



Fruits & Veggies—More Matters® in Oklahoma

What is Fruits & Veggies—More Matters®?

In March 2007, the 5 A Day program became the National Fruit and Vegetable Alliance and launched a new public health initiative, Fruits & Veggies—More Matters®, in order to reflect the current *Dietary Guidelines for Americans*, which recommend more than 5 servings of fruits and vegetables for some Americans. The National Fruit and Vegetable Alliance is a public private partnership led by the Centers for Disease Control and Prevention (CDC) and Produce for Better Health Foundation (PBH). It is a confederation of government, not-for-profit groups and industry working collaboratively and synergistically to increase the consumption of fruits and vegetables for improved public health (1).

Why is Fruits & Veggies—More Matters® Important?

Diets rich in fruits and vegetables are associated with a decreased risk of a number of chronic diseases such as cardiovascular diseases (coronary artery disease, hypertension, and ischemic stroke), type 2 diabetes, and perhaps certain cancers (lung, mouth, pharynx, esophagus, stomach, colon, and rectum) (1-6). In addition to many vitamins and minerals, phytonutrients are present in fruits and vegetables and perform important functions such as acting as antioxidants, stimulating detoxification enzymes and the immune system, positively affecting hormones, and acting as antibacterial or antiviral agents (7). Researchers have shown that an increased consumption of fruits and vegetables from less than 3 to more than 5 servings daily can reduce the risk of coronary heart disease by 17% (8). Individuals who eat less than 3 servings of fruits and vegetables daily had a higher rate of diet-related chronic diseases

such as cardiovascular diseases and certain cancers than those who have more servings of fruits and vegetables (8, 9). The World Health Organization (WHO) estimates that low intake of fruits and vegetables causes about 19% of gastrointestinal cancer, about 31% of ischemic heart disease, and 11% of stroke worldwide (10). Thus, eating a healthy diet rich in fruits and vegetables as part of an active lifestyle can help lower the risk for many chronic diseases.

Data sources:

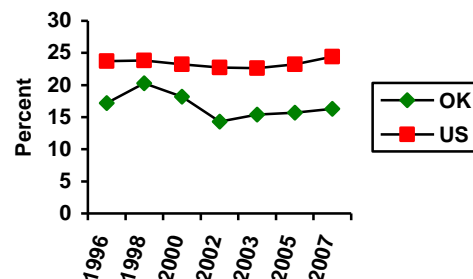
Data for this report are from the 2007 Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a state-based, random-digit dialing telephone survey of the non-institutionalized adult population aged 18 years and older.

Survey questionnaires may change and states can choose specific modules. Thus, data is reported for only those years when the specific question was available nationwide. The 2007 BRFSS is the most recent year when questions regarding fruit and vegetable consumption were included in the Oklahoma survey.

Oklahoma: Fruit and Vegetable Consumption

From 1996 to 2007, the prevalence of Oklahomans who consume 5 or more servings of fruits and vegetables has been lower than the national average (Figure 1). The 2007 data shows that only 16.3% of adult Oklahomans eat 5 or more servings of fruit and vegetables a day compared to 24.4% nationwide (Figure 2). Moreover, Oklahoma has the lowest prevalence of fruit and vegetable consumption among all the states and Washington, D.C. (11).

Figure 1: Oklahoma and US consumption of 5 or more servings of fruits and vegetables: BRFSS 1996-2007.

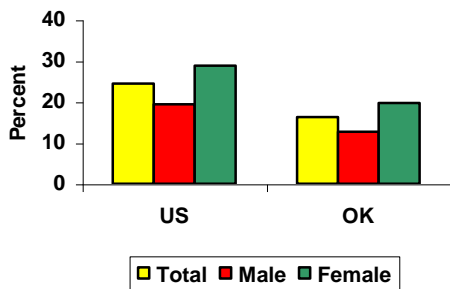


Only 16.3% of adult Oklahomans eat 5 or more servings of fruits and vegetables a day.

Oklahoma has the lowest rate of consuming 5 or more servings of fruits and vegetables among all U.S. states.

Only 12.7% of Oklahoma males and 19.7% of females ate 5 or more servings of fruits and vegetables a day in 2007 (males significantly lower than females) compared to the national prevalence of 19.4% and 28.8% for males and females, respectively (Figure 2). Those 65 and older were significantly more likely to eat 5 or more servings than were adults in the four youngest age groups (Table 1). The lowest consumption was in the 25-34 and 35-44 year age groups.

Figure 2: Oklahoma and US consumption of 5 or more fruits and vegetables, total and by gender: BRFSS 2007.



Oklahomans who were college graduates were significantly more likely to eat 5 or more servings than those who did not graduate from college (Table 1). Those with an annual household income of \$50,000 or more had higher rates of consuming 5 or more servings than those with annual income less than \$50,000 (Table 1). There was no significant difference among race/ethnicity groups.

The 2007 BRFSS questionnaire contained questions about consumption of fruit juice such as orange, tomato or grapefruit; fruits (not counting fruit juice), green salad, potatoes (not counting french fries or chips), carrots, and other vegetables (not counting carrots, potatoes, or salad). Table 2 shows the average number of servings of fruits and vegetables consumed per day among Oklahoma adults. On average Oklahoma adults eat only 3.5 servings of fruits and vegetables per day. The average number of servings per day for Oklahoma males was 3.1 whereas the average number of servings among females was 3.6 per day. The combined average consumption of fruit/fruit juice was 1.2 servings and the combined

average consumption of vegetables was only 2.3 servings.

Table 1: Prevalence of consumption of 5 or more servings of fruits and vegetables per day: Oklahoma BRFSS 2007.

Category	Percent	95% CI
Total	16.3%	15.3-17.3
Male	12.7%	11.1-14.3
Female	19.7%	18.3-21.1
White	16.5%	15.3-17.7
African American	15.4%	11.5-19.3
American Indian	15.6%	11.4-19.7
Hispanic	13.4%	9.3-17.5
Multiracial	19.4%	14.5-24.4
18-24	18.4%	13.3-23.5
25-34	14.0%	11.3-16.7
35-44	13.9%	11.7-16.1
45-54	16.3%	14.1-18.5
55-64	15.8%	13.6-18.0
65+	20.4%	18.6-22.2
<\$ 15,000	16.0%	12.7-19.3
\$15,000- 24,999	13.9%	11.5-16.3
\$25,000- 34,999	12.8%	10.3-15.3
\$35,000- 49,999	14.5%	12.0-17.0
\$50,000+	18.9%	17.1-20.7
Less than H.S.	12.6%	9.9-15.3
H.S. or G.E.D.	14.9%	12.9-16.9
Some post-H.S.	14.9%	12.9-16.9
College graduate	21.5%	19.3-23.7

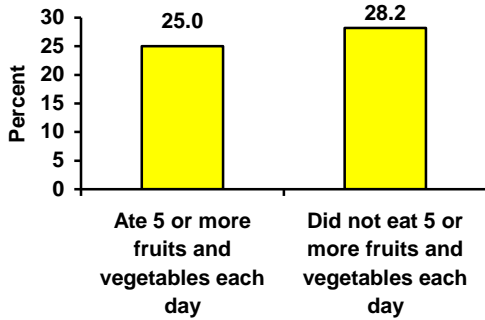
Though not significant, the prevalence of obesity in 2007 among Oklahoma adults who did not consume 5 or more servings of fruits and vegetables was higher than the prevalence among those who did (28.2% and 25.0%, respectively; Figure 3).

Table 2: Average number of servings of fruits and vegetables (all categories) per day: Oklahoma BRFSS 2007.

Fruit / Vegetable	Average intake per day
Total	3.5
Fruit juice	0.5
Fruit	0.7
Green salad	0.4
Potato	0.3
Carrots	0.2
Other vegetables	1.4

The prevalence of obesity in 2007 among Oklahoma adults who did not consume 5 or more servings of fruits and vegetables each day was higher than those who did consume 5 servings daily.

Figure 3: Comparison of prevalence of obesity between those who ate 5 or more servings and those who did not: Oklahoma 2007.



Oklahoma ranks 47th worst in the nation for health status.

Daily Intake Recommendations:

The 2005 *Dietary Guidelines for Americans* recommended increased intakes of fruits and vegetables for all populations. The *Guidelines* transitioned from using servings to cups. Four and a half cups (9 servings) are recommended for the reference 2000-calorie level. Recommendations range from 2.5 cups to 6.5 cups (5-13 servings) according to caloric level (12). Appropriate calorie levels are based on age, sex and activity level (13). The *Dietary Guidelines* also recommend that to stay healthy, persons aged 2 years and older choose a variety of fruits and vegetables daily.

The percentage of Oklahomans consuming 5 or more servings of fruits and vegetables is very low irrespective of socio-economic and other demographic variables.

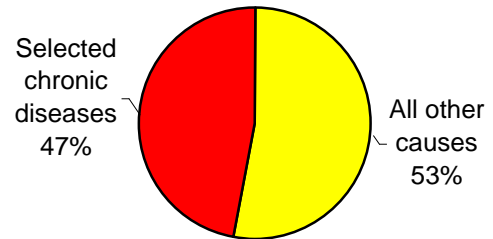
Healthy People 2010 and fruits and vegetables intake:

There are specific objectives in the Healthy People 2010 regarding fruit and vegetable consumption (objectives 19-5 and 19-6, respectively). The target for fruit consumption is for 75% of persons aged 2 years and older to consume at least 2 servings of fruit a day. This is an increase from the baseline proportion of 28% across the nation. The target for vegetable consumption is for 50% of persons aged 2 years and older to consume at least 3 daily servings of vegetables, with at least one-third being dark green or orange (14). This is an increase from the baseline proportion of only 3%.

Discussion and Recommendations:

Oklahoma ranks 47th worst in the nation for overall health status and 50th worst for cardiovascular disease deaths (15). In 2006, almost 47% of deaths in Oklahoma could be attributed to heart diseases, stroke, certain cancers (lung, stomach, and colorectal), and diabetes mellitus, which can be affected by increasing fruit and vegetable consumption (Figure 4).

Figure 4: Percent of deaths among Oklahoma adults caused by heart diseases, stroke, certain cancers, and type 2 diabetes: Oklahoma Vital Statistics 2006.



This report indicates that the consumption of fruits and vegetables is very low in Oklahoma irrespective of socioeconomic and other demographic variables. Moreover, in comparison to other states, Oklahoma has the lowest rate of consuming 5 or more servings of fruits and vegetables per day. These data demonstrate a need for intensified efforts to promote consumption of fruits and vegetables in the Sooner State. The following strategies are based on **GetFit EatSmart: OK Physical Activity & Nutrition State Plan** (16):

- Adopt laws and policies to increase accessibility and affordability of fruits and vegetables in all settings.
- Strengthen local food system to increase access to high quality produce at all food venues.
- Expand Farm to School, cooking skills classes, and community, school, and home gardening and other similar programs.
- Offer age-appropriate, comprehensive nutrition education wherever Oklahomans learn.

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