Adult Behaviors and Health Conditions from the BRFSS: 2010 Data Better Represent Oregon Adults

Executive summary

The Behavioral Risk Factor Surveillance System (BRFSS) is a telephone survey of adults that has been conducted annually in Oregon since 1988. The BRFSS collects information on health risk behaviors, preventive health practices, and health care access.

To ensure that responses to the survey are representative of population of Oregon adults, the data are adjusted using a calculation called "weighting." Starting with 2010 Oregon survey, the data will be weighted by a new technique, called "raking." (Nationally, BRFSS data will be "raked" starting in 2011.) In addition to age and sex, raking will take into account marital status, home ownership, educational achievement, and telephone type (cell phone versus landline).

Differences in estimates between years are to be expected when survey methods change. Public health prevention programs, policy makers, and other BRFSS data analysts need to determine the best way to describe these changes.

Introduction

The Behavioral Risk Factor Surveillance System (BRFSS) is a telephone survey of adults that has been conducted annually in Oregon since 1988. The survey is administered according to standards set forth by the Centers for Disease Control and Prevention (CDC). CDC assembles data from the states and territories to form a picture of health conditions and risk behaviors of U.S. adults.

The BRFSS is conducted on a sample of Oregon adults and the respondents are assumed to represent other adults like him or her in the state. In order to obtain results that reflect the entire population of Oregon adults, the fact that certain types of people are more (or less) likely to respond to the survey needs to be taken into account. For example, women are more likely than men, and older people more likely than younger, to respond to telephone surveys.

These adjustments are accomplished using a mathematical technique called "weighting." From 1988 to 2009, the weighting calculation was simple, and adjusting for two factors: age and sex. Starting with 2010 data, however, Oregon switched to a more complex weighting method called "iterative proportional fitting," or "raking**"**. In addition to being a far more complex computation, this method factors in many more demographic dimensions, including race, marital status, home ownership, educational achievement, and telephone type. CDC will switch to this method beginning with 2011 data.

One reason for this change is faster personal computer processing. Until recently, this technique would not have been possible with a desktop computer. In addition, fewer adults live in households with landline telephones. This new method incorporates data from people who have a cell phone but no landline. Prior to 2010, the BRFSS was only conducted on landlines.

Comparing estimates

Selected BRFSS estimates are displayed in Tables 1 through 3. The first column contains estimates calculated using the old post-stratification weights, and incorporates landline data only ("Old method, landline only"). The second column contains estimates calculated using raking weights, and incorporates both landline and cell phone data ("New method, adds cell phone").

The third column shows the absolute difference between the estimates using the old and new methods, with statistically significant differences indicated by asterisks. Comparing prevalence estimates highlights which ones are most affected by the new calculations.

Table 1. Percent of adults reporting selected health risk, Oregon, 2010

	Old method, landline only	New method, adds cell phone	Absolute difference
Binge drinking (past 30 days)	14.3	16.4	2.1
Consume 7+ sodas per week	12.3	14.3	2.0
Current cigarette smoking	16.4	19.9	3.5*
Current smokeless tobacco user (men)	8.1	7.8	(0.3)
Eat fast food 1+ times per week	32.8	34.6	1.8
Heavy drinking (past 30 days)	6.2	7.4	1.2
No leisure time physical activity	17.4	19.9	2.5
Overweight	34.0	34.7	0.7
Obese	27.1	27.7	0.6

Table 2. Percent of adults reporting selected chronic conditions, Oregon, 2010

Ever told by a health care provider that you have:	Old method, landline only	New method, adds cell phone	Absolute difference
Angina	3.6	4.1	0.5
Arthritis	30.2	32.0	1.8
Asthma	10.0	10.1	0.1
Cancer	9.3	10.8	1.5
Diabetes	7.1	8.4	1.3
Heart attack	3.5	3.8	1.3
High blood pressure	29.0	31.1	2.1
High cholesterol	37.0	38.1	1.1
Stroke	2.5	2.6	0.1

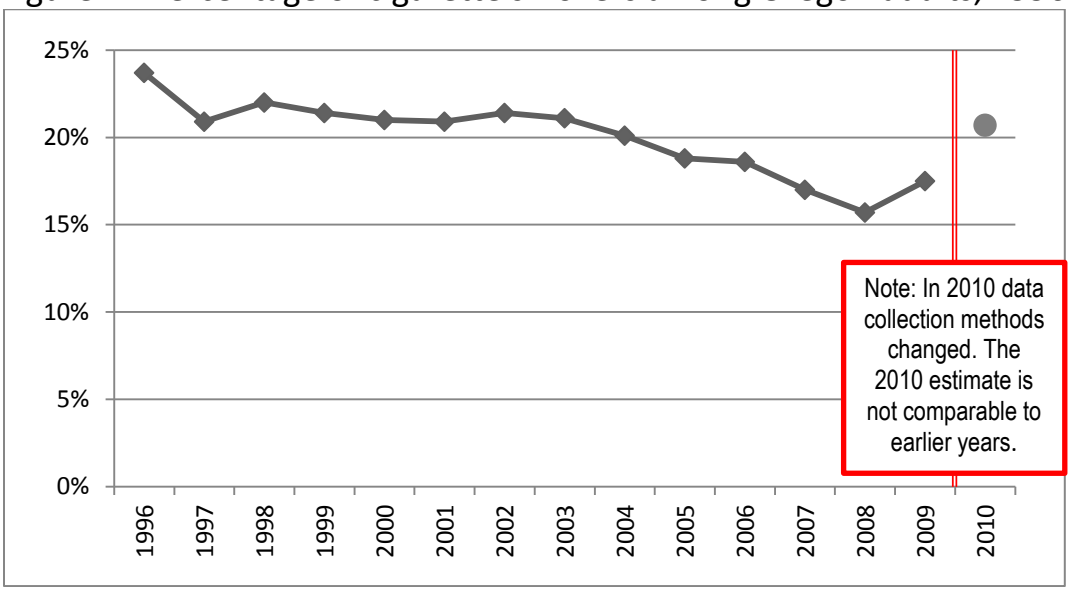
Table 3. Percent of adults reporting selected health screenings or other health-related factors, Oregon, 2010			
	Old method, landline only	New method, adds cell phone	Absolute difference
Cholesterol check in past 5 years	74.6	73.0	(1.6)
Has a disability	28.8	29.2	0.4
Has health insurance, including Medicaid	83.4	79.8	(3.6)*
Health status (good to excellent)	84.2	81.8	(2.4)*
Mammogram within 2 years (women ages 50-74)	76.9	74.8	(2.1)
Pap test within 3 years (women ages 21-65 with intact cervix)	80.5	82.4	1.9
Screened for colorectal cancer appropriately (ages 50-75)	62.2	59.0	(3.2)

What do these changes mean?

These tables show that when the same estimate is calculated using the old and new methods, results differ. Nonetheless, estimates using raking weights are more representative of Oregon's adult population.

Moreover, estimates using the old weighting method are not comparable to estimates using the new method. Put another way, data from 1989 to 2009 should not be compared to 2010. This weighting change is like pushing a reset button. If underlying trends continue as before, patterns evident in 1989 through 2009 data will begin to reappear as new data are collected. Future time trend graphs of Oregon BRFSS data should show a break in the trend line at 2010, as demonstrated in Figure 1. CDC and states will continue to monitor the impact of the methodological changes and help to explain the changes to policymakers.

Figure 1. Percentage of cigarette smokers among Oregon adults, 1996-2010



Survey Limitations

The BRFSS relies on self-reported data and has certain limitations. Respondents tend to underreport socially unacceptable behaviors (e.g., smoking, heavy alcohol use); conversely, respondents may over-report desirable behaviors (e.g., physical activity, fruit and vegetable consumption). The survey's cross-sectional design makes it impossible to infer causality. Finally, the sample sizes used to calculate the estimates in this report vary for a number of reasons.

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For More Information

More information is available upon request to Renee Boyd, BRFSS coordinator, at 971-673-1145.