

Menu Labeling

A Report by the Tennessee Department of Health

67.9% of Tennesseans are overweight or obese

Introduction

In 1999, more than 2,406,000 Tennesseans were overweight or obese. Ten years later, another 779,235 Tennesseans joined them. By 2008, 67.9% or 3,185,235 of Tennessee's adult population were overweight or obese. Tennessee, along with the rest of the nation, is in the midst of an obesity epidemic and any action that may slow this harmful trend needs thorough consideration. One such action is menu labeling; i.e., posting nutritional information in restaurants and fast food chains.

A Serious Health Problem

Obesity is a serious health problem. It increases the risk of type 2 diabetes, hypertension, heart disease, stroke, sleep apnea, and liver and gallbladder disease (CDC, 2009). Obesity may also increase the risk of cancers, including breast cancer, colon cancer and uterine cancer (CDC, 2009).

Obesity can increase the risk of:

- type 2 diabetes
- hypertension
- heart disease
- stroke
- sleep apnea
- liver and gallbladder disease
- cancer

Maternal obesity poses an increased risk of difficulty achieving pregnancy and pregnancy complications such as gestational diabetes, preeclampsia, and miscarriages (Cedergren, 2004). Maternal obesity can also contribute to medical problems such as birth defects in infants and is a contributing factor in the weight of young children (Fitzsimons et al., 2009).

In addition, "overweight adolescents have a 70% chance of becoming overweight or obese adults. This increases to 80% if one or more parent is overweight or obese" (Office of the Surgeon General, 2009). Diseases like type 2 diabetes formerly seen only in adults are now appearing in children who are obese and some predict this generation of children may have shorter lives than their parents (Lee et al., 2007).

Financial Burden

According to Finkelstein et al. (2003), as the number of people affected by chronic health conditions associated with obesity climbs so does the financial burden to treat them with 37% of annual health care costs attributed to obesity (Finkelstein et al, 2003). More than 25% of the growth in health care spending between 1987 and 2001 was due to medical conditions related to obesity (Thorpe, Florence, Howard, Joski; The impact of obesity on rising medical spending, Health Affairs 2004).

37% of annual health care costs are attributed to obesity

The growth of health care spending for Tennesseans is also likely to increase as the rate of overweight children ages 6-11 has nearly quintupled to 19% and approximately 12% of Tennessee's population has been diagnosed with diabetes (CDC, 2009).

Where Tennessee Ranks

When compared to other states, Tennessee finds itself near the top for many categories relating to obesity and associated health problems. More specifically, the sixth annual "F as in Fat: How Obesity Policies Are Failing in America" 2009 report by Trust for America's Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) ranks Tennessee:

- 3rd for diabetes (11.0%)
- 4th for adult hypertension (32.1%)
- 4th for obesity among adults (30.2%)
- 5th for adult physical inactivity (29.8%)
- 5th for obesity and overweight among 10-17 year-olds (36.5%)
- 6th for medical costs of obesity (\$315 per capita)

In addition, the United Health Foundation 2008 rankings place Tennessee fourth for infant deaths, fifth for heart disease deaths and fifth for all health outcomes.

Obesity Rank

1. Mississippi	32.5%
2. Alabama	31.2%
3. W. Virginia	31.3%
4. Tennessee	30.2%
5. S. Carolina	29.7%
50. Massachusetts	21.2%
51. Colorado	18.9%

Source: "F as in Fat: How Obesity Policies Are Failing in America", 2009

Dealing with Excess Calories

At the heart of the obesity epidemic is a chronic consumption of excess calories coupled with inactivity.

While this suggests a clear path to reversing obesity exists, successful interventions require a retooling of long standing eating and exercise habits—habits that are largely immersed within daily social routines. This requires us to think of multiple ways to approach this complex problem.

One approach to the obesity epidemic involves providing consumers with information about calories for food menu items in an effort to help them make more informed choices. For example, as many as nine out of ten people underestimate the number of calories for food items (Burton et al. 2006).

Research has also found that adults who eat out consume more than 200 extra calories a day where as children who eat out consume an excess of more than 100 calories per day; this can increase weight gain by 10 or more pounds per year (French et al. 2001, Paeratakul et al. 2003).

Other studies suggest having information about calorie counts for food items available at the time of purchase may be more likely to influence personal choices and in turn reduce calories consumed (Freidman 2008).

Menu Labeling Initiatives

To date, there are menu labeling initiatives in over 30 cities and states to require restaurants with 15 or more locations to post calorie information for items served (Frumkin, 2009).

The Metro Public Health Department of Nashville, Tennessee is one of the entities that has passed such a local regulation in order to provide consumers with tools to make informed health decisions. Additional

Eating Out in America

- Adults consume more than 200 extra calories
- Children consume more than 100 extra calories

legislation has been proposed at the state level. The impact of menu labeling legislation, however, is under question.

In efforts to estimate the impact of menu labeling, Simon et al. (2008) developed a method to estimate potential weight gain adverted as a result of menu labeling in Los Angeles County California. We used this approach to estimate potential weight gain adverted for the state of Tennessee and for Davidson County.

Potential Impacts of Menu Labeling

Methods

The Tennessee Department of Health routinely gathers information about the health of Tennesseans age 18 and older state wide through the Behavioral Risk Factor Surveillance System (BRFSS) survey. While the sample size for this survey is adequate to estimate regional differences, it is not adequate to determine county trends.

Survey respondents are asked to report their current height and weight without shoes. Body Mass Index or BMI was calculated by using the self-reported height and weight in the following formula:

$$\text{BMI} = \frac{\text{Weight in Pounds}}{(\text{Height in Inches}) \times (\text{Height in Inches})} \times 703$$

Using the standard definition of obesity employed by the CDC, we defined obesity as a body mass index (BMI) of 30.0 or greater.

The average weight of a Tennessean was calculated by summing reported weights and dividing that sum by the number of respondents. We did not adjust this for age and gender differences. The weight gain between 1999 and 2008 was calculated by subtracting the average self-reported weight

Body Mass Index (BMI)

Body Mass Index or BMI is the measure of a person's weight in relationship to their height.

BMI Ranges

Underweight = 16.5 to 18.5
Normal = 18.5 to 25
Overweight = 25 to 30
Obese = 30 to over 40

of 1999 respondents from the average self-reported weight of 2008 respondents.

Quantifying Potential Weight Gain Averted As A Result of Menu Labeling

Several different data sources were used to develop an estimate for number of pounds averted as a result of consumers using menu labeling information to reduce calorie consumption. We estimated percent of weight gain averted for Davidson County and the state of Tennessee where menu labeling initiatives are in place or under consideration. We also estimated percent weight gain averted for Shelby County, the most populated county in the state of Tennessee.

Annual restaurant sales were obtained from the National Restaurant Association (<http://www.restaurant.org>). The estimate for 2009 for Tennessee was \$8.8 billion. Davidson County and Shelby County restaurant sales were estimated by multiplying the population proportion for each county by state restaurant revenues.

\$8.8 billion

Estimated restaurant sales in Tennessee in 2009.

For their labeling bill, the Metro Public Health Department of Nashville, Tennessee determined 864 of their 2800 restaurants, or 31%, were among those with 15 or more locations (http://health.nashville.gov/MenuLabeling/ML_ExecutiveSummary.pdf). We did not have comparable information available for the state of Tennessee or Shelby County. However, the 2002 Census Bureau Economic Survey data revealed that 33% of restaurants employed 100 or more persons. We used this as an estimate for restaurants that had 15 or more locations for the state of Tennessee and for Shelby County.

Simon et al. (2008) estimated the average price of a meal from a large chain restaurant was \$7.80. We used this as our estimate to determine how many meals large chain restaurant served in 2009 in Davidson County, Shelby County and the state of Tennessee.

Simon et al. (2008) estimated that children under the age of five represented 3.8% of all meals and due to insufficient data they excluded them from further consideration. Similarly, we excluded 3.8% of the total meals served from further calculations as we did not have verifiable data about obesity in children under age five nor did we have data available to determine how menu labeling might affect this population.

Reported changes in consumer food purchases as a result of calorie labeling varies widely reaching as high as 48% (Levy and Derby, 1996; Harnack and French, 2008); however, we chose to use the same conservative estimate employed by Simon et al. (2008) of 10%. Similarly, it is also assumed that consumers eating reduced calorie meals did not increase their exercise levels, metabolic rate, or alter other food choices.

Using this information and the estimated number of meals served to persons age five or older, we calculated how many meals would be subject to calorie reductions. Then we estimated that this proportion of meals would be reduced by 100 calories as did Simon et al. (2008). Considering one pound is approximately 3,500 calories (Duyff, 2006), we determined the number of pounds reduced calorie meals would total. Yanovski et al. (2000) determined that the average person gains 1.06 pounds per year. We used this information in conjunction with the calculated pounds resulting from reduced calorie meals to estimate the percent of weight gain averted from menu labeling.

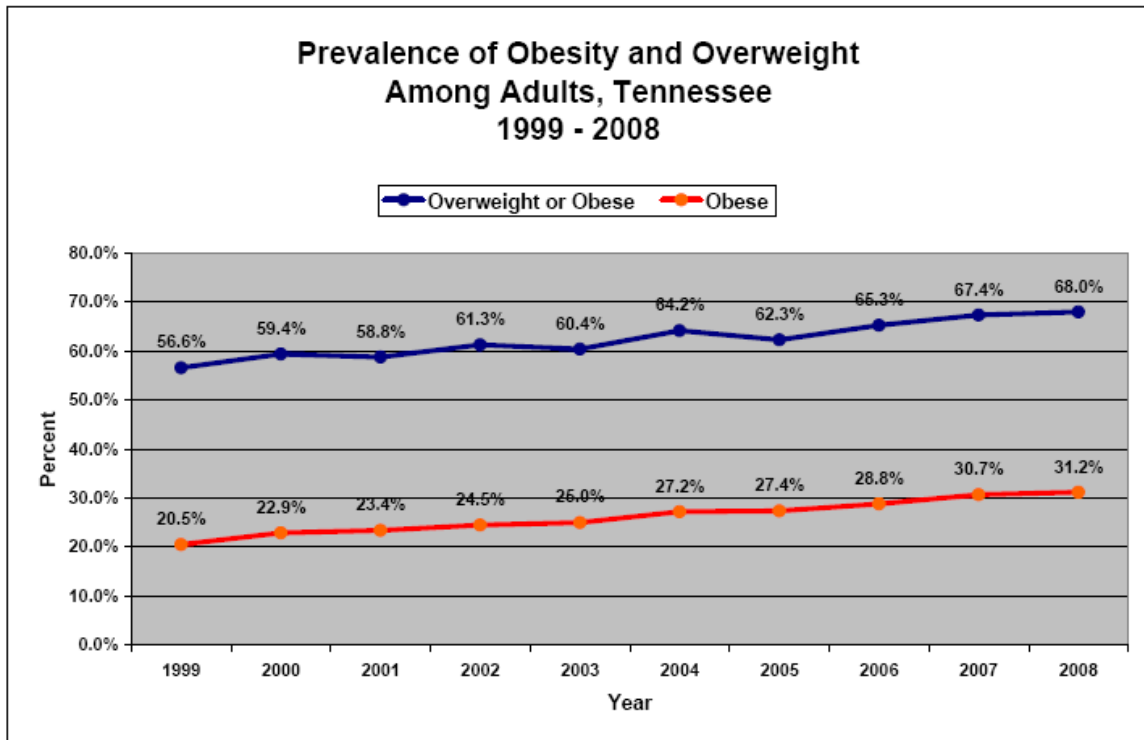
10.6 Pounds

What an average adult gains each decade.

Results

The number of overweight and obese Tennesseans continues to rise. As shown in Figure 1, 56.5% adult Tennesseans were overweight or obese (20.5% = obese and 36.1% = overweight) in 1999. This increased to 68.0% (31.2% = obese and 36.8% = overweight) in 2008. All age groups are affected by obesity with the largest increase taking place among 18 to 24 years-olds. Over 30 % of people between the ages of 35 and 64 are obese and the average weight gain of Tennesseans between 1999 and 2008 was ten pounds.

Figure 1



Source: Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Behavioral Risk Factor Surveillance System

Among persons age 5 and older, the estimate percent of weight gain potentially averted as a result of menu labeling was 16.72% for the state of Tennessee and 15.77% for Davison County (Table 1, Page 10).

It is not surprising that the estimates for these two areas are similar since they are based on similar considerations and mainly adjusted for population differences. While individual components of these estimates are subject to uncertainty, the underlying assumptions are conservative and the actual weight averted as a result of menu labeling may very well exceed these projections. Even with conservative assumptions, this translates into potentially averting over one million pounds of weight gained if 10% of the large chain restaurant meals are reduced by a mere 100 calories.

Calculations and source information are in Table 1. on page 10.

Discussion

Humana, one of the nation's largest health benefits companies, estimates that in 2009, every overweight individual will have \$1,037.64 in added health care costs. Considering that 68.0% of adult Tennesseans (an estimated 3,223,276 people in 2009) are overweight or obese, this translates into \$3,344,600,109 in added health care costs just for the year 2009. The impact of this additional financial stress is even more concerning during the current economic environment.

\$3,344,600,109

Added health care costs for Tennesseans in 2009 due to overweight and obesity.

Obesity is not the result of one single factor and is therefore in need of multiple interventions.

Menu labeling is one of many possible interventions. However, the estimates derived here suggest we could avoid gaining almost 2 (1.67) pounds of that 10 pound weight gain by menu labeling if only 10% of the meals consumed at large chain restaurants had 100 fewer calories.

Said another way, the estimated 1,027,569 pounds of averted weigh gain is equal to:

- 3,315 NFL line backers, each weighing 310 pounds
- 10,817 figure skaters at 95 pounds each (without skates)
- 5,838 Tennessee residents

By CDC standards, an obese adult weighs 28-40 pounds more than normal for a given height and weight (for example: 35 pounds more for a 5-foot-9-inch person). The potential impact of menu labeling using estimated weight gain averted can also be described as weight lost; this result of menu labeling analogy would be the same as 25,689 Tennesseans losing 40 pounds each.

With an estimated two to four years of decreased life expectancy for a BMI in the 30-35% range (Whitlock et al. 2009), this could save 51,378 (2 years each) to 102,756 (4 years each) years of life. This benefit is heightened with the very obese population. Very Obese is defined as (40% BMI) an

extra 76-131 pounds depending on height and weight. For example, a 5-foot-9-inch person who is very obese would weigh an extra 102 pounds.

2–4 Years of Life Lost

The estimated decrease in life expectancy (years of life lost) for a person with a BMI of 30-35.

8–10 Years of Life Lost

The estimated decrease in life expectancy (years of life lost) for a person with a BMI of 40-45.

The estimated decrease in life expectancy for a BMI in the 40-45% range is 8-10 years (Whitlock et al. 2009). The estimated weight gain averted of 1,027,568 pounds is equivalent to 9,786 Tennesseans losing 105 pounds each, dropping them down to an average weight. In life expectancy terms, the return to average weight would be 78,228 (8 years each) to 97,860 (10 years each) years of life saved, not to mention all the holidays, high school graduations, and family vacations that would otherwise be missed.

Conclusion

We are not suggesting that menu labeling will solve the obesity problem in Tennessee. However, even with a modest decrease in calories consumed, it should help put Tennessee on a path leading to reducing health issues associated with obesity and their corresponding health care costs. In addition, promoting more active participation of Tennesseans in their lifestyle choices could lead to lengthening the lives of Tennesseans. These factors make menu labeling a tool well worth considering in our fight to reduce obesity.

Table 1. Data sources and methods used to estimate weight averted as a result of menu labeling.

	State of Tennessee Estimate	Davidson County Estimate	Shelby County Estimate	Source
1	Projected restaurant sales in TN for 2009	\$8.8 billion		
	Proportion of 2009 state population	0.095	0.15	Source: National Restaurant Association http://www.restaurant.org , accessed 4/21/2009
	Estimated county restaurant revenue	\$836,000,000	\$1,320,000,000	Source: Health Statistics population estimates
2	Large chain restaurants affected by proposed menu labeling regulation	33%	31%	33%
				(864/2800) source: http://health.nashville.gov/MenuLabeling/ML_ExecutiveSummary.pdf 33% = 2002 Census Bureau Economic Suvery, TN estimate
3	Estimated large chain restaurant revenue	\$2,904,000,000	\$259,160,000	\$435,600,000
				Item 1 X Item2
4	Average price per meal in large chain restaurants	\$7.80	\$7.80	\$7.80
				Source: Simon, p, Jarosz CJ, Kuo T, Fielding JE. Menu labeling as a potential strategy for combating the obesity epidemic: A health impact assessment. Los Angeles County Department of Public Health, 2008.
5	Estimated number of large chain meals served	372,307,692	33,225,641	55,846,154
				Item 3 ÷ Item 4
6	Estimated number of meals served to 0-4 year-olds	12,658,462	1,262,574	1,898,769
				3.4% X Item 5 Source of 3.4%: Simon, p, Jarosz CJ, Kuo T, Fielding JE. Menu labeling as a potential strategy for combating the obesity epidemic: A health impact assessment. Los Angeles County Department of Public Health, 2008.
7	Estimated number of meals served to ages 5 and older	359,649,230	31,963,067	53,947,385
				Item 5 - Item 6
8	Estimated percent of patrons that would select a reduced calorie meal as a result of menu labels	10%	10%	10%
				Source: Burton S, Creyer EH, Kees J, Huggins. Attacking the obesity epidemic: The potential health benefits of providing nutrition information in restaurants. American Journal of Public Health 2006, 96:1669-1675.

Table 1. Data sources and methods used to estimate weight averted as a result of menu labeling.

Variable	State of Tennessee Estimate	Davidson County Estimate	Shelby County Estimate	Source
9 Estimated number of reduced calorie meals for ages 5 and older	35,964,923	3,196,307	5,394,738	Item 7 X Item 8
10 Average amount of calorie reduction per meal	100	100	100	Source: Simon, p, Jarosz CJ, Kuo T, Fielding JE. Menu labeling as a potential strategy for combating the obesity epidemic: A health impact assessment. Los Angeles County Department of Public Health, 2008.
11 Estimated number of reduced calories as a result of menu labeling	3,596,492,300	319,630,670	539,473,846	Item 9 X 100
12 12) Calories per pound of weight	3,500	3,500	3,500	Source: Duyff, Roberta Larson. American Dietetic Association Complete Food and Nutrition Guide, (Third Edition). Hoboken, NJ: John Wiley and Sons, 2006.
13 13) Estimated pounds lost as a result of menu labeling	1,027,569	91,323	154,135	Item 11 ÷ 3,500
14 We do not have data that - compares to what they used so we 16 used this:				Source most frequently cited: Yanovski JA, Yanovski SZ, Sovik KN, Nguyen TT, O'Neil PM and Sebring NG. A prospective study of holiday weight gain. New England Journal of Medicine . 2000;342(12):861-867.
14 Estimated average annual weight gain	1.06 pounds	1.06 pounds	1.06 pounds	Ranges reported 0.4 - 1.8
15 2009 population ages 5 and older	5,796,920	546,379	858,765	Source: Health Statistics population estimates
16 Estimated weight gain	6,144,735 pounds	579,162 pounds	910,291 pounds	1.06 pounds X Item 15
17 Estimated percent of weigh gain averted as a result of menu labeling	16.72%	15.77%	16.93%	Item 13 ÷ Item 16

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