1995 (after implementation), the number of available fat-modified cheese products tripled, and the market share for fat-modified cookies increased from zero percent of the market to 15%.[188] In a similar fashion, nutrition labeling on menus and menu boards may spur nutritional improvements in restaurant foods.

Some participants, however, are wary of extrapolating from the experience of packaged foods to the away-from-home context, in which accuracy is harder to achieve and consumers may be more likely to grant themselves license to indulge (due to a special occasion, for instance) and therefore may be less interested in nutrition information.

Also, some participants believe that the introduction of nutrition labeling on packaged foods may have had a bigger impact on food choice if it had been accompanied by a greater investment in helping people to understand and utilize the information. While Forum participants generally support the provision of nutrition information, many believe its effectiveness in assisting consumers with managing their energy intake is enhanced by supporting education that provides guidance in interpreting and making use of the information.

A review of the current literature on the consumer use of nutrition information regarding away-from-home foods is included in this report as Appendix I. Evidence regarding how and why consumers use nutrition information in away-from-home foods settings is limited. There may be important policy reasons (e.g., right to know, do no harm, act now in the face of uncertainty due to the magnitude of the problem) to take action on the basis of existing knowledge.

In the research to date, the literature suggests that:

- a majority of those surveyed in national polls want calorie and other nutrition information on restaurant menus;
- consumers, and nutrition experts for that matter, are not able to accurately estimate the caloric content of away-from-home foods;
- different population segments may react to and use nutrition information differently (i.e., women may use it more than men to make lower-calorie selections, consumers with health conditions like heart disease may react more favorably and use information such as specific

[185] S. Crutchfield, F. Cutchler, and J. Variyam, "The Economic Benefits of Nutrition Labeling: A Case for Fresh Meat and Poultry Products," *Journal of Consumer Policy* 24, no. 2 (2001): 185-207.
[186] J. Variyam and J. Cawley, *Nutrition Labels and Obesity*, National Bureau of Economic Research (NBER) Working Paper #11956 (Cambridge, MA: NBER, 2006).
[187] B.A. Silverglade, "Food Labeling: Rules You Can Live By," *Legal Times,* July 17, 1995: 21-24.
[188] Levy and Derby, "The Impact of the NLEA on Consumers," 1996.

calorie counts or health-oriented symbols, and some consumers may not make lower-calorie selections even when clear, detailed nutrition information is provided); and
- consumers tend to make more significant changes to their choices when the caloric content of a product or meal is significantly higher than expected or perceived.

In addition, many in the industry have found in their experience that using "healthy symbols" can unintentionally reduce demand for products, and proprietary data may exist to support this experience. In the limited published literature, however, the research done to date has not shown a correlation between healthy symbols and decreased demand. Also, published research is not available on how and where nutrition information should be provided to best help people lower their calorie intake in away-from-home food establishments.

Differences in experimental methods, subject populations, labeling approaches, and other factors suggest that care should be taken when generalizing from these findings. A number of authors note that an examination of the effects of information provision in restaurant-type settings or other away-from-home contexts is difficult.

The Role of Government in Providing Nutrition Information

Away-from-home food providers are not bound by any federal regulatory requirements to provide nutrition information about menu items, unless they make specific health or nutrient content claims. When provided, it must be truthful and not misleading. Though federal and state governments provide a host of broad information and education on overweight and obesity and collect some data through the USDA's Economic Research Service, the FDA does not have regulatory authority to require nutrition information in restaurants.

The U.S. Congress and state legislatures do have the authority to require the provision of nutrition information, and a number of these elected bodies have considered nutrition labeling bills. Between 2003 and 2005, 14 states,[189] the District of Columbia, the U.S. Senate, and the U.S. House of Representatives introduced legislation to require nutrition information disclosure at restaurants. Generally, the bills would require calories and/or other nutrition information to be listed on menus or menu boards, limit the requirement to chain restaurants (defined as restaurants with 10 or 20 or more outlets operating under the same trade name nationally), and limit the required information to calories, saturated plus trans fat, sodium, and carbohydrates. To date, none of the bills has been signed into law.

Government agencies might play any number of roles in increasing consumer access to nutrition information. They could continue to provide general information and gather consumer and producer data. The federal government could issue non-binding guidelines on how to develop accurate nutrition information for away-from-home foods within certain tolerances, in order to help industry as a whole develop common and best practices and to help assure consumers that the information they receive is accurate and consistent across outlets. The federal government could also issue binding regulations (if authorized to do so by Congress) outlining what kind of

[189] Arkansas, California, Connecticut, Hawaii, Illinois, Maine, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Texas, and Vermont.

information to provide and where and how to provide it, and allowing for prescribed tolerances for accuracy (as done under the NLEA and its associated regulations) for one or more segments of the away-from-home foods sector.

The following are some of the arguments made for and against an additional role for the federal government in ensuring that nutrition information is available for away-from-home foods. [190]

- **Right to Know (as noted earlier):** Consumers have a right to know about the products that they purchase. Because providers of products tend to have access to more information, be more concentrated, and have more resources, they have greater power to provide or withhold information to achieve their goals and objectives. Thus, consumers may be at a disadvantage when seeking to make choices regarding products in foodservice establishments (or when choosing among establishments). Some stakeholders believe that providers do not have an incentive to provide information voluntarily, and thus that government intervention may be necessary to ensure that consumers have adequate access to product information.

- **Benefits Should Exceed Costs:** Public policy usually requires that the benefits of any action justify its costs. While it might be desirable to provide information to consumers about a product or service, the cost of doing so should be measured against the benefits that might accrue to consumers. If the benefits of providing that information are difficult to measure or are unknown—i.e., if consumers receive information and it is not clear what they do with it, if anything—then mandated action may be difficult to justify. Past cost-benefit analyses for food labeling have resulted in highly favorable cost-benefit ratios.

- **Measurable Impact:** Some stakeholders argue that government action should not be taken unless its impact can be measured with some degree of certainty. Others maintain that actions should be based on the best data available. Impacts that could be measured include: Do consumers make lower-calorie choices if calorie information is provided at the point of sale? Does that meal choice affect their overall caloric intake? How do cost information and nutrition information interact for consumers? If nutrition information is provided, how will that affect various revenues and market share? How will it affect product formulation, portion size, calorie density, and the mix of choices available on menus?

- **Precaution and Prevention:** When significant adverse health consequences are possible and may affect substantial segments of the U.S. population, actions should be taken on the basis of the best available data. As noted in the Institute of Medicine's 2004 report, *Preventing Childhood Obesity: Health in the Balance*, "[t]he obesity epidemic is a serious public health problem that calls for immediate action to reduce its prevalence as well as its health and social consequences. Therefore…actions should be based on the best available evidence—as opposed to waiting for the best possible evidence."[191] Similarly, the American Academy of Pediatrics stated in a recent report on childhood obesity: "Evidence to support the

[190] See Golan, et al., "Economics of Food Labeling," 2001. The first page of this article notes that: "Government intervention in labeling in the United States has served three main purposes: to ensure fair competition among producers, to increase consumers' access to information, and to reduce risks to individual consumer safety and health."
[191] Institute of Medicine, *Preventing Childhood Obesity,* 2004.

recommendations for prevention is presented when available, but unfortunately, too few studies on prevention have been performed. The enormity of the epidemic, however, necessitates this call to action…using the best information available."[192] Estimating costs and benefits requires dealing with uncertainties (i.e., cost and benefit calculations can be rife with assumptions, biases, and uncertainties, though such estimates are made routinely and frequently guide policy decision-makers).

- **Market Failure:** The free, unencumbered market tends to under-provide objective information. The reason is that once someone pays to create information, it can be freely distributed among consumers beyond the control of the producer. As a result, interested consumers are frequently forced to make decisions about their calorie intake on the basis of imperfect information. The fact that free markets tend to under-provide objective information argues that there is an economic rationale for governments to require or provide the production and dissemination of information.

- **Public Health:** Obesity and overweight are pressing public health issues. Their consequences include early death and increased risk of the leading causes of death in the United States, including heart disease, cancer, and diabetes. These outcomes decrease the well-being and health of American citizens and increase the costs of health care. Thus, it is incumbent upon public health officials, business, and government to improve public health by providing nutrition information that will enable consumers to make more healthful choices.

The Forum's Recommendations

Forum participants in this section offer two recommendations regarding the provision of nutrition information for away-from-home foods.

Recommendation 4.1

Away-from-home food establishments should provide consumers with calorie information in a standard format that is easily accessible and easy to use.

Current Efforts

The availability of nutrition information regarding away-from-home foods has increased over the past ten years. According to a recent study of the 287 largest chain restaurants in the United States, 54% make at least some nutrition information available. Forty-four percent provide some kind of information, in a variety of formats, for the majority of their standard menu items.[193] No

[192] American Academy of Pediatrics, "Prevention of Pediatric Overweight and Obesity: Statement of Policy," *Pediatrics* 12, no. 2 (2003).
[193] M.G. Wootan and M. Osborn, "Availability of Nutrition Information in Chain Restaurants in the U.S.," *American Journal of Preventive Medicine* 30: 266-268.

similar studies have been conducted for non-chain (or independently owned) dining establishments.

As discussed previously, evidence on how and why consumers use nutrition information is limited at present. (See Appendix I for a literature review on this topic.) Though the experience in away-from-home-foods may be different than for packaged foods, some argue that a key benefit of mandatory nutrition labeling on packaged foods has been the reformulation of existing products and the introduction of new nutritionally improved products.

Foodservice operators currently share with their customers many kinds of nutrition information, including numerical values, symbols, information about food allergies and sensitivities, and recommendations for specific dietary needs. The information shared and the format in which it is shared varies widely among different establishments. Some chains, such as Au Bon Pain and (soon) McDonald's provide the equivalent of a Nutrition Facts panel (like that on packaged foods) for menu items. Some provide carbohydrate information, others provide data on fat content, and others list total calories. In addition, great variability can exist among the outlets of a given company, depending upon the perceived interests of the client (e.g., hospital, museum, college) and the customer base (e.g., patients, tourists, young adults).

Of restaurant chains providing nutrition information, most (82%) provide information on several key nutrients for the majority of their menu items.[194] In an informal survey of the websites of nearly 40 restaurant chains, Forum participants found that the great majority provided a summary nutritional profile that included calories, calories from fat, total fat, saturated fat, cholesterol, sodium, total carbohydrates, dietary fiber, sugar, and protein. In addition, almost three-fourths of the sites offered trans-fat information for these same menu items. These nutrition facts are almost always expressed in grams per serving.

Of those restaurant chains that currently provide nutrition information, 86% use the company website as at least one means of doing so.[195] Foodservice venues also provide information in a number of ways in-store, both at the point of decision (e.g., though electronic kiosks, brochures, table guides, or server handhelds) and after the point of decision (e.g., via packaging, "nutrition receipts" on register tape, or tray liners). Cafeterias and grocery stores may use informational signs on, in, or near food counters, or next to self-serve items such as soups. A few establishments provide guidance on where to locate the information—for example, with a notification on a menu board directing customers to a brochure.

Operational Tips

Keystone Forum participants suggest the following operational tips and considerations.

- Information should be provided in a manner that is easy for consumers to see and use as part of their purchasing and eating decisions. Consumers might view such information, for example, when standing at a counter, while reviewing a menu board, in a car when reading a drive-through menu, or when sitting down at a table reviewing a menu, table tent, or other

[194] Ibid.
[195] Ibid.

means of providing information. The means and location for providing nutrient information are discussed more fully in Appendix J.

- Information should be provided for any standard menu item offered on a regular and ongoing basis (i.e., offered daily or regularly for at least three months of the year) that is prepared from a standardized recipe, whether the item is an entire meal or a meal component (e.g., entire meals, appetizers, side dishes, desserts, beverages). Non-standard items, including daily specials and experimental items, may be exempted. The information should be provided for the different size offerings (i.e., small, medium, large) of each standard menu item. Of course, changes based on availability and recipes can still occur in standard items.

- Information should be provided for the standard menu item as usually offered for sale (i.e., the base product, in the portion size as offered for sale), since most means of providing information (with the notable exceptions of computer-based systems such as websites and electronic kiosks) cannot easily account for changes due to customization and special orders.

- Information should be accompanied by a caveat regarding variations owing to preparation, customization, server variability, and so forth.

- Single-store operations and small chains may not be able to provide nutrition information. Other foodservice venues, such as contract dining services, that have variations in sourcing and preparation, or that do not have standard menus, may also have difficulty providing information that is accurate, reliable, and consistent. For instance, where segments of the industry employ trained chefs (such as in fine-dining establishments and as compared to institutional cooks or foodservice workers), the chefs may prepare primarily by taste and feel and either not use, veer from, or disregard standardized recipes. Lack of standardized recipes and preparation, variations in management and operational control systems, and the cost of product analysis are potential obstacles for smaller operators. However, restaurants and other foodservice operators are encouraged to provide the information to the extent feasible, especially since some programs exist to support them in doing so. An example includes the National Restaurant Association's Ask Us! program, a voluntary, nationwide, branded effort to help restaurants provide nutrition information to interested customers.

- For more guidance on providing nutrition information, please see Appendices G and H from the FDA Obesity Working Group Report *Calories Count*, as well as the ORC Macro report on Restaurant and Food Labeling Focus Group Research.[196]

Additional considerations for foodservice operators related to this recommendation include the following (see Chapter 3 for greater detail).

[196] FDA, *Calories Count*, Appendix H ("Developing Effective Consumer Messages") and Appendix G (a reprint of FDA, *Helping Consumers Lead Healthier Lives through Better Nutrition: A Social Sciences Approach to Consumer Information, Food Choices, and Weight Management*, A Report from the Division of Market Studies (Rockville, MD: FDA, 2004)); and ORC Macro, *Restaurant and Food Labeling Focus Group Research: Summary Report* (Rockville, MD: FDA, 2003).

- Operators might indicate simple ways of making lower-calorie substitutions, to help consumers customize their meals with total calories in mind.
- Operators might use menu descriptions that include cooking method, ingredients, etc., which can help point out to consumers the lower-calorie options. For example: "Pan-seared skinless chicken breast with mango salsa served with chipotle grilled polenta."
- Operators might provide "standard" and "light" versions of standard ingredients and condiments, such as substituting salsa for sour cream, omitting cheese, and so forth.

Costs and Methods of Analysis

The cost of laboratory analysis for nutrition information ranges widely depending on the number of items on the menu and the costs charged by each laboratory. The cost to have one item analyzed for calories may be as low as $100 but is estimated at about $230 per item for more complete nutrition information (including saturated and trans fat, carbohydrates, and sodium). Since the number of items in larger-scale quick-service and casual dining establishments range from about 50 to more than 200, the cost for analyzing the entire menu initially would thus range from $11,500 to $46,000.[197] As mentioned previously, approximately half of chain restaurants already provide nutrition information on their websites or on in-store brochures. Thus, if this information were determined by laboratory analysis (as is the case for many chains), these companies would not necessarily incur any new costs for product testing in order to provide menu labeling. However, the analysis of new products and reformulations and the re-printing of materials would add additional and ongoing costs to operations. Operators newly adopting this recommendation would incur costs for posting this new information (e.g., on a website, menu, or menu board), in addition to the basic cost of determining caloric and nutritional content.

Software packages that allow smaller operations to estimate calories are also available. The typical software package costs around $500 and uses pre-calculated information to estimate the caloric content of various products and meals. Though one could learn and use the software, often a company will hire a registered dietitian to use the software to calculate the nutrition information for products and meals. Dietitian rates vary widely depending on expertise and geography. Assuming the rate is $100 per hour, and the time to do the calculations for a modest-sized menu (50 to 100 items) would be between 40 to 80 hours, the full initial cost of calculating caloric content using this method would be between $4,000 and $8,000. In addition to the basic laboratory analysis, further analysis of new products, reformulations, and base ingredient changes, and the re-printing of materials, would add additional and on-going costs to operations.

Standard methodologies for determining nutrient information such as calories have already been established for packaged foods for the NLEA. For compliance purposes under the NLEA, the FDA uses methods given in the most recent edition of *Official Methods of Analysis* of AOAC International,[198] or, if no AOAC method is available or appropriate, by other reliable and appropriate analytical procedures. AOAC International's *Official Methods* volumes are updated annually with new or modified methods. The results of successful collaborative studies appear in

[197] Center for Science and the Public Interest, "Myth vs. Reality: Nutrition Labeling at Fast-Food and Other Chain Restaurants," www.cspinet.org/nutritionpolicy/Myth_vs_Reality_Nutrition_Labeling.pdf, accessed March 18, 2006.
[198] Formerly known as the Association of Official Analytical Chemistry.

the journal of AOAC throughout the year.[199] The FDA has also posted guidance that discusses laboratory and statistical analyses for developing nutrition label values and addresses variability in reporting data for packaged food.[200]

Multiple Solutions Necessary

Forum participants noted that the provision of nutrition information to away-from-home food customers is not the sole means by which consumers might more effectively manage their energy intake. Numerous factors contribute to weight gain and obesity. The interaction of these factors likely further complicates our understanding. Cause and effect in something as complex as people's choices and eating patterns is extremely difficult to discern. However, Forum participants noted that basic nutrition information provision is one of many actions that may help Americans to better manage weight gain and obesity and may provide incentive to companies to change the nutritional quality of their menus or specific menu items.

Considerations on Other Nutrition Information beyond Calories

Forum participants considered whether away-from-home food outlets should provide other kinds of quantitative nutrition information (i.e., beyond caloric content). A great many foodservice operators already choose to share comprehensive nutrition information with their customers.

Participants recognized that it is possible for an individual to maintain caloric balance and yet consume an unhealthy diet; therefore, additional nutrition information should be available to consumers. Some Forum participants raised the concern that providing calorie information in the absence of other nutrition information, such as that regarding nutrients of concern (i.e., calcium) and nutrients to avoid (i.e., saturated fat), could result in less-healthful food choices or unanticipated negative health consequences. However, addressing such a wide range of health considerations was outside the scope of the Forum. Although calorie information is most relevant to obesity prevention, several participants did favor the inclusion of additional nutrient information, especially for fiber and total, saturated, and trans fat, which may assist consumers with weight management or with health impacts that are associated with obesity. There was not consensus around which nutrients might be most appropriate, however.

Some Forum participants expressed interest in providing consumers with information regarding the energy density of menu items, but that concept is presently unfamiliar to the majority of consumers and many foodservice operators, and such information is not currently provided for packaged foods. Thus, participants did not recommend this means of reporting information.

Some participants also suggested including a reference point along with nutrition information, so that interested consumers would have a way of gauging how a menu item fits into their daily caloric needs. One suggestion was to provide totals—for calories and specific nutrients—that the

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[199] See also I.J. Jeon and W.G. Ikins, *Analyzing Food for Nutrition Labeling and Hazardous Contaminants* (New York: Marcel Dekker, Inc., 1995); and D.M. Sullivan and D.E. Carpenter (eds.), *Methods of Analysis for Nutrition Labeling* (Arlington, VA: AOAC International, 1993).

[200] M.M. Bender, J.I. Rader, and F.D. McClure, *FDA Nutrition Labeling Manual: A Guide for Developing and Using Data Bases* (Rockville, MD: FDA, 1998). See www.cfsan.fda.gov/~dms/nutrguid.html.

average person should consume in a day, like the "daily values" on packaged food labels. But broad agreement did not exist within the group on this. Daily caloric intake recommendations vary according to weight, gender, physical activity levels, and other factors. For the time being, any reference points provided, for ease of consumer use and consistency across types of foodstuffs, should be the same as those provided for packaged goods under the NLEA.

Forum participants generally did not favor the use of health-related symbols (for menu sections or specific items) as a means of helping consumers to make informed choices. While symbols clearly associated with specific health considerations may be useful to some consumers, such as those on a specific disease-related diet, there is some evidence from market experience that health-related symbols on menus do not tend to encourage—and may even discourage—broader selection of those products. Health-related symbols: (1) can be confusing, since their definition is not always clear and can vary among establishments; (2) may not provide new information to customers; and (3) can be associated in consumers' minds with poor taste based on past experience with products that were promoted on the basis of health-related attributes but that were not made to be both healthful and delicious.

Considerations on the Means of Delivering Information

Forum participants differed substantially in their ideas regarding where and how basic nutrition information should be provided. Some stakeholders believe that nutrition information, at least for calories, must be provided at the point of sale on menus and menu boards, in order to offer adequate opportunity for the greatest number of consumers to make informed decisions, and without requiring additional effort by those interested in managing their energy intake. National polls, as noted above, show that about two-thirds of Americans support the provision of nutrition information on menus. Several participants noted, however, that this may detract from the dining experience, be costly to implement, slow down ordering times in establishments where quick service is an essential part of the value provided to customers, be difficult for consumers to read and/or comprehend, and may have unanticipated consequences in terms of sales, product substitution, and consumer behaviors. Forum participants did agree that information provided at the consumer's point of decision, wherever that might be, is most likely to be used and useful to the consumer. The group did not develop a consensus agreement on the means of providing nutrition information for away-from-home foods other than as described in this paragraph. An assessment of a wide range of means of delivery is included with this report as Appendix J.

Considerations Related to Children's Needs

Some Forum participants believed that nutritional information provided at the point of sale targeting children should contain information about nutrients other than just caloric content. There was also acknowledgment, however, that little evidence exists to indicate exactly what information should be provided for children and how this information might be utilized by parents as well as by older children and adolescents. Some felt the provision of caloric information has the potential for unintended negative effects on children, including conflicts between parent and child centering on food. In general, organizations such as the American Dietetic Association and the American Academy of Pediatrics have recommended specifically

against "calorie counting" for children, given the wide range of acceptable caloric intake in this population.

However, a recent Institute of Medicine report entitled *Food Marketing to Children and Youth: Threat or Opportunity?* specifically recommended that caloric content and other nutrient information be placed on restaurant menus for children.[201] Though the report has only indirect evidence to support this recommendation, it assumes that listing caloric content on the menu, accompanied by a marketing strategy to emphasize lower-caloric food and beverage choices for children, would have the desired effect of helping to manage the caloric intake of children. The context in which the information is provided—e.g., on the menu, in a pamphlet, or on a website—might affect the level and type of concern, where it exists.

Possible Unintended Consequences

Some Forum participants, while generally supportive of the provision of calorie information, raised concerns about unintended consequences (for consumers and operators). These unintended consequences included but were not limited to: (1) negative effects on company revenues; (2) possible negative perceptions of lower-calorie menu options (i.e., consumers may view lower-calorie items as less satiating or flavorful, thus actually decreasing the consumption of these products and meals); (3) consumers choosing a lower-calorie main item but increasing the purchase of side items, which could increase overall caloric intake; (4) emphasis on calories over other nutritional considerations; (5) increased, quantifiable costs for operators that outweigh the potential and more-difficult-to-determine benefits to consumers in managing weight gain and obesity, and (6) the potential provision of inaccurate information to consumers by operations not using standardized recipes.

Considerations on the Accuracy of Information

Owing to variance in preparation, sourcing, and other factors in the away-from-home sector, some are concerned that nutrition information in foodservice outlets cannot always achieve the same level of accuracy and reliability that consumers expect from that on packaged food labels. For certain types of venues, such as fine-dining establishments, menu and recipe variability and a culinary philosophy that does not include the use of standardized recipes may make the regular provision of nutrition information particularly difficult.

Nonetheless, NLEA standards are often used as a guide for away-from-home foods companies. Most Forum participants agreed that the information that is currently provided in the marketplace is accurate and reliable across companies in the away-from-home food sector. Though not an exact corollary, it is worth noting that in FDA surveys conducted in 1994 and 1996 to determine the percent of consistency between analyzed and labeled values for nutrients in packaged foods, consistency for calories was high—it was rated at 93% for both surveys (of approximately 300 different food products per survey).[202] More recently, as a result of the FDA's label reviews and

[201] Institute of Medicine, *Food Marketing to Children and Youth: Threat or Opportunity?* (Washington, DC: National Academies Press, 2005).
[202] Life Sciences Research Office (LSRO) and Federation of American Societies for Experimental Biology (FASEB), *Analytical Data and Label Review* (Rockville, MD: LSRO and FSAB, 1994); and LSRO and FASEB,

nutrient analysis (between October 2004 and December 2006), the FDA issued 56 warning letters addressing misbranding violations involving a variety of food products.[203] Almost none of these misbranding violations involved inaccurate reporting of calories.

However, some stakeholders suggested that liability may be a factor inhibiting some foodservice companies from sharing nutrition information, either at all or in certain formats. Some companies may fear that they will be held legally accountable for inaccuracies that are due to variabilities inherent in a particular type of operation. No standards exist currently for setting a "margin of error;" thus operators are concerned that they may unduly open themselves up to liability. Some note that a retail operation's information accuracy is dependent on the accuracy of information from its suppliers, be it for single ingredients or pre-packaged foods or mixes. Thus, some suggest that the government could have an important role in sheltering responsible actors, ensuring consistency, and treating all players fairly by providing accuracy standards and methodologies across the industry. Others do not see evidence that liability is an inhibiting factor, given the wide and increasing availability of accurate nutrition information already in the marketplace.

Forum participants generally agreed that standards of accuracy need to be more flexible for away-from-home foods than for packaged foods, to reflect the greater variability in the away-from-home sector. Product substitutions by suppliers, even unbeknownst to the operator, as well as how the meal is constructed on site (both in what products are used and in what quantities) can contribute to variability.

Recommendation 4.2

Research by multiple sectors should be conducted on how consumers use nutrition information for away-from-home foods; how this information affects their calorie intake at that venue; how and why nutrition information affects operators' decisions, costs, and revenues; and unanticipated consequences.

There is a clear need for more research regarding how the provision of nutrition information, claims (such as "low calorie"), and symbols influence consumer preference and choice for away-from-home food consumption situations. Of particular concern is how, when, and why consumers use nutrition information and claims during their decision-making processes. More specifically, a better understanding is needed of the types of factors that moderate consumers' responses to the provision of nutrition information and claims for away-from-home foods.

Suggested research questions include the following.

- What types of individual consumer characteristics (e.g., age, gender, nutrition knowledge level, concern about weight) impact whether or not nutrition information is utilized when ordering away-from-home foods?

Consistency between Nutrition Label Information and Laboratory Analysis for 300 Food Products (Rockville, MD: LSRO and FSAB, 1997).

[203] Personal communication, Anne Crawford, FDA, January 20, 2006.

- What type of information should be provided? Does the amount of information positively or negatively influence its usage?
- What types of nutrition information are most valuable to which segments of consumers?
- How do parents and children/adolescents use the calorie content and other nutrition information supplied at the point of sale for both children's menus and adult menus?
- What situational or environmental influences impact consumers' responses to nutrition information?
- Where is the point of decision for the range of away-from-home-foods consumers?
- How and where should information be provided, given the goals for providing such information? At point of sale, before sale, after sale for future purchases, etc.? Via menu board, brochure, table tent, poster, kiosk, etc.?
- If the information is accessed, how is it used?
- Under what circumstances is current behavior influenced and under what circumstances is future behavior influenced? For example, if consumers consume an extra 100 calories at lunch, will they eat a lighter dinner?
- How do nutrition information, claims, and symbols influence consumers' food choices, attitudes, and assumptions about the food item itself (such as perceived tastes and flavors) and impact their overall attitudes toward the restaurant?
- Is information on the caloric content of food items more likely to be used by the consumer when presented alone or when embedded in general nutrition content information?

Appendix A
Keystone Forum
Supporting Participants, Information Resources, and Project Staff

Affiliations are listed for the purpose of identification only. Participants were asked to represent their individual views throughout the Forum's deliberations.

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Informational Resources

The following individuals contributed to the Forum's deliberations in various ways. Some served as consultative advisors throughout the deliberations. Some served as formal participants, but elected not to support the report formally, generally due either to the nature of their organizations of affiliation or to the degree of their participation.

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Appendix B
Research Regarding the Association of Away-From-Home Foods and Body Weight

The following is a brief annotated bibliography of sources regarding the association between away-from-home foods and overweight/obesity, as outlined in a presentation by Dr. Alice Lichtenstein of Tufts University at the April 26-27, 2005, meeting of the Keystone Forum on Away-From-Home Foods. Please note that the studies use different terms for away-from-home foods establishments, including "restaurants," "away-from-home food outlets," and "quick-service" or "fast-food" restaurants. Furthermore, the researchers may define these terms differently. Thus, one should consult the individual studies for more detail and clarity.

Binkley, et al. (2000)[204]

Using 1994 to 1996 data from the U.S. Department of Agriculture (USDA) Continuing Survey of Food Intakes by Individuals (CSFII), these researchers found that the source of food is a significant determinant of body mass index (BMI). This association was shown for both restaurants generally and fast-food outlets specifically. For females, the correlation was significant for fast-food outlets only, but for males, the correlation was significant for restaurants generally as well as fast-food outlets specifically.

Bowman, et al. (2004)[205]

Using CSFII data from 1994 to 1996 and the Supplemental Children's Survey from 1998, the researchers found that, for 4- to 19-year-olds, 30% of the sample population consumed fast food on a typical day. Those who ate fast food consumed more calories per gram of food and had poorer diet quality. The higher fast-food consumption was associated with males, older children, higher household income, non-Hispanic African-Americans, and residence in the South.

Bowman and Vinyard (2004)[206]

Using CSFII data from 1994 to 1996, the researchers found that 25% of adults reported eating fast food. The study found that such fast food provided greater than 33% of total calorie intake, and it found a positive association between fast-food consumption and overweight status.

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[204] J.K. Binkley, et al., "The Relation between Dietary Change and Rising U.S. Obesity," *International Journal of Obesity* 24 (2000): 1032-1039.

[205] S.A. Bowman, et al., "Effects of Fast-Food Consumption on Energy Intake and Diet Quality among Children in a National Household Survey," *Pediatrics* 113 (2004): 112-132.

[206] S.A. Bowman and B.T. Vinyard, "Fast-Food Consumers vs. Non-Fast-Food Consumers: A Comparison of Their Energy Intakes, Diet Quality, and Overweight Status," *Journal of the American College of Nutrition* 23, no. 2 (2004): 163-168.

Clemens, et al. (1999)[207]

The study group was composed of premenopausal women. Groups were categorized as "low eating out" for meals consumed out five times or less per week and "high eating out" for meals consumed out six to thirteen times per week. The researchers found eating out frequency associated with higher intakes of calories, fat, and sodium.

Ebbeling, et al. (2004)[208]

In the first part of this study, the participants were instructed to eat as much or little as they desired in a one-hour period in a food-court setting. The participants, 13 to 17 years old, had large caloric intake (1652 calories), and overweight participants ate more than their leaner counterparts in both absolute terms as well as in estimated daily calorie requirements. In the second part of this study, caloric intake was determined for participants under "free-living" conditions for two days when fast food was eaten and not eaten. The researchers found that overweight adolescents consumed significantly more total calories on fast food days (almost 18% more). Lean adolescents had no significant difference in total calorie intake between fast food and non-fast food days.

French, et al. (2000)[209]

This three-year prospective intervention trial found that frequency of fast-food restaurant use was associated with higher caloric intakes and higher fat intake (as a percent of calories) and lower consumption of fiber and fruit. The frequency of fast-food restaurant use was also positively associated with younger women, those with lower income, and those with non-White ethnicity.

Guthrie, et al. (2002)[210]

Using data from the 1977-78 Nationwide Food Consumption Survey and from the 1994-1996 CSFII, the researchers found changes in the source of calories consumed over time. Food prepared away from home (restaurants, schools, daycare, or other) increased from 18% to 34% of total calories. Meals and snacks prepared away from home contained more calories per eating occasion, and those meals and snacks were higher in fat and saturated fat and lower in fiber, calcium, and iron per calorie consumed.

Jeffery and French (1998)[211]

This study considered the correlation between fast-food intake and energy intake and body mass. (The study also looked at TV, VCR, and cable TV watching). Recruitment was done via the USDA Women, Infants, and Children program (WIC) for those not pregnant one year prior to or following WIC enrollment. Total calorie intake and BMI were positively associated with fast-food consumption.

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[207] L.H. Clemens, et al. "The Effect of Eating Out on Quality of Diet in Premenopausal Women," *Journal of the American Dietetic Association* 99 (1999): 422-444.
[208] C.B. Ebbeling, et al., "Compensation for Energy Intake from Fast Food among Overweight and Lean Adolescents," *Journal of the American Medical Association* 291 (2004): 2828-2833.
[209] S.A. French, et al., "Fast Food Restaurant Use among Women in the Pound of Prevention Study: Dietary, Behavioral, and Demographic Correlates," *International Journal of Obesity* 24 (2000): 1353-1359.
[210] J.F. Guthrie, et al., "Role of Food Prepared Away from Home in the American Diet, 1977-78 Versus 1994-96: Changes and Consequences," *Society for Nutrition Education* 34 (2002): 140-150.
[211] R.W. Jeffery and S.A. French, "Epidemic Obesity in the United States: Are Fast Foods and Television Viewing Contributing?" *American Journal Public Health* 88 (1998): 277-280.

Lin, et al. (1996)[212]
Using data from the USDA's 1989-91 CSFII and the Diet and Health Knowledge Survey, USDA researchers found that the foods children eat from fast-food and other restaurants are higher in fat and saturated fat and lower in fiber, iron, calcium, and cholesterol than foods from home.

Maddock (2004)[213]
The researcher considered state-level data on the percent of the population that is obese, fast-food restaurants per square mile, and self-reported behaviors, from physical activity to fruit and vegetable consumption. The study found state levels of obesity to be inversely related to the number of residents per fast-food restaurant density and the number of square miles per fast-food establishment. Other factors associated with obesity were income, fruit and vegetable intake, and percentage population of African-Americans.

Manchino, et al. (2004)[214]
The researchers used data from the USDA's 1994-96 CSFII and the 1994-96 Diet and Health Knowledge Survey. The researchers found that overweight and obese women go significantly longer intervals between meals than healthy-weight women, and receive more of their daily calories from fast-food restaurants.

McCrory, et al. (1999)[215]
The study group was comprised of "healthy" men and women. Restaurant consumption averaged 7.5 times per month. After controlling for age and gender, frequency of restaurant consumption was associated positively with body fatness (as measured by underwater weights). The association was unaltered after controlling for education, smoking status, and alcohol intake. The association increased after controlling for physical activity.

Paeratakul, et al. (2003)[216]
Using CSFII data from 1994 to 1996 and 1998, the researchers found that 37% of adults and 42% of children reported eating in fast-food establishments. On the basis of two nonconsecutive 24-hour diet recalls, adults and children who reported eating fast foods had higher intakes of calories, fat, saturated fat, sodium, and soft drinks and lower intakes of vitamins A and C, milk, fruits, and vegetables than people who did not eat fast food.

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[212] B.H. Lin, et al., *Diets of America's Children: Influence of Dining Out, Household Characteristics, and Nutrition Knowledge*, Agricultural Economic Report #726 (Washington, DC: USDA, 1996).
[213] J. Maddock, "The Relationship between Obesity and the Prevalence of Fast-Food Restaurants: State-Level Analysis," *American Journal of Health Promotion* 19 (2004): 137-143.
[214] L. Manchino, et al., *The Role of Economics in Eating Choices and Weight Outcomes*, Agricultural Information Bulletin #791 (Washington, DC: USDA, 2004).
[215] M.A. McCrory, et al., "Overeating in America: Association between Restaurant Food Consumption and Body Fatness in Healthy Adult Men and Women Ages 19 to 80," *Obesity Research* 7 (1999): 564-571.
[216] S. Paeratakul, et al., "Fast-Food Consumption among U.S. Adults and Children: Dietary and Nutrient Intake Profile," *Journal of the American Dietetic Association* 103 (2003): 1332-1338.

Pereira, et al. (2005)[217]

This study used data from the Coronary Artery Risk Development in Young Adults (CARDIA) study. The CARDIA study included 3,031 females and males from 18 to 30 years of age in 1985 and 1986, and it included a follow-up 15 years later. The analysis found that a change in fast-food frequency was positively associated with changes in body weight. Those who frequented fast-food restaurants more than two times per week at baseline and follow-up gained an additional 4.5 kg (about 10 pounds) over the 15 years and had a twofold greater increase in insulin resistance.

Satia, et al. (2004)[218]

This study considered a cross-sectional sample of 658 African-Americans from 20 to 70 years of age in North Carolina. The study found eating in fast-food restaurants to be associated with higher total fat intake, higher saturated fat intake, and lower vegetable intake. Frequent eaters in such establishments were more likely to be younger, never married, obese, and/or physically inactive.

Schmidt, et al. (2004)[219]

In a longitudinal, multicenter cohort study of 2,379 girls (ages 9 to 19), increased fast-food intake was associated with increased intake of energy, fat, and saturated fat (as a percent of calories).

Thompson, et al. (2004)[220]

The researchers conducted a longitudinal growth study with girls 8 to 12 years of age at the baseline with a follow-up when they were 11 to 19 years of age. The study showed that, at baseline, eating at quick-service restaurants more often was associated with increases in BMI. This was most evident when quick-service frequency was two times per week or greater.

Zoumas-Morse, et al. (2001)[221]

This study combined data from two populations: (1) 376 children, 7 to 11 years old, and (2) 435 adolescents, 12 to 17 years old. It found that the study subjects' largest consumption of calories took place in restaurants. Of almost 2,500 calories consumed per day, restaurants contributed 31.3% of the total calories, followed by home at 17.3% of calories. Other sources of food included—in order of contribution from higher to lower—school/daycare, friend's homes, other, and transit. The study found that children typically eat almost twice as many calories when they eat a meal at a restaurant (765 calories) compared to an average meal at home (425 calories). Children and adolescents also ate more energy from fat and saturated fat when eating at a restaurant compared to at home.

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[217] M.A. Pereira, et al., "Fast-Food Habits, Weight Gain, and Insulin Resistance (The CARDIA Study): 15-Year Prospective Analysis," *Lancet* 365 (2005): 36-42.

[218] J.A. Satia, et al., "Eating at Fast-Food Restaurants is Associated with Dietary Intake, Demographic, Psychosocial, and Behavioral Factors among African Americans in North Carolina," *Public Health Nutrition* 7 (2004): 1089-1096.

[219] M. Schmidt, et al., "Fast-Food Intake and Diet Quality in Black and White Girls," *Archives of Pediatrics and Adolescent Medicine* 159 (2004): 626-631.

[220] O.M. Thompson, et al., "Food Purchased Away from Home as a Predictor of Change in BMI Z-Score among Girls," *International Journal of Obesity* 28 (2004): 282-289.

[221] C. Zoumas-Morse, et al., "Children's Patterns of Macronutrient Intake and Associations with Restaurant and Home Eating," *Journal of the American Dietetic Association* 101 (2001): 923-925.

Appendix C
Success Factors in Consumer Acceptance of Low-Calorie Innovations in the Away-From-Home Food Market

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The following is a compilation of successful tactics in healthy food promotion that have been used by various segments of the foodservice industry recently. In each case study the market was analyzed by asking representatives of the relevant companies eight questions pertaining to the development, promotion, and success of their healthy products. While there seemed to be several common trends that led to success in each case, there were also some specific tactics that were used for certain market segments and that improved individual results.

Overview of the Case Studies

Nabisco

Introduced in 2004, Nabisco's 100-Calorie Packs were designed to provide great-tasting, better-for-you products that help consumers maintain sensible eating habits. The line featured new versions of some Nabisco classics, conveniently delivered in pre-portioned packages, each containing 100 calories and zero to three grams of fat per pack. The product line was considered a success due to positive responses from consumers, industry, and the media, leading to the brand reaching $100M in sales in less than a year.

Family Dining Chain

The company analyzed in this case is a small- to mid-sized chain (with between 90 and 100 stores nationwide) specializing in Italian-influenced cuisine and family-friendly dining.

In 2004, the company began to "lighten up" its menu offerings, creating new dishes with lighter ingredients (in terms of calories and fat) and more of a Mediterranean flair. One of the chain's biggest successes has been the greater use of vegetables. All new entrees are now presented on the menu with vegetables rather than a starch (e.g., pasta or potatoes) as the standard accompaniment. Customers are explicitly given the option of substituting the starch back in, but roughly 90% of customers go with the vegetables.

Replacing the starch with vegetables has caused sales to increase by 10-15% on an item-by-item basis. Entrees with vegetables as a main focus have also been selling well. The chain's overall sales have gone up 4-5% during this period.

Grocery Chain

This grocery chain introduced a line of approximately 15 prepared food items (i.e., prepared on site), consisting largely of salads such as potato salads, pasta salads, curried brown rice chicken salad, black bean and mango salad, and lentil and split pea salads. The products were developed to be lower in fat by using fruit juices, vinegars, and nonfat and reduced-fat dressings and dairy products. The line also included some hot entrees such as vegetarian chili and salmon. Point-of-sale markers indicated products as "Eat for Health." However, the signage was inconsistent due to lack of maintenance at store level. After several months, the line was discontinued. Many of the items are considered successful, however, since sales initially met projections and the products are still provided in stores and selling reasonably well.

Lower-Fat Milk Consumption

The new products in this case study were 1% and 2% white and chocolate milk in 8-ounce plastic bottles. The products were introduced to two quick-service restaurant (QSR) chains (dubbed QSR A and QSR B) and one fast-casual restaurant chain. Sales soared when the repackaged milk debuted on menus; in restaurants overall, milk orders rose 10% in the timeframe.

- QSR A – Sales doubled
- QSR B – Saw a 15-fold increase from 65,000 units to 1 million units per week
- Fast-casual restaurant – Saw a 5% increase

These results are particularly significant because overall milk sales have declined since the 1960s. Milk sales at QSRs A and B have been sustained and healthy since switching to the 8-ounce plastic bottles.

Seasons 52 Restaurant

Seasons 52 is a new fresh grill and wine bar in Florida that has great-tasting and satisfying meals with nothing on the menu over 475 calories. It's marketed as a "new kind of chain"—one that celebrates food and is not about deprivation or satisfying satiation. The restaurant has seasonally inspired menus that reflect the freshest products available and also offers terrific wines, which speaks to its upscale nature. The restaurant has received positive consumer and media reviews, which has been its most prominent measure of success so far.

Quick-Service Restaurant – Lower-Calorie Sandwiches

A QSR company began in the last five years marketing a line of lower-calorie sandwiches and promoting them as better (i.e., "healthier") choices. This period of time has corresponded with a big boom in the company's sales. It is difficult to know how much of this boom resulted from the marketing of those sandwiches, the product's attributes (taste, value), or the simultaneous redesign of stores. But the sandwich line is viewed internally as a sales success and is a big part of the chain's identity with consumers.

Analysis of Responses Received

The following are the questions asked of interviewees, followed by an analysis of the responses received.

How is the product or concept relevant to obesity prevention?

The first topic of interest when looking at these new healthy products and concepts was how they were developed to address obesity prevention. The most common technique for making the foods healthier was to adhere to nutritional guidelines set forth by respected organizations in the health industry.

Seasons 52 follows the recommendations for nutritional balance set forth by the National Institutes of Health and other respected organizations. These organizations place an emphasis on eating whole-food carbohydrates such as fruits, vegetables, and whole grains; beneficial oils, such as extra-virgin olive oil; and lean meat and fish, especially those high in omega-3 fatty acids. In another example, the grocery chain that introduced the line of lower-calorie prepared food items followed the health-claims criteria set forth in the federal Nutrition Labeling and Education Act. The family dining chain described their menu changes as "absolutely" lowering calorie levels for the chain's menu entrees—up to an estimated 15-20% reduction in calories across the board over two years. The changes don't necessarily affect portion size, just the choice of foods that are on the plate.

In terms of profits, both changing menu items to fit specific nutritional guidelines and individually deciding how to make dishes lower calorie and healthier have worked out favorably for these companies. The path that a business chooses in making their menu healthier has long-term effects on their positioning in the market. For example, if a company decides to strictly tailor its menu items to the recommendations of a certain health organization, then that will illustrate to the consumer that the company has made a firm commitment to providing healthy choices. But the process of creating those menu items and getting them validated takes a significant amount of time and cost, making the company less flexible in the short run. By contrast, self-designing healthy menus is a very adaptable strategy. Changes to menu items can be made virtually every day, putting the company in a very good position in a trend-conscious marketplace. The business is not able to make any solid nutritional claims using this approach, however, which could act as a deterrent to health-conscious consumers.

To decide which approach to take, a business must obviously determine in what type of marketplace it is positioned. Only after addressing this question will the business be able to decide whether it is worthwhile to invest in creating menu items according to specific nutritional guidelines, or if it would be more profitable to make its own changes to its products.

Other than taste, what do you think helped contribute to the success of this product or concept?

When asked what factors apart from taste made their new product or concept successful, the respondents' answers ranged from meeting the market demand to contemporary packaging. Nabisco felt that its new 100-Calorie Packs delivered a "lifestyle need for BFY [better-for-you] snacks in portion-controlled convenience." Nabisco used extensive consumer testing before the product line's launch in order to determine the name, packaging, advertising, public relations, and consumer promotions.

The lower-fat milk campaign used contemporary packaging to change the perception of the product in the consumer's eye. By replacing traditional paper cartons with attractive 8-ounce plastic bottles with appealing graphics, the restaurants were able to penetrate the most difficult segment of the milk market—children.

All of the companies interviewed emphasized how important it is to focus on factors other than the taste of the product and to view things through the consumer's eye. The amount of testing and number of factors that were looked at through the "lens of the consumer" differed greatly for each new product or concept analyzed. Companies seemed to be the most successful when they scaled their research and marketing efforts proportionally to the "size" of the product or concept. Companies adding a single product to a product line can focus on a single characteristic of that product (i.e., packaging, slogan, consumer trends). When a company decides to make a more significant change to its overall product set, however, the company must look at more factors through the consumer's eye—including every aspect of marketing, from packaging to promotions to media coverage—in order to ensure that the product will be successful. In short, companies cannot rely on the content of the product for it to become successful. The marketing mix is key, though companies must determine how much is needed for each specific product to succeed.

Do you think that any media, social, economic, or policy factors external to the product or concept influenced the success or failure of its launch?

Many of the industry representatives said they used trends external to the product itself to influence the launch of the product. When the QSR chain introduced its lower-calorie sandwiches, low-fat diets were still very popular among the public. The chain took advantage of this social trend and focused its advertising on the low fat content of its new products.

Nabisco responded to this question as follows: "The social, media, and policy environment played a role in this product's creation and success. At the time of the product launch [mid-2004] the issues of obesity and the desire to help consumers understand portion control were gaining prominence in all of these arenas."

The family dining chain also looked toward societal trends in tailoring their new products. The interviewee from this company felt that "as the younger generation grows older and is a few years into raising their own children, they're responding to new information about healthy eating for kids and families."

Businesses seemed to be the most successful when they took the current trends and directly implemented them into their new products in every fashion, from content to product names, packaging, and advertising. The case studies thus suggest there is no reason not to take advantage of current swings in consumer preferences. However, it also seems that companies must pick and choose their targets carefully. Society will continue to become more health-conscious in the foreseeable future, but new diets, health concerns, and taste trends are always emerging. In order to market their nutritious product lines effectively, companies need to identify sustainable ways of advertising them.

In short, companies should take advantage of current media, social, economic, and policy factors that could help launch their products, but they cannot rely on those trends to carry their product forward indefinitely. Research must be done into identifying long-range trends, and action plans need to be created that will link the new product to those trends.

How did you position and promote the new product or concept to your customers? What did the ads say?

The companies interviewed used several different techniques to position and promote their new products to customers. The QSR chain with the lower-calorie sandwiches slowly developed their advertising campaign based on reactions from the consumer. "The initial ads just advertised the exact fat content," they said, "6 grams of fat or less." The company then began to advertise its nutrition information in terms that were understandable to the consumer. They compared their products' nutritional information to that of competitors, and then stated the difference in calories in terms of physical exercise such as number of push-ups, etc. Then, in 2000, the company launched an ad campaign featuring a customer who had lost a significant amount of weight while eating a steady diet of the lower-calorie sandwiches. The company believes the ads worked because they featured a "regular guy" to whom people could relate.

Another technique used to promote these healthy products was to use carefully selected words and phrases on the packaging and menus. The aim was to *imply* healthiness without scaring consumers away by making the product seem tasteless and bland. Nabisco's print advertising campaign supporting the launch of the 100-Calorie Packs focuses on "The Joy of Snacking." The company said this "helped convey the notion that Better For You snacks can be fun, tasty, and fit into an active lifestyle and balanced diet." The company also noted: "From consumer research, the brand knew that price value was important; therefore, advertising also highlighted the per-

pouch piece count, which communicated the benefit that 100-Calorie Packs were tasty and satisfying."

The family dining chain felt that "customers do not respond well to promotions that are explicitly health-oriented." New or changed items haven't been referred to as "healthy," but instead have been pegged as "Mediterranean" or, above all, "fresh."

These two different approaches to the positioning and promotion of products resulted in extremely different effects on consumers. In one approach, the business comes straight out and tells the consumer that this product is different and better, and here's why. The information is designed to make the consumer evaluate and compare the product with the competitor's products and inevitably choose the new product based on their decision variables. With this approach, marketers must develop a set of reasons why the new product creates more value than a competitor's products, and then the entire marketing campaign must revolve around these identified points of difference. When this approach is done effectively—and the product has valuable content—consumers in the target market will recognize the merit of the product and eventually purchase it.

In the second approach, marketing tactics are implemented to affect the consumers on a much more basic level. This method concentrates on the use of catch phrases, brand recognition, and key words in the packaging and advertising of the product. Consumers are not intended to use this marketing information to make a well-thought-out decision to purchase a product, but instead to instinctively recognize certain words or symbols that convince them to buy a product. While this tactic is more subtle than the full-blown advertising campaigns of the first approach, it requires just as much research and work to get right.

What specifically did you do to make the food taste good and still be lower-calorie?

Businesses relied on creative yet simple ideas to make their food still taste good despite its healthy qualities. The QSR sandwich chain said, "When the lower-fat items were first introduced, they were plain meat and/or vegetable sandwiches. In 2000, the company started developing fat-free sauces to add more flavor, like honey mustard to go with ham."

Some businesses decided to use natural techniques to enhance the flavor of their foods. Most entrees and appetizers at Seasons 52 are either grilled or roasted over open-fire oak-burning grills that create great flavor without the need for heavy sauces. At the family dining chain, many vegetables (e.g., asparagus, broccoli, spinach) are offered in different ways— steamed and plain, sautéed in butter, with parmesan cheese, etc.—so customers can exercise their preferences.

The main choice of which technique to use in boosting flavor—e.g., specialty low-fat sauces or natural cooking techniques—depends upon the complexity of the dishes that are offered. When dealing with simple food items such as cold sandwiches and salads, it is hard to find a way to naturally develop more flavor in the ingredients. (When ham is sliced a different way it doesn't suddenly turn spicy!) Businesses that rely on simple and easy-to-prepare foods such as this may

need to develop low-calorie additives in order to create the flavor profile that will convince consumers to purchase the product.

On the other hand, higher-end restaurants and the prepared meals sections of grocery stores can use a chef's skills and knowledge to create flavorful products by cooking things different ways. For these types of businesses, it would be more valuable to invest time and money in training their chefs how to create great-tasting food without using fatty ingredients.

How did you communicate that the product was lower-calorie—or did you—without turning people off by making them think it wouldn't taste good?

All of the companies interviewed emphasized that choice of wording in the packaging was key. Nabisco says, "It's all in the name '100-Calorie Packs'—100 calories, coupled with additional key consumer points (0g trans fats; 3 grams fat or less, etc.). In addition, the trademark names delivered a taste expectation that helped counter any potential negative perceptions around good-tasting BFY products."

The family dining chain also was careful in the words it used to describe its newly renovated food choices. "Consumers themselves make the association between 'health' and promotional language like 'fresh,' 'Mediterranean,' and 'not deep fried,'" the chain's spokesperson said.

The key when deciding how to label a healthy product is to look at the consumer's mindset when he or she is deciding whether or not to buy the product. For instance, if a product is located in a grocery store, the consumer is probably thinking about value, portion size, and possibly the health characteristics of the product. The best way to encourage a consumer to buy a product in this situation would be to state the facts clearly and succinctly so that the questions running through the consumer's mind are answered.

A menu item at a restaurant needs to possess very different characteristics. When consumers are in a dining mindset they are not as focused on value, but instead they think of taste, portion size, and possibly health. Labeling must be much more subtle in this situation. Companies must find words and phrases that both convince consumers that the item will satisfy their expectations and also connote that the product has significant nutritional value.

How was the support (ads, sales force efforts, distribution, trade promotions, etc.) different than for other typical launches with which you are familiar?

Various techniques were used to support these product launches. Nabisco gave out free samples of the product so that consumers could verify the taste claims of the product for themselves. At the grocery chain, the company's Vice President for Consumer Affairs wrote about the product

line in her popular column in the chain's circulars. The QSR sandwich chain featured their print ads in health-related publications, in an attempt to penetrate the health-conscious market.

All of these techniques proved to be successful, and it shows that creative ways of product promotion must be identified in order for a product to reach its full potential. These companies took a look at what their new product's biggest obstacle to success might be, and they tackled it head on in their marketing campaigns. When developing a product in the health-conscious segment of the foodservice industry it is almost impossible to find a product that everyone will accept initially. For this reason, if a business is confident in a new product, the business must take an unbiased look at what its biggest challenges will be in getting the product out into the market, and then develop strategies that will allow the product to penetrate the shopping habits of target consumers and so succeed.

Appendix D
Selected Social Marketing and Education Efforts Relevant to Consumer Behavior and Obesity Prevention

This appendix provides summary descriptions of selected social marketing and education campaigns undertaken by the federal government and civic organizations.

Selected Government-Sponsored Initiatives

This section describes three government-sponsored initiatives in some detail, and then lists additional programs by agency.

Dietary Guidelines for Americans[222]

The *Dietary Guidelines for Americans* (DGA), first published in 1980, provide science-based advice to promote health and reduce the risk for chronic diseases through diet and physical activity. The recommendations contained within the DGA are targeted to members of the general public who are over the age of two and living in the United States. The DGA form the basis of federal food, nutrition education, and information programs. By law, the DGA are reviewed, updated if necessary, and published every five years.[223] The DGA contain examples of two eating plans that consumers can follow to meet the recommendations, and consumers are encouraged to follow the recommendations wherever they make food choices.

The U.S. Department of Health and Human Services (HHS) published a *Toolkit for Professionals*, created from the DGA, for health education experts such as doctors and nutritionists. Included in this toolkit is a section called "Eating Out with the Guidelines," which consists of tip sheets to assist consumers in making more healthful choices when eating out and helping them to understand portion size control, among other things.[224] The HHS also published an educational consumer brochure titled *Finding Your Way to a Healthier You: Based on the Dietary Guidelines for Americans*, which contains recommendations with respect to eating "on the go."[225]

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[222] U.S. Department of Health and Human Services (HHS) and U.S. Department of Agriculture (USDA), *Dietary Guidelines for Americans 2005* (6th ed.) (Washington, DC: HHS and USDA, 2005).
[223] Public Law 101-445, Title III, 7 U.S.C. 5301 et seq.
[224] HHS and USDA, *Toolkit for Professionals* (Washington, DC: USDA, 2005). See www.health.gov/dietaryguidelines/dga2005/toolkit/.
[225] HHS and USDA, *Finding Your Way to a Healthier You: Based on the Dietary Guidelines for Americans* (Washington, DC: USDA, 2005). See www.health.gov/dietaryguidelines/dga2005/document/pdf/brochure.pdf.

"5 A Day for Better Health" Campaign[226]

The national 5 A Day for Better Health program, which was initiated in 1991, is a large-scale, public/private partnership between the vegetable and fruit industry, the U.S. government, and nonprofit organizations. Its goal is to increase the average per capita consumption of vegetables and fruit in the United States to five or more servings every day. The long-range purpose is to help reduce the incidence of heart disease, cancer, and other chronic diseases through dietary improvements. Another benefit of the program, however, is its potential to reduce obesity. The program's specific objectives are to increase public awareness of the importance of eating five or more servings of vegetables and fruit every day and to provide consumers with specific information about how to incorporate more servings of these foods into their daily eating patterns.

The private side of the partnership is coordinated by the Produce for Better Health Foundation, a nonprofit organization composed of approximately 1,000 members of the fruit and vegetable industry. The public side is coordinated by the Centers for Disease Control and Prevention (CDC). The goal of the 5 A Day program coincides with one of the national health objectives for the country, which encourages the population to eat five or more servings of vegetables and fruit each day, and is also consistent with all other national dietary guidance provided by the U.S. government. Major components of the program—including point-of-sale initiatives (in supermarkets and foodservice establishments), media efforts, community programs, and research—have created a breadth of focused activity designed to change behaviors.

The "VERB It's What You Do" Campaign[227]

VERB, a part of the CDC's efforts to help reduce the national incidence of youth overweight and obesity, is a national, multicultural campaign coordinated by the CDC to encourage children ages 9-13 ("tweens") to be physically active every day. Components of the effort include paid advertising, marketing strategies, and partnership efforts. The program's website includes informational resources to help parents and professionals who serve tweens to make regular physical activity enjoyable.

Results from the first year of the campaign's activities include the following. First, the program succeeded in narrowing the gap in physical activity between girls and boys, with a 27% increase in free-time physical activity sessions among girls and a 37% decline among least-active girls in high-dose communities.[228] Second, tweens from lower-income (<$25,000) and lower-middle-income ($25,000-$50,000) households became more physically active, with a 25% increase in free-time physical activity sessions among lower-middle income households. And third, the program reached a 74% awareness level among tweens nationally.

[226] See www.cdc.gov/nccdphp/dnpa/5aday/.
[227] See www.cdc.gov/youthcampaign/.
[228] That is, in communities receiving a "high dose" of the intervention.

Additional HHS Programs

HHS

- Healthy Lifestyles/Obesity Prevention Campaign. Developed in partnership with the Ad Council, this campaign includes public service announcements and a website with lifestyle tips.[229]
- Steps to a HealthierUS.[230] A program begun in 2003 to help Americans live longer, better, and healthier lives. One component involves efforts to reduce obesity and to address poor nutrition and physical inactivity, with a focus on identifying, supporting, and promoting programs that encourage small behavior changes. Through a five-year cooperative agreement program, states, cities, and tribal entities receive funds to implement chronic disease prevention efforts focused on reducing the burden of diabetes, overweight, and obesity.

Food and Drug Administration (FDA)

- The Power of Choice: Helping Youth Make Healthy Eating and Fitness Decisions.[231] Intended for after-school program leaders working with young adolescents. Developed by the FDA and the U.S. Department of Agriculture (USDA) Food and Nutrition Service.
- Consumer education on diet and healthy lifestyles:
  - *FDA Consumer* magazine, containing articles on nutrition and other health-related issues[232]
  - FDA Nutrition Education web postings (e.g., Facts about Weight Loss Products and Programs)[233]
  - Issuance of papers on obesity and nutrition, including a paper on restaurant menus and menu claims regarding "low-fat" and "heart-healthy" foods

Indian Health Service (IHS)

- Nutrition and Dietetics Training Program.[234] Provides a wide range of nutrition training to IHS, tribal, and urban program health professionals and paraprofessionals, including tribal cooks, community health representatives, nutrition professionals, registered dietitians, health educators, nurses, substance abuse program staff, and school staff.

Centers for Disease Control and Prevention (CDC)

- Making It Happen: School Nutrition Success Stories.[235] This joint product of the CDC and the USDA tells the stories of 32 schools and school districts that have implemented innovative strategies to improve the nutritional quality of foods and beverages offered and sold on school campuses. The most consistent theme emerging from these case studies is that students will buy and consume healthful foods and beverages—and schools can make money from healthful options.

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[229] See www.smallstep.gov.
[230] See www.healthierus.gov/steps/.
[231] See www.fns.usda.gov/tn/Resources/power_of_choice.html.
[232] See www.fda.gov/fdac/default.htm.
[233] See www.cfsan.fda.gov/~dms/wgtloss.html.
[234] See www.ihs.gov/MedicalPrograms/Nutrition/.
[235] See www.fns.usda.gov/tn/Healthy/execsummary_makingithappen.html.

National Institutes of Health (NIH)

- Strategic Plan for NIH Obesity Research.[236] Includes investigation of intervention programs.
- Obesity- and nutrition-related information via MEDLINE,[237] primarily through links to relevant research studies.
- Special applications of the National Heart, Lung, and Blood Institute—Portion Distortion[238] and Menu Planner.[239]

Office of Public Health and Science

- The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity[240]

Additional USDA Programs

Center for Nutrition Policy and Promotion

- MyPyramid.[241] A widely recognized nutrition education tool that translates nutritional recommendations into the kinds and amounts of food to eat each day. The MyPyramid Tracker is an online dietary assessment tool that includes nutrition messages and evaluates dietary intake as compared to the Food Guide Pyramid. The Tracker also includes recipes and tips for healthy eating.
- Food and Nutrition Information Center (FNIC).[242] The website includes sections on dietary guidelines, the food pyramid, food composition, dietary supplements, food safety, and healthy school meals. The FNIC's mission is to collect and disseminate information about food and human nutrition.

Selected Civic-Sector Programs

The Corner Store Campaign[243]

The Food Trust—a nonprofit organization aimed at improving access to healthy food—is conducting a "Corner Store Campaign," a program that seeks to reduce the incidence of diet-related disease and obesity by improving the snack food choices made by adolescents in corner stores. The Corner Store Campaign uses social marketing and education to increase demand for healthy snacks, works with the food industry to increase the availability of healthier choices in stores, and promotes participation in the school meals programs.

[236] See www.obesityresearch.nih.gov/About/strategic-plan.htm.
[237] See health.nih.gov/search.asp?category_id=29 and www.nlm.nih.gov/medlineplus/.
[238] See http://hin.nhlbi.nih.gov/portion/.
[239] See http://hin.nhlbi.nih.gov/menuplanner/menu.cgi.
[240] See www.surgeongeneral.gov/topics/obesity/calltoaction/CalltoAction.pdf.
[241] See www.mypyramid.gov/.
[242] See www.nalusda.gov/fnic/.
[243] See www.thefoodtrust.org/php/programs/corner.store.campaign/php.

The program's Snack Smart social marketing campaign is currently working with specific stores in Philadelphia. Snack Smart marketing materials have been placed on refrigerator doors, snack racks, and the front doors and windows of each participating store. A Snack Smart Snack Guide with pictures of all snacks that meet specific criteria was placed on counters and walls or hung from ceilings. The Snack Guide provides kids with a clear and easy way to determine which are the healthier snacks and beverages.

The Corner Store Campaign also includes a Healthy Community Stores National Network, a national network of programs and institutions that are working to improve the availability and promotion of healthy food choices through food stores, particularly to disadvantaged and low-income populations.

"1% Or Less" Campaign[244]

The 1% Or Less campaign is a health education program that aims to reduce saturated fat consumption by encouraging adults and children over two years of age to switch from drinking whole or 2% milk to 1% or fat-free (skim) milk. Rather than encouraging people to overhaul their entire diet or lifestyle all at once, the campaign focuses on this concrete and implementable message.

The Center for Science in the Public Interest—a Washington, DC-based nonprofit organization—has sponsored numerous 1% Or Less campaigns in communities nationwide. 1% Or Less campaigns can include:

- news coverage and paid ads on television, the radio, and billboards, and in newspapers;
- milk taste tests and nutrition presentations at supermarkets, worksites, schools, churches, and other community organizations;
- signs in supermarket dairy cases that promote low-fat milk; and
- school activities and contests.

Over the course of the seven-week pilot campaign in Clarksburg, West Virginia, low-fat milk intake doubled—from 18% to 41% of supermarket milk sales. These results held a year after the campaign had ended. The total cost of the campaign was about 22 cents per person.[245]

Active for Life Campaign Demonstration Project[246]

The AARP conducted an "Active for Life Campaign," a social marketing project aimed at increasing the physical activity of people aged 50 and older. Funded under the Robert Wood Johnson Foundation's Active for Life program, the campaign was conducted in two demonstration sites—Richmond, Virginia, and Madison, Wisconsin—from 2002 through 2004. The AARP worked with a range of partners in these communities.

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[244] See www.cspinet.org/nutrition/1less.htm.
[245] B. Reger, et al. "1% or Less: A Community-Based Nutrition Campaign," *Public Health Reports* 113 (1998): 410-419.
[246] See www.activeforlife.info/default.aspx.

The goal of the Active for Life Campaign was to increase awareness of the benefits of physical activity and increase physical activity levels in target populations. The campaign promoted the specific exercise goal for older adults of moderate physical exercise for at least 30 minutes a day, five days a week.

The marketing communications included paid advertising on television and the radio and in print media. Direct mail to AARP members also encouraged participation in Active for Life activities. Project staff developed community resources guides, a handbook, and a coordinators' guide for partners involved in the campaign.

The results of these marketing communications were as follows.

- At six months, a survey found small positive changes in older adults' awareness of and attitudes toward exercise in the two pilot sites, along with preliminary indications that behavior was beginning to change.
- One year after the launch, the survey indicated that the campaign was having measurable effects on the 50-and-older populations in both Madison and Richmond. Both cities showed modest increases in overall rates of physical activity among those 50 and older and higher rates of participation in community-based exercise events than was the case prior to the campaign. However, there was a relatively low recall of Active for Life advertising in the two cities and an absence of any change in residents' reported exposure to exercise information.
- Two years after the inception of the Active for Life campaign, adults 50 and older in Madison maintained modest behavioral and knowledge changes. But the positive changes evident in Richmond after one year were no longer evident after two years.

Appendix E
Summary of Key Government Efforts to Collect Data on Consumer Behavior and Away-From-Home Foods

This appendix summarizes the federal government's efforts to collect data on consumer behavior and away-from-home foods. These efforts have been and are being conducted by agencies within the U.S. Departments of Heath and Human Services, Agriculture, Labor, and Education.

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention

National Health and Nutrition Examination Survey

The National Health and Nutrition Examination Survey (NHANES) is a program of studies designed to assess the health and nutritional status of adults and children in the United States. The survey is unique in that it combines interviews and physical examinations. The NHANES program began in the early 1960s and has been conducted as a series of surveys focusing on different population groups or health topics. In 1999, the survey became a continuous program that will have a changing focus on a variety of health and nutrition measurements to meet emerging needs. The survey examines a nationally representative sample of about 5,000 persons each year. These persons are located in counties across the country, 15 of which are visited each year.

The NHANES detailed interview includes demographic-, socioeconomic-, dietary-, and health-related questions. The examination component consists of medical and dental examinations, physiological measurements, and laboratory tests administered by medical personnel.

NHANES included the following question specifically related to away-from-home food consumption in its 2001-2002 survey questionnaires:

- On average, how many times per week {do you/does sample person} eat meals that were prepared in a restaurant? Please include eat-in restaurants, carry-out restaurants, and restaurants that deliver food to your house. ("Meals" mean more than a beverage or snack food like a candy bar or bag of chips.)

United States Department of Agriculture (USDA), Food Surveys Research Group[247]

What We Eat in America

What We Eat in America is the dietary interview component of NHANES. As a precaution to protect the confidentiality of survey participants, single-year data from NHANES are not released for public use. For that reason, only Day 1 interview data are included in the present release. Neither the data collected on Day 2 in What We Eat in America 2002 nor Day 1 information that was only collected in 2002 (e.g., the place where each food was obtained) will be publicly released. Restricted data, such as those just mentioned, may be made available at the Research Data Center located at the National Center for Health Statistics (NCHS) headquarters in Hyattsville, Maryland. A research proposal for using the restricted data must be submitted to the NCHS for review and approval.

Continuing Survey of Food Intakes by Individuals

The 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals (CSFII) collected information on the following topics, among others.

Food- and nutrient-related variables:
- Two nonconsecutive days of dietary intake using in-person, 24-hour recalls
- Food intakes in grams: by food item and by food groups and subgroups defined by the USDA's Agricultural Research Service. Intakes of food energy and 52 dietary components (including 19 individual fatty acids).
- Intakes of food energy and 15 nutrients as percentages of the 1989 RDAs

Sources of food:
- Where was the item obtained: store, restaurant, fast-food outlet, etc.
- Was the food item eaten at home?
- Was the food item ever at your home before you ate it?

Food shopping practices:
- Amount spent at grocery stores, on nonfood items, at specialty stores, and at fast-food or carryout places for food brought into the home
- Amount of money spent for food bought and eaten away from home

[247] See www.ars.usda.gov/main/site_main.htm?modecode=12-35-50-00.

U.S. Department of Health and Human Services, Food and Drug Administration (FDA)

FDA Health and Diet Survey

The FDA's Health and Diet Survey (HDS) is a periodic telephone survey conducted by the FDA's Center for Food Safety and Applied Nutrition. Its purpose is to measure and monitor public awareness, knowledge, attitudes, and reported behavior related to food and nutrition. Topics in previous surveys have included food labels, fats, and dietary supplements. Data have been used to meet the FDA's information needs on these topics and to evaluate national programs such as the National Cholesterol Education Program.[248]

The HDS includes the following questions regarding meals prepared in restaurants:

- First of all, think about all of the meals you eat in a typical seven-day week. Meals include breakfast, lunch, and dinner. About how many meals do you eat in a typical week?
- About how many of the (number reported above) meals you eat in a typical week are prepared in a restaurant? Please include eat-in restaurants, carry-out restaurants, and restaurants that deliver food to your house.

U.S. Department of Labor, Bureau of Labor Statistics

American Time Use Survey[249]

The American Time Use Survey (ATUS) measures the amount of time people spend doing various activities, such as paid work, childcare, volunteering, commuting, and socializing. The ATUS is a nationally representative sample drawn from households completing their final month of interviews for the Current Population Survey. The ATUS uses computer-assisted telephone interviewing to conduct the survey.

Potential data sources include:

1. Records activity. For example, people identify the time spent in the following activities:
   a. Sleeping
   b. Grooming (self)
   c. Watching TV
   d. Working at main job
   e. Working at other job
   f. Preparing meals or snacks
   g. Eating and drinking

[248] See www.cfsan.fda.gov/~comm/crnutri.html.

[249] See www.bls.gov/tus/home.htm.

h. Cleaning kitchen
i. Doing laundry
j. Grocery shopping
k. Attending religious services
l. Paying household bills
m. Caring for animals and pets

2. Simultaneous activities can be recorded (i.e., eating and watching TV).

While away-from-home foods are not part of the activity question, a follow-up question helps identify location. For example, the respondent would be asked, "Where were you while eating and drinking?" Answers could include:

1. Home or yard
2. Workplace
3. Someone else's home
4. Restaurant/bar
5. Place of worship
6. Grocery store
7. Other store/mall
8. School
9. Outdoors away from home
10. Library

If the respondent has not identified any time spent eating or drinking, there is a prompt to state, "You did not report any eating or drinking yesterday. Did you do any eating or drinking yesterday as your main activity?" If the respondent answers yes, then the time diary is edited.

U.S. Department of Education, National Center for Education Statistics

Early Childhood Longitudinal Study[250]

Kindergarten Cohort

The Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K) is an ongoing study that focuses on children's early school experiences beginning with kindergarten and following children through 12th grade. The ECLS-K provides descriptive information on children's status at entry to school, their transition into school, and their progression through 12th grade. The longitudinal nature of the ECLS-K data enables researchers to study how a wide range of family, school, community, and individual factors are associated with school performance.

[250] See http://nces.ed.gov/ecls/.

The 5th-grade year includes a child food consumption questionnaire, but does not differentiate foods consumed by location. Questions are asked about food purchased at school.

Birth Cohort

The birth cohort of the Early Childhood Longitudinal Study (ECLS-B) looks at children's health, development, care, and education during the formative years from birth through kindergarten entry. It is comprised of a nationally representative sample of 14,000 children born in the year 2001.

The parent interview includes questions regarding the frequency of participating in certain activities with the child, including eating at a restaurant. A sample question is:

1. In the past month, how often did you do the following things with {CHILD}?
   a. Play chasing games?
   b. Play with games or toys indoors with {CHILD}{and {TWIN}}?
   c. Go to a restaurant or out to eat with {him/her/them}?
   d. Take {him/her/them} outside for a walk or to play in the yard, a park, or a playground? Was it more than once a day, about once a day, a few times a week, a few times a month, rarely, or not at all?

Appendix F
The Design and Focus of Needed Consumer Research

The Forum proposes the following design elements and substantive questions to guide the development of needed consumer research.

Key Design Elements

For the purposes of gathering and assessing data, consumers should be segmented according to important demographic and behavioral variables, such as:

- Age
- Sex
- Education
- Income (including disposable income for food)
- Ethnicity
- Geographic location
- Body mass index
- Family size and ages of children
- How often they frequent foodservice venues (including by total visits and by type of venue)
- Whether they follow particular weight-control practices
- Whether they maintain a diet due to a particular disease
- Whether they use nutrition information in deciding what or how to eat
- Who in the household most often makes decisions regarding food choice
- Amount of time spent by household members in school and daycare

The research approaches employed might depend largely on quantitative methods for understanding behavioral choices and environmental influences. However, innovative qualitative methods may help to identify immediate determinants of choice of eating venue, and choices once inside a venue. Methods such as focus groups may be useful in generating lists of barriers to healthy eating or reasons why one venue is chosen over another, or for assessing consumer response to messages. The results could then be used to generate items for designing quantitative measures, such as survey instruments for use with large target populations. Research should be designed to identify repetitive patterns of behavior that contribute to obesity, so that once an intervention is designed, consumers will receive a sufficient "dose" of it.

Key Questions to Be Addressed through Further Research

Forum members propose that several important questions need to be addressed through consumer research and analysis, as follows.

1) **Understanding what choices consumers are making**
   - Who is ordering what? What are they paying for it?
   - Where are they buying it?
   - How they are eating it (e.g., sharing, eating some and saving some for later)?
   - Where are they eating it (e.g., in store, at home, in car, elsewhere)?
   - What is the nutrient content?
   - Who is buying "healthy" foods (or at least lower-calorie options)? New customers or previous ones?
   - How does one meal occasion affect the rest of the day/week? How, if at all, do consumers compensate?
   - Is it important to distinguish how adults behave when buying for themselves vs. parents buying for children?

2) **Understanding why people are making those choices—i.e., the drivers of food choice and eating behavior**
   - What are the determinants of where consumers choose to go?
   - What is the relative importance of lower-calorie options in choice of restaurant (compared to convenience, value, etc.)?
   - What drives specific food choices once a venue has been selected?
   - What psychological mechanisms drive food consumption?
   - How do convenience and availability influence the consumption of desired "healthful" foods?
   - What unique needs are being fulfilled by away-from-home foods as opposed to food prepared at home?
   - Are there identifiable barriers that discourage healthy energy intake?
   - Why do some consumers fail to make use of their own knowledge or beliefs regarding how they should eat to manage their weight?
   - In what forums can education take place (schools, places of business, other)?
   - Does more choice lead to eating more calories?
   - What do the data show about behavior patterns of individuals who successfully maintain healthy energy-intake levels and healthy weight? Are their knowledge and skills transferable to other individuals? (For example, does eating alone, at one's desk, or while driving increase consumption of calories?)

3) **Understanding how to motivate and equip consumers through marketing and education**
   - What do consumers say are motivating factors in changing their behavior?
   - What can be learned anecdotally from product innovations over the past five years that have successfully and positively changed, or have failed to change, diet- and nutrition-related attitudes and behaviors? What worked, over what timeline, and why?
   - What inhibits consumers who already know what they "should" be doing or eating from transforming that knowledge into action?
   - Since virtually everyone has difficulty estimating serving sizes accurately, which methods would be most successful for teaching individuals about appropriate portions?
   - What alternative "value proposition" might successfully appeal to consumers while being consistent with healthy weight management?

4) **Understanding consumer acceptance of product innovations relevant to weight management**
   - What is the best way (or ways) to promote customer acceptance of new/changed products?
   - How can low-calorie and less-calorie-dense options best be marketed to different population segments?
   - How do consumers respond to changes in portion size, greater choice of portion size, and changes in calorie density? What are the thresholds beyond which consumers notice such changes?
   - What kinds of unpublicized nutrition changes can be effective with consumers? What are the barriers to/opportunities for silent change?
   - Under what circumstances can fruits and vegetables be substituted successfully for more-calorie-dense and/or less-nutrient-dense items?
   - How do consumers respond to greater choice of portion size, visual cues to help them gauge how much they've eaten, and lower-calorie plate composition and menu-pairing options?

Appendix G
Summary of Survey Results

The Keystone Forum's Products, Menu Items, and Meals Work Group developed an informal, internet-based survey that was administered through the efforts of individual work group members who volunteered to share the survey with their colleagues. Nearly all of those participating in the survey were from the on-site/contract-feeding sector of the away-from-home foodservice industry. Because this did not reflect an adequately broad sample, Forum participants did not draft specific recommendations based on the results of the survey. Instead, the group agreed that an additional survey conducted outside of the purview of the Forum would be appropriate and helpful, as evidenced by Recommendation 3.4 in Chapter 3. What follows is a brief description of the Forum's survey and the summary of results.

Overview of the Survey

The purpose of the survey was to gather information from chefs and restaurant owners about their experiences helping customers to manage their weight and health, particularly via product reformulation and innovation. Individual restaurateurs' experiences with refashioning dishes and menus is often not disseminated and has not crossed over into academic research, regulatory policy, or public health practice; this survey was intended to open that pathway.

The survey was designed to cover the following areas:
1) Factors influencing the success of healthful items
2) How the industry currently makes healthy menu modifications
3) Effective ways to promote changes
4) Barriers to introducing healthy items
5) Restaurateurs' perceptions of factors that influence body weight
6) Demographic information

By collecting this information from a broad array of chefs, restaurant owners, managers, and others across the spectrum of industry sectors, Forum participants believe that researchers, public policy officials, and industry will gain a better understanding of what changes the restaurant industry might be encouraged to undertake in the future. This type of information could provide much-needed guidance to the industry as they increasingly look for ways to help consumers manage their weight.

Summary of Results[251]

Five areas of inquiry were used to assess the best practices of foodservice providers in helping customers achieve or maintain a healthy weight. First, respondents were asked what factors and

[251] Thanks to Collin Payne, PhD, Cornell University, for his work in compiling the survey results.

emphases would lead to a successful healthy menu item. Second, respondents were asked to indicate what, if any, modifications of an existing menu item (or parts of a menu item) could be successful in helping customers achieve or maintain a healthy weight. Third, respondents were asked what they thought were effective ways to promote menu items that were intended to help customers achieve or maintain a healthy weight. Fourth, respondents were asked about the perceived barriers to offering a greater number of menu items that help customers achieve or maintain a healthy weight. Lastly, respondents were asked about their knowledge of factors that have an influence on body weight. The results of each area of inquiry are discussed in turn below, followed by tables providing more detail.

Area 1. What Factors Influence the Success of a Healthy Menu Item?

"Taste" was the highest-rated response for foodservice providers in terms of the factor and emphasis used for successful, healthy menu items. "Value," "positioning" (e.g., health vs. taste vs. freshness), and "freshness" were the respective factors and emphases rated as next important and successful. "Advertising" and "healthy" were rated as the respective least important and least successful of all factors and strategies.

Area 2. How Would You Make Healthy Menu Modifications?

"Actively promote changes," was rated more highly as a way to promote changes to menu items than "make the changes without active promotion," and "introduce a new menu item," was rated more highly than "modify/change an existing menu item." "Reduce fat," "add vegetables," and "add fruit" were the highest-rated strategies used to modify existing menu items to be healthier. In contrast, "add fiber," "reduce carbohydrates," and "reduce protein" were the lowest rated. "Sides," "entrees," and "beverages" were rated as the easiest courses or meal parts to modify to be healthier, while "bundled meals," "appetizers," "snacks," and "desserts" were rated as the most difficult.

Area 3. What Are the Most Effective Ways to Promote Changes?

"Other on-site materials" (e.g., tray inserts, table tents, brochures, etc.), "menus," and "menu boards" were the highest-rated effective ways to promote healthy menu items, while "websites," "print ads," and "TV/radio ads" were the lowest rated.

Area 4. What Are the Barriers to Introducing Healthy Items?

"Staff nutrition knowledge," "consumer preference," and "staff skill and knowledge" were the highest-rated barriers to offering a greater number of healthy menu items, while "operational challenges," "ingredient pricing," "time," and "ingredient availability" were the lowest rated.

Area 5. Which Factors Most Influence Body Weight?

"Calories consumed," "total fat consumed," and "carbohydrates consumed" were the highest-rated influences on body weight, while "protein consumed," "water consumed," and "fiber consumed" were the lowest.

Detailed Survey Results

Survey respondents were asked to use a scale of 1 to 9, wherein 9 was "very important" and 1 was "not at all important."

Area 1. What Factors Influence Success?

Table 1.

Below are factors that might determine the success of menu items to help customers reduce or maintain a healthy weight. In your experience, please rate how important each is to the success of this menu item.	All	Chef (n = 37)	Manager (n = 62)	Other (n = 12)	F
How important is taste?	8.6	8.6	8.5	8.6	0.1
How important is value?	7.5	7.6	7.6	7.5	0.0
How important is positioning (e.g., health versus taste versus freshness)?	7.2	7.2	6.9	7.7	1.5
How important is advertising?	6.8	7.0	6.6	6.9	0.7

- Taste was the single most important rated factor in the success of a healthy menu item.
- Advertising was the single least important rated factor in the success of a healthy menu item.
- There were no significant differences between comparison groups in ratings.

Table 2.

Please rate how successful you think each of the different types of emphases would be for this item.	All	Chef (n = 37)	Manager (n = 62)	Other (n = 12)	F
A Taste-related emphasis?	8.2	8.0	7.9	8.6	2.2
A Freshness emphasis?	8.0	8.2	7.9	8.0	0.6
A Healthy emphasis?	6.7	6.8	6.8	6.5	0.2

- A taste-related emphasis was rated the single most successful.
- A healthy emphasis was rated the single least successful.
- There were no significant differences between comparison groups in ratings.

Area 2. How Would You Make Healthy Menu Modifications?

Table 3.

Suppose you are modifying an existing menu item to help customers achieve or maintain a healthy weight. Please rate how you would promote the changes.	All	Chef (n = 37)	Manager (n = 62)	Other (n = 12)	F
Actively promote the changes	7.3	7.8	7.9	6.3	4.2
Make the changes without active promotion	3.4	3.5	2.8	4.0	1.9

- Respondents rated "actively promoting changes," in contrast to "making changes without active promotion" as the better strategy for promoting changes to an existing item to make it healthier.
- "Chefs" and "managers" rated "actively promoting the changes" as a significantly more successful strategy than the "other" category. ("Other" includes nutritionists and others.)

Table 4.

Suppose you were thinking of modifying an existing menu item or of launching a new menu item that was intended to help customers achieve or maintain a healthy weight. Please rate how successful you think each option would be.	All	Chef (n = 37)	Manager (n = 62)	Other (n = 12)	F
Introduce a new menu item	7.8	7.6	7.9	8.0	.71
Modify/Change an existing menu item	5.6	5.9	6.1	4.9	1.8

- "Introducing a new menu item," in contrast with "modifying/changing an existing menu item," was rated as a better option for helping customers achieve or maintain a healthy weight.
- There were no significant differences between comparison groups in ratings.

Table 5.

When modifying an existing menu item to help customers achieve or maintain a healthy weight, please rate how successful you think the following strategies would be.	All	Chef (n = 37)	Manager (n = 62)	Other (n = 12)	F
Reduce fat	7.2	7.4	7.0	7.3	0.7
Add vegetables	6.7	7.2	6.8	6.1	3.4
Add fruit	6.3	6.3	6.3	6.2	0.0
Add fiber	5.9	5.9	6.0	5.8	0.1
Reduce carbohydrates	5.7	6.0	6.3	4.9	2.6
Reduce protein	3.8	3.9	3.9	3.5	0.2

- Respondents rated "reducing fat" as the single most important strategy in helping customers achieve or maintain a healthy weight.
- Respondents rated "reducing protein" as the single least important strategy in helping customers achieve or maintain a healthy weight.
- "Chefs" and "managers" rated "adding vegetables" as a significantly more successful strategy than the "other" group. ("Other" includes nutritionists and others.)

Table 6.

How easy is it to modify each of the following courses or meal parts so they help customers achieve or maintain a healthy weight?	All	Chef (n = 37)	Manager (n = 62)	Other (n = 12)	F
Sides	6.9	6.9	6.9	6.8	0.0
Entrees	6.8	7.1	7.3	6.0	3.4
Beverages	6.8	6.9	6.1	7.4	1.7
Bundled Meals	6.5	6.7	6.9	6.0	1.1
Appetizers	5.6	6.4	5.5	5.0	2.7
Snacks	5.6	5.3	6.1	5.5	2.0
Desserts	4.4	4.7	5.2	3.4	3.2

- Respondents rated "sides" as the most easily modified courses or meal parts that would help customers achieve or maintain a healthy weight.
- Respondents rated "desserts" as the least easily modified courses or meal parts that would help customers achieve or maintain a healthy weight.
- "Chefs" and "Managers" rated "entrees" and "appetizers" as a significantly more easily modified courses or meal part than the "other" group. ("Other" includes nutritionists and others.)

Area 3. What Are the Most Effective Ways to Promote Changes?

Table 7.

What are effective ways to promote menu items intended to help customers achieve or maintain a healthy weight?	All	Chef (n = 37)	Manager (n = 62)	Other (n = 12)	F
Other on-site materials (e.g., tray inserts, table tents, brochures, etc.)	7.0	7.0	7.1	7.0	0.0
Menus	7.0	7.4	7.1	6.3	1.9
Menu boards	6.9	7.0	7.4	6.4	1.7
Websites	6.1	6.2	5.7	6.3	0.8
Print Ads	5.8	5.9	5.8	5.9	0.0
TV/Radio Ads	5.2	5.3	4.8	5.4	0.6

- Respondents rated "other on-site materials" and "menus" as the most effective ways to promote menu items intended to help customers achieve or maintain a healthy weight.
- Respondents rated "TV/radio ads" as the least effective way to promote menu items intended to help customers achieve or maintain a healthy weight.
- There were no significant differences between comparison groups in ratings.

Area 4. What Are the Barriers to Introducing Healthy Items?

Table 8.

What are the barriers to offering a greater number of menu items that help customers achieve or maintain a healthy weight?	All	Chef (n = 37)	Manager (n = 62)	Other (n = 12)	F
Staff nutrition knowledge	7.1	6.4	6.9	7.9	2.6
Consumer preferences	7.0	6.9	6.6	7.4	0.9
Staff skill and training	6.5	5.8	6.1	7.6	2.6
Operational challenges	6.1	5.3	5.4	7.6	5.1
Ingredient pricing	6.0	5.9	5.9	6.3	0.1
Time	5.3	5.0	5.7	5.2	1.3
Ingredient availability	5.1	4.8	5.1	5.5	0.3

- Respondents rated "staff nutrition knowledge" as the most significant barrier to offering a greater number of menu items that help customers achieve or maintain a healthy weight.
- Respondents rated "ingredient availability" as the least significant barrier to offering a greater number of menu items that help customers achieve or maintain a healthy weight.
- "Chefs" and "managers" rated "operational challenges" as a less significant barrier than the "other" group. ("Other" includes nutritionists and others.)

Area 5. Which Factors Most Influence Body Weight?

Table 9.

In your opinion, which one of the following factors has an influence on body weight?	All	Chef (n = 37)	Manager (n = 62)	Other (n = 12)	F
Calories consumed	8.3	8.0	8.1	8.8	1.8
Total fat consumed	8.0	8.3	7.9	7.8	1.6
Carbohydrate consumed	7.0	7.1	7.2	6.7	0.5
Protein consumed	6.0	6.0	5.5	6.5	2.4
Water consumed	5.8	5.1	5.9	6.5	1.4
Fiber consumed	5.7	5.1	5.7	6.3	1.4

- Respondents rated "calories consumed" as the most significant influence on body weight.
- Respondents rated "fiber consumed" as the least significant influence on body weight.
- There were no significant differences between comparison groups in ratings.

Demographics

Age	Frequency	Percent
18-30	7	6.3
31-50	91	82.0
51 and over	13	11.7
Total	111	100.0

Gender	Frequency	Percent
Female	41	36.9
Male	70	63.1
Total	111	100.0

Years in the restaurant industry	Frequency	Percent
10 to 14	16	14.4
14-19	25	22.5
20+	63	56.8
5 to 9	6	5.4
Less than 5	1	.9
Total	111	100.0

Where are you located?	Frequency	Percent
Undetermined	3	2.7
Central	20	18.0
Northeast	36	32.4
Southeast	23	20.7
West	29	26.1
Total	111	100.0

How would you characterize your restaurant?	Frequency	Percent
Undetermined	1	.9
Buffet-style self-serve	2	1.8
Casual/Family restaurant	1	.9
Fine dining	4	3.6
On site/contract feeding	92	82.9
Other	9	8.1
Quick service/fast food	2	1.8
Total	111	100.0

Appendix H
Summary of National Polls Regarding Consumer Interest in Nutrition Information for Away-from-Home Foods

Question	Poll	% Supportive/Agree	% Disagree
Restaurants should make nutrition information available for all menu items	ARAMARK Corp., 2005[252]	83	
Support putting calorie info on menu boards at fast-food restaurants	*Advertising Age*, 2005[253]	72	
Support requiring restaurants to list nutrition info—such as calories—on menus	Harvard Forums on Health, 2003[254]	62	
Support requiring fast-food restaurants to display the calorie content of their foods on menus and menu boards	Center for Science in the Public Interest, 2003[255]	67	23
Support a law requiring restaurants to list the calorie count and fat content of all items on their menus	Time/ABC, 2004[256]	61	
Support requiring fast-food and chain restaurants to post nutritional information, such as caloric, fat, and sugar content, on their menus	California Endowment[257]	87	12

[252] C. Malone and J. Bland-Campbell (ARAMARK), *New Insights on the Away-From-Home Eating Patterns and Nutritional Preferences of Americans*, presentation at the North American Association for the Study of Obesity Annual Scientific Meeting, October 17, 2005. (Presenting results of an online nationwide survey of 5,279 adults.) See www.aramark.com/CaseStudyWhitePaperDetail.aspx?PostingID=420&ChannelID=221.

[253] Lightspeed Research, national survey commissioned by *Advertising Age* and published March 21, 2005, www.lightspeedresearch.com/pdffiles/9adage-mared-master.pdf, accessed March 18, 2006.

[254] Lake, Snell, Perry & Associates, "Obesity as a Public Health Issue," a poll commissioned by the Harvard Forums on Health in 2003, with 1,002 respondents nationwide, www.phsi.harvard.edu/health_reform/poll_results.pdf, accessed March 18, 2006.

[255] Global Strategy Group, "Menu Board Question," a poll commissioned by the Center for Science in the Public Interest in 2003 with a nationally representative sample of 600 respondents, http://cspinet.org/new/pdf/census_menu_board_question.pdf, accessed March 18, 2006.

[256] Time/ABC News poll, conducted May 10-16, 2004, with 1,202 respondents nationwide.

[257] Field Research Corporation, "A Survey of Californians about the Problem of Childhood Obesity," a poll commissioned by the California Endowment in November 2003 with 1,068 respondents in California, www.calendow.org/reference/publications/ disparities_in_health.stm, accessed March 18, 2006.

Appendix I
Review of Selected Studies: The Impact of Nutrition Information on Menu Item Selection

The standardized "Nutrition Facts" panel was one of the primary outcomes of the 1990 federal Nutrition Labeling and Education Act (NLEA). The panel, found on most packaged food products, lists information on the levels of calories, total fat, saturated fat, trans fat, sodium, other macronutrients, and key vitamins and minerals present in the food. While the NLEA covers packaged foods, food prepared for immediate consumption—such as restaurant meals, carryout foods, and foods served on airplanes or in cafeterias—was not included in these requirements.

Rising obesity rates have raised concern among many people in the public health, public policy, and medical fields. Consumers spent approximately 46% of their food budget in 2002 on away-from-home foods,[258] as compared to 26% in 1970. Food prepared outside the home tends to be higher in calories than foods eaten in the home; while away-from-home foods comprise 27% of the meals and snacks consumed by the average American, they provide 34% of the calories.[259] The wide prevalence of overweight and obesity in the United States and the substantial number of calories obtained by Americans from away-from-home foods has given rise to the following question: "Does away-from-home food contribute to overweight and obesity in the U.S.?" And, if it might or does, "How might the provision of nutrition information regarding foods prepared away from home influence Americans' food choices? Would such information aid consumers in making lower-calorie or smaller-portioned food choices?"

A review of existing literature on this topic reveals that additional research is needed to better understand how consumers do or would react to, understand, and use nutrition information in the away-from-home foods setting. That said, that there may be important policy reasons to take action (e.g., right to know, do no harm, act now in the face of uncertainty due to the magnitude of the problem), even given the limited knowledge we have to date on these issues.

The literature review in this appendix contains three elements: (1) a review of studies that have examined the effects of nutrition information provision in away-from-home food settings; (2) a review of research that has examined the effects of claims and symbols on consumers' behaviors in these settings; and (3) a review of studies regarding unintended consequences and how to provide nutrition information.

[258] J.N. Variyam, *Nutrition Labeling in the Food-Away-From-Home Sector: An Economic Assessment*, Economic Research Report #4 (Washington, DC: Economic Research Service (ERS), 2005).
[259] B. Lin, J. Guthrie, and E. Frazao, *Away-From-Home Foods Increasingly Important to Quality of American Diet,* Agriculture Information Bulletin #749 (Washington, DC: ERS, 1999.)

Summary of Findings: Influence of Nutrition Information Provision

The following studies assessed whether consumers could accurately estimate the caloric content of their food choices, and, when reliable nutrition information was provided, how it affected people's food choices.

Burton and Creyer (2004)[260]

This series of laboratory studies demonstrated that many consumers have very little knowledge of the high levels of calories, fat, and saturated fat found in many popular, less-healthful restaurant items. For example, for some items such chicken fajitas and chef salad, actual calorie levels were twice what consumers expected. When levels of calories, fat, and saturated fat substantially exceeded consumers' expectations, the provision of nutrition information had a significant negative effect on product attitude, purchase intention, and choice. The authors suggest that the provision of nutrition information on restaurant menus could potentially have a positive impact on public health by reducing the consumption of less-healthful menu items.

Burton, et al. (2006)[261]

Burton and his colleagues explored how much the average consumer knows about the calories, fat, and other macronutrient levels found in foods served at restaurants. Their results show that consumers substantially underestimated the levels of calories, fat, saturated fat, and cholesterol found in many less-healthful menu items. When objective, quantitative nutrition information was provided, consumers had more unfavorable attitudes towards the less-healthful menu options. Consumers' purchase intentions for the less-healthful items were also significantly diminished by the provision of nutrition information.

Backstrand, et al. (1997)[262]

This study, conducted by the Center for Science in the Public Interest and New York University, found that even well-trained nutrition professionals could not accurately estimate the calorie content of typical restaurant meals. Although the dietitians were able to accurately estimate the caloric content of a cup of whole milk (the control in the study), they consistently underestimated the calories in restaurant foods and meals. Their estimations were off by large amounts—by 200 to 600 calories. For example, when shown a typical dinner-house hamburger and onion rings, the dietitians on average estimated that it had 865 calories, when it actually contained 1,550 calories. Since not even experts in the field of nutrition are able to accurately estimate the caloric content of restaurant foods, consumers are unlikely to do better.

Conklin, Cranage, and Lambert (2005)[263]

Conklin, Cranage, and Lambert examined the use of nutrition and ingredient information by college freshmen at the point of sale in campus dining facilities. Results showed that women

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[260] S. Burton and E.H. Creyer, "What Consumers Don't Know Can Hurt Them: Consumer Evaluations and Disease Risk Perceptions of Restaurant Menu Items," *Journal of Consumer Affairs* 38, no. 1 (2004): 121-145.
[261] S. Burton, et al., "Attacking the Obesity Epidemic: An Examination of the Potential Health Benefits of Nutrition Information Provision in Restaurants," *American Journal of Public Health,* forthcoming (2006).
[262] J. Backstrand, et al., *Fat Chance* (Washington, DC: Center for Science in the Public Interest, 1997).
[263] M.T. Conklin, D.A. Cranage, and C.U. Lambert, "College Students' Use of Point of Selection Nutrition Information," *Topics in Clinical Nutrition* 20, no. 2 (2005): 97-108.

were more likely than men to use the nutrition information labels to make food choices. Whereas women used the nutrition information to identify and select lower-fat, lower-calorie foods, men used the information to select foods with higher levels of protein. These results confirm the findings of a previous research effort, which found that the provision of nutrition information can have a positive influence on the food purchase behaviors of college students.

Kral, Roe, and Rolls (2002)[264]

A study by Kral and her associates found that the provision of information about the energy density (i.e., calories per ounce) of foods did not have an effect on the weight of food consumed. The daily intake of calories was directly related to energy density, regardless of whether or not nutrition information was presented. Interestingly, however, the relationship between dietary restraint (that is, whether or not the consumer was consciously trying to regulate food consumption for the purpose body weight regulation) and food intake differed depending on whether or not nutrition information was presented. While the intake of food by restrained eaters was not influenced by information provision, unrestrained eaters consumed less food when nutrition information was presented.

Kozup, Creyer, and Burton (2003)[265]

Kozup, Creyer, and Burton found that when favorable nutrition information was presented on restaurant menus, consumers had more favorable attitudes towards the items and had higher purchase intentions. When unfavorable nutrition information was presented, there was a negative influence on product attitudes and purchase intentions. The authors note that the results imply that if restaurants were required to disclose nutrition information, consumers would be more likely to choose more healthful menu items. In addition, requiring restaurants to provide nutrition information may encourage the healthfulness of their menu options.

Milich, Anderson, and Mills (1976)[266]

In a study in a cafeteria setting, signs indicating the calorie content of available foods significantly decreased the number of calories that people purchased.

Summary of Findings: Influence of Claims and Symbols

The following studies sought to understand how consumers react to more generalized nutrition information than the numeric provision of calories, through such means as claims, "health" symbols, or other communication devices. One general worry of many is that consumers will actually avoid selections labeled "healthful" or "low fat" for fear (or experience) of poor flavor and taste.

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[264] T.V. Kral, L.S. Roe, and B.J. Rolls, "Does Nutrition Information about the Energy Density of Meals Affect Food Intake in Normal-Weight Women?" *Appetite* 39, no. 2 (2002): 137-45.

[265] K.C. Kozup, E.H. Creyer, and S. Burton, "Making Healthful Food Choices: The Influence of Health Claims and Nutrition Information on Consumers' Evaluations of Packaged Food Products and Restaurant Menu Items," *Journal of Marketing* 67 (2003): 19-34.

[266] R. Milich, J. Anderson, and M. Mills, "Effects of Visual Presentation of Caloric Values on Food Buying by Normal and Obese Persons," *Perceptual and Motor Skills* 42 (1976): 155-162.

Albright, Flora, and Fortmann (1990)[267]

Albright et al. explored the sales of food "labeled" as low fat/low cholesterol in four family-style restaurants. Two of the four restaurants showed an increase in sales. In general, women and older patrons were more responsive to the menu claims. It is unclear why only two of the four stores showed increased sales.

Anderson and Haas (1990)[268]

In this study, heart symbols were placed on "heart-healthy" menu items in 167 restaurants. Of the 56 items that were eligible for the symbol, sales increased for 52 of them, while 4 remained the same and 2 decreased.

Colby, et al. (1987)[269]

A study by Colby, et al., attempted to influence consumers to make more-healthful selections in a family-style restaurant. They described a menu item in one of three different ways. In one case the message stressed that the selection was healthful because it was relatively low in fat, sodium, and cholesterol. A second message stressed the flavor of the food, while also noting that the selection was healthful. In the third case, the menu item was simply identified as a daily special. Their result showed that patrons were more likely to choose the more healthful item when the message emphasized flavor. This suggests that emphasizing the good taste or flavor of a menu item, in addition to presenting information about its healthfulness, may be an important component of any food labeling program.

Fitzpatrick, Chapman, and Barr (1997)[270]

Consumer satisfaction with the "Fresh Choice" restaurant-based nutrition program was assessed in a study by Fitzpatrick and her colleagues. The purpose of the Fresh Choice program was to increase the availability and accessibility of good-tasting, lower-fat menu items. The research found that consumers were significantly more satisfied with the lower-fat items than with the regular menu items. The authors concluded that consumers will support restaurants that provide lower-fat choices on the menus.

Sproul, Canter, and Schmidt (2003)[271]

Sproul, Canter, and Schmidt examined how labeling lunch selections as "healthy" influenced sales. The study, conducted in an Army cafeteria, revealed no significant differences between the sales of the labeled "healthy entrées" and the unlabeled same entrées. This finding may suggest that, in this case, individuals who were interested in making more healthful food selections were able to do so without the additional labeling information, or, the provision of nutrition information did not seem to motivate individuals to make more-healthful selections.

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[267] C.L. Albright, J.A. Flora, and S.P. Fortmann, "Restaurant Menu Labeling: Impact of Nutrition Information on Entree Sales and Patron Attitudes," *Health Education Quarterly* 17 (1990): 157-167.
[268] J. Anderson and M.H. Haas, "Impact of a Nutrition Education Program on Food Sales in Restaurants," *Journal of Nutrition Education* 22 (1990): 232-238.
[269] J.J. Colby, et al., "Promoting the Selection of Healthy Food through Menu Item Description in a Family-Style Restaurant," *American Journal of Preventative Medicine* 3 (1987): 171-177.
[270] M.P. Fitzpatrick, G.E. Chapman, and S.I. Barr, "Lower-Fat Menu Items in Restaurants Satisfy Customers," *Journal of the American Dietetic Association* 97 (1997): 510-14.
[271] A.D. Sproul, D.O. Canter, and J.B. Schmidt, "Does Point-of-Purchase Nutrition Labeling Influence Meal Selections: A Test in an Army Cafeteria," *Military Medicine* 168, no. 7 (2003): 556-560.

Stubenitsky, et al. (1999)[272]

Stubenitsky, et al., examined the influences of nutritional information on meal quality expectations, food selection, and macronutrient intake. In the training restaurant of a hotel school, patrons were assigned to one of four treatment conditions. In the full-fat blind condition, no information was presented about the target item, smoked haddock with Welsh rabbit. In the reduced-fat blind condition, no nutrition information was presented but the entrée was prepared using lower-fat ingredients. In the reduced-fat informed and reduced-fat informed with details conditions (that is, patrons were told that the entrée was prepared with reduced-fat cheese and skim milk), the target item was specifically identified as a lower-fat option.

The results show that the proportion of patrons selecting the target item was not significantly higher when no information was provided versus when the entrée was identified as lower in fat. The use of the claim "low fat" had no influence on product acceptance or ratings of sensory quality. However, the authors note that provision of a lower-fat, lower-energy entrée did have a direct effect on fat and energy intake. That is, patrons who chose the lower-fat entrée consumed less fat and fewer calories overall, since they did not compensate for their more healthful selection by consuming more of the other meal components (e.g., dessert). The authors note that the results of both this study and prior research[273] suggest that provision of a lower-fat, lower-energy main entrée identified as such is an approach that would provide dietary benefits and have good consumer acceptance.

Johnson, et al. (1990)[274]

This study considered behavior in a cafeteria restaurant setting. "Lower-calorie selection" signs appeared within the entree, salad, and vegetable categories. The labeling had little effect on food purchases. Restrained eaters and women were found to underestimate total calories to a greater extent.

Summary of Findings: Unintended Consequences and How to Provide Information

Though there is little information in the literature on this issue, some stakeholders are concerned about the potential unintended consequences of providing nutrition information. For instance, consumers may choose a diet soda because it has no calories, but then order a high-calorie ice cream sundae because they "earned it." Several studies have found that consumers, when informed that they consumed a low-fat product, subsequently consumed more energy during the day than consumers who were informed that they consumed a high-fat product.[275] That is, some

[272] K. Stubenitsky, et al., "Effect of Information and Extended Use on the Acceptance of Reduced-Fat Products," *Food Quality and Preference* 10 (1999): 367-376.
[273] K. Stubenitsky, et al., "The Influence of Nutritional and Sensory Descriptive Information on Measures of Food Selection and Acceptance in a Restaurant," *Appetite* 29 (1997): 265.
[274] W.G. Johnson, et al., "Dietary Restraint and Eating Behaviors in the Natural Environment," *Addictive Behavior* 15 (1990): 285-290.
[275] D.J. Shide and B.J. Rolls, "Information about the Fat Content of Preloads Influences Energy Intake in Healthy Women," *Journal of the American Dietetic Association* 95 (1995): 993–998; and F.A. Caputo and R.D. Mattes,

consumers behave as if they have a "nutrient budget" and use the available nutrition information to adjust their overall, daily macronutrient intake.[276] Other participants are concerned that a focus on just calories may unintentionally skew consumer decisions away from nutrient-dense foods to lower-calorie and less-nutrient-dense foods and beverages.

There are no publicly available studies that compare and contrast different methods of providing nutrition information in terms of format or means, such as via menu board, table tent, website, and so forth. Focus group research from the Food and Drug Administration does suggest that, when asked, many consumers prefer more nutrition information, specifically calories, particularly on menu boards, and believe it would assist them in selecting "healthier food choices if and when they wanted to eat healthier."[277] However, how consumers would actually act and react when provided such information in a restaurant or more controlled setting is not known.

"Human Dietary Responses to Perceived Manipulation of Fat Content in a Midday Meal," *International Journal of Obesity* 17 (1993): 241-244.

[276] Variyam, *Nutrition Labeling in the Food-Away-From-Home Sector*, 2005.

[277] ORC Macro, *Restaurant and Food Labeling Focus Group Research: Summary Report* (Rockville, MD: FDA, 2003).

Appendix J
Approaches to Providing Nutrition Information

This appendix evaluates a number of means, currently being used by foodservice companies, to provide information to consumers. The "pros" and "cons" described for each were developed jointly by individuals with a variety of perspectives (e.g., from industry, academia, consumer organizations, voluntary health organizations, and others). The analysis considers information as provided about a given outlet's menu items, and so does not consider how consumers might use nutrition information to choose foodservice venues themselves. Finally, it is important to remember that a consumer may encounter multiple sources of information in one visit to an outlet (e.g., on a printed napkin, a brochure, and poster).

Websites

Pros:

- Can include detailed information and a wide range of nutrients
- Can compare options side by side
- Almost half of large chains already have nutrition information on the web, suggesting that this is a practical mode for at least much of industry
- Can have menu calculators and interactive programming to provide people with information for special orders and whole meals, without having them do the math themselves
- Some websites can calculate entire meals—adding up nutrition information, making substitutions, and allowing the consumer to determine whole-meal nutrition, not just item by item
- Can be graphically very interesting and innovative, thus drawing in audiences, especially younger ones

Cons:

- The information is not at the point of purchase/decision-making—it has to be accessed before or after going to a restaurant
- Customers can only take advantage of it when the decision to eat out (and perhaps the decision of where to eat) is already made
- Since use of a website requires an extra, advanced measure for consumers, it is helpful only to people who are interested in and motivated to consider the information
- Price and nutrition information are not in the same place, therefore consumers cannot make tradeoffs between nutrition and cost
- The customer has to have access to a computer and an internet connection
- For much of the industry (small restaurants, etc.), technology is expensive
- Because websites organize information differently, information can be hard to find and use easily in the absence of standardization

- Some websites can calculate entire meals but make it difficult to make side-by-side comparisons of different menu choices
- The format can be hard to read on the screen or even when printed out
  - Often there is information for so many nutrients that it can be hard to read and make comparisons

Servers Verbally Offering and, If Requested, Providing Written Information at the Point of Sale/Decision (with Aid from Electronic Registers, Printed Sources, or Handheld Devices)

Pros:

- Information is at the point of purchase and decision-making
- Has the potential to be interactive, depending on the training of staff (i.e., consumers could ask questions and interact)
- The delivery of the information is more "human" and personal than other modes

Cons:

- May slow the food ordering process and affect customer service time
- Requires more staff training, which can be costly, difficult with high labor turnover, and variable in how the information is communicated to the customer
- Hard to compare options because the customer won't see options side-by-side
- Hard for the server to communicate a lot of numbers quickly
- Difficult for the customer to understand a lot of numbers without seeing them in print
- Price and nutrition information may not be in the same place
- There may be a stigma associated with asking for assistance or information related to overweight and obesity
- Places nutrition information and making informed choices outside the norm–sets it apart in a way that may make healthier eating and informed choices seem like an exception rather than the norm

Menus and Menu Boards (for Standard Menu Items)

There are some differences between the attributes of menus and menu boards, but many pros and cons are similar, and most restaurants have one or the other.

Pros:

- Easy to find and linked to an essential information method in the business
- At the point of purchase and decision-making
- Can use and compare options at the point of purchase
- Is what state legislatures and Congress are considering requiring
- Would provide restaurants with an incentive for reformulation
- Allows people to consider price and nutrition information together in the same place

Cons:

- Can't provide the full range of nutrients on the menu because of lack of space (but could be supplemented with more information in writing, upon request)
- Consumers may not be able to add up individual items to construct a full meal choice and determine its nutritional value
- Consumers may be making decisions on isolated nutrition information rather than tradeoffs across multiple nutrition factors (for instance, just making choices based on calories without regard for sodium, carbohydrates, kinds of fat, and other considerations that may be important to individuals' needs)
- Only provides information for standard menu items, and so does not allow people to determine how the nutrition information changes for special orders
- May slow ordering (on menu boards more than menus)
- Some consumers may be put off or not want to know
- Presents uncertainty/risk for foodservice in terms of affecting choices within a restaurant (ordering lower-profit items, reducing quantities consumed) as well as across restaurants and other sources of meals (substitution effects across other restaurants, other away-from-home food outlets, or eating at home)
- Concern within industry that providing information in this way may act as a disincentive for customers to purchase "healthier" items (i.e., because of the possible stigma about compromised taste and flavor associated with "healthy" or health-oriented foods)

"Second" Menu with Nutrition Information—Provided upon Request

Pros:

- Should be easy to read, use, and compare options
- Allows people to consider price and nutrition information together in the same place
- Isolates the intervention to seekers who are most likely to change their behavior
- Does not offend or turn off customers who do not want the information

Cons:

- Customers might not know it is available or know to ask for it (although servers could routinely offer it)
- Can get lost: employees may not be able to find the alternative menus, or it might take them too long to track them down
- Puts extra burden on people who want to make informed choices; they are the exception rather than the norm (i.e., does not make the healthier choice the easy choice)
- Embarrassing or uncomfortable to ask for—there may be a social stigma associated with asking for a menu because one is on a diet, has a disease, etc.

Nutrition Information on a "Health-Oriented" Section of the Menu

Pros:

- Is at the point of decision/purchase

- Allows people to consider price and nutrition information together in the same place
- Focuses on interested seekers who are most likely to change their behavior, and may not confuse them with too much information

Cons:

- Information is for a limited number of menu items (usually a small percentage of the menu)
- Can't compare nutrition information for health-oriented items to other menu items and determine what the tradeoffs are
- Places health-oriented choices outside of the normal menu—sets it apart in a way that may make healthier eating seem like an exception rather than the norm
- Many people have had negative past experiences with bad-tasting health-oriented foods and may assume that the health-oriented menu items don't taste as good

Health-Related Symbols for Menu Items

Pros:

- Is at the point of purchase/decision
- May help people to identify healthier food choices
- Can target audiences for various purposes, such as seeking to aid those with heart disease
- May help those with low health literacy: easy to use and understand and does not require the customer to do math, read a lot, or weigh multiple factors quickly
- Customers don't have to do the math—simple, targeted, and easier to understand than numbers

Cons:

- Criteria for "healthy" can vary among different restaurants, can be confusing to customers, and can be suspect or misleading (e.g., an item denoted as low in carbohydrates might be high in fat or calories)
- Can't compare nutrition information for health-oriented items to other menu items and determine what the tradeoffs are
- Places health-oriented food outside of the normal menu—sets it apart in a way that positions healthier eating as an exception rather than the norm
- Many people have had negative past experiences with bad-tasting health-oriented foods and may assume that the health-oriented menu items don't taste as good
- Symbols don't provide detailed, clear information. "Health" may be subject to arbitrary standards and food fads, or left undefined. May not be providing new information (if, say, the products is generally known to be lower in calories). May be based on a controversial or suspect standard (e.g., low-carb chicken wings).

Table Mats, Table Tents, or Other Displays at the Table (Distinct from Point of Sale)

Pros:

- Information may be at the point of purchase and decision-making (if at a sit-down restaurant)
- Detailed information can be provided for a wide range of nutrients
- For repeat customers, might affect choice at next purchase

Cons:

- Price and nutrition information are not in the same place
- Not at the point of purchase
- May not be noticed by customers
- Easy to lose, disappear, and not be available (especially in quick-service restaurants where individual operatives' practices may vary even with company standards)
- Places nutrition information and making informed choices outside of the normal menu—sets it apart in a way that may make healthier eating and informed choices seem like an exception rather than the norm
- May add clutter to the table and detract from the dining experience, depending on the atmosphere

Tray Liners, Cups, Napkins or Other Packages, Containers, Receipts (After Order but Linked Closely to Food Item(s))

Pros:

- Can provide more detailed information on a tray liner or directly on a container than on a menu board or probably a menu
- If more than one person is eating, consumers might make a post-purchase comparison with one another's choices that leads to a different selection on the next order, especially for repeat consumers
- Could provide nutrition information in a standard Nutrition Facts label format and thus be consistent with nutrition information provided for grocery goods

Cons:

- Price and nutrition information are not in the same place
- People obtain the information after they have already ordered
- If containers are used for multiple items (e.g., different kinds of sandwiches), information would need to provided for each of those items, possibly causing space constraints on the packaging surface
- Tray liners are under the food and thus the nutrition information may not be easily visible (i.e., one has to take the items off the liner to read it)
- Tray liners may be quickly stained, ignored, and thrown away, since they rest underneath food
- If information is on the item's packaging, it makes it difficult to make comparisons among items, unless fellow diners are present to enable comparisons among different items

Electronic Kiosks

Pros:

- Can provide detailed nutrition information on a range of nutrients
- Can have menu calculators and interactive programming to provide people with information for customized orders and whole meals, without having to do the math themselves
- Are less obtrusive and may be more acceptable overall to customers (more discreet)
- Can target those with the interest
- Can be graphically interesting and innovative, thus drawing in audiences, especially younger ones
- Can be at or near the point of decision

Cons:

- Price and nutrition information are not in the same place
- Customers might not know that the kiosk is available
- Requires consumers to take special effort to access the information, rather than having it proactively provided to all consumers
- A limited number of people can use a kiosk at any one time
- People not familiar with it may take time to learn to use it
- Maybe too time-consuming to use
- The equipment is costly, raising a question of who should pay for it (e.g., chains, franchisees, client organizations)

Reference Books, Posters, Handouts, Brochures, etc.

Pros:

- Can include detailed information on a wide range of nutrients
- Can compare options side-by-side across the full range of choices
- Many large fast-food chains already have these formats, so it is practical for the restaurant

Cons:

- Can be hard to find if the information is in varying locations within the same restaurant or at different outlets of the same chain or between different chains
- Consistent availability is uncertain (they get lost, employees can't find them, they run out and are not replenished)
- Can take too much time to find the information
- Can be hard to use; large complicated tables listing too many nutrients can be overwhelming
- May use small fonts that can be hard to read
- Price and nutrition information are not in the same place
- People don't want to lose their place in line to track down the information
- Depending on how prominently they are provided, can require extra effort from consumers who want to make informed choices

Appendix K
Key Abbreviations

AOAC	Formerly known as the Association of Official Analytical Chemistry
ATUS	American Time Use Survey
BMI	body mass index
CARU	Children's Advertising Review Unit
CDC	Centers for Disease Control and Prevention (HHS)
CSFII	Continuing Survey of Food Intakes by Individuals
DGA	Dietary Guidelines for Americans
ERS	Economic Research Service (USDA)
FDA	Food and Drug Administration (HHS)
HDS	Health and Diet Survey
HHS	U.S. Department of Health and Human Services
NBER	National Bureau of Economic Research
NCHS	National Center for Health Statistics (CDC)
NHANES	National Health and Nutrition Examination Survey
NLEA	Nutrition Labeling and Education Act
USDA	U.S. Department of Agriculture