HEALTH RISK FACTORS IN OREGON:

County and Regional Estimates

based on data from the
Behavioral Risk Factor Surveillance System

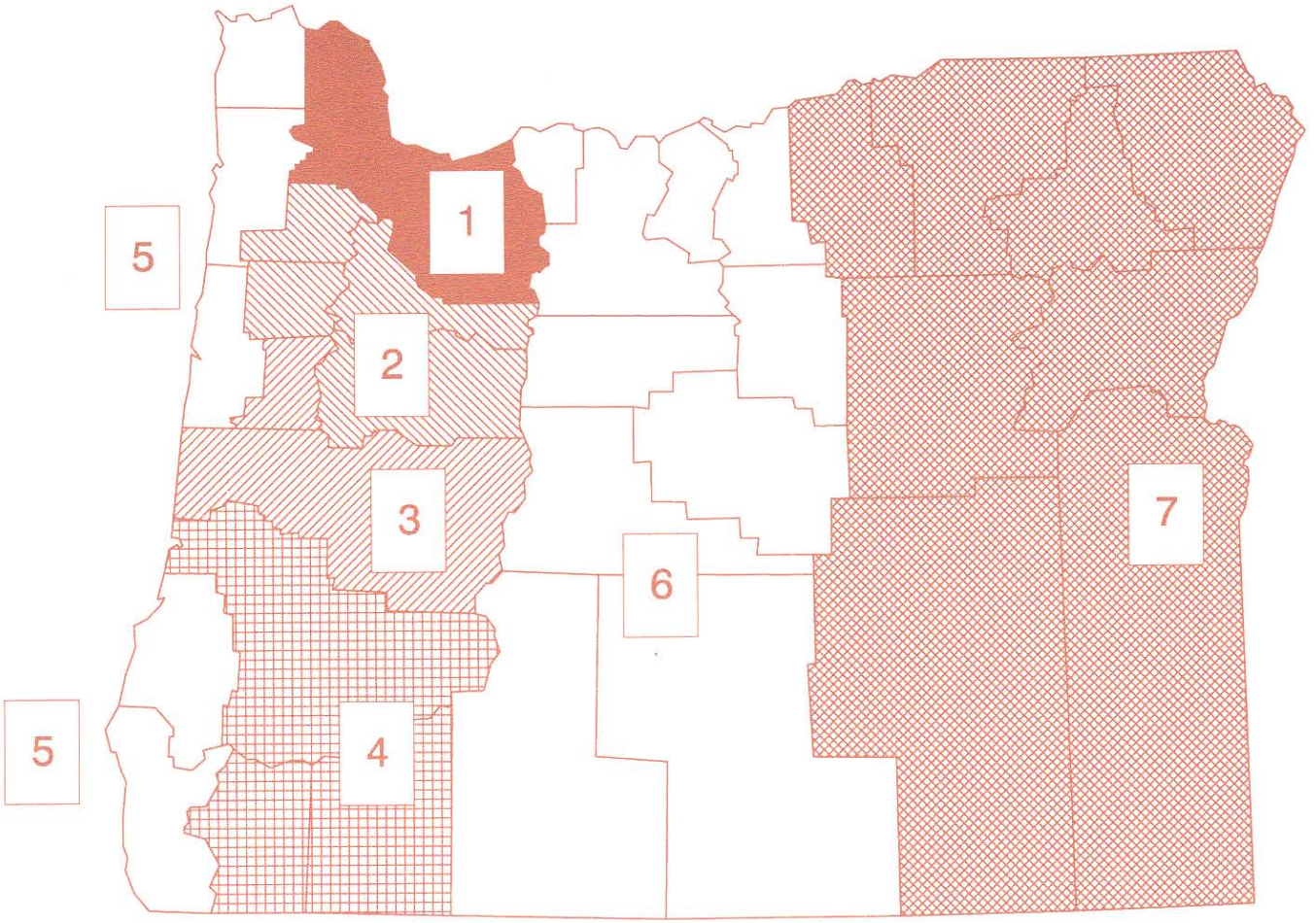
1989-1994

Center for Health Statistics
of the Oregon Health Division
Oregon Department of Human Resources

REGIONS

1 North Willamette
2 Mid-Willamette
3 South Willamette
4 Southwestern
5 Coastal
6 Central
7 Eastern

FOR COUNTY NAMES REFER TO INSIDE BACK COVER.



CONTENTS

TABLES

Goal statements:

Oregon Benchmarks are health goals specific to this state and established by the Oregon Progress Board

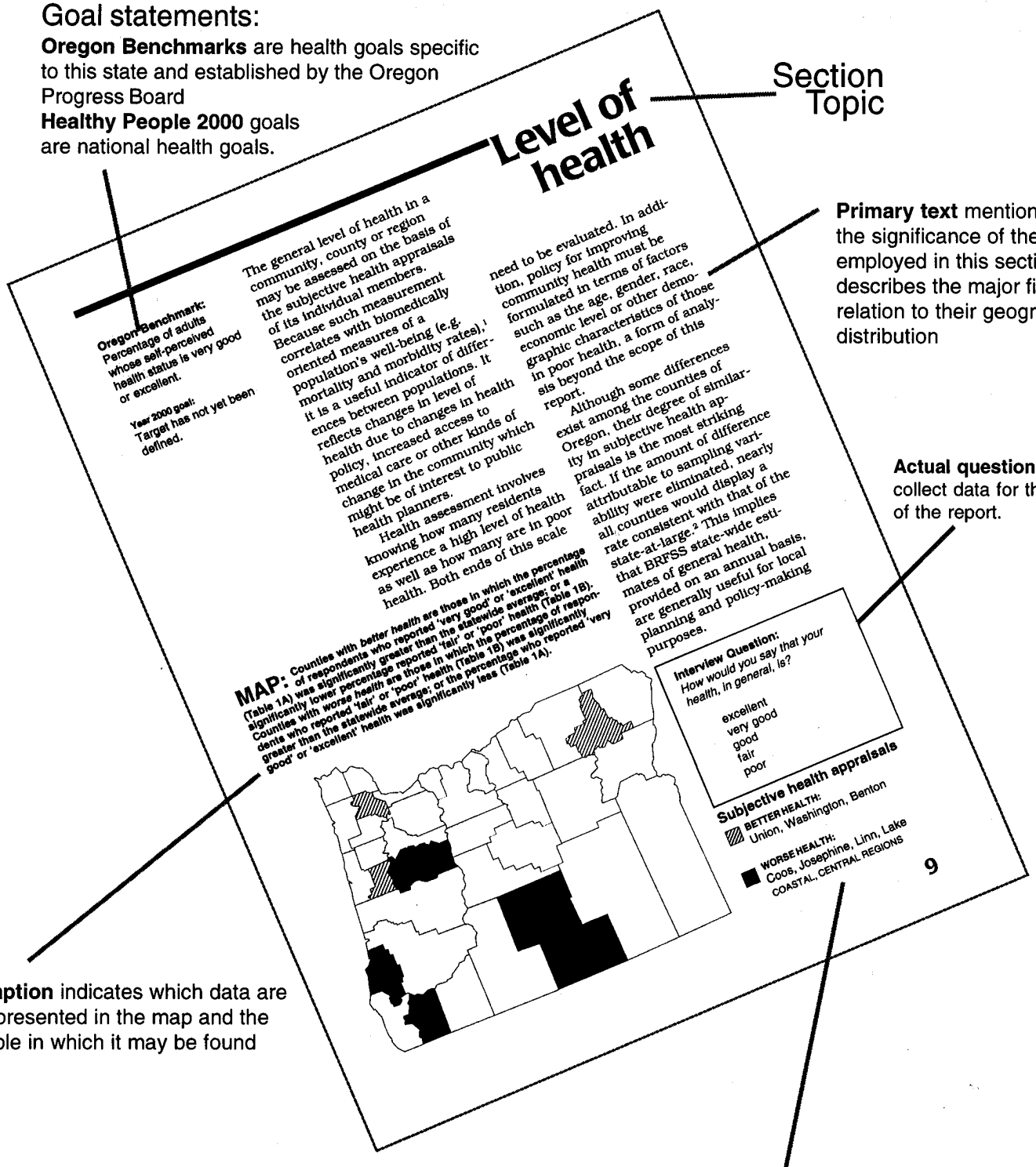
Healthy People 2000 goals are national health goals.

Section Topic

Primary text mentions briefly the significance of the measures employed in this section and describes the major findings in relation to their geographic distribution

Actual questions used to collect data for this section of the report.

Caption indicates which data are represented in the map and the table in which it may be found



Level of health

Oregon Benchmark: Percentage of adults whose self-perceived health status is very good or excellent.

Year 2000 goal: Target has not yet been defined.

The general level of health in a community, county or region may be assessed on the basis of the subjective health appraisals of its individual members. Because such measurement correlates with biomedically oriented measures of a population's well-being (e.g. mortality and morbidity rates),[1] it is a useful indicator of differences between populations. It reflects changes in level of health due to changes in health policy, increased access to medical care or other kinds of change in the community which might be of interest to public health planners.

Health assessment involves knowing how many residents experience a high level of health as well as how many are in poor health. Both ends of this scale need to be evaluated. In addition, policy for improving community health must be formulated in terms of factors such as the age, gender, race, economic level or other demographic characteristics of those in poor health, a form of analysis beyond the scope of this report.

Although some differences exist among the counties of Oregon, their degree of similarity in subjective health appraisals is the most striking fact. If the amount of difference attributable to sampling variability were eliminated, nearly all counties would display a rate consistent with that of the state-at-large.[2] This implies that BRFSS state-wide estimates of general health, provided on an annual basis, are generally useful for local planning and policy-making purposes.

MAP: **Counties with *better health* are those in which the percentage of respondents who reported 'very good' or 'excellent' health (Table 1A) was significantly greater than the statewide average; or a significantly lower percentage reported 'fair' or 'poor' health (Table 1B). Counties with *worse health* are those in which the percentage of respondents who reported 'fair' or 'poor' health (Table 1B) was significantly greater than the statewide average; or the percentage who reported 'very good' or 'excellent' health was significantly less (Table 1A).**

Interview Question:
How would you say that your health, in general, is?

excellent
very good
good
fair
poor

Subjective health appraisals

BETTER HEALTH:
Union, Washington, Benton

WORSE HEALTH:
Coos, Josephine, Linn, Lake
COASTAL, CENTRAL REGIONS

9

LEGEND:

Diagonal lines show that county residents are in *better health* —according to this indicator—than residents of the state as a whole.

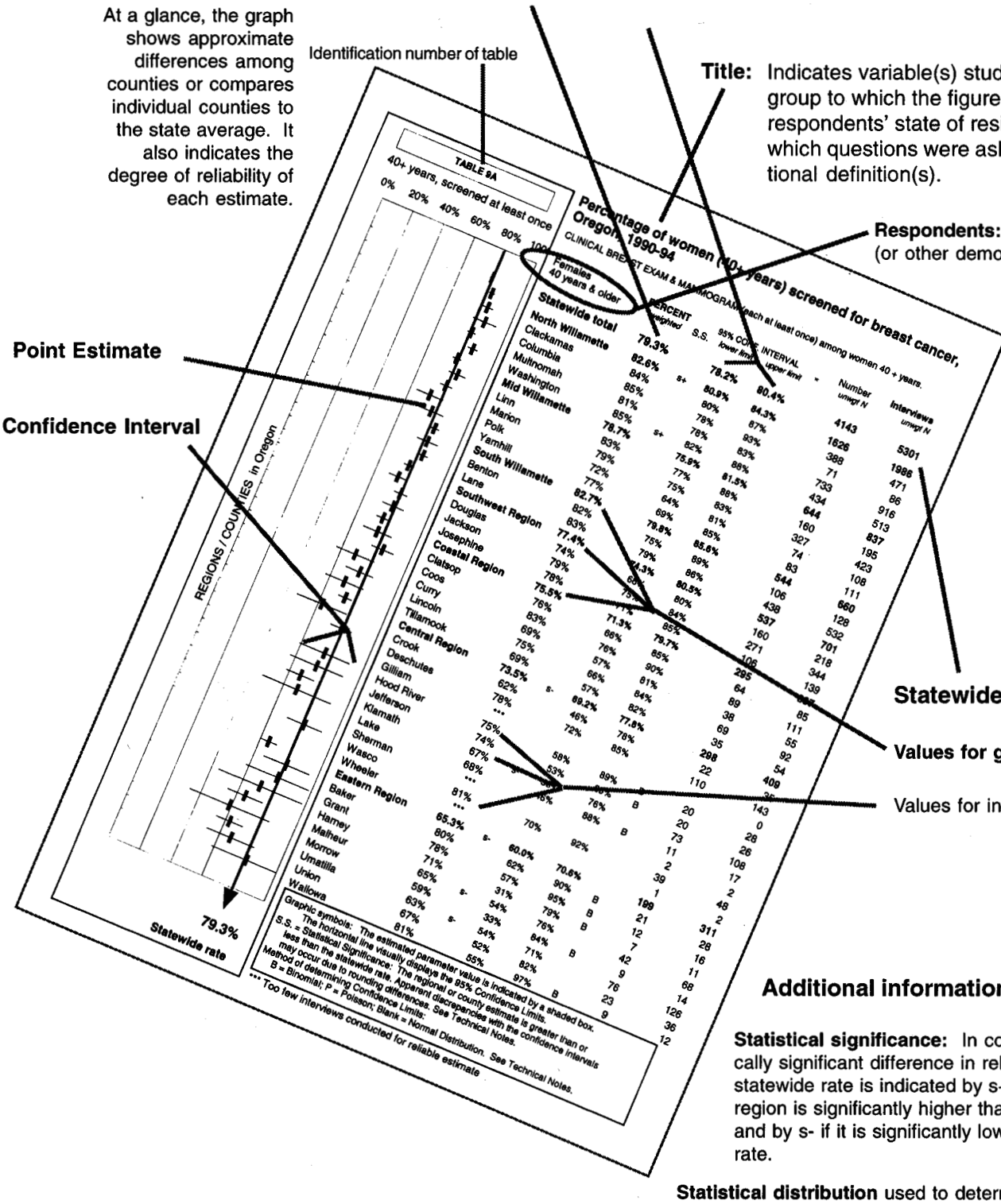
Solid shading shows that county residents are in *worse health*—according to this indicator—than residents of the state, as a whole.

How to use this report...

CHART: Visually shows point and interval prevalence estimates for geographic regions and individual counties. At a glance, the graph shows approximate differences among counties or compares individual counties to the state average. It also indicates the degree of reliability of each estimate.

TABLE: Gives numerical estimates of prevalence and the number of interviews upon which estimates are based.

Prevalence rate: reported as a weighted percentage.
Point estimate and approximate limits for the 95% **confidence interval.**



Title: Indicates variable(s) studied and the group to which the figures refer. Includes respondents' state of residence, years in which questions were asked, and operational definition(s).

Respondents: Gender & age range (or other demographic identifiers).

Point Estimate

Confidence Interval

Statewide values

Values for geographic regions

Values for individual counties

Additional information in the table:

Statistical significance: In column 3 a statistically significant difference in relation to the statewide rate is indicated by s+ if the county or region is significantly higher than the state rate and by s- if it is significantly lower than the state rate.

Statistical distribution used to determine the 95% confidence interval is indicated in column 6.

Number of Interviews conducted is shown in column 8 and the (unweighted) number of respondents who gave a response consistent with the prevalence measure is shown in column 7.

About this report

Purpose of the report

The central purpose of this report is to provide baseline information for geographic and administrative subareas of Oregon useful to community health assessment and planning. The report focuses primarily upon behavior patterns and medical conditions which are associated with chronic diseases--diseases which reduce the quality of life and shorten the life span of many Oregonians.

Auspices of the study

The data of the report were originally collected as part of the Behavioral Risk Factor Surveillance System (BRFSS) to measure key health-related behaviors of Oregonians. Oregon's BRFSS is part of a nationally developed and supported data collection system designed to measure personal behaviors, attitudes and knowledge relevant to health in a periodic fashion.[1] These operations are managed by the Center for Health Statistics of the Oregon Health Division.

Variables studied

The BRFSS surveys are designed so that progress toward state health objectives may be monitored. For example, the data are used to measure progress toward Oregon Benchmarks[2] such as the proportion of adults who do not use tobacco or the proportion who consume alcohol only in moderation. Risk factors associated with national health objectives[3] are also addressed in this report: high blood pressure, high cholesterol, overweight, a sedentary lifestyle and diabetes. Health issues relevant to women, such as screening for breast or cervical cancer are included. Immunization rates among older citizens and the effect of legislation upon seatbelt use are also examined.

Collection of data

The data of this report were gathered by means of telephone interviews conducted from1989 to 1994. On average, about 240 adult Oregonians were surveyed each month. After 1989 the annual sample involved roughly 3,000 interviews. Respondents were randomly selected to represent all non-institutionalized residents of Oregon who were 18 years-of-age or older. A core set of questions developed nationally but administered locally on a periodic basis permits description of statewide trends as well as comparison with other states. Additional questions specific to Oregon were included also. A more complete description of sampling methods may be found in the Technical Notes.

Larger samples for small areas

Since 1989 it has been possible to monitor health trends at a statewide level. Now, by combining these interviews over several years, a random sample has been created of sufficient size and reliability to be useful at a county level of analysis. Questionnaire responses have been reweighted and prevalence estimates produced for both point and interval comparisons for nearly all counties. Comparable statistics are presented for larger geographical regions composed of adjoining counties. A more complete description of the operations employed to achieve valid and reliable estimates may be found in the Technical Notes.

Presentation of data

The percentages given in the tables of this report provide baseline figures for each region and most counties. The charts presented allow direct, easy comparison of counties and regions with one another and with the statewide rate. As explained in the Technical Notes, the accuracy and reliability of the estimates is based upon the number of interviews conducted in each of the counties. In counties with large populations, chance selection insured that more residents were selected for interview; this, in turn, produced more reliable estimates than occurred in counties with fewer residents. This fact is graphically displayed in the chart which accompanies each table of data.

Cautionary notes

The *usefulness of the estimates varies greatly according to the number of observations* obtained for each variable and within each county. For example, there were too few observations regarding the immunization of seniors to permit reliable estimation in several counties. Too few respondents were interviewed to permit valid prevalence estimates for any of the variables under study in Gilliam, Sherman or Wheeler Counties.

Each of the tables of this report contains many prevalence estimates: the statewide rate, a rate for each of 7 regions and, usually, 33 counties. Statistical theory indicates that, in tables with so many sample-based estimates, some of the differences which appear statistically significant are, in fact, due to the chance selection of those interviewed. Based on the 95 percent confidence level, each table is likely to contain *one or two false positives* of this sort.

Apparent differences between counties may be due to differences in their demographic composition rather than differences in health behavior patterns or the quality of medical services available. For example, hypertension typically develops after middle age, thus a county populated by older adults is likely to show a higher rate of residents with high blood pressure than one populated by young adults (e.g. a county with a major university). Other demographic characteristics may also have marked effects upon prevalence estimates for certain health variables.

To reduce the risk of unwarranted conclusions or inappropriate explanations, it is always wise to *discuss matters with local health officials*. Frequently they are aware of local factors which may be affecting prevalence rates in their county. For private citizens or public officials wishing to develop programs to improve community health, this report provides a starting point for discussion. It is intended as one source for the baselines needed to measure improvement, as well.

Finally, one of the most striking facts of this report is the similarity among counties in terms of many health measures. It seems likely that marked differences in levels of health or health-related behavior often may be associated with variables of age, gender, economics or other factors more than geography and residence. This, too, is useful information and suggests that all Oregonians, no matter where they reside, should be concerned with the statewide measures of health published periodically by their public officials.

[1] *Health Risks in America: Gaining Insight from the Behavioral Risk Factor Surveillance System*; Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; 1995; 24 pages.

[2] *Oregon Benchmarks: Standards for Measuring Statewide Progress and Institutional Performance*; Oregon Progress Board; December, 1994; 99 pages.

[3] U.S. Department of Health and Human Services. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington, DC: U.S. Department of Health and Human Services, Public Health Service, 1991; DHHS publication no. (PHS) 91-50212.

Level of health

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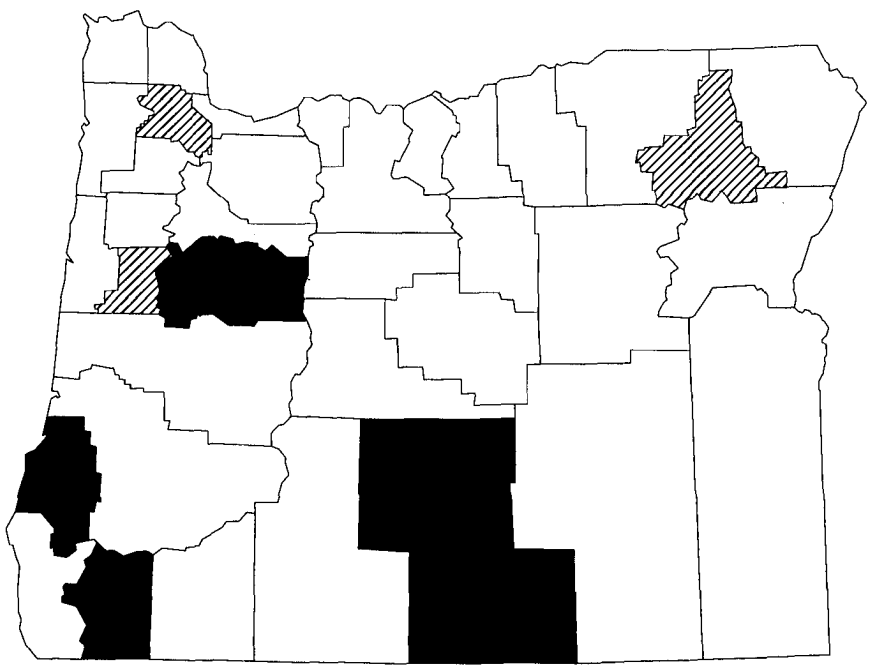

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Subjective health appraisals

BETTER HEALTH:
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WORSE HEALTH:
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COASTAL, CENTRAL REGIONS

Excellent or very good health.

Based on nearly six thousand interviews conducted throughout the state in 1993 and 1994, sixty-three percent of Oregonians 18 years of age or older report 'very good' or 'excellent' health (Table 1A).

In Washington County—and perhaps Clackamas County, as well—residents report a higher level of personal health than in the state at-large. Union County, too, appears to have a higher proportion of residents who report a higher level of health than other counties of the Eastern Region.[3]

On the other hand, respondents from Coos and Josephine Counties reported lower than average rates. In fact, less than one-half of those interviewed from Coos County claimed 'excellent' or 'very good' health.

A lower proportion of persons living in the Coastal or Central Regions report superior health levels.

Poor health.

Nearly twelve percent of Oregonians consider themselves to have 'poor' or only 'fair' health (Table 1B).

By this standard, residents of Central Oregon are more likely than those of other regions to view themselves as having less than good health. Residents of Linn and Lake Counties, too, are more likely to report a low level of health than residents statewide.

On the other hand, Benton and Washington Counties have proportionately fewer residents who report 'poor' or only 'fair' health.

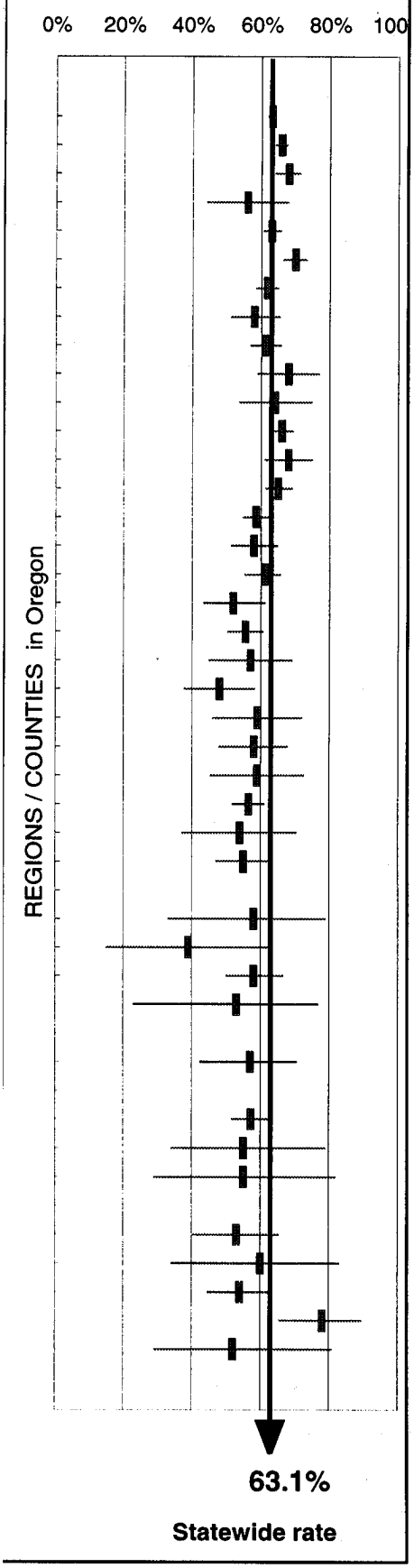
Endnotes:

[1] Hennessy CH, Moriaty DG, Zack MM, Scherr PA and Brackbill R. Measuring health-related quality of life for public health surveillance. *Public Health Reports* 109:5 Sept-Oct, 1994. 665-72. See also: Quality of life as a new public health measure--Behavioral Risk Factor Surveillance System, 1993. *MMWR* 43:20 May 27, 1994. 375-80. Due to the correspondence between subjective evaluations of personal health and more objective measures, BRFSS interviews may be used to assess county or regional levels of health. Although too imprecise for some purposes, this data source is highly useful for health planning and policy-making. Shifts in subjective health appraisals may provide early indications of change in the level of community health which are only later documented by morbidity or mortality statistics.

[2] See section on *sampling variability and estimation of confidence intervals* in the Technical Notes of this report.

[3] These comparisons are based on *Confidence Interval* estimates given in Table 1A. For a more complete explanation, read the relevant sections in the Technical Notes.

TABLE 1A



Percentage of adults reporting superior health, Oregon, 1993-94

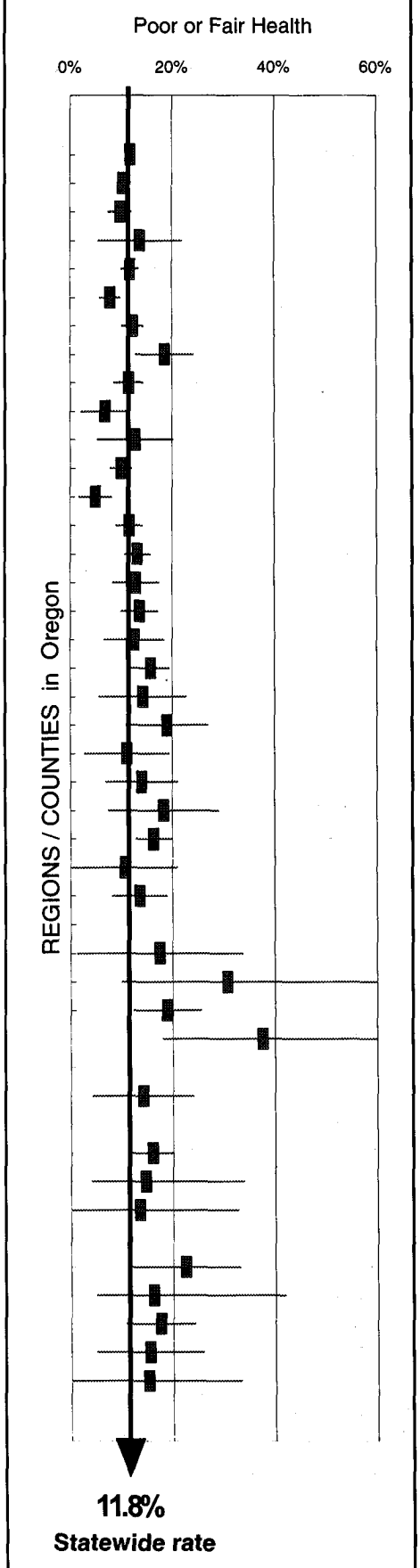
SUBJECTIVE HEALTH ASSESSMENT: 'excellent' or 'very good' health.

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*		Number *unwgt N*	Interviews *unwgt N*
Statewide total	**63.1%**		**61.9%**	**64.3%**		**3580**	**5798**
North Willamette	**65.9%**		**64.1%**	**67.7%**		**1662**	**2550**
Clackamas	68%		64%	71%		403	599
Columbia	56%		44%	68%		37	66
Multnomah	63%		61%	66%		765	1227
Washington	70%	s+	66%	73%		457	658
Mid Willamette	**61.8%**		**58.5%**	**65.1%**		**483**	**814**
Linn	58%		51%	66%		98	177
Marion	61%		57%	66%		269	456
Polk	68%		59%	77%		70	104
Yamhill	64%		54%	75%		46	77
South Willamette	**66.1%**		**62.7%**	**69.5%**		**478**	**730**
Benton	68%		61%	75%		111	168
Lane	65%		61%	69%		367	562
Southwest Region	**58.6%**		**54.8%**	**62.4%**		**362**	**647**
Douglas	58%		51%	65%		109	199
Jackson	61%		55%	66%		194	330
Josephine	52%	s-	43%	61%		59	118
Coastal Region	**55.5%**	s-	**50.3%**	**60.7%**		**194**	**349**
Clatsop	57%		45%	69%		35	63
Coos	48%	s-	38%	58%		45	91
Curry	59%		46%	72%		32	54
Lincoln	58%		48%	68%		54	92
Tillamook	59%		45%	73%		28	49
Central Region	**56.5%**	s-	**51.7%**	**61.3%**		**236**	**411**
Crook	54%		37%	71%		18	34
Deschutes	55%		47%	63%		81	150
Gilliam	***						0
Hood River	58%		33%	79%	B	12	21
Jefferson	39%		15%	63%	B	8	14
Klamath	58%		50%	67%		83	133
Lake	53%		23%	77%	B	6	12
Sherman	***						0
Wasco	57%		42%	71%		28	47
Wheeler	***						0
Eastern Region	**57.2%**		**51.6%**	**62.8%**		**165**	**297**
Baker	55%		34%	79%	B	11	21
Grant	55%		29%	82%	B	7	12
Harney	***					3	7
Malheur	53%		40%	65%		28	59
Morrow	60%		34%	83%	B	11	17
Umatilla	54%		45%	62%		62	120
Union	78%	s+	65%	90%		35	46
Wallowa	52%		29%	81%	B	8	15

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TABLE 1B



Percentage of adults reporting inferior health, Oregon, 1993-94

SUBJECTIVE HEALTH ASSESSMENT: 'poor' or 'fair' health.

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*		Number *unwgt N*	Interviews *unwgt N*
Statewide total	**11.8%**		**11.0%**	**12.6%**		**748**	**5798**
North Willamette	**10.4%**		**9.2%**	**11.6%**		**279**	**2550**
Clackamas	10%		8%	12%		60	599
Columbia	14%		5%	22%		12	66
Multnomah	12%		10%	14%		156	1227
Washington	8%	s-	6%	10%		51	658
Mid Willamette	**12.3%**		**10.0%**	**14.6%**		**108**	**814**
Linn	19%	s+	13%	24%		34	177
Marion	12%		9%	14%		58	456
Polk	7%		2%	12%		6	104
Yamhill	13%		5%	20%		10	77
South Willamette	**10.0%**		**7.8%**	**12.2%**		**81**	**730**
Benton	5%	s-	2%	8%		11	168
Lane	12%		9%	14%		70	562
Southwest Region	**13.2%**		**10.6%**	**15.8%**		**102**	**647**
Douglas	13%		8%	18%		31	199
Jackson	14%		10%	17%		54	330
Josephine	13%		7%	19%		17	118
Coastal Region	**15.8%**		**12.0%**	**19.6%**		**60**	**349**
Clatsop	14%		6%	23%		9	63
Coos	19%		11%	27%		19	91
Curry	11%		3%	19%		8	54
Lincoln	14%		7%	21%		13	92
Tillamook	18%		7%	29%		11	49
Central Region	**16.3%**	s+	**12.7%**	**19.9%**		**64**	**411**
Crook	11%		0%	21%	P	4	34
Deschutes	14%		8%	19%		21	150
Gilliam	***						0
Hood River	18%		1%	34%	B	4	21
Jefferson	31%		10%	61%	B	3	14
Klamath	19%		12%	26%		22	133
Lake	38%	s+	18%	69%	B	4	12
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Eastern Region	**16.0%**		**11.8%**	**20.2%**		**54**	**297**
Baker	15%		4%	34%	B	4	21
Grant	14%		0%	33%	B	2	12
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Malheur	23%		12%	33%		15	59
Morrow	16%		5%	42%	B	2	17
Umatilla	18%		11%	24%		22	120
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Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate.

Seatbelt use

Oregon Benchmark:
Percentage of adults who use vehicle safety restraints (seat belts) consistently.

Year 2000 goal: 90%

Consistent use of seatbelts while riding in a motor vehicle reduces the risk of severe injury or death. This has long been established fact.

Still, after auto manufacturers made protective restraints widely available for use, the majority of Americans failed to adapt quickly. In Oregon, observational research sponsored by the Traffic Safety section of the Oregon Department of Transportation (ODOT) documented this slow shift in seatbelt usage:[1] roughly 20 percent of vehicle occupants used seatbelts in 1983; this had increased to 31 percent by 1985, and to 50 percent by 1990. As seen in Table 2A, the latter figures correspond closely to data from BRFSS interviews conducted in 1989-1990.

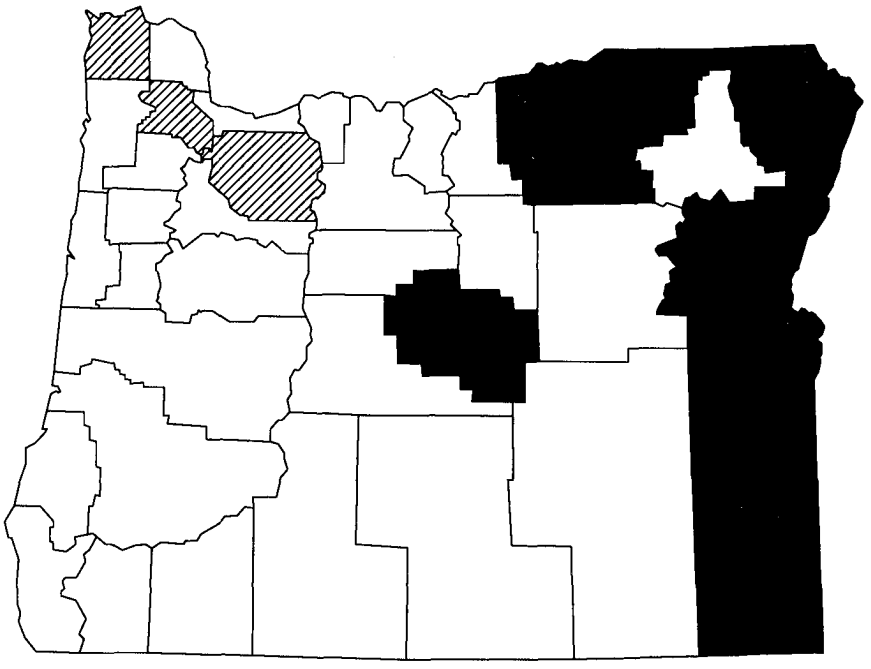
In December of 1990 a law was implemented which required all drivers and passengers to wear safety belts. Violations could cost as much as $50 per unbuckled person.

The law had a marked impact upon behavior. Within three years the consistent use of safety restraints rose to nearly 80 percent according to both BRFSS estimates and the ODOT observational research. Furthermore, the rate of vehicle accident deaths in the state dropped during this period. This demonstrates how legislation may alter personal behavior in ways that protect health.

Due to the degree of correspondence between self-reports (BRFSS) and direct observation (ODOT) of seatbelt use, BRFSS interviews are presumed to provide good estimates regarding both the level of use and the degree of behavioral change associated with the new law.

Inspection of BRFSS data reveals important differences in current seatbelt use between

MAP: Shows counties in which the percentage of regular seatbelt users was significantly greater or significantly less than the state average after enforcement legislation was enacted. See Table 2B.



Interview Question:
How often do you use seatbelts when you drive or ride in a car?

- Always
- Nearly always
- Sometimes
- Seldom
- Never
- Never drive or ride in a car

Regular seatbelt use

MORE USERS:
Clatsop, Clackamas, Washington
NORTH WILLAMETTE, COASTAL REGIONS

FEWER USERS:
Baker, Malheur, Wallowa, Morrow, Crook, Umatilla
CENTRAL, EASTERN REGIONS

geographic regions of the state. It also shows that the law had greater effect in some areas than others.

Prior to the new law.

In 1989-90, forty-eight percent of Oregonians reported that they always buckled up. There were major differences, however, between counties and regions (Table 2A).

Although Washington (55%) and Multnomah (53%) Counties had rates above the statewide average, only Benton County (68%) had a rate above 60 percent. None of the counties approached 80 percent, the Benchmark target which had been set for 1995.

In Eastern Oregon the rate of regular seatbelt use was below that of any other region in the state. Little more than one-fourth of the adults reported that they always used a seatbelt while driving or riding in a motor vehicle.

In sum, perhaps 7 counties in the Willamette Valley[2] and four in other parts of the state (Jackson, Deschutes, Coos and Tillamook) could reasonably claim that half or more of their residents used seatbelts on a regular basis. In a majority of counties, however, closer to 40 percent consistently employed safety restraints--a level of use which reached only halfway toward the 1995 Benchmark goal.

After the new law.

In 1991-93, after the mandatory seatbelt law was in effect, 77 percent of Oregonians reported that they always buckled up. Central and Eastern Oregon displayed lower rates of seatbelt use (Table 2B).

Baker County had the lowest rate with only 40 percent of its residents reporting that they always used seatbelts. (Nevertheless, this new figure represented almost 40 percent improvement over the level of regular seatbelt use prior to the time at which the law took effect.) Except for Grant County (72%), other counties in the Eastern Region had rates which were about 10 to 25 percentage points below the statewide rate. In the case of Malheur, Wallowa, Morrow and Umatilla Counties the amount of difference was statistically significant.

On the positive side, six counties in the Willamette Valley or along the coast had achieved the level of the 1995 Benchmark. In doing so they surpassed the rate in Benton County, the previous leader during voluntary compliance.

While improvements in seat belt use have been documented since the law went into effect, the fact remains that at least one-fifth of adult Oregonians do not protect themselves from injury while riding in a car in the manner required by law.

Effect of legislation.

The rapid shift of nearly 30 percentage points dramatically displayed the way legislation may be used to improve public safety. The way in which the law impacted various regions is also of great interest.

Without exception, seatbelt use increased in all counties. In fact, the amount of increase was at least 20 percentage points in all but Baker and Benton Counties.[3] The fact that Benton had an increase of only 9 percentage points may be explained by the fact that, prior to the time the law took effect, that county had already achieved a high level of voluntary compliance.

The greatest improvement occurred in Clatsop County. It more than doubled the rate from 39 percent in 1989-90 to 87 percent--the highest estimated rate among all counties in 1991-93. Thus, residents of that county not only surpassed the 1995 Benchmark goal, they are approaching the Year 2000 goal of 90 percent. Other counties which showed above average improvement were Curry, Wasco and Union Counties.

Interestingly, improvement was most apparent among coastal counties and in the Eastern part of the state. The proportion of residents who consistently use seatbelts nearly doubled in the Coastal Region. Because of the small number of adults in eastern Oregon who regularly used seatbelts prior to 1991, that region shows the proportionately greatest improvement in use of these safety devices. Unfortunately, it remains the region with the lowest seatbelt use.

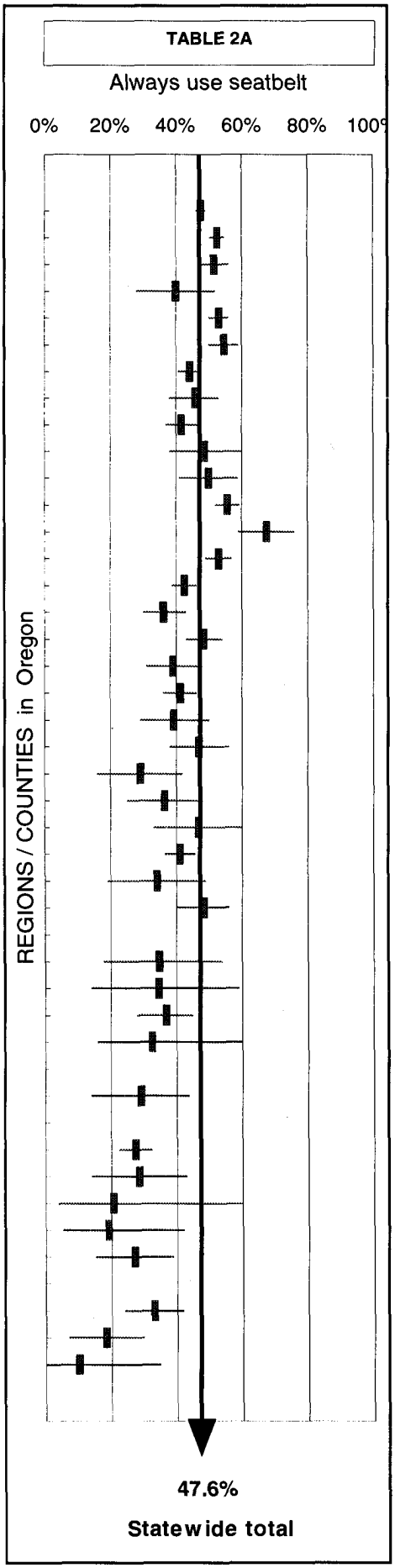
Endnotes:

[1] Oregon Department of Transportation: Traffic Safety Commission. Executive Summary and Database resulting from Occupant Protection Observation Studies conducted by the Intercept Research Corporation of Lake Oswego, Oregon.

[2] Specifically, Benton, Lane, Washington, Multnomah, Clackamas, Yamhill, Polk.

[3] The shift was statistically significant at the 95 percent level of confidence in all counties in which at least 50 interviews had been conducted.

TABLE 2A



Percentage of adults reporting consistent seatbelt use prior to the 1990 law, Oregon, 1989-90.

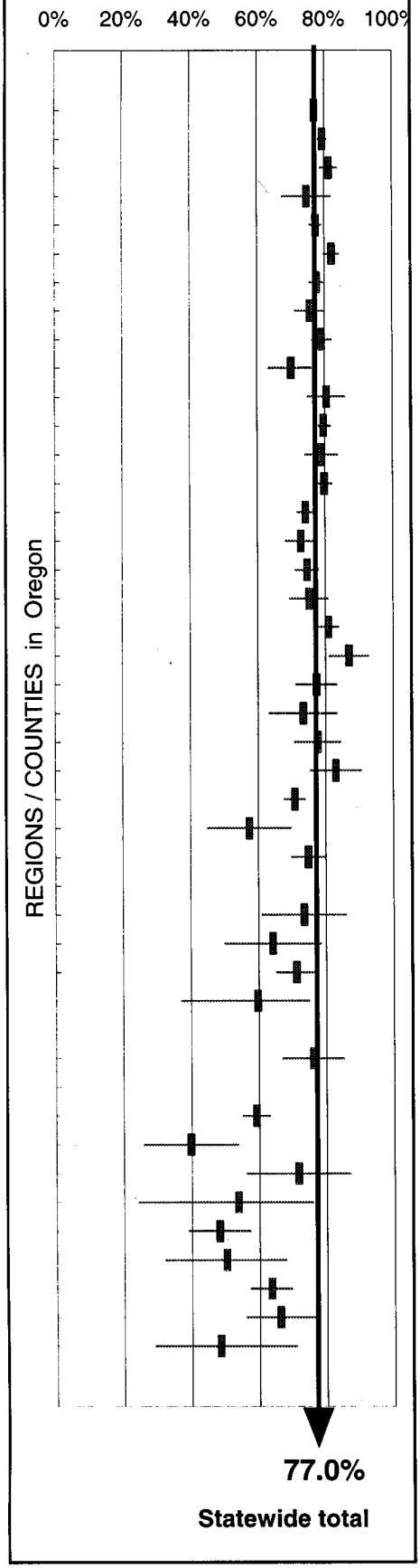
ALWAYS USE SEATBELT

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*		Number *unwgt N*	Interviews *unwgt N*
Statewide total	**47.6%**		**46.2%**	**49.0%**		**2389**	**4997**
North Willamette	**52.6%**	s+	**50.3%**	**54.9%**		**965**	**1832**
Clackamas	52%		47%	56%		205	401
Columbia	40%		28%	52%		23	62
Multnomah	53%	s+	50%	56%		464	880
Washington	55%	s+	50%	59%		273	489
Mid Willamette	**44.2%**		**40.6%**	**47.8%**		**332**	**742**
Linn	46%		38%	53%		79	174
Marion	42%		37%	47%		158	375
Polk	49%		38%	60%		40	81
Yamhill	50%		41%	59%		55	112
South Willamette	**55.7%**	s+	**52.0%**	**59.4%**		**396**	**696**
Benton	68%	s+	59%	76%		89	131
Lane	53%		49%	57%		307	565
Southwest Region	**42.6%**		**38.8%**	**46.4%**		**284**	**652**
Douglas	36%	s-	30%	43%		76	209
Jackson	48%		43%	54%		154	316
Josephine	39%		31%	48%		54	127
Coastal Region	**41.3%**		**36.2%**	**46.4%**		**154**	**360**
Clatsop	39%		29%	50%		37	81
Coos	47%		38%	56%		52	114
Curry	29%	s-	16%	42%		15	47
Lincoln	36%		25%	48%		24	64
Tillamook	47%		33%	60%		26	54
Central Region	**41.1%**	s-	**36.4%**	**45.8%**		**177**	**420**
Crook	34%		19%	49%		15	37
Deschutes	48%		40%	56%		76	151
Gilliam	***						3
Hood River	35%		18%	54%	B	8	26
Jefferson	35%		14%	59%	B	9	20
Klamath	37%	s-	28%	45%		50	126
Lake	33%		16%	60%	B	6	17
Sherman	***					2	2
Wasco	29%	s-	14%	44%		10	36
Wheeler	***					1	2
Eastern Region	**27.4%**	s-	**22.3%**	**32.5%**		**81**	**295**
Baker	29%	s-	14%	43%		8	39
Grant	21%		4%	60%	B	3	10
Harney	19%	s-	5%	42%	B	3	17
Malheur	27%	s-	15%	39%		15	55
Morrow	***					5	7
Umatilla	33%	s-	24%	42%		37	110
Union	18%	s-	7%	30%		9	45
Wallowa	10%	s-	0%	35%	B	1	12

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews for reliable estimate.

TABLE 2B



Percentage of adults reporting consistent seatbelt use after the 1990 law, Oregon, 1991-93

ALWAYS USE SEATBELT

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*		Number *unwgt N*	Interviews *unwgt N*
Statewide total	**77.0%**		**76.2%**	**77.8%**		**7541**	**9694**
North Willamette	**79.4%**	s+	**78.1%**	**80.7%**		**3077**	**3848**
Clackamas	81%	s+	79%	84%		693	853
Columbia	75%		67%	82%		104	137
Multnomah	77%		76%	79%		1435	1840
Washington	82%	s+	80%	85%		845	1018
Mid Willamette	**77.6%**		**75.4%**	**79.8%**		**1122**	**1418**
Linn	76%		71%	80%		265	345
Marion	79%		76%	82%		569	712
Polk	70%		63%	77%		129	169
Yamhill	81%		75%	86%		159	192
South Willamette	**79.6%**		**77.4%**	**81.8%**		**1073**	**1313**
Benton	79%		74%	84%		218	264
Lane	80%		77%	82%		855	1049
Southwest Region	**74.2%**		**71.7%**	**76.7%**		**880**	**1169**
Douglas	73%		68%	77%		276	374
Jackson	75%		71%	78%		446	584
Josephine	75%		69%	81%		158	211
Coastal Region	**80.9%**	s+	**77.8%**	**84.0%**		**487**	**606**
Clatsop	87%	s+	81%	93%		104	121
Coos	77%		71%	83%		144	180
Curry	73%		63%	84%		57	74
Lincoln	78%		71%	85%		108	138
Tillamook	83%		75%	91%		74	93
Central Region	**70.8%**	s-	**67.6%**	**74.0%**		**559**	**779**
Crook	57%	s-	45%	70%		36	61
Deschutes	75%		70%	80%		216	283
Gilliam	***					2	4
Hood River	74%		61%	86%		33	48
Jefferson	64%		50%	79%		28	43
Klamath	71%		65%	77%		159	217
Lake	60%		37%	75%	B	17	29
Sherman	***					1	4
Wasco	76%		67%	85%		63	84
Wheeler	***					4	6
Eastern Region	**59.2%**	s-	**55.1%**	**63.3%**		**343**	**561**
Baker	40%	s-	26%	54%		19	46
Grant	72%		56%	87%		22	33
Harney	54%		24%	76%	B	9	12
Malheur	48%	s-	39%	57%		57	114
Morrow	50%	s-	32%	68%	B	18	30
Umatilla	64%	s-	57%	70%		154	225
Union	66%		56%	77%		54	81
Wallowa	49%	s-	29%	71%	B	10	20

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate.

Tobacco use

Oregon Benchmark: Percentage of adults who do not currently smoke tobacco.

Year 2000 goal: 85%

Healthy People 2000: Cigarette smoking prevalence among adults 20 years or older.

Year 2000 goal: 15%

Use of tobacco is the leading cause of premature death and disability in the United States and in Oregon. People who smoke cigarettes and those exposed to second-hand smoke are placed at increased risk of heart disease, stroke, cancer and other health problems. In 1993, more than one out of every five deaths among state residents could be linked to the effects of tobacco according to death certificates filed with the Oregon Health Division.[1] Women who smoke during pregnancy place their newborn infants at risk for prematurity, low birthweight and other adverse health conditions.

In spite of this, over one-fifth of adult residents in Oregon report that they smoke cigarettes. In some counties the proportion of smokers may be as high as one-third. Tobacco use remains a major health problem in the state.

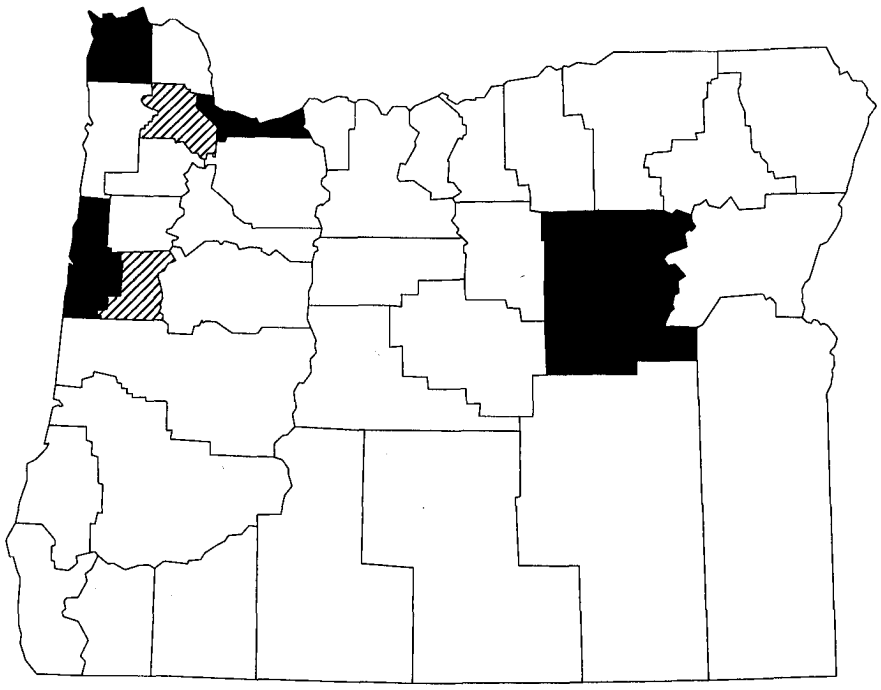
The estimated percentage of adults who *do not currently smoke* tobacco is a key Benchmark based on BRFSS data. The statewide target set for 1995 was 82 percent; the Year 2000 goal is 85 percent.

The good news first.

More than three-fourths of all adults in Oregon do *not* currently smoke tobacco. During 1989-94 annual BRFSS estimates varied from 77 to 79 percent; the average for the entire time period was 78 percent (Table 3A).

Benton County showed an estimated 87 percent of adults as non-smokers, a rate which was significantly higher than the state rate and exceeds the statewide goal for the Year 2000. Washington County (82%) also displayed a rate above the statewide average, achieving the state's 1995 target goal.

MAP: Shows counties in which the percentage of current smokers was significantly greater or significantly less than the state average. See Table 3B.



Interview Questions:

Have you smoked at least 100 cigarettes in your entire life?

Do you smoke cigarettes now?

Cigarette smoking prevalence

FEWER SMOKERS:
Benton, Washington

MORE SMOKERS:
Clatsop, Grant, Lincoln, Multnomah
COASTAL REGION

Now the bad news.

More than one in five adults in the state currently smoke cigarettes. The highest percentage of smokers was reported in Grant County (42%). Table 3B indicates that Lincoln (33%), Clatsop (28%) and Multnomah (24%) Counties also had rates significantly greater than the statewide rate.

At least 7 other counties had rates which exceed a level consistent with Oregon Benchmark goals: Clackamas, Linn, Marion, Lane, Douglas, Coos and Grant.[2] Except for Benton and Washington Counties each of the counties will need to reduce tobacco use if future Benchmark goals are to be met.

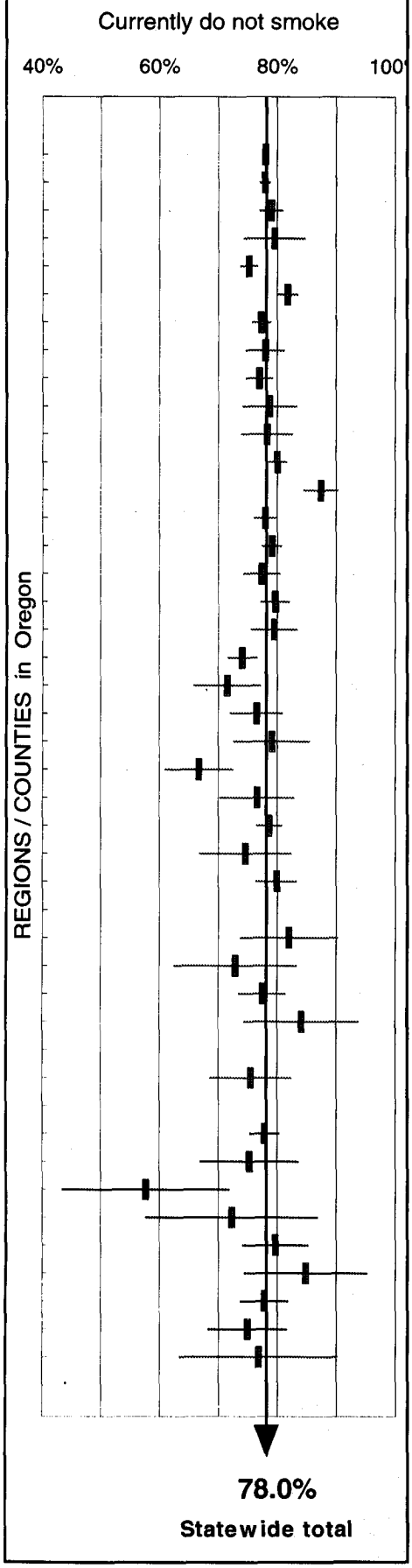
Remarkably little difference is seen between regions in terms of the percentage of smokers. Only the Coastal Region has a significantly higher proportion of residents who smoke than the state rate. Based on the 6-year BRFSS estimate, it is the only extended geographic area in which one-fourth of the residents currently use tobacco.

Endnotes

[1] Table 6-20: *Tobacco-related deaths by county of residence, Oregon, 1993* in Oregon Vital Statistics Annual Report 1993, Volume 2. Center for Health Statistics, Health Division, Oregon Department of Human Resources. December, 1995. page 6-59.

[2] That is, the interval estimate associated with each of these counties is greater than 18 percent, the proportion of smokers which corresponds to the 1995 Oregon Benchmark goal (phrased as 82% non-smokers).

TABLE 3A



Percentage of adults who do not currently smoke cigarettes, Oregon, 1989-94

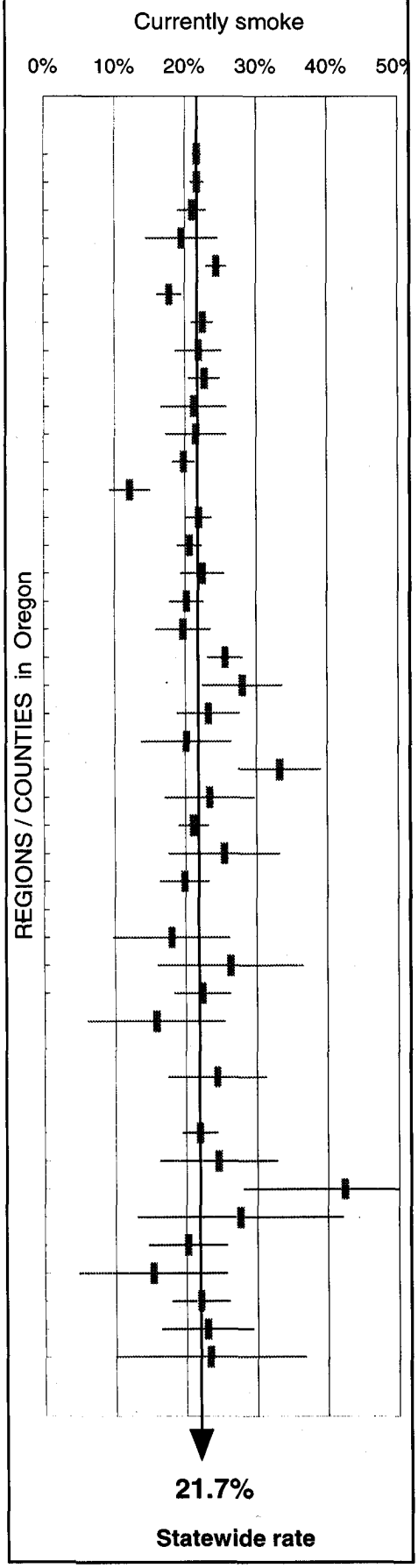
DO NOT CURRENTLY SMOKE.

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**78.0%**		**77.4%**	**78.6%**	**13653**	**17535**
North Willamette	**77.9%**		**76.9%**	**78.9%**	**5367**	**6886**
Clackamas	79%		77%	81%	1248	1578
Columbia	80%		74%	85%	182	229
Multnomah	75%	s-	74%	77%	2485	3299
Washington	82%	s+	80%	84%	1452	1780
Mid Willamette	**77.3%**		**75.7%**	**78.9%**	**2011**	**2595**
Linn	78%		75%	81%	469	607
Marion	77%		75%	79%	1040	1346
Polk	79%		74%	83%	233	298
Yamhill	78%		74%	83%	269	344
South Willamette	**80.0%**		**78.4%**	**81.6%**	**1870**	**2338**
Benton	87%	s+	84%	90%	427	486
Lane	78%		76%	80%	1443	1852
Southwest Region	**79.1%**		**77.4%**	**80.8%**	**1669**	**2129**
Douglas	77%		74%	81%	535	688
Jackson	80%		77%	82%	825	1046
Josephine	80%		76%	83%	309	395
Coastal Region	**74.1%**	s-	**71.6%**	**76.6%**	**853**	**1161**
Clatsop	72%	s-	66%	77%	174	240
Coos	77%		72%	81%	261	347
Curry	79%		73%	86%	118	151
Lincoln	67%	s-	61%	73%	171	252
Tillamook	77%		70%	83%	129	171
Central Region	**78.6%**		**76.5%**	**80.7%**	**1101**	**1409**
Crook	75%		67%	82%	89	118
Deschutes	80%		76%	83%	401	505
Gilliam	***				6	7
Hood River	82%		74%	90%	66	83
Jefferson	73%		62%	83%	55	70
Klamath	78%		73%	82%	319	414
Lake	84%		74%	94%	45	54
Sherman	***				5	6
Wasco	76%		68%	83%	108	144
Wheeler	***				7	8
Eastern Region	**77.8%**		**75.2%**	**80.4%**	**782**	**1017**
Baker	75%		67%	84%	73	102
Grant	58%	s-	43%	72%	33	46
Harney	72%		58%	87%	29	36
Malheur	80%		74%	85%	150	194
Morrow	85%		74%	95%	38	45
Umatilla	78%		74%	82%	306	396
Union	75%		68%	82%	123	160
Wallowa	77%		63%	90%	30	38

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews for reliable estimate.

TABLE 3B



Percentage of adults who currently smoke cigarettes, Oregon, 1989-94

CURRENTLY SMOKE CIGARETTES

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**21.7%**		**21.1%**	**22.3%**	**3834**	**17535**
North Willamette	**21.7%**		**20.7%**	**22.7%**	**1501**	**6886**
Clackamas	21%		19%	23%	329	1578
Columbia	20%		14%	25%	45	229
Multnomah	24%	s+	23%	26%	806	3299
Washington	18%	s-	16%	20%	321	1780
Mid Willamette	**22.5%**		**20.9%**	**24.1%**	**578**	**2595**
Linn	22%		19%	25%	137	607
Marion	23%		20%	25%	303	1346
Polk	21%		17%	26%	64	298
Yamhill	22%		17%	26%	74	344
South Willamette	**19.8%**		**18.2%**	**21.4%**	**462**	**2338**
Benton	12%	s-	9%	15%	57	486
Lane	22%		20%	24%	405	1852
Southwest Region	**20.6%**		**18.9%**	**22.3%**	**454**	**2129**
Douglas	22%		19%	26%	151	688
Jackson	20%		18%	23%	219	1046
Josephine	20%		16%	24%	84	395
Coastal Region	**25.6%**	s+	**23.1%**	**28.1%**	**305**	**1161**
Clatsop	28%	s+	22%	34%	65	240
Coos	23%		19%	28%	85	347
Curry	20%		14%	26%	32	151
Lincoln	33%	s+	27%	39%	81	252
Tillamook	23%		17%	30%	42	171
Central Region	**21.1%**		**19.0%**	**23.2%**	**303**	**1409**
Crook	25%		18%	33%	29	118
Deschutes	20%		16%	23%	102	505
Gilliam	***				1	7
Hood River	18%		10%	26%	17	83
Jefferson	26%		16%	37%	14	70
Klamath	22%		18%	26%	93	414
Lake	16%		6%	26%	9	54
Sherman	***				1	6
Wasco	24%		17%	31%	36	144
Wheeler	***				1	8
Eastern Region	**21.9%**		**19.4%**	**24.4%**	**231**	**1017**
Baker	25%		16%	33%	28	102
Grant	42%	s+	28%	57%	13	46
Harney	28%		13%	42%	7	36
Malheur	20%		15%	26%	44	194
Morrow	15%		5%	26%	7	45
Umatilla	22%		18%	26%	89	396
Union	23%		16%	29%	35	160
Wallowa	23%		10%	37%	8	38

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate.

Alcohol use

Oregon Benchmark:
Percentage of adults who drink alcohol only in moderation.

Year 2000 goal: 90%

The relationship between alcohol use and individual health status remains controversial. Although some research suggests that the moderate use of alcohol may be beneficial to health, when consumed to excess or at the wrong time alcohol may represent a major health hazard.

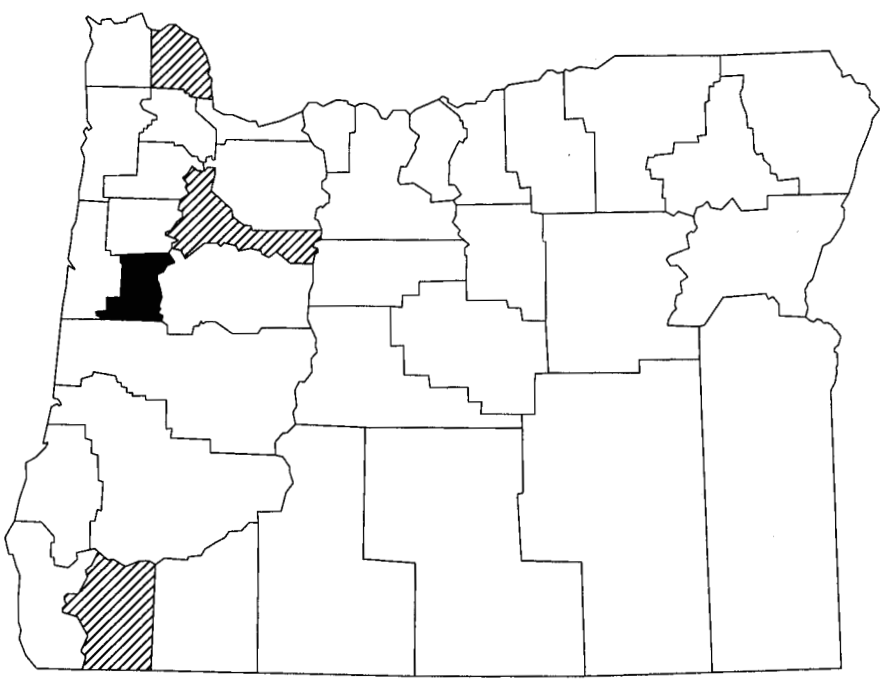
Regular heavy use of alcohol increases the risk of cirrhosis of the liver, gastritis, pancreatitis, damage to the nervous system, and even brain damage. It may also increase the risk of cancers of the mouth, throat, and liver. If consumed during pregnancy—especially during the early phases of fetal development—even moderate amounts of alcohol may have a severe negative effect upon the newborn.

Occasional or episodic overconsumption of alcohol may also pose a serious health problem. Often people injure themselves or others while drunk. It is well-known that the risk of unintentional injury increases greatly among operators of motor vehicles or other types of mechanical equipment who have overconsumed alcohol.

In combination with other substances—prescribed or over-the-counter drugs as well as illegal substances—alcohol may prove lethal. Also, acts of suicide or homicide are often preceded by the overconsumption of alcohol.

In view of this partial list which indicates the great destructive potential of alcohol misuse, an Oregon Benchmark

MAP: Shows counties in which the percentage of adults who are moderate users of alcohol is significantly greater or significantly less than the state average. See Table 4A.



Definition of terms:
Moderate: Use no alcohol or drink 30 or fewer drinks per month and never more than 4 drinks on a single occasion.

Acute: Drank 5 or more drinks on at least one occasion during month preceding interview.

Chronic: Drank 2 or more drinks per day on average (>60 drinks per month).

Drinking & Driving: Drove a vehicle after having "too much to drink".

Moderate use of alcohol

MORE MODERATE DRINKERS:
Columbia, Marion, Josephine
MID-WILLAMETTE, SOUTHWEST REGIONS

FEWER MODERATE DRINKERS:
Benton

has been established to measure the percentage of adults who drink alcohol only in moderation. The target set for this Benchmark in the Year 2000 is for 90 percent of all adult Oregonians to use alcohol in moderation.

Moderate use of alcohol.

Four out of five Oregon adults do not drink alcohol or do so only in moderation. According to the 1989-93 BRFSS interviews, 81 percent of adults in this state consume 30 or fewer alcoholic drinks per month and never more than 4 drinks on a single occasion (Table 4A).

Based on this standard of moderation, a higher proportion of residents in the Mid-Willamette and Southwestern Regions are moderate users of alcohol. Both regions had a rate of 84 percent; this remains below the Benchmark Goal.

The estimated proportion of moderate users was above the statewide average in three counties: Columbia (88%), Marion (85%) and Josephine County (86%). At the other end of the scale, only in Benton County (74%) is the proportion of moderate alcohol users significantly less than the statewide average.

Acute use of alcohol.

Respondents who reported that they had consumed 5 or more alcoholic drinks on a single occasion during the preceding month were classified as acute users. Occasional heavy use of beer, wine, wine coolers, cocktails, or liquor is often called binge drinking and is associated with physical injuries or other harmful behavior.

This is primarily a male pattern. In Oregon, men are more than three times as likely to engage in such behavior as women (Table 4B vs. Table 4C).

Statewide, 23 percent of adult males engage in acute heavy drinking, at least occasionally (Table 4B). The proportion of men who do so, however, is less in the Southwest Region of the state. In this area--comprised of Jackson, Josephine and Douglas Counties--an estimated 16 percent of the males engage in binge drinking, a figure nearly one-third below the statewide rate.

In those counties in which at least 50 interviews with males were conducted, the rate of acute alcohol use ranged from 13 percent in Josephine County to 29 percent in Benton and Clatsop Counties and 30 percent in Polk County. Multnomah County (28%) displayed a rate greater than the statewide average, as well.

Although men are more likely to engage in the episodic overconsumption of alcohol, seven percent of the women in Oregon do so also (Table 4C). According to Oregon BRFSS data from 1989, however, one-fourth of *women under 30 years old who use alcohol* engage in acute heavy alcohol use[1].

In those counties in which at least 50 interviews with females were conducted, the rate of acute alcohol use ranged from less than one percent in Wasco and Crook Counties to 11 percent in Benton and Deschutes Counties.

Chronic heavy use of alcohol.

Persons who consume two or more alcoholic drinks per day on average—i.e. 60 or more drinks during the month preceding interview—were classified as *chronic heavy users* of alcohol. Statewide, nearly four percent of all adults fall into this category.

As with other forms of alcohol misuse, chronic heavy drinking is primarily a male pattern. Oregon BRFSS data indicate that for every woman who consumes two or more drinks per day there are at least six men who do so. During 1989-93, slightly more than one percent of the females were chronic heavy users of alcohol and about 7 percent of the men were categorized in this way (Table 4D vs Table 4E).

This pattern holds throughout the state. None of the regions showed rates of chronic heavy use significantly different than the statewide average for either males or females.

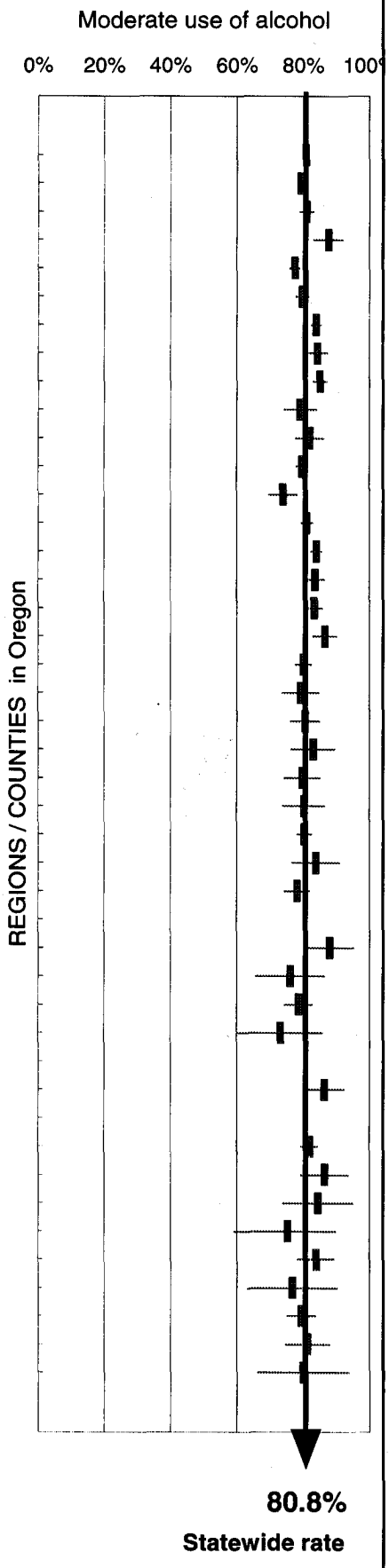
Among counties, the reported heavy use of alcohol by females shows little variation. Counties seem more variable with respect to male patterns of chronic heavy alcohol use. Data indicate that in several counties—Linn, Polk, and Josephine—men are significantly less likely to be chronic heavy users of alcohol than the state rate indicates. Although the precision of this estimate is questionable because of the small number of observations, one-third of the men living in Harney county report chronic heavy use of alcohol.

More thorough analysis of these data, based on social, economic or demographic characteristics more than geographic areas is needed to guide policy intended to diminish chronic misuse of alcohol.

Endnote:

[1] Alcohol and Drugs in Oregon: 1989; Center for Health Statistics, Oregon Health Division, page 3-3.

TABLE 4A



Percentage of adults who use alcohol in moderation, Oregon, 1989-93

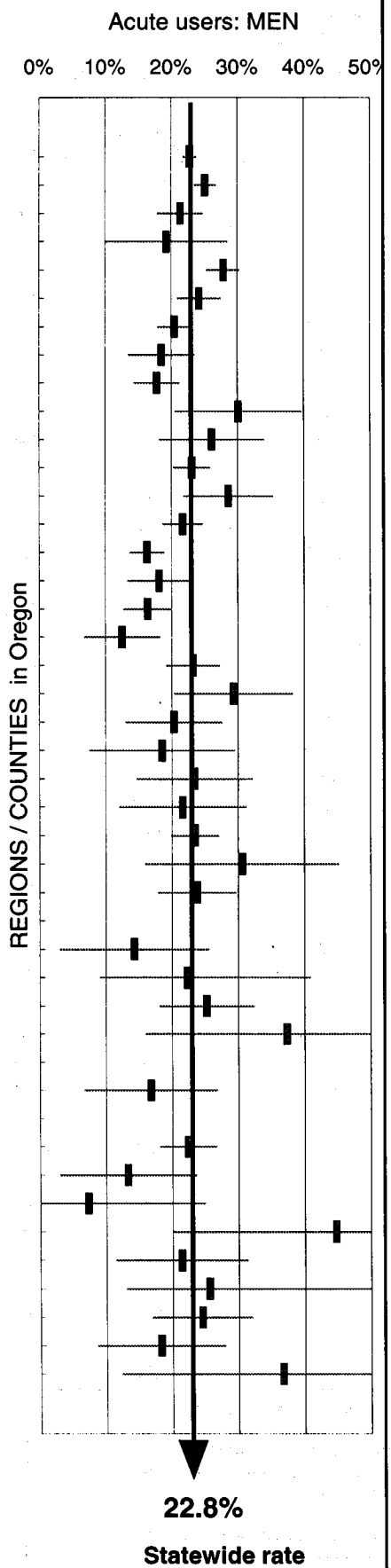
MODERATION: 30 or less drinks per month and never more than 4 drinks on a single occasion.
(Includes persons who do not drink alcohol.)

Males & Females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*		Number *unwgt N*	Interviews *unwgt N*
Statewide total	**80.8%**		**80.2%**	**81.4%**		**12056**	**14691**
North Willamette	**79.3%**		**78.2%**	**80.4%**		**4583**	**5680**
Clackamas	81%		79%	83%		1030	1254
Columbia	88%	s+	83%	92%		178	199
Multnomah	78%		76%	79%		2155	2720
Washington	80%		78%	82%		1220	1507
Mid Willamette	**83.9%**	s+	**82.4%**	**85.4%**		**1844**	**2160**
Linn	84%		81%	87%		443	519
Marion	85%	s+	83%	87%		931	1087
Polk	79%		74%	84%		213	250
Yamhill	82%		78%	86%		257	304
South Willamette	**79.7%**		**77.9%**	**81.5%**		**1636**	**2009**
Benton	74%	s-	70%	78%		311	395
Lane	81%		79%	83%		1325	1614
Southwest Region	**84.0%**	s+	**82.3%**	**85.7%**		**1542**	**1821**
Douglas	84%		81%	87%		495	583
Jackson	83%		81%	86%		749	900
Josephine	87%	s+	83%	90%		298	338
Coastal Region	**80.1%**		**77.6%**	**82.6%**		**780**	**966**
Clatsop	79%		74%	85%		161	202
Coos	81%		76%	85%		241	294
Curry	83%		76%	90%		99	121
Lincoln	80%		74%	85%		162	202
Tillamook	80%		74%	87%		117	147
Central Region	**80.3%**		**78.0%**	**82.6%**		**966**	**1199**
Crook	84%		77%	91%		82	98
Deschutes	78%		74%	82%		343	434
Gilliam	***					4	7
Hood River	88%		80%	95%		64	74
Jefferson	76%		66%	87%		50	63
Klamath	79%		74%	83%		269	343
Lake	73%		60%	86%		36	46
Sherman	***					6	6
Wasco	86%		80%	92%		105	120
Wheeler	***					7	8
Eastern Region	**81.9%**		**79.3%**	**84.5%**		**705**	**856**
Baker	86%		79%	94%		71	85
Grant	84%		74%	95%		38	43
Harney	75%		60%	91%	B	25	29
Malheur	84%		78%	89%		141	169
Morrow	77%		63%	90%		29	37
Umatilla	79%		75%	84%		274	335
Union	81%		74%	88%		103	126
Wallowa	80%		66%	94%		24	32

Graphic symbols: The estimated parameter value is indicated by a shaded box.
The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TABLE 4B



Percentage of adult males at risk of acute alcohol use, Oregon, 1989-93

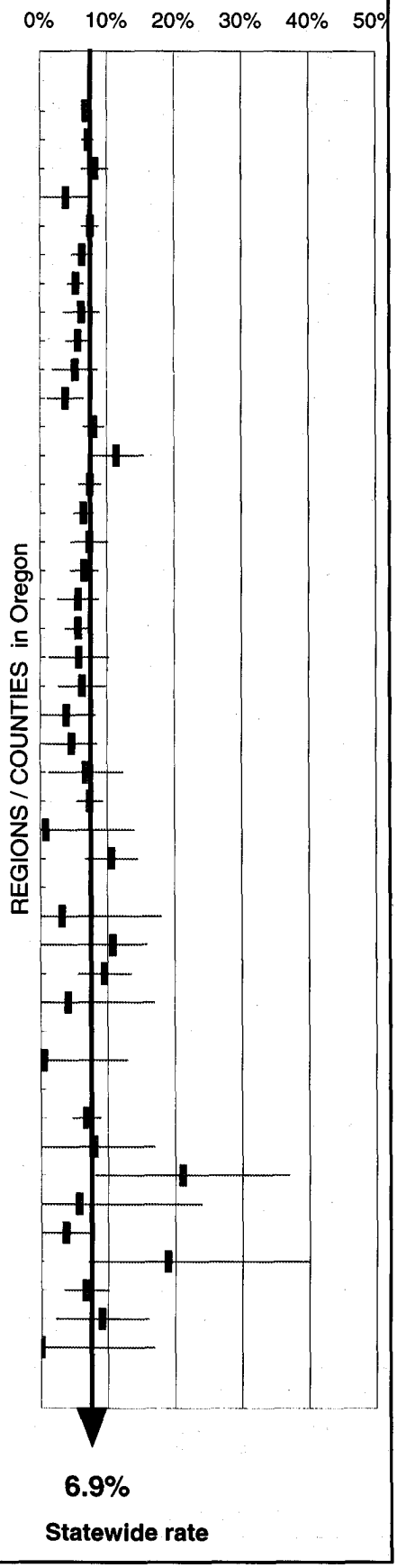
ACUTE USE: Drank 5 or more drinks on at least one occasion during preceding month.

Males 18 & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*		Number *unwgt N*	Interviews *unwgt N*
Total males	**22.8%**		**21.8%**	**23.8%**		**1408**	**6280**
North Willamette	**25.1%**		**23.4%**	**26.8%**		**599**	**2453**
Clackamas	21%		18%	25%		115	541
Columbia	19%		10%	29%		14	70
Multnomah	28%	s+	25%	30%		314	1197
Washington	24%		21%	28%		156	645
Mid Willamette	**20.5%**		**17.9%**	**23.1%**		**177**	**892**
Linn	19%		13%	24%		42	225
Marion	18%	s-	14%	21%		82	461
Polk	30%		21%	40%		23	89
Yamhill	26%		18%	34%		30	117
South Willamette	**23.1%**		**20.3%**	**25.9%**		**199**	**870**
Benton	29%		22%	35%		45	172
Lane	22%		19%	25%		154	698
Southwest Region	**16.3%**	s-	**13.7%**	**18.9%**		**127**	**770**
Douglas	18%		13%	23%		44	246
Jackson	16%	s-	13%	20%		68	397
Josephine	13%	s-	7%	18%		15	127
Coastal Region	**23.2%**		**19.2%**	**27.2%**		**98**	**423**
Clatsop	29%		20%	38%		29	99
Coos	20%		13%	28%		23	116
Curry	19%		8%	29%		10	48
Lincoln	23%		15%	32%		20	90
Tillamook	22%		12%	31%		16	70
Central Region	**23.5%**		**19.9%**	**27.1%**		**125**	**521**
Crook	31%		16%	45%		13	38
Deschutes	24%		18%	30%		44	199
Gilliam	***					3	6
Hood River	14%		3%	26%		5	37
Jefferson	22%		9%	41%	B	7	23
Klamath	25%		18%	32%		38	140
Lake	37%		16%	62%	B	6	18
Sherman	***						2
Wasco	17%		7%	27%		8	53
Wheeler	***					1	5
Eastern Region	**22.4%**		**18.0%**	**26.8%**		**83**	**351**
Baker	13%		3%	24%		6	41
Grant	7%		0%	25%	B	2	17
Harney	45%		20%	75%	B	3	11
Malheur	21%		11%	31%		15	65
Morrow	26%		13%	57%	B	4	16
Umatilla	25%		17%	32%		32	125
Union	18%		9%	28%		14	61
Wallowa	37%		12%	61%	B	7	15

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TABLE 4C



Percentage of adult females at risk of acute alcohol use, Oregon, 1989-93

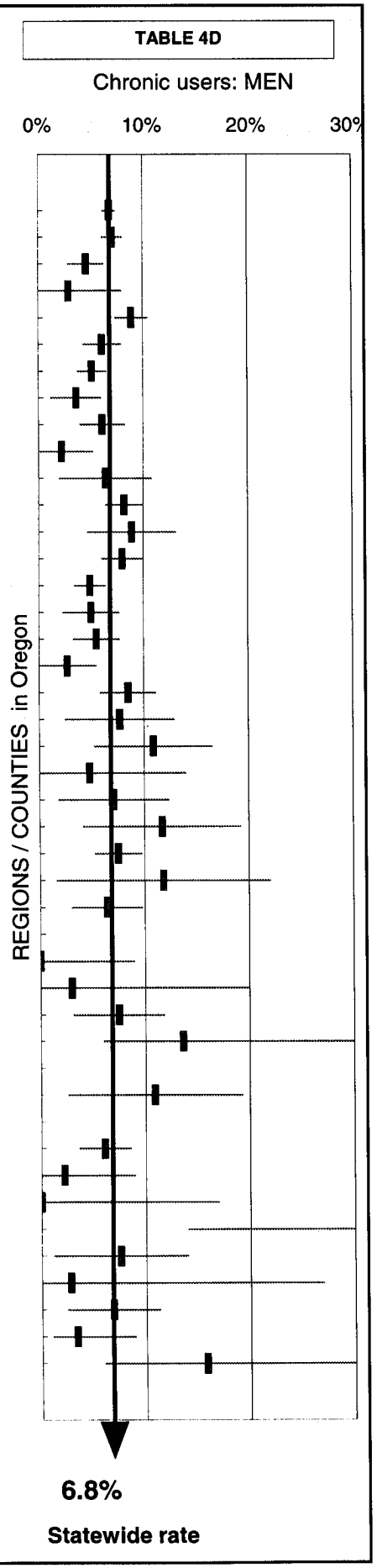
ACUTE USE: Drank 5 or more alcoholic drinks on at least one occasion during preceding month.

Females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*		Number *unwgt N*	Interviews *unwgt N*
Total females	**6.9%**		**6.4%**	**7.4%**		**544**	**8411**
North Willamette	**7.2%**		**6.3%**	**8.1%**		**222**	**3227**
Clackamas	8%		6%	10%		50	713
Columbia	4%		1%	7%		5	129
Multnomah	8%		6%	9%		113	1523
Washington	6%		5%	8%		54	862
Mid Willamette	**5.4%**		**4.2%**	**6.6%**		**62**	**1268**
Linn	6%		3%	9%		15	294
Marion	6%		4%	8%		34	626
Polk	5%		2%	9%		6	161
Yamhill	4%		1%	7%		7	187
South Willamette	**8.1%**		**6.5%**	**9.7%**		**80**	**1139**
Benton	11%		7%	16%		18	223
Lane	8%		6%	9%		62	916
Southwest Region	**6.5%**		**5.0%**	**8.0%**		**64**	**1051**
Douglas	7%		5%	10%		24	337
Jackson	7%		4%	9%		29	503
Josephine	6%		3%	9%		11	211
Coastal Region	**5.7%**		**3.7%**	**7.7%**		**27**	**543**
Clatsop	6%		1%	10%		5	103
Coos	6%		3%	10%		11	178
Curry	4%		1%	10%		4	73
Lincoln	5%		1%	9%		4	112
Tillamook	7%		1%	12%		3	77
Central Region	**7.4%**		**5.4%**	**9.4%**		**55**	**678**
Crook	1%		1%	14%	P	1	60
Deschutes	11%		7%	15%		25	235
Gilliam	***					0	1
Hood River	3%		0%	18%	P	2	37
Jefferson	11%		0%	16%	P	2	40
Klamath	10%		5%	14%		24	203
Lake	4%		0%	17%	B	1	28
Sherman	***					0	4
Wasco	—		0%	13%	P	0	67
Wheeler	***					0	3
Eastern Region	**6.8%**		**4.6%**	**9.0%**		**34**	**505**
Baker	8%		0%	17%	P	4	44
Grant	21%	s+	8%	37%	B	2	26
Harney	6%		0%	24%	B	1	18
Malheur	4%		0%	8%		4	104
Morrow	19%		7%	40%	B	3	21
Umatilla	7%		3%	10%		14	210
Union	9%		2%	16%		6	65
Wallowa	—		0%	17%	B	0	17

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TABLE 4D



Percentage of adult males at risk of chronic alcohol use, Oregon, 1989-93

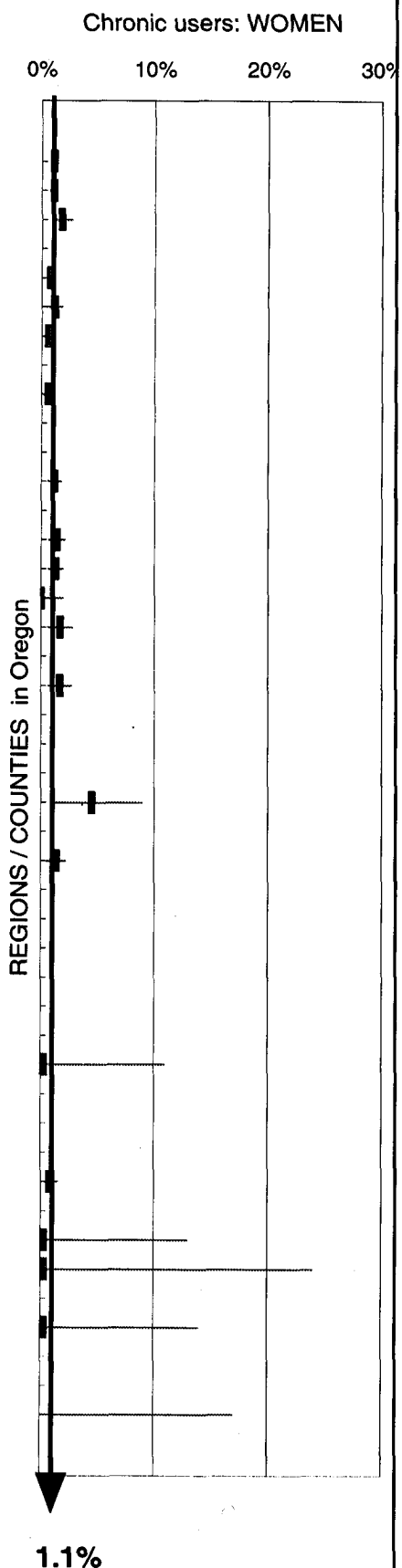
CHRONIC USE: An average of 2 or more drinks per day.

Males 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*		Number *unwgt N*	Interviews *unwgt N*
Total males	**6.8%**		**6.2%**	**7.4%**		**426**	**6280**
North Willamette	**7.1%**		**6.1%**	**8.1%**		**168**	**2453**
Clackamas	5%		3%	6%		26	541
Columbia	3%		0%	8%		3	70
Multnomah	9%		7%	11%		99	1197
Washington	6%		4%	8%		40	645
Mid Willamette	**5.1%**		**3.7%**	**6.5%**		**53**	**892**
Linn	4%	s-	1%	6%		10	225
Marion	6%		4%	8%		33	461
Polk	2%	s-	0%	5%		2	89
Yamhill	6%		2%	11%		8	117
South Willamette	**8.2%**		**6.4%**	**10.0%**		**67**	**870**
Benton	9%		5%	13%		11	172
Lane	8%		6%	10%		56	698
Southwest Region	**4.9%**		**3.4%**	**6.4%**		**41**	**770**
Douglas	5%		2%	8%		12	246
Jackson	6%		3%	8%		24	397
Josephine	3%	s-	-0%	6%		5	127
Coastal Region	**8.5%**		**5.8%**	**11.2%**		**37**	**423**
Clatsop	8%		2%	13%		8	99
Coos	11%		5%	17%		12	116
Curry	5%		0%	14%	P	3	48
Lincoln	7%		2%	12%		7	90
Tillamook	12%		4%	19%		7	70
Central Region	**7.5%**		**5.2%**	**9.8%**		**36**	**521**
Crook	12%		1%	22%	P	5	38
Deschutes	6%		3%	10%		11	199
Gilliam	***					0	6
Hood River	—		0%	9%	P	0	37
Jefferson	3%		0%	20%	B	1	23
Klamath	8%		3%	12%		11	140
Lake	14%		6%	38%	B	3	18
Sherman	***					0	2
Wasco	11%		3%	19%		5	53
Wheeler	***					0	5
Eastern Region	**6.1%**		**3.6%**	**8.6%**		**24**	**351**
Baker	2%		0%	9%	P	2	41
Grant	—		0%	17%	B	0	17
Harney	35%	s+	14%	66%	B	1	11
Malheur	8%		1%	13%		5	65
Morrow	3%		0%	27%	B	1	16
Umatilla	7%		2%	11%		10	125
Union	3%		1%	9%	P	2	61
Wallowa	16%		6%	34%	B	3	15

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TABLE 4E



Percentage of adult females at risk of chronic alcohol use, Oregon, 1989-93

CHRONIC USE: An average of 2 or more drinks per day.

Females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*		Number *unwgt N*	Interviews *unwgt N*
Total females	**1.1%**		**0.9%**	**1.3%**		**94**	**8411**
North Willamette	**1.1%**		**0.7%**	**1.5%**		**35**	**3227**
Clackamas	2%		1%	3%		10	713
Columbia	***				P	1	129
Multnomah	1%		0%	1%		14	1523
Washington	1%		0%	2%		10	862
Mid Willamette	**0.6%**		**0.2%**	**1.0%**		**7**	**1268**
Linn	***				P	2	294
Marion	1%		0%	1%		3	626
Polk	***				P	2	161
Yamhill	***				P	0	187
South Willamette	**1.2%**		**0.6%**	**1.8%**		**14**	**1139**
Benton	***				P	1	223
Lane	1%		1%	2%		13	916
Southwest Region	**1.3%**		**0.6%**	**2.0%**		**14**	**1051**
Douglas	—		0%	2%	P	1	337
Jackson	2%		1%	3%		10	503
Josephine	***				P	3	211
Coastal Region	**1.7%**		**0.6%**	**2.8%**		**10**	**543**
Clatsop	***				P	1	103
Coos	***				P	2	178
Curry	***				P	0	73
Lincoln	5%		1%	9%		5	112
Tillamook	***				P	2	77
Central Region	**1.4%**		**0.5%**	**2.3%**		**10**	**678**
Crook	***				P	0	60
Deschutes	***				P	5	235
Gilliam	***					0	1
Hood River	***					0	37
Jefferson	***				P	1	40
Klamath	***				P	4	203
Lake	***		0%	11%	B	0	28
Sherman	***					0	4
Wasco	***				P	0	67
Wheeler	***					0	3
Eastern Region	**0.8%**		**0.0%**	**1.6%**	P	**4**	**505**
Baker	***				P	2	44
Grant	***		0%	13%	B	0	26
Harney	***		0%	24%	B	1	18
Malheur	—				P	0	104
Morrow	—		0%	14%	B	0	21
Umatilla	1%				P	1	210
Union	—				P		65
Wallowa	—		0%	17%	B		17

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

Hypertension

Oregon Benchmark:
Percentage of adults who have normal blood pressure.

Year 2000 goal: 88%

Healthy People 2000:
Percentage of adults who have had their blood pressure measured within the preceding 2 years and can state whether their blood pressure was normal or high.

Year 2000 goal: 90%

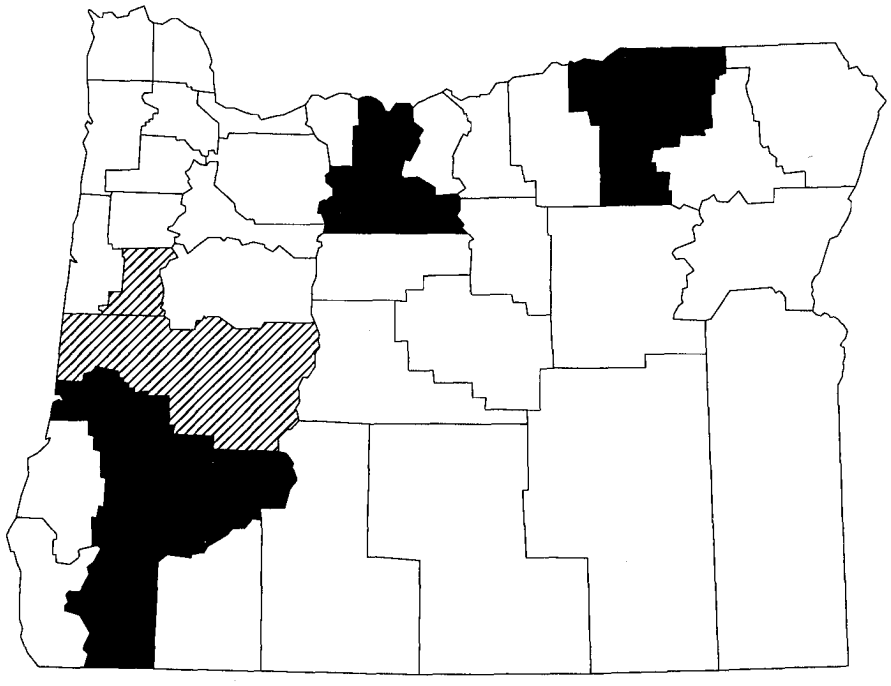
Hypertension, or high blood pressure, is a common condition associated with contemporary life-styles. If it remains undiagnosed and untreated it leads to disabilities associated with heart or cerebrovascular diseases—and may result in sudden death. Because of its key role in health, the measurement of blood pressure level has become one of the most common diagnostic tools used by physicians.

Although the significance of blood pressure levels for individual health must be understood within the context of other health factors, a systolic pressure (the highest reading which follows a heart beat) above 140 or a diastolic pressure (the low point between heart beats) above 90 is generally considered too high and potentially harmful. Continuous elevation in blood pressure level is likely to damage blood vessels and other essential organs.

For many Oregonians with chronic hypertension, a healthy life may be achieved with proper exercise, a diet in which the fat and cholesterol content is restricted and possibly prescribed medications. This treatment program and the associated prognoses represent a greatly reduced risk of death or disability which existed as recently as the 1960's.

As with many other chronic health conditions, a better solution to this health threat is to prevent its development. This is accomplished best during a person's early years—when individual choices establish life-style patterns. Individual behavior patterns can be developed among children and young adults which focus on healthy diets, physical activity, and the reduction of stress. Al-

MAP: Shows counties in which the percentage of adults who have been told by a health professional at least once that they had high blood pressure is significantly greater or significantly less than the state average. See Table 5.



Interview Questions:
Have you ever been told by a doctor, nurse or other health professional that you have high blood pressure?

High blood pressure

LESS HYPERTENSION:
Benton, Lane
SOUTH WILLAMETTE

MORE HYPERTENSION:
Douglas, Josephine, Wasco, Umatilla
SOUTHWEST REGION

though such changes among younger residents would not immediately affect the rate of people with hypertension—a disease associated with middle and later years of life—eventually rates of chronic diseases associated with high blood pressure would begin to decline.

To help track statewide changes, the Oregon Progress Board maintains the following Benchmark: *the percentage of adults who have normal blood pressure.* From 1989 to 1992, estimates of this measure have varied between 78 and 81 percent. The target set for the Year 2000 is 88 percent.

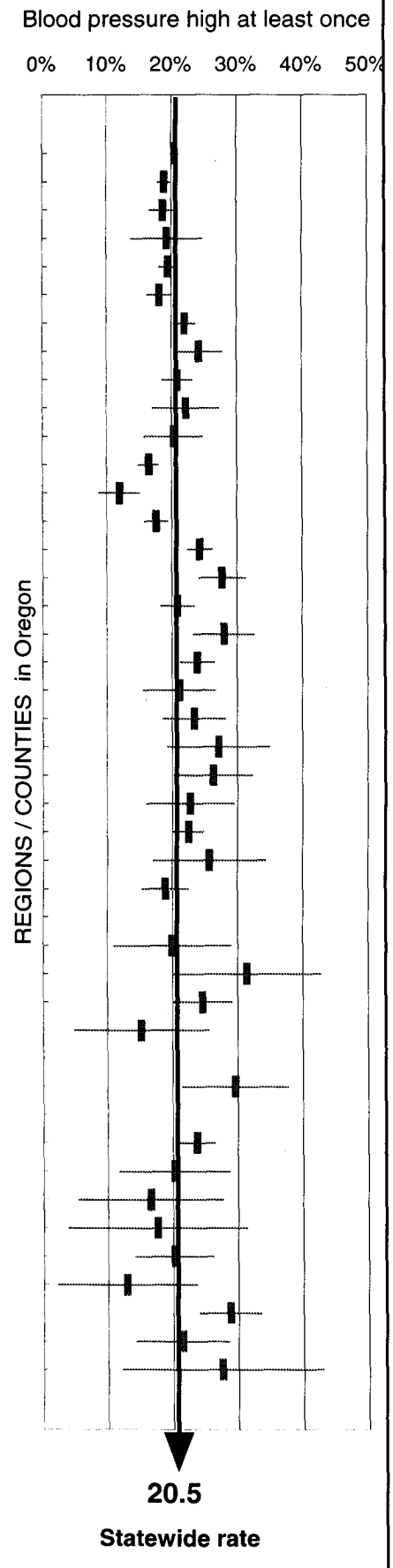
Percent reporting hypertension.

One in five adult Oregonians (21%) report that they have been told by a doctor that they had high blood pressure (Table 5). Such reports provide an indirect and approximate measure of the rate of hypertension.

The BRFSS data obtained between 1989 and 1993 indicate that both Benton and Lane Counties have reported hypertension rates below the statewide average. At 12 percent, Benton County's rate was lowest; Lane County had a rate of 18 percent. Caution should be exercised in interpreting this finding, however, since both counties have many young adults enrolled as students at local universities—and thus, disproportionately fewer residents at more advanced age when high blood pressure becomes apparent.

The number of residents with high blood pressure is higher in the Southwest Region than the statewide rate. This appears to be true of Josephine and Douglas Counties (a rate of 28% was reported in both) but not Jackson County. In the Northeastern part of the state Wasco (30%) and Umatilla Counties (29%) had reported rates above average. Other counties do not appear to be significantly different from the statewide level.

TABLE 5



Percentage of adults who reported hypertension, Oregon, 1989-93

TOLD BY DOCTOR that blood pressure was high at least once

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	*	Number *unwgt N*	Interviews *unwgt N*
Total	**20.5%**		**19.8%**	**21.2%**		**3192**	**14691**
North Willamette	**18.9%**		**17.9%**	**19.9%**		**1138**	**5680**
Clackamas	19%		17%	21%		250	1254
Columbia	19%		14%	25%		47	199
Multnomah	20%		18%	21%		550	2720
Washington	18%		16%	20%		291	1507
Mid Willamette	**22.0%**		**20.3%**	**23.7%**		**508**	**2160**
Linn	24%		21%	28%		127	519
Marion	21%		18%	23%		245	1087
Polk	22%		17%	27%		63	250
Yamhill	20%		16%	25%		73	304
South Willamette	**16.5%**	s-	**14.9%**	**18.1%**		**358**	**2009**
Benton	12%	s-	9%	15%		56	395
Lane	18%	s-	16%	19%		302	1614
Southwest Region	**24.3%**	s+	**22.3%**	**26.3%**		**465**	**1821**
Douglas	28%	s+	24%	31%		173	583
Jackson	21%		18%	24%		200	900
Josephine	28%	s+	23%	33%		92	338
Coastal Region	**23.9%**		**21.2%**	**26.6%**		**241**	**966**
Clatsop	21%		15%	27%		46	202
Coos	23%		19%	28%		72	294
Curry	27%		19%	35%		33	121
Lincoln	26%		20%	32%		58	202
Tillamook	23%		16%	29%		32	147
Central Region	**22.5%**		**20.1%**	**24.9%**		**278**	**1199**
Crook	26%		17%	34%		26	98
Deschutes	19%		15%	23%		86	434
Gilliam	***					2	7
Hood River	20%		11%	29%		17	74
Jefferson	31%		20%	43%		17	63
Klamath	25%		20%	29%		82	343
Lake	15%		5%	26%		8	46
Sherman	***					1	6
Wasco	30%	s+	21%	38%		35	120
Wheeler	***					4	8
Eastern Region	**23.7%**		**20.9%**	**26.5%**		**204**	**856**
Baker	20%		12%	29%		17	85
Grant	17%		5%	28%		8	43
Harney	18%		4%	31%	B	6	29
Malheur	20%		14%	26%		32	169
Morrow	13%		2%	24%		7	37
Umatilla	29%	s+	24%	34%		98	335
Union	21%		14%	29%		25	126
Wallowa	28%		12%	43%		11	32

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

Blood cholesterol

Oregon Benchmark:
None established.

Healthy People 2000:
Prevalence of high blood cholesterol among adults 20-74 years-of-age.

Year 2000 goal: 20%

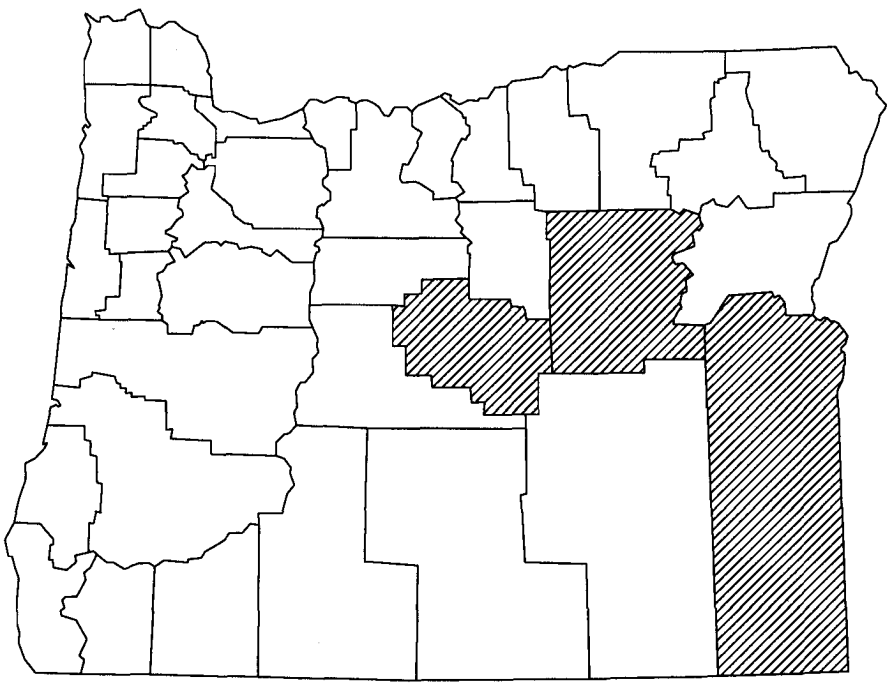
A high level of cholesterol in a person's blood is linked with an elevated risk of coronary heart disease (CHD). The risk of CHD may be reduced by lowering one's blood cholesterol level.

A level below 200 mg/dl is considered desirable for health. A cholesterol reading above 240 mg/dl is defined as "high" and calls for active intervention. Those with a "borderline high" level—between 200 and 240—need to protect themselves against higher levels through appropriate changes in diet and exercise routines. Therefore, adults need to be aware of their blood cholesterol levels and those with high or borderline high levels need to monitor themselves closely over time.

For the past decade the National Heart, Lung, and Blood Institute has attempted to improve public awareness of the significance of cholesterol levels for health. Individuals have been encouraged to ask their doctor about blood cholesterol and to have it tested.

One of the national Health Objectives for the Year 2000 is concerned with this issue. The goal is that at least 75 percent of all adults 18 years of age or older will have been tested for cholesterol level within the preceding 5 years. The achievement of this goal should contribute to reducing coronary heart disease by insuring that an increased number of those at high risk receive treatment. Also, it may increase the number of young adults who alter dietary and exercise patterns in ways beneficial to maintaining low cholesterol levels.

MAP: Shows counties in which the percentage of adults who have been told by a health professional that their blood cholesterol was high is significantly greater or significantly less than the state average. See Table 6.



Interview Questions:
Blood cholesterol is a fatty substance in the blood. Have you ever had your blood cholesterol checked?

How long has it been since you last had your blood cholesterol checked?

Have you ever been told by a doctor or other health professional that your blood cholesterol is high?

High Blood Cholesterol

LOWER CHOLESTEROL:
Grant, Crook, Malheur

HIGHER CHOLESTEROL:
None

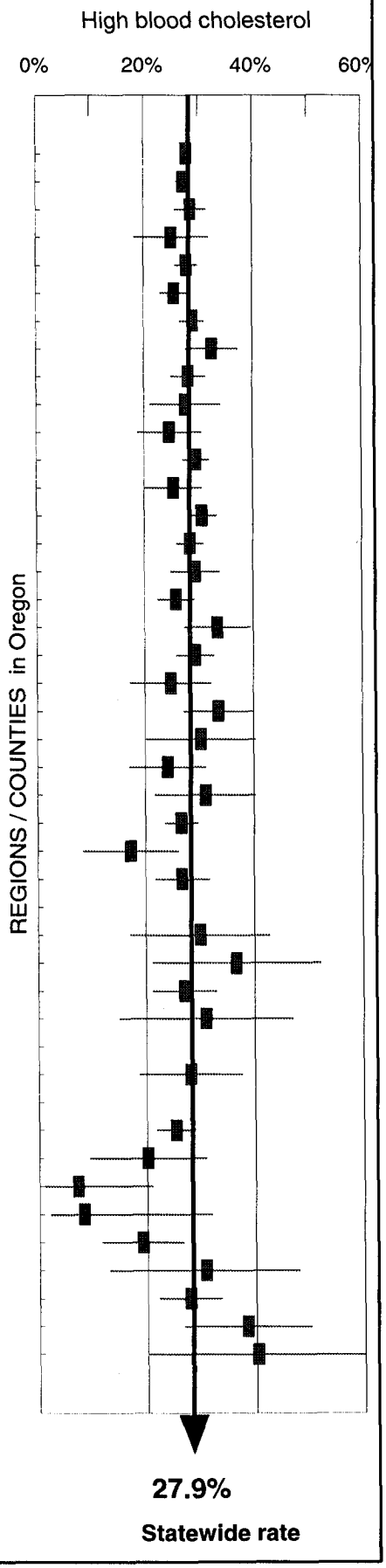
Awareness of high cholesterol.

Twenty-eight percent of adult Oregonians report that they have been told by a physician that they had a high level of blood cholesterol (Table 6). Little variation is seen in a comparison of geographic regions. They range from a high of 29 percent in the Middle and South Willamette Valley and Coastal Region to a low of 25 percent in the Eastern Region. None of the regions differ significantly from the statewide average.

Greater variability in the sample-based estimates may be seen among the counties. Among those counties in which at least 50 residents were interviewed the range is from 17 percent in Crook County to 38 percent in Union County.

None of the counties had a rate of high cholesterol significantly greater than the statewide average. Only three counties had estimated rates significantly below the statewide rate: Grant (7%), Crook (17%) and Malheur Counties (19%).

TABLE 6



Percentage of adults who reported high cholesterol, Oregon, 1989-93

TOLD BY DOCTOR that blood cholesterol was high (>240) at least once
(among respondents who had their cholesterol checked)

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**27.9%**		**27.0%**	**28.8%**		**2874**	**10200**
North Willamette	**27.3%**		**25.9%**	**28.7%**		**1128**	**4108**
Clackamas	29%		26%	31%		270	934
Columbia	25%		18%	32%		43	151
Multnomah	28%		26%	30%		519	1882
Washington	26%		23%	28%		296	1141
Mid Willamette	**29.0%**		**26.7%**	**31.3%**		**436**	**1502**
Linn	33%		28%	37%		114	362
Marion	28%		25%	31%		216	753
Polk	28%		21%	34%		55	182
Yamhill	25%		19%	31%		51	205
South Willamette	**29.5%**		**27.1%**	**31.9%**		**393**	**1340**
Benton	25%		20%	31%		64	260
Lane	31%		28%	33%		329	1080
Southwest Region	**28.4%**		**25.9%**	**30.9%**		**364**	**1246**
Douglas	29%		25%	34%		119	388
Jackson	26%		22%	29%		171	628
Josephine	33%		27%	39%		74	230
Coastal Region	**29.3%**		**25.8%**	**32.8%**		**193**	**653**
Clatsop	25%		17%	32%		32	129
Coos	34%		27%	40%		71	209
Curry	30%		20%	40%		25	80
Lincoln	24%		17%	31%		38	140
Tillamook	31%		22%	40%		27	95
Central Region	**26.6%**		**23.5%**	**29.7%**		**210**	**798**
Crook	17%	s-	9%	26%		11	71
Deschutes	27%		22%	32%		80	294
Gilliam	***					1	4
Hood River	30%		17%	43%		14	49
Jefferson	37%		21%	52%		10	37
Klamath	27%		21%	33%		57	213
Lake	31%		15%	47%		9	32
Sherman	***					1	4
Wasco	28%		19%	38%		24	87
Wheeler	***					3	7
Eastern Region	**25.4%**		**21.8%**	**29.0%**		**150**	**553**
Baker	20%		9%	31%		15	53
Grant	7%	s-	1%	21%	B	3	30
Harney	8%		2%	32%	B	2	18
Malheur	19%	s-	12%	27%		18	106
Morrow	31%		13%	48%	B	10	27
Umatilla	28%		22%	34%		69	230
Union	38%		27%	50%		23	66
Wallowa	40%		20%	60%	B	10	23

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

Diabetes

Oregon Benchmark:
None established.

Healthy People 2000:
Prevalence for diabetes.

Year 2000 goal:
No more than 2.5%

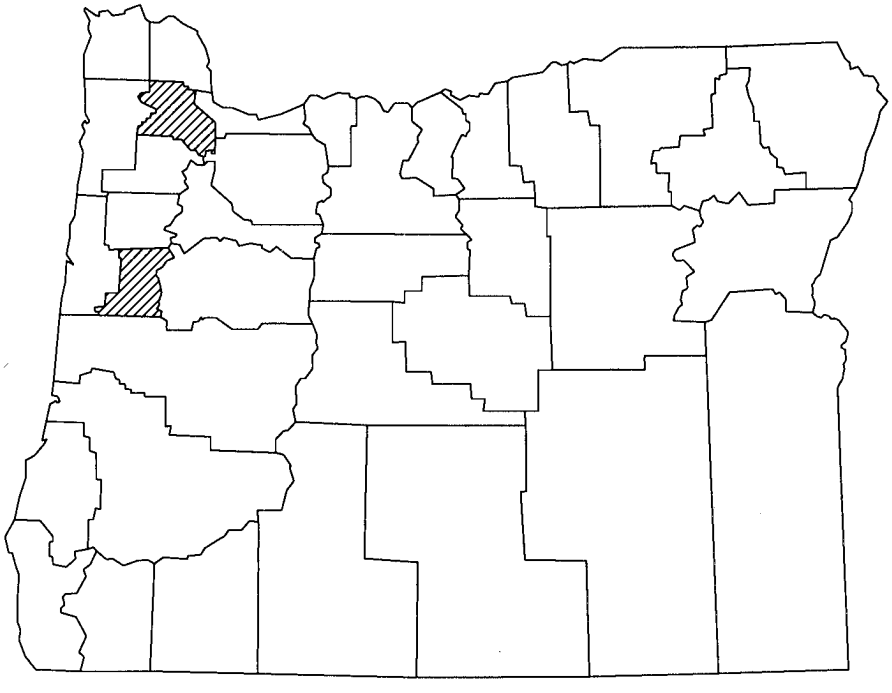
Diabetes is a condition in which the body is unable to adequately metabolize glucose circulating in the blood. Risk factors for developing diabetes include overweight, physical inactivity, a family history of diabetes, and age over 45 years. Persons who are African-American, Hispanic-American, or American Indian are at elevated risk for diabetes. It has been estimated that roughly one-half of those with diabetes are unaware of their condition.[1]

Type I or insulin-dependent diabetes accounts for 5-10 percent of all cases. The great majority of cases (90-95%) are classified as Type II or non-insulin dependent. In addition, some women develop gestational diabetes, a transient form of the disease which occurs during pregnancy. Women with a history of gestational diabetes are more likely to develop chronic diabetes later in life.

People with diabetes are at increased risk for many serious health problems, including heart disease, blindness, lower extremity amputation, adverse pregnancy outcomes, and renal failure. These complications may be reduced by controlling blood glucose through a healthy diet, exercise, regular monitoring of blood glucose levels, and regular preventive screening tests such as an annual dilated eye exam.[2]

Diabetes continues to be one of the leading causes of death in the United States. The Centers for Disease Control has estimated the direct and indirect costs of diabetes in Oregon during 1992 to be $1.3 billion. One of seven health care dollars spent in the United States is used for the care of people with diabetes.[3]

MAP: Shows counties in which the percentage of adults diagnosed as having diabetes is significantly greater or significantly less than the state average. See Table 7.



Interview Questions:
Have you ever been told by a doctor that you have diabetes?

For women:
other than when pregnant

Diabetes prevalence

LESS DIABETES:
Benton, Washington

MORE DIABETES:
None

Review of geographic differences.

Nearly one out of every 20 adult Oregonians has been diagnosed as having diabetes. The statewide estimate for the six-year period beginning in 1989 and ending in 1994 was 4.4 percent (Table 7). Women (5.1%) reported a somewhat higher rate than men (3.7%), although much of this difference appears to be due to the increased risk of diabetes during pregnancy and more careful monitoring of health during this period of a woman's life.[4]

Little variation occurred among regions; all of the estimates were within two percentage points of the statewide average. Because each involved over 1,000 interviews with randomly selected respondents, the regional estimates may be considered fairly reliable.

Prevalence estimates for individual counties ranged from one percent in Benton County to eight percent in Tillamook County. However, none of the estimates for individual counties—including Tillamook (8%) and Clatsop (7%)—was significantly higher than the statewide rate. On the other hand, Benton County (1%) and Washington County (3%) had rates significantly below the statewide average.

Endnotes:

[1] Harris MI. *Diabetes in America.* National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. NIH Pub No. 95-1468:1995, page 1.

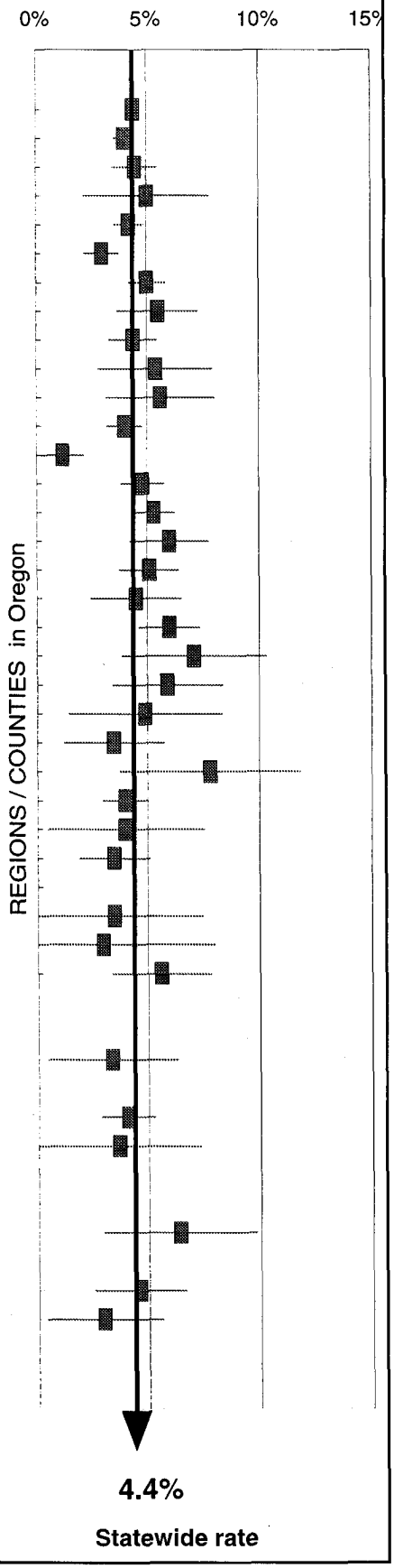
[2] For information useful in population-based prevention programs see *Continuous Quality Improvement Guidelines: Diabetes Mellitus* published by the Diabetes Guidelines Advisory Group, Oregon Health Division, 1995.

[3] Rubin RJ, Altman WM, Mendelson DN. (1994) Health care expenditures for people with diabetes mellitus, 1992. *J.Clin Endocrin Metab.* 78:4 809A-809F.

[4] One indication of the significance of gestational diabetes for BRFSS data may be seen in data provided by other states in the surveillance system. When interview instructions were changed nationwide, the amount of difference between rates of men and women was greatly reduced. In 1993, BRFSS interviewers were instructed to ask women to report whether they had been diagnosed as having diabetes *other than when pregnant.* As a result, the median rate for women among participating states dropped from 5.9 percent in 1992 to 4.6 percent in 1993. During the same period the median rate for men remained unchanged at 4.4 percent. Unfortunately, the data in Table 7 does not reflect this change in wording and, thus, obscures the probable source of the difference in rates between males and females.

TABLE 7

Persons diagnosed with diabetes



Percentage of adults who reported diabetes, Oregon, 1989-94

TOLD BY DOCTOR that he/she had diabetes.

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**4.4%**		**4.1%**	**4.7%**		**815**	**17535**
North Willamette	**4.0%**		**3.5%**	**4.5%**		**282**	**6886**
Clackamas	5%		3%	6%		69	1578
Columbia	5%		2%	8%		15	229
Multnomah	4%		4%	5%		143	3299
Washington	3%	s-	2%	4%		55	1780
Mid Willamette	**5.0%**		**4.2%**	**5.8%**		**136**	**2595**
Linn	6%		4%	7%		34	607
Marion	4%		3%	5%		62	1346
Polk	5%		3%	8%		18	298
Yamhill	6%		3%	8%		22	344
South Willamette	**4.0%**		**3.2%**	**4.8%**		**102**	**2338**
Benton	1%	s-	0%	2%		8	486
Lane	5%		4%	6%		94	1852
Southwest Region	**5.3%**		**4.3%**	**6.3%**		**119**	**2129**
Douglas	6%		4%	8%		46	688
Jackson	5%		4%	6%		55	1046
Josephine	5%		2%	7%		18	395
Coastal Region	**6.0%**		**4.6%**	**7.4%**		**73**	**1161**
Clatsop	7%		4%	10%		17	240
Coos	6%		3%	8%		24	347
Curry	5%		1%	8%		10	151
Lincoln	4%		1%	6%		8	252
Tillamook	8%		4%	12%		14	171
Central Region	**4.0%**		**3.0%**	**5.0%**		**59**	**1409**
Crook	4%		0%	8%		4	118
Deschutes	4%		2%	5%		21	505
Gilliam	***					0	7
Hood River	4%		1%	9%	P	4	83
Jefferson	3%		0%	8%	P	2	70
Klamath	6%		3%	8%		21	414
Lake	***				P	1	54
Sherman	***					0	6
Wasco	3%		0%	6%		6	144
Wheeler	***					0	8
Eastern Region	**4.1%**		**2.9%**	**5.3%**		**44**	**1017**
Baker	4%		0%	7%	P	4	102
Grant	***				P	2	46
Harney	***				P	0	36
Malheur	6%		3%	10%		11	194
Morrow	***				P	1	45
Umatilla	5%		3%	7%		17	396
Union	3%		0%	6%		7	160
Wallowa	***				P	2	38

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

Physical fitness

Oregon Benchmark:
Percentage of adults who maintain a recommended weight-to-height ratio.

Year 2000 goal: 87%

Percentage of adults who exercise aerobically for 20 minutes at least 3 times a week.

Year 2000 goal: 75%

Healthy People 2000:
Prevalence of overweight among persons 20-74 years-of-age.

Year 2000 goal:
no more than 20%.

Prevalence of sedentary lifestyle among persons 18 years or older.

Year 2000 goal: no more than 15%

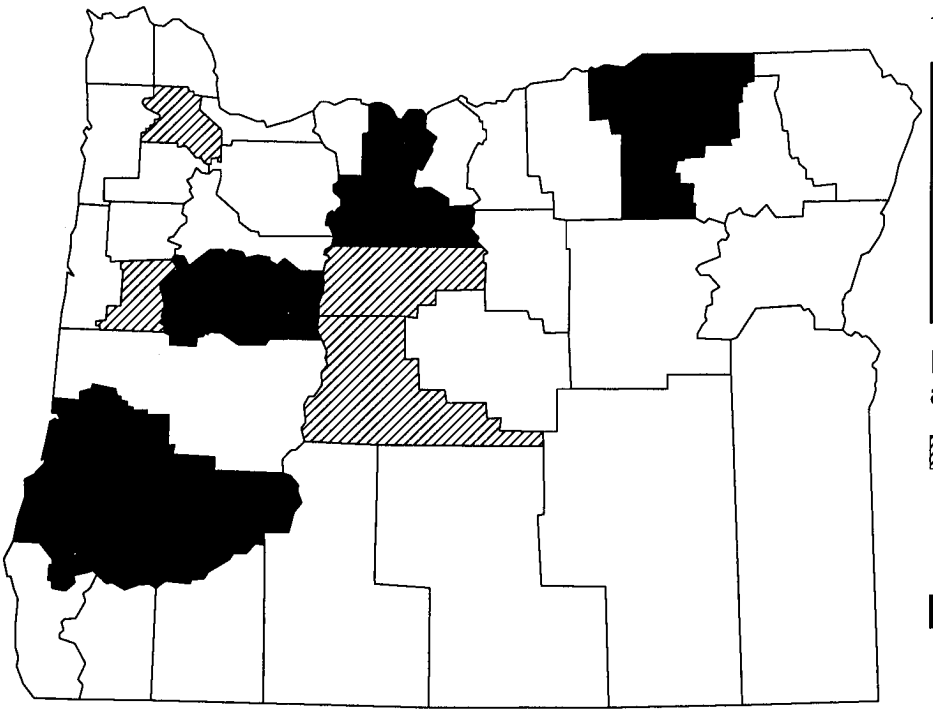
Physical fitness is an important factor in assessing risk for several chronic diseases, including coronary heart disease, hypertension, diabetes, osteoporosis, and colon cancer.[1] On average, physically active people live longer than those who are inactive. While regular physical activity contributes to the quality of life for all age groups, it is especially important for older adults by helping them to prolong functional independence.

The relationships between health and type or amount of physical activity are complex. Even light to moderate physical activity--below the level recommended for cardiorespiratory fitness--can have significant health benefits when done on a daily basis. During BRFSS interviews respondents are asked about their participation in leisure-time physical activity. Those who participate in fewer than three 20-minute sessions per week are classified as living a sedentary life-style.

Because many Americans have a sedentary life-style, a Healthy People 2000 goal has been developed which would reduce the proportion of adults 18 years of age or older who live a sedentary life-style to 15 percent. In 1993 the figure was estimated to be 24 percent, nationwide.

Another major public health concern is the large number of persons who are overweight. Although related to physical activity level, this represents a separate risk factor for several chronic diseases, including coronary heart disease, hypertension and diabetes. One of the measures of overweight

MAP: **Shows counties in which the percentage of adults who are overweight (based on Body Mass Index) is significantly greater or significantly less than the state average. See Table 8A.**



Interview Questions:
About how much do you weigh without shoes?

About how tall are you without shoes?

Prevalence of overweight adults

FEWER OVERWEIGHT:
Jefferson, Deschutes, Benton, Washington
NORTH WILLAMETTE REGION

MORE OVERWEIGHT:
Douglas, Coos, Wasco, Umatilla, Linn
COASTAL, EASTERN REGIONS

used in BRFSS data is the Body Mass Index (BMI), the ratio of reported weight to reported height.[2] Females are considered obese if the BMI is 27.3 or more; males are classified as obese whenever the BMI is 27.8 or greater. The Healthy People 2000 goal is to reduce the proportion of obese adults to no more than 20 percent.

Obesity.

More than one-fourth of all Oregonians 18 years of age or older are obese according to the gender-specific BMI definitions. Based on BRFSS data from 1989 through 1994, an estimated 27 percent of adults exceeded the weight to height ratio established as the norm for healthy body weight (Table 8A).

Considerable variation occurred from one region of the state to another. An estimated 25 percent of the adults who lived in the North Willamette Region were classified as obese based on their reported weight and height. Although it represents a small numerical difference, statistically it is significantly less than the state average. By comparison, the proportion of overweight adults in the Coastal and Eastern Regions is 33 percent, significantly higher than the statewide rate.

The estimated rate of obesity among individual counties ranged from 17 percent in Jefferson and Harney Counties to 41 percent in Wallowa County. Several counties had rates which were significantly higher than the statewide average. In four counties over one-third of adult residents were categorized as obese in terms of their reported weight to height ratios: Douglas (36%), Coos (36%), Umatilla (35%) and Wasco (36%). Although slightly less than one-third, Linn County (32%), too, had a rate significantly greater than the state average.

On the other hand, several counties displayed rates significantly below the statewide average. Jefferson County at 17 percent had the lowest proportion of obese adults. Benton and Deschutes Counties showed a rate of 22 percent, and Washington County had a rate of 24 percent. Although an additional 9 counties display rates of obesity numerically less than the statewide average, none of them were based on enough interviews to be statistically significantly different than the state rate.

Sedentary life-style.

Nearly one-half of the adults in Oregon report a sedentary life-style. Based on combined data from 1989 through 1992 and 1994, an estimated 47 percent of residents 18 years or older were classified as living a sedentary life-style (Table 8B).

Some regional variation may be seen in the data. For example, the estimated proportion of persons who maintain a sedentary life-style is significantly lower in the South Willamette Region (44%) than in the state at-large, while the rate is higher than average in the Eastern Region (52%).

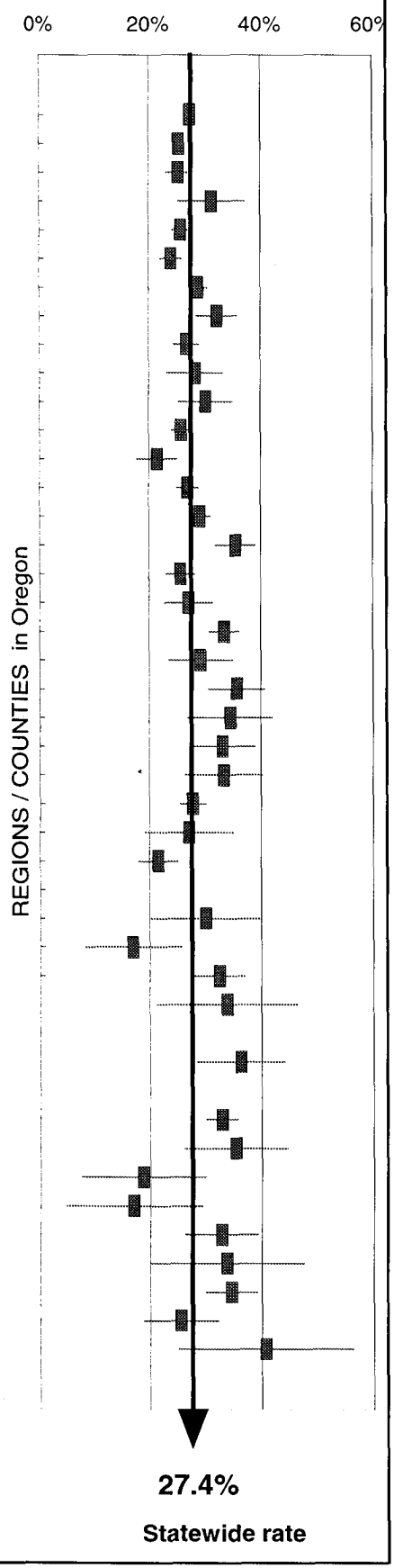
County rates range from 31 to 61 percent; however, the amount of difference between the statewide rate and individual county rates is statistically significant for only five counties. Jackson (42%) and Morrow County (31%) have rates below the statewide rate. And, at the other end of the spectrum, Wasco and Malheur Counties have rates of 61 and 62 percent, respectively. Because Marion County's estimated rate (51%) was based on interviews with over one-thousand randomly selected respondents, the difference when compared with the statewide rate is statistically significant. It indicates that residents of Marion County are at higher than average risk of a sedentary life-style, although the amount of increased risk is small.

Endnotes:

[1] Pate RR, et al. Physical activity and public health: A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. JAMA 273:402-6. 1995.

[2] The Body Mass Index used to define obesity is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight (27.3 for women; 27.8 for men) approximate the 120 percent of desirable body weight definition used in the 1990 Healthy People 2000 objectives.

TABLE 8A



Percentage of adults classified as overweight, Oregon, 1989-94

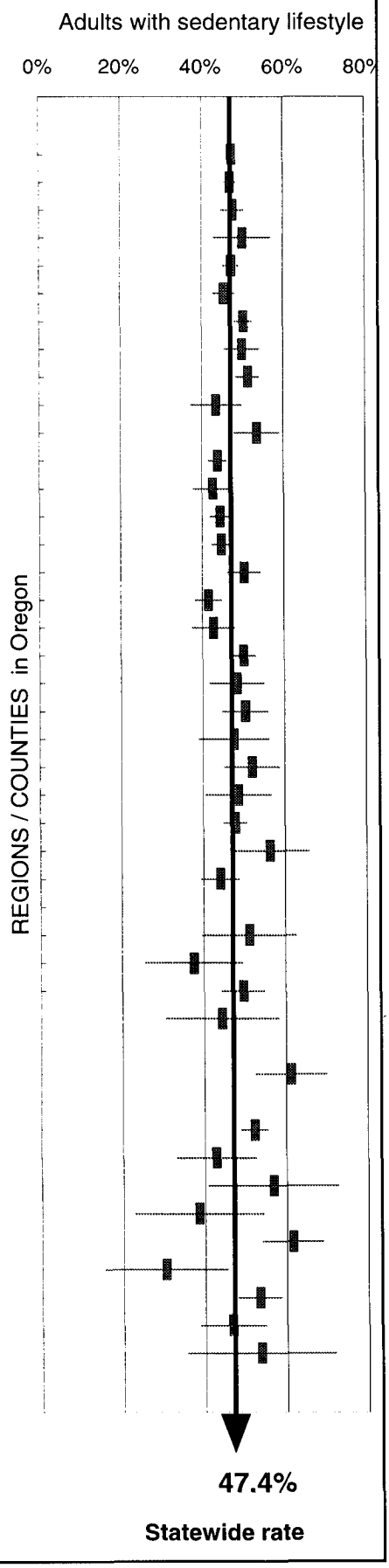
DEFINED AS OBESE based on ratio of weight to height

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**27.4%**		**26.7%**	**28.1%**	**4872**	**17535**
North Willamette	**25.4%**	s-	**24.4%**	**26.4%**	**1765**	**6886**
Clackamas	25%		23%	27%	402	1578
Columbia	31%		25%	37%	82	229
Multnomah	26%		24%	27%	858	3299
Washington	24%	s-	22%	26%	423	1780
Mid Willamette	**28.8%**		**27.1%**	**30.5%**	**768**	**2595**
Linn	32%	s+	28%	36%	202	607
Marion	27%		24%	29%	367	1346
Polk	28%		23%	33%	93	298
Yamhill	30%		25%	35%	106	344
South Willamette	**25.8%**		**24.0%**	**27.6%**	**604**	**2338**
Benton	22%	s-	18%	25%	112	486
Lane	27%		25%	29%	492	1852
Southwest Region	**29.1%**		**27.2%**	**31.0%**	**625**	**2129**
Douglas	36%	s+	32%	39%	245	688
Jackson	26%		23%	28%	275	1046
Josephine	27%		23%	31%	105	395
Coastal Region	**33.5%**	s+	**30.8%**	**36.2%**	**384**	**1161**
Clatsop	29%		23%	35%	72	240
Coos	36%	s+	31%	41%	121	347
Curry	35%		27%	42%	52	151
Lincoln	33%		27%	39%	81	252
Tillamook	33%		26%	40%	58	171
Central Region	**27.8%**		**25.5%**	**30.1%**	**400**	**1409**
Crook	27%		19%	35%	35	118
Deschutes	22%	s-	18%	25%	107	505
Gilliam	***				2	7
Hood River	30%		20%	40%	27	83
Jefferson	17%	s-	8%	26%	18	70
Klamath	33%		28%	37%	132	414
Lake	34%		21%	47%	19	54
Sherman	***				1	6
Wasco	36%	s+	28%	44%	56	144
Wheeler	***				3	8
Eastern Region	**32.9%**	s+	**30.0%**	**35.8%**	**326**	**1017**
Baker	35%		26%	45%	36	102
Grant	19%		8%	30%	13	46
Harney	17%		5%	29%	7	36
Malheur	33%		26%	39%	66	194
Morrow	34%		20%	48%	15	45
Umatilla	35%	s+	30%	39%	133	396
Union	26%		19%	32%	41	160
Wallowa	41%		25%	56%	15	38

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TABLE 8B



Percentage of adults who reported a sedentary lifestyle, Oregon, 1989-92 and 1994

DEFINED AS SEDENTARY based on reported amount of regular exercise

Males & females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**47.4%**		**46.6%**	**48.2%**		**6929**	**14567**
North Willamette	**47.0%**		**45.7%**	**48.3%**		**2615**	**5538**
Clackamas	48%		45%	50%		631	1303
Columbia	50%		43%	57%		98	193
Multnomah	47%		45%	49%		1249	2648
Washington	46%		43%	48%		637	1394
Mid Willamette	**50.3%**		**48.2%**	**52.4%**		**1109**	**2215**
Linn	50%		46%	54%		262	518
Marion	51%	s+	48%	54%		585	1148
Polk	44%		37%	50%		104	242
Yamhill	54%		48%	59%		158	307
South Willamette	**43.9%**	s-	**41.7%**	**46.1%**		**857**	**1935**
Benton	43%		38%	47%		173	408
Lane	44%		42%	47%		684	1527
Southwest Region	**44.7%**		**42.4%**	**47.0%**		**806**	**1790**
Douglas	50%		46%	54%		298	594
Jackson	42%	s-	38%	45%		362	862
Josephine	43%		37%	48%		146	334
Coastal Region	**50.0%**		**46.9%**	**53.1%**		**502**	**1004**
Clatsop	48%		42%	55%		101	215
Coos	50%		45%	56%		160	308
Curry	48%		39%	56%		60	127
Lincoln	52%		45%	59%		107	208
Tillamook	49%		40%	57%		74	146
Central Region	**47.9%**		**45.1%**	**50.7%**		**582**	**1205**
Crook	56%		47%	66%		55	104
Deschutes	44%		39%	49%		189	424
Gilliam	***					1	7
Hood River	51%		40%	63%		37	71
Jefferson	38%		26%	50%		23	63
Klamath	50%		44%	55%		174	351
Lake	44%		31%	58%		20	50
Sherman	***					4	6
Wasco	61%	s+	53%	70%		75	121
Wheeler	***					4	8
Eastern Region	**52.2%**	s+	**48.9%**	**55.5%**		**458**	**880**
Baker	43%		33%	53%		46	98
Grant	57%		41%	73%		19	37
Harney	39%		23%	54%		17	36
Malheur	62%	s+	54%	69%		95	160
Morrow	31%	s-	15%	46%		14	36
Umatilla	53%		48%	59%		183	336
Union	47%		39%	55%		70	148
Wallowa	54%		35%	72%	B	14	29

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

Women's health

Oregon Benchmark:
None established.

Healthy People 2000:
Ever received breast exam and mammogram among females 40 or older.

Year 2000 goal: 80%

Received breast exam and mammogram in past 2 years among females 50 or older.

Year 2000 goal: 60%

Ever received Pap test among females 18 or older.

Year 2000 goal: 95%

About 500 women die each year in Oregon from breast cancer; another 40 or more deaths occur as the result of cervical cancer. Processes which cause the development of such cancers are insufficiently understood—but presumed to include complex interactions among life-style, environmental and genetic factors. The good news about these two cancers is that with early detection, cure rates are very high.

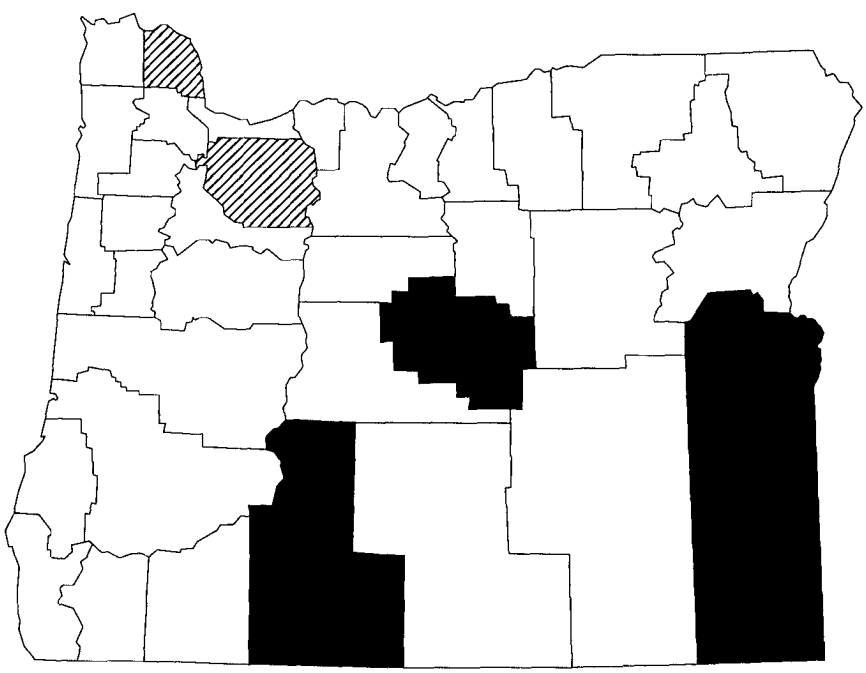
The introduction of the Pap test in the 1950's has resulted in dramatic reductions in deaths from cervical cancer. Pap tests can detect abnormal cells in precancerous stages. Abnormalities can be treated before cancer actually develops.

The cure rate for breast cancer approaches 100 percent when cancers are found in very early, localized stages where the cancer has not spread. Early detection methods include regular breast self-exam, clinical breast exam and mammography. Approximately 80 percent of breast cancers are diagnosed in women without family history of the disease. For this reason, research studies have begun to examine possible risk factors such as diet, physical activity, environmental and occupational causes of breast cancer.

Breast cancer screening.

Nearly four out of five Oregon women 40 years or older have been screened for breast cancer at some point in life. BRFSS data gathered from 1990 through 1994 indicate that 79 percent of women in this age group have had at least one mammogram as well as a clinical breast examination

MAP: **Shows counties in which the percentage of women (50+ years) screened for breast cancer within preceding 2 years is significantly greater or significantly less than the state average. See Table 9B.**



Interview Questions:

Have you ever had a mammogram? Breast exam? Pap smear?

(for each) *How long has it been? Have you had a hysterectomy?*

(See *endnotes* of this section for full text of the questions)

Breast Cancer Screening

MORE SCREENING:
Columbia, Clackamas
NORTH WILLAMETTE REGION

LESS SCREENING:
Crook, Malheur, Klamath
CENTRAL, EASTERN REGIONS

by a physician (Table 9A). This rate falls just short of the Healthy People 2000 target for preventive health care of 80 percent. Nevertheless, important differences may be seen between regions.

BRFSS data show that women living in the Portland metropolitan area are more likely to receive breast cancer screening than those in other areas of the state. The North Willamette Region had a rate of 83 percent. In the more sparsely populated regions of central and eastern Oregon the rate was significantly less: 73 percent in the Central Region and 65 percent in the Eastern Region.

Rates for individual counties ranged from 62 percent in Crook County to 85 percent in Columbia and Washington Counties. Although all of the counties in the North Willamette Region had sample rates above the 80 percent target, only Washington County had a rate which was significantly greater than the goal. On the other hand, several counties had rates significantly less than the statewide average: Klamath (67%), Malheur (65%) and Umatilla Counties (63%).

Recommended schedule of exams after 50th birthday.

As part of the program to detect breast cancers early in their development, it is recommended that women be screened for breast cancer every one or two years after they reach 50 years of age. BRFSS data provides a means of monitoring the extent to which Oregon residents get this screening.

Statewide, 64 percent of women 50 years of age or older have had both a clinical breast exam and a mammogram within the past two years. This proportion is greater than the Healthy People 2000 target of 60 percent. However, it appears likely that most counties outside of the Willamette Valley have not yet achieved this goal (Table 9B).

BRFSS data indicate that in all regions at least one-half of the women in this risk group are maintaining the recommended schedule of examinations. Still, residents of the Central and Eastern Regions are less likely than other regions to do so. Those of the North Willamette Valley have a rate significantly greater than the statewide average.

In Crook and Malheur Counties only about one-third of this group maintain the recommended schedule of examinations (32% and 35%, respectively). Klamath County (50%), too, has a rate significantly below the statewide average. On the other hand, Clackamas (73%) and Columbia County (79%) have rates significantly greater than the state rate; and, although the other Oregon counties which compose the Portland metropolitan area did not have rates high enough for the difference to be considered statistically significant, the North Willamette Region as a combined geographical area had a rate significantly greater than the statewide average.

Cervical cancer screening.

In Oregon, 95 percent of all adult women who have not had a hysterectomy have been screened for cervical cancer at least once. There is little variation in this measure from one region to another or among individual counties (Table 9C).

The fact that a Pap smear has become a routine diagnostic procedure used to maintain women's health is evidenced by the high statewide rate as well as the fact that none of the counties or regions had a rate significantly less than that of the state. Only Deschutes County had a rate which was significantly higher than the statewide average.

Endnotes:

Interview Questions:

A mammogram is an x-ray of each breast to look for breast cancer. Have you ever had a mammogram?

How long has it been since you had your last mammogram?

Was your last mammogram done as part of a routine checkup, because of a breast problem other than cancer, or because you've already had breast cancer?

A clinical breast exam is when a doctor, nurse, or other health professional feels the breast for lumps. Have you ever had a clinical breast exam?

How long has it been since your last breast exam?

Was your last breast exam done as part of a routine checkup, because of a breast problem other than cancer, or because you've already had breast cancer?

A Pap smear is a test for cancer of the cervix. Have you ever had a Pap smear?

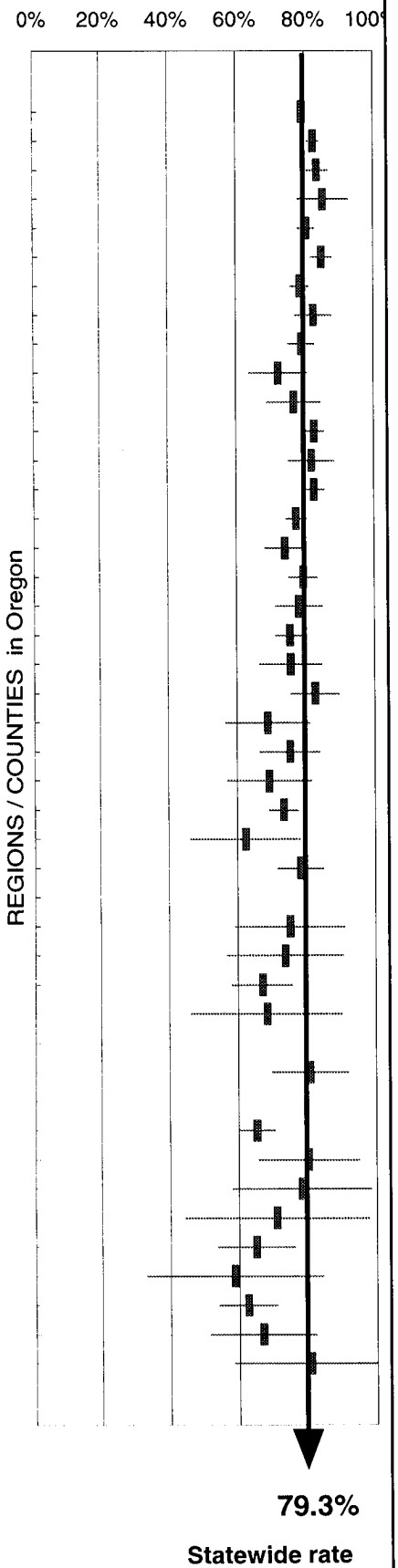
How long has it been since you had your last Pap smear?

Was your last Pap smear done as part of a routine exam, or to check a current or previous problem?

Have you had a hysterectomy (that is, an operation to remove the uterus/womb)?

TABLE 9A

40+ years, screened at least once



Percentage of women (40+ years) screened for breast cancer, Oregon, 1990-94

CLINICAL BREAST EXAM & MAMMOGRAM (each at least once) among women 40 + years.

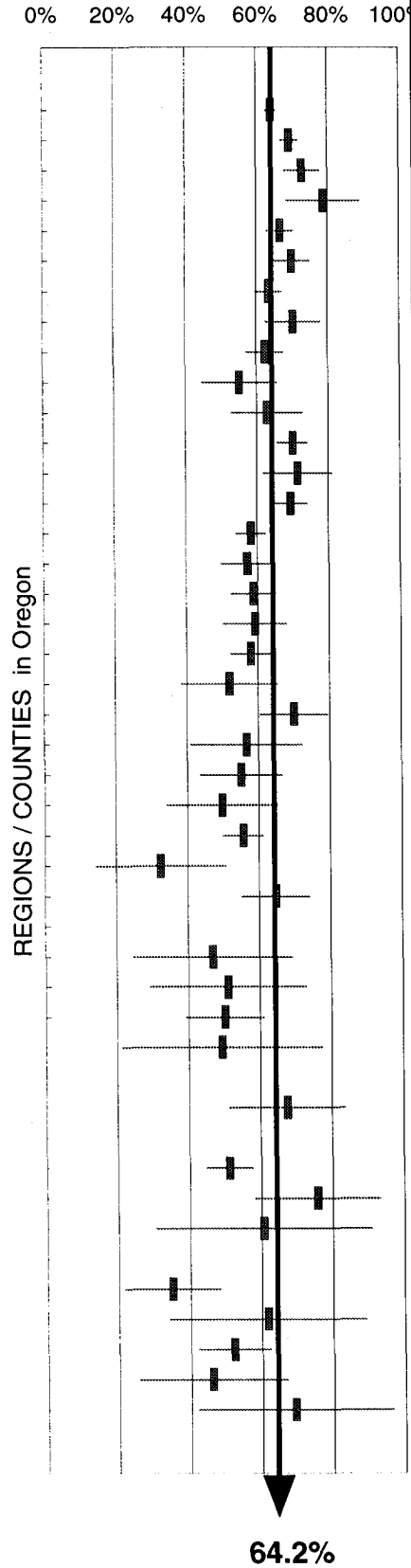
Females 40 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**79.3%**		**78.2%**	**80.4%**		**4143**	**5301**
North Willamette	**82.6%**	s+	**80.9%**	**84.3%**		**1626**	**1986**
Clackamas	84%		80%	87%		388	471
Columbia	85%		78%	93%		71	86
Multnomah	81%		78%	83%		733	916
Washington	85%	s+	82%	88%		434	513
Mid Willamette	**78.7%**		**75.9%**	**81.5%**		**644**	**837**
Linn	83%		77%	88%		160	195
Marion	79%		75%	83%		327	423
Polk	72%		64%	81%		74	108
Yamhill	77%		69%	85%		83	111
South Willamette	**82.7%**		**79.8%**	**85.6%**		**544**	**660**
Benton	82%		75%	89%		106	128
Lane	83%		79%	86%		438	532
Southwest Region	**77.4%**		**74.3%**	**80.5%**		**537**	**701**
Douglas	74%		68%	80%		160	218
Jackson	79%		75%	84%		271	344
Josephine	78%		71%	85%		106	139
Coastal Region	**75.5%**		**71.3%**	**79.7%**		**295**	**397**
Clatsop	76%		66%	85%		64	85
Coos	83%		76%	90%		89	111
Curry	69%		57%	81%		38	55
Lincoln	75%		66%	84%		69	92
Tillamook	69%		57%	82%		35	54
Central Region	**73.5%**	s-	**69.2%**	**77.8%**		**298**	**409**
Crook	62%		46%	78%		22	35
Deschutes	78%		72%	85%		110	143
Gilliam	***						0
Hood River	75%		58%	89%	B	20	28
Jefferson	74%		53%	89%	B	20	26
Klamath	67%	s-	58%	76%		73	108
Lake	68%		46%	88%	B	11	17
Sherman	***					2	2
Wasco	81%		70%	92%		39	48
Wheeler	***					1	2
Eastern Region	**65.3%**	s-	**60.0%**	**70.6%**		**199**	**311**
Baker	80%		62%	90%	B	21	28
Grant	78%		57%	95%	B	12	16
Harney	71%		31%	79%	B	7	11
Malheur	65%	s-	54%	76%		42	68
Morrow	59%		33%	84%	B	9	14
Umatilla	63%	s-	54%	71%		76	126
Union	67%		52%	82%		23	36
Wallowa	81%		55%	97%	B	9	12

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TABLE 9B

50+ years, screened in past 2 years



Percentage of women (50+ years) screened for breast cancer, Oregon, 1990-94

CLINICAL BREAST EXAM & MAMMOGRAM (both within past 2 years) among women 50 + years.

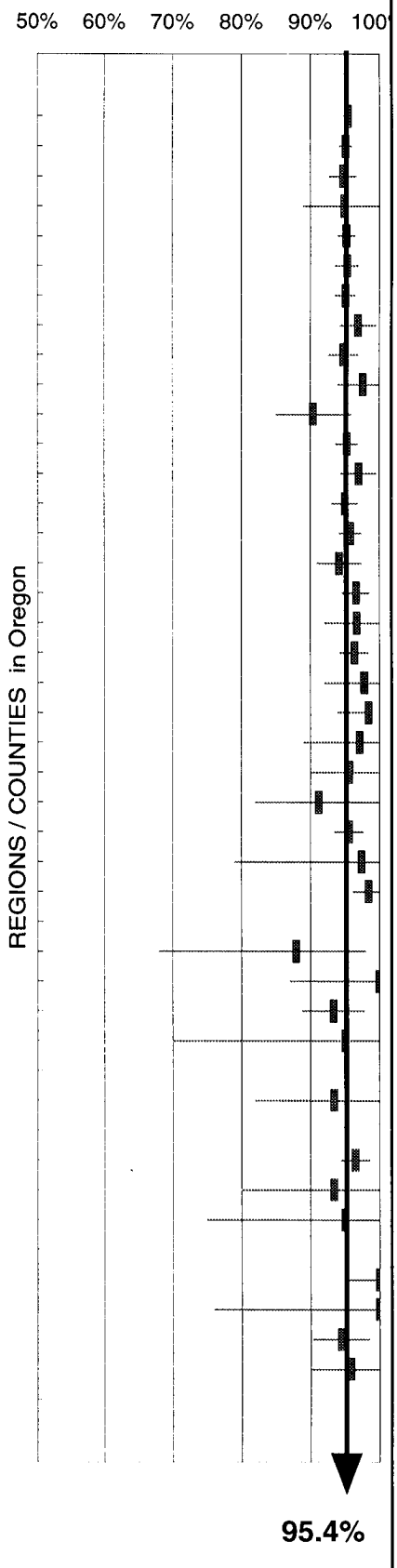
Females 50 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**64.2%**		**62.6%**	**65.8%**		**2258**	**3636**
North Willamette	**69.3%**	s+	**66.8%**	**71.8%**		**856**	**1261**
Clackamas	73%	s+	68%	78%		211	300
Columbia	79%	s+	68%	89%		44	59
Multnomah	67%		63%	70%		385	594
Washington	70%		65%	75%		216	308
Mid Willamette	**63.5%**		**59.7%**	**67.3%**		**386**	**623**
Linn	70%		63%	78%		96	133
Marion	63%		57%	68%		194	318
Polk	55%		44%	66%		44	84
Yamhill	63%		53%	73%		52	88
South Willamette	**70.0%**		**65.7%**	**74.3%**		**300**	**441**
Benton	71%		62%	81%		58	84
Lane	69%		65%	74%		242	357
Southwest Region	**58.3%**		**54.0%**	**62.6%**		**291**	**510**
Douglas	57%		50%	65%		90	163
Jackson	59%		53%	65%		140	235
Josephine	59%		50%	68%		61	112
Coastal Region	**58.0%**		**52.3%**	**63.7%**		**160**	**290**
Clatsop	52%		39%	65%		26	53
Coos	70%		60%	80%		58	88
Curry	57%		41%	73%		21	38
Lincoln	55%		44%	67%		36	71
Tillamook	50%		34%	65%		19	40
Central Region	**55.6%**	s-	**49.8%**	**61.4%**		**157**	**286**
Crook	32%	s-	16%	53%	B	8	25
Deschutes	65%		55%	74%		62	96
Gilliam	***						0
Hood River	47%		23%	69%	B	8	19
Jefferson	51%		29%	71%	B	11	20
Klamath	50%	s-	39%	61%		41	79
Lake	49%		24%	76%	B	5	12
Sherman	***					1	1
Wasco	68%		51%	84%		20	32
Wheeler	***					1	2
Eastern Region	**51.1%**	s-	**44.6%**	**57.6%**		**108**	**225**
Baker	76%		54%	88%	B	15	23
Grant	61%		27%	85%	B	6	10
Harney	***					3	6
Malheur	35%	s-	22%	49%		17	48
Morrow	62%		29%	82%	B	6	12
Umatilla	52%		42%	62%		46	93
Union	46%		26%	67%	B	8	22
Wallowa	69%		37%	92%	B	7	11

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TABLE 9C

18+ years, screened at least once



Percentage of women screened for cervical cancer, Oregon, 1991-94

GIVEN PAP SMEAR TEST at least once during adult lifetime (women with intact cervix only)

Females 18 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**95.4%**		**94.8%**	**96.0%**		**4932**	**5145**
North Willamette	**95.1%**		**94.2%**	**96.0%**		**2048**	**2141**
Clackamas	95%		93%	97%		457	479
Columbia	95%		89%	100%	P	64	67
Multnomah	95%		94%	97%		967	1013
Washington	95%		94%	97%		560	582
Mid Willamette	**95.1%**		**93.6%**	**96.6%**		**737**	**770**
Linn	97%		94%	100%		162	168
Marion	95%		93%	97%		384	402
Polk	98%		94%	100%	P	93	96
Yamhill	90%		85%	96%		98	104
South Willamette	**95.3%**		**93.7%**	**96.9%**		**654**	**677**
Benton	97%		94%	100%		165	171
Lane	95%		93%	97%		489	506
Southwest Region	**95.8%**		**94.2%**	**97.4%**		**581**	**607**
Douglas	94%		91%	97%		189	201
Jackson	97%		95%	99%		291	302
Josephine	97%		92%	100%	P	101	104
Coastal Region	**96.4%**		**94.3%**	**98.5%**		**285**	**295**
Clatsop	98%		92%	100%	P	59	60
Coos	98%		94%	99%	P	85	86
Curry	97%		89%	100%	P	40	41
Lincoln	96%		90%	100%	P	64	67
Tillamook	91%		82%	100%	P	37	41
Central Region	**95.6%**		**93.5%**	**97.7%**		**342**	**356**
Crook	97%		79%	100%	B	20	21
Deschutes	98%	s+	96%	100%		122	125
Gilliam	***						
Hood River	88%		68%	98%	B	17	18
Jefferson	100%		87%	100%	B	22	22
Klamath	93%		89%	98%		110	116
Lake	95%		70%	100%	B	14	15
Sherman	***					2	2
Wasco	93%		82%	100%	P	35	36
Wheeler	***						1
Eastern Region	**96.5%**		**94.4%**	**98.6%**		**285**	**299**
Baker	93%		80%	100%	B	19	22
Grant	95%		75%	100%	B	16	17
Harney	***					8	8
Malheur	100%		95%	100%	P	62	62
Morrow	100%		76%	100%	B	12	12
Umatilla	95%		90%	99%		111	118
Union	96%		90%	100%	P	50	53
Wallowa	***					7	7

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

Immunization of seniors

Oregon Benchmark:
None established.

Healthy People 2000:
Pneumococcal pneumonia and annual influenza immunization among non-institutionalized high-risk populations.

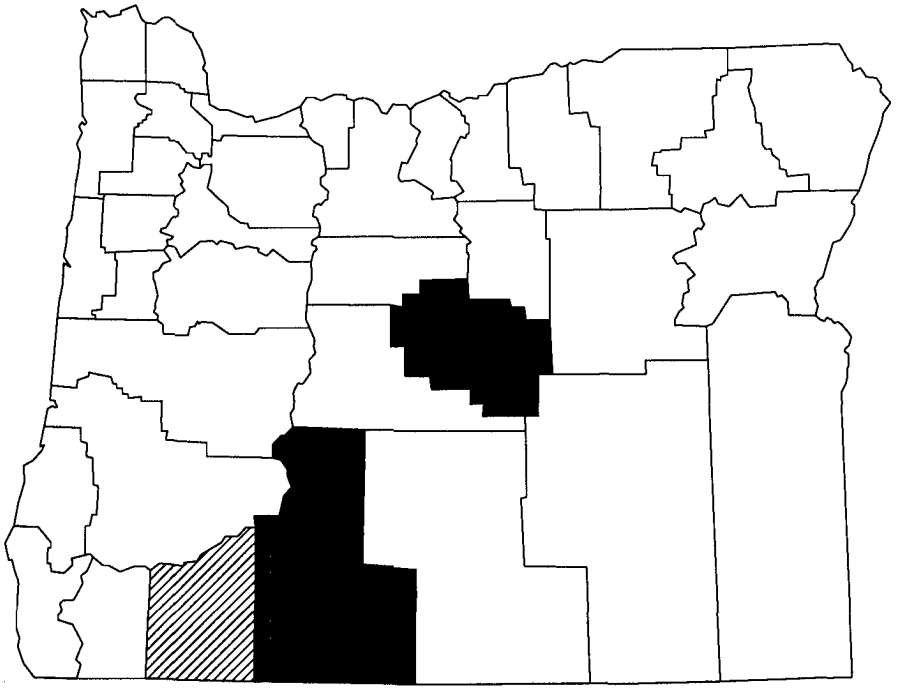
Year 2000 goal: 60%

Perhaps the most significant public health achievement in this century has been the reduction in incidence of infectious diseases. One of the major factors in the struggle to control the devastating effects of infectious disease was the development and widespread use of vaccines[1]. This preventive strategy has proven to be one of the safest, most economical and effective health measures for whole populations as well as individuals.

In spite of dramatic success, some groups, such as the very young, older adults, and members of minority groups, continue to be vulnerable to infectious diseases. For example, approximately 80 to 90 percent of all influenza-associated deaths in the United States occur among people aged 65 and older; many additional deaths in this group occur as the result of pneumococcal pneumonia.

Immunization of older adults should reduce the number of pneumonia and influenza deaths which occur each year. To achieve this reduction, Healthy People 2000 targeted seniors 65 and older living independent of institutionalized care: by the Year 2000, at least 60 percent of this age group should have been vaccinated for pneumococcal pneumonia at some time in life and should receive influenza vaccinations on an annual basis.

MAP: Shows counties in which the percentage of older adults with recommended immunization for influenza and pneumonia is significantly greater or significantly less than the state average. See Table 10A.



BRFSS findings.

Interviews conducted throughout 1991-1993 indicate that only 26 percent of the seniors living outside of care facilities have ever been immunized against pneumococcal pneumonia and also receive an annual inoculation for influenza (Table 10A). This rate is well below the Year 2000 goal

Interview Questions:
During the past 12 months, have you had a flu shot?

Have you ever had a pneumonia vaccination?

Immunization of older adults

MORE IMMUNIZED:
Jackson

FEWER IMMUNIZED:
Crook, Klamath

of 60 percent. Regional estimates ranged between 21 and 32 percent; yet, none differed significantly from the statewide rate. The apparent regional variation is largely due to the small number of respondents within this age group.

County rates range from 9 percent in Klamath County to 42 percent in Columbia and Jackson Counties. Only Jackson County had an immunization rate significantly greater than the state rate; Crook and Klamath Counties had rates significantly less than the state average.

Many of the counties of the Central and Eastern Regions lacked sufficient interviews for reliable estimation. Because most of the variability in county rates may be attributed to sampling variability—rather than behavioral differences or differences in the success of immunization programs—county health planners may choose to use synthetic estimates based upon the state average in conjunction with these county estimates[2].

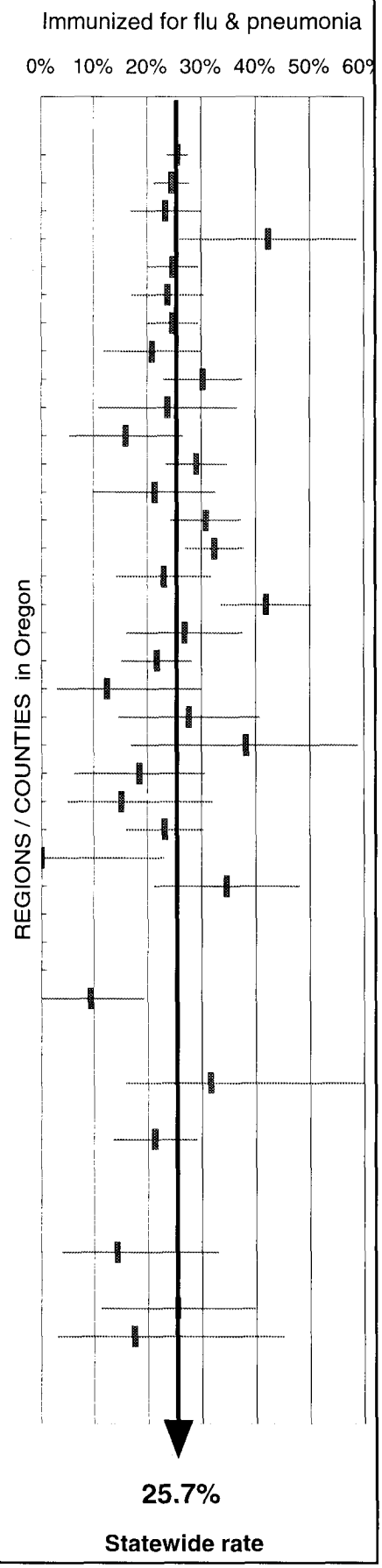
The major problem in achieving the Healthy People 2000 goal is the lack of immunization for pneumonia among seniors. That is, 57 percent of Oregon seniors reported that they had been given a flu vaccination in the previous year (Table 10B); but *less than one-third* reported ever having been immunized against pneumococcal pneumonia (Table 10C).

Endnotes:

[1] Other factors which greatly influenced the reduction in incidence of infectious diseases were practical changes in personal hygiene, food production and handling, and water treatment--all related to knowledge associated with germ theory. The importance of antimicrobial drugs in reducing the serious effects of infectious diseases is also well known.

[2] For example, synthetic estimates may take sex-or age-specific rates which are based on the statewide sample and multiply them by the number of county residents in each of the sex/age groupings to estimate the number of residents in that county who display the characteristic of interest.

TABLE 10A



Percentage of older adults immunized for pneumonia and recently immunized for influenza, Oregon, 1991-93

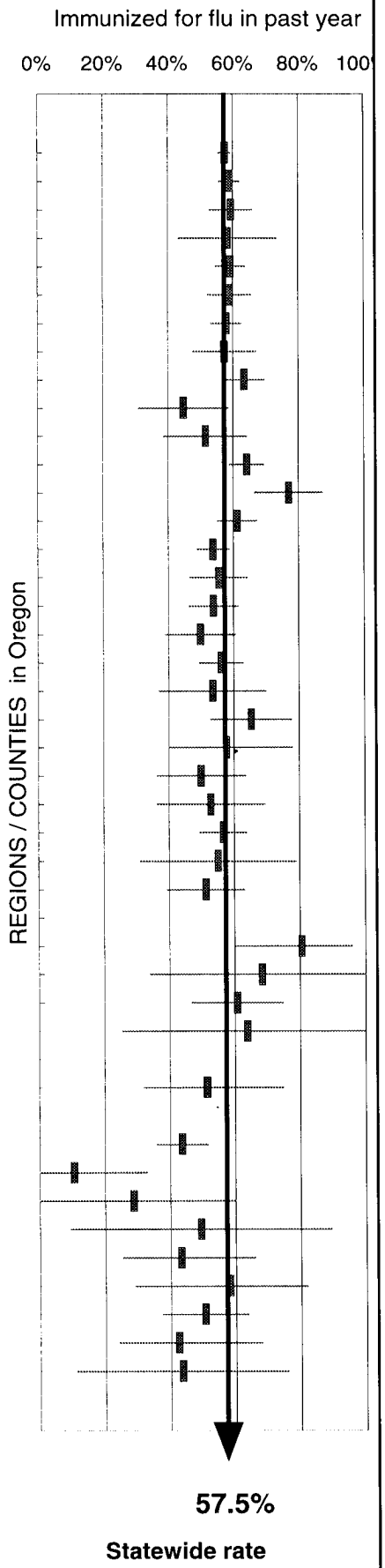
IMMUNIZED FOR FLU IN PAST YEAR and also for pneumococcal pneumonia in past years

Males & Females 65 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**25.7%**		**23.7%**	**27.7%**		**503**	**1921**
North Willamette	**24.5%**		**21.3%**	**27.7%**		**166**	**678**
Clackamas	23%		17%	30%		38	162
Columbia	42%		26%	59%		11	35
Multnomah	25%		20%	29%		78	321
Washington	24%		17%	30%		39	160
Mid Willamette	**24.7%**		**20.0%**	**29.4%**		**80**	**318**
Linn	21%		12%	30%		16	77
Marion	30%		23%	38%		46	153
Polk	24%		11%	37%		9	42
Yamhill	16%		5%	27%		9	46
South Willamette	**29.1%**		**23.4%**	**34.8%**		**75**	**243**
Benton	21%		10%	33%		13	51
Lane	31%		24%	37%		62	192
Southwest Region	**32.4%**		**27.0%**	**37.8%**		**91**	**287**
Douglas	23%		14%	32%		21	89
Jackson	42%	s+	34%	50%		53	133
Josephine	27%		16%	38%		17	65
Coastal Region	**21.8%**		**15.3%**	**28.3%**		**36**	**153**
Clatsop	13%		3%	30%	B	4	25
Coos	28%		15%	41%		14	45
Curry	38%		17%	59%	B	6	17
Lincoln	19%		6%	31%		7	39
Tillamook	15%		5%	32%	B	5	27
Central Region	**23.2%**		**16.1%**	**30.3%**		**31**	**135**
Crook	—	s-	0%	23%	B	0	13
Deschutes	35%		21%	48%		16	48
Gilliam	***					1	2
Hood River	***					3	8
Jefferson	***					1	7
Klamath	9%	s-	0%	19%		3	33
Lake	***					1	3
Sherman	***					0	1
Wasco	32%		16%	62%	B	6	18
Wheeler	***					0	2
Eastern Region	**21.3%**		**13.5%**	**29.1%**		**24**	**107**
Baker	***					0	9
Grant	***					2	8
Harney	***					1	3
Malheur	14%		4%	33%	B	3	22
Morrow	***					3	9
Umatilla	26%		11%	40%		10	36
Union	18%		3%	45%	B	2	12
Wallowa	***					3	8

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TABLE 10B



Percentage of older adults recently immunized for influenza, Oregon, 1991-94

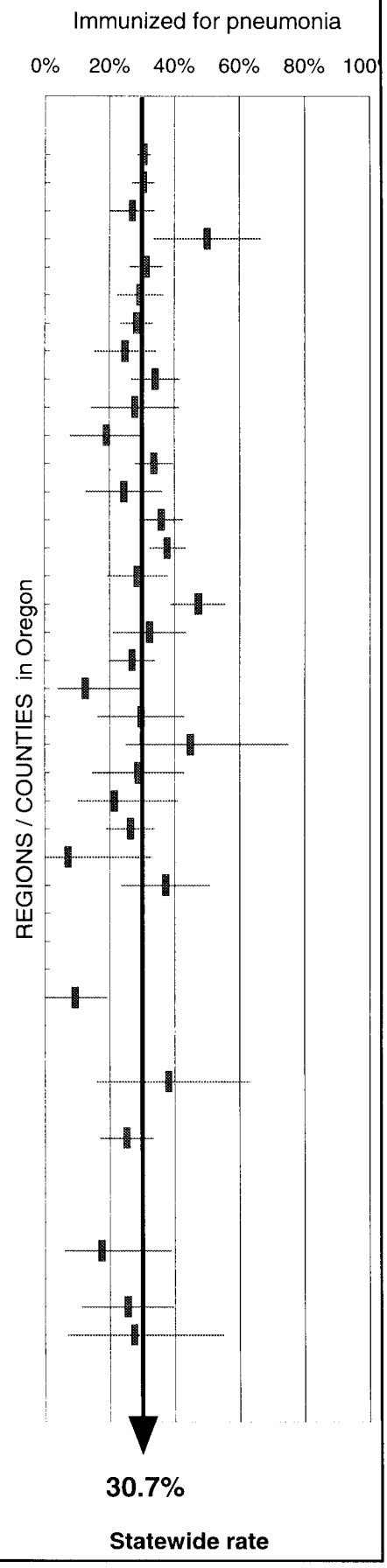
IMMUNIZED FOR FLU IN PAST YEAR.

Males & Females 65 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**57.5%**		**55.6%**	**59.4%**		**1447**	**2537**
North Willamette	**59.0%**		**55.8%**	**62.2%**		**530**	**902**
Clackamas	59%		53%	66%		130	216
Columbia	58%		43%	73%		23	41
Multnomah	59%		55%	64%		258	442
Washington	59%		52%	66%		119	203
Mid Willamette	**57.9%**		**53.2%**	**62.6%**		**246**	**428**
Linn	57%		48%	67%		55	98
Marion	63%		57%	70%		142	223
Polk	45%		31%	59%		20	49
Yamhill	52%		39%	64%		29	58
South Willamette	**64.1%**		**58.8%**	**69.4%**		**197**	**310**
Benton	77%	s+	67%	87%		45	62
Lane	61%		55%	67%		152	248
Southwest Region	**53.7%**		**48.6%**	**58.8%**		**198**	**366**
Douglas	56%		47%	64%		68	120
Jackson	54%		46%	61%		88	164
Josephine	50%		39%	61%		42	82
Coastal Region	**56.2%**		**49.4%**	**63.0%**		**110**	**203**
Clatsop	54%		37%	70%		20	35
Coos	65%		53%	78%		34	56
Curry	58%		40%	78%	B	14	27
Lincoln	50%		36%	64%		26	51
Tillamook	53%		36%	70%		16	34
Central Region	**56.7%**		**49.4%**	**64.0%**		**99**	**178**
Crook	55%		31%	79%	B	7	14
Deschutes	51%		39%	63%		34	67
Gilliam	***					2	2
Hood River	81%		60%	96%	B	8	10
Jefferson	***					4	7
Klamath	61%		47%	75%		27	46
Lake	***					4	6
Sherman	***					1	1
Wasco	51%		32%	75%	B	12	23
Wheeler	***						2
Eastern Region	**43.7%**	s-	**35.8%**	**51.6%**		**67**	**150**
Baker	11%	s-	0%	33%	B	1	13
Grant	***					2	8
Harney	***					3	6
Malheur	43%		25%	66%	B	12	29
Morrow	58%		29%	82%	B	8	12
Umatilla	51%		37%	64%		28	55
Union	43%		24%	68%	B	9	18
Wallowa	***					4	9

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TABLE 10C



Percentage of older adults immunized for pneumonia Oregon, 1991-93

IMMUNIZED FOR PNEUMOCOCCAL PNEUMONIA at some time in life

Males & Females 65 years & older	PERCENT *weighted*	S.S.	95% CONF. INTERVAL *lower limit*	*upper limit*	*	Number *unwgt N*	Interviews *unwgt N*
Statewide total	**30.7%**		**28.6%**	**32.8%**		**606**	**1921**
North Willamette	**30.5%**		**27.0%**	**34.0%**		**207**	**678**
Clackamas	27%		20%	34%		45	162
Columbia	50%	s+	34%	67%		14	35
Multnomah	31%		26%	36%		100	321
Washington	30%		22%	37%		48	160
Mid Willamette	**28.4%**		**23.4%**	**33.4%**		**96**	**318**
Linn	25%		15%	35%		21	77
Marion	34%		27%	42%		53	153
Polk	28%		14%	41%		10	42
Yamhill	19%		8%	30%		12	46
South Willamette	**33.7%**		**27.8%**	**39.6%**		**88**	**243**
Benton	25%		13%	36%		15	51
Lane	36%		29%	43%		73	192
Southwest Region	**37.8%**		**32.2%**	**43.4%**		**109**	**287**
Douglas	29%		19%	38%		26	89
Jackson	47%	s+	39%	56%		62	133
Josephine	32%		21%	44%		21	65
Coastal Region	**27.0%**		**20.0%**	**34.0%**		**43**	**153**
Clatsop	13%		4%	30%	B	4	25
Coos	30%		16%	43%		15	45
Curry	45%		25%	75%	B	7	17
Lincoln	29%		15%	43%		11	39
Tillamook	22%		10%	41%	B	6	27
Central Region	**26.4%**		**19.0%**	**33.8%**		**35**	**135**
Crook	7%		0%	33%	B	1	13
Deschutes	37%		24%	51%		17	48
Gilliam	***					1	2
Hood River	***					3	8
Jefferson	***					2	7
Klamath	9%	s-	0%	19%		3	33
Lake	***					1	3
Sherman	***					0	1
Wasco	38%		16%	63%	B	7	18
Wheeler	***					0	2
Eastern Region	**25.2%**		**17.0%**	**33.4%**		**28**	**107**
Baker	***					0	9
Grant	***					3	8
Harney	***					1	3
Malheur	18%		6%	39%	B	4	22
Morrow	***					3	9
Umatilla	26%		11%	40%		10	36
Union	28%		7%	55%	B	3	12
Wallowa	***					4	8

Graphic symbols: The estimated parameter value is indicated by a shaded box. The horizontal line visually displays the 95% Confidence Limits.
S.S. = Statistical Significance: The regional or county estimate is greater than or less than the statewide rate. Apparent discrepancies with the confidence intervals may occur due to rounding differences. See Technical Notes.
Method of determining Confidence Limits:
B = Binomial; P = Poisson; Blank = Normal Distribution. See Technical Notes.

*** Too few interviews conducted for reliable estimate

TECHNICAL NOTES

Data collection:

BRFS interviews were conducted by telephone. Based on a core set of questions developed by researchers at the Centers for Disease Control and Prevention of the U.S. Public Health Service, the questionnaire was reviewed and limited revisions made annually. Additional items were included to aid in understanding health-related conditions specific to Oregon. Core items generally remain unchanged to permit comparisons with other states and the analysis of trends. Questionnaire items analyzed in this report are those most useful in measuring Oregon Benchmarks established by the Oregon Progress Board or Healthy People 2000 goals set by the Centers for Disease Control.[1]

Adults, aged 18 years or older, residing in households having a telephone were randomly selected for interview. Beginning in January, 1989 roughly 140 BRFSS interviews were conducted each month throughout Oregon. After 1989, the number of interviews was increased to approximately 240 to 280 per month. The annual totals for each year during the study period are given below:

1989	1701
1990	3308
1991	3361
1992	3365
1993	2968
1994	2844

For purposes of this report, responses to questionnaire items have been aggregated over the time period that a particular question was used. Aggregating data in this way created subsamples large enough to estimate risk levels in individual counties and to make comparisons among them. Tables based on questions asked each year—e.g. Table 7 regarding the prevalence of adult diabetes—include responses from more than 17,000 interviews. By contrast, Tables 1A and 1B which report the subjective assessments of respondents' level of health are based upon fewer than 6,000 interviews because this question was added to the survey beginning in 1993. Tables 10A and 10C, which pertain to seniors only, are based on fewer than 2000 interviews. Because the precision and reliability of sample-based estimates are contingent upon the number of respondents interviewed, these differences in sample size are important. Readers should pay close attention to the number of observations made within a county or region and the probable range of values associated with the estimated parameters. Many county estimates given in the report are highly useful for the comparisons made in health planning and assessment; others are not.

The number of interviews conducted in some counties remains small—especially in the Central and Eastern Regions of the state. Because of the small number of residents, and the correspondingly low probability that any would be randomly selected for interview, fewer than 10 interviews were carried out in Gilliam, Sherman or Wheeler Counties.

The usefulness of aggregating data over a period of several years, assumes that the mix of responses does not change greatly during the study period. For most variables employed in this report the assumption appears valid. However, Tables 2A and 2B are intended to demonstrate a contrary condition—that statewide legislation strongly affected seatbelt use on a county by county basis.

Sampling methodology:

One method of selecting the individuals to be interviewed was employed during 1989 through 1992; a second sampling plan was used in 1993 and 1994.

In the method employed from 1989 through 1992, a list of valid residential telephone numbers was obtained from a large research corporation which provides sampling services for telephone surveys. Randomly selected telephone numbers were incremented upward by a fixed amount so that the sample would include unlisted as well as listed households. Chance selection produced a random sample of households with telephones. A single adult in each of these households was randomly chosen for interview based on the standard Kish technique.[2] With proper weighting, this sampling plan provides data which may be analyzed as a simple random sample of individuals.

In 1993, the Waksberg method of probability cluster sampling was implemented to select respondents.[3] This method, too, yields a representative sample of households with telephones—it is not equivalent to a simple random sample, however. To compensate for the design effect of this sampling plan, appropriate adjustments are needed in formulas for calculating variances. As a rule, cluster sampling increases the amount of variability to be expected among sample estimates.

In this report, the data for all years was combined—*regardless of the actual sampling employed*—and analysis performed *as if* it were a simple random sample. For many tables this would appear to have minor effects—e.g. those which estimate the prevalence of hypertension (Table 6), based on data from 1989 through 1993—because only one-fifth of the responses were obtained using the second sampling plan. On the other hand, tables which describe the subjective health assessments of Oregonians (Tables 1A and 1B)—in which all respondents were selected in terms of a multi-stage cluster sampling protocol—no doubt underestimate the range of values needed to specify 95 percent confidence intervals.

Response weighting to achieve an equal probability sample:[4]

Theoretically, BRFSS sampling methods insure that every residential telephone number in Oregon has the same probability of being selected as part of the sample. It is this fact that makes it possible to generalize from a relatively small set of interviews to the state in its entirety or to any subpopulation within the state—a region, county, gender group, age group, race, etc.—on the basis of observations made regarding the corresponding subset within the sample. However, a simple summary of the raw data can, at times, create misleading impressions. For two reasons:

1. *Some households have more than one telephone;* thus they are more likely to be selected for interview. Wealthy households, for example, tend to be overrepresented. Among the households selected for analysis in this report, five percent had 2 or more telephone numbers.

2. *The selection probabilities are not the same for all individuals*—the unit about which we wish to generalize. That is, an adult in a four-adult household has a 25% chance of being selected as the interviewee; whereas, the only adult in another selected household has a 100% chance of being interviewed.

By assigning inverse weights to responses associated with such factors it is possible to calculate *unbiased estimates for* geographic areas or demographic groupings. The combined weights insure that statistical estimates are more nearly equivalent to those obtained from an equal probability sample of adults. For example, the responses of someone living in a household with three telephones is given only one-third the weight of those from households which may be reached by only a single telephone number. Similarly, the responses of someone from a four-adult household would be given four times the weight of those of a respondent living in a single-member household and twice the weight of responses obtained from members of two-adult households.

Post-stratification weights:[5]

Within the framework of statistical theory it is clear that most randomly selected samples of a given size, drawn from the same population, would provide quite similar findings. These findings are generalizable to the population, itself. It is just as clear that the single sample actually observed in a given study never provides perfect representation for the larger population. In other words, it is not an exact image of the sampled universe. To make sample-based estimates as nearly representative of the universe as possible, they are commonly adjusted by post-stratification weights.

This system of adjusting statistical estimates is useful because of the well-established fact that health-relevant behavior and beliefs display considerable similarity among persons within the same demographic classifications--age, gender, race and ethnicity, economic level, marital status, etc. Furthermore, due to a periodic census, the demographic composition of counties is already known. This makes it possible to determine how well the specific sample selected represents the population under study. If a particular demographic group is underrepresented in the sample, the responses of the interviewees with that characteristic may be given greater weight; as the result, the newly adjusted values become a more accurate representation of the population.

For example, 18-24 year-old males were typically underrepresented and females over 64 years of age were often overrepresented in the sample relative to the number of young men and older women known to live in a particular county. To compensate whenever this occurred, each of the responses by young men were given increased weight; whereas the responses of the older women received less than average weight. As a final result, summary statistics used to generalize about the counties as a whole more accurately reflect their true conditions—that is, what the findings would have been had every resident been interviewed.

Statistical estimates produced for this report employ post-stratification weights based on both gender and age. Operationally, post-stratification weights were calculated by first segmenting respondents into subclasses based on gender and six age categories (18-24, 25-34, 35-44, 45-54, 55-64, 65 and older)--a total of 12 subclasses. Next, county population figures for these same subclasses, based on the 1990 U.S. Census and reflecting estimates for July 1, 1991, were obtained from the Oregon Center for Population Research and Census at Portland State University. Weights for each of the 12 cells were calculated by dividing the population estimate for each cell by the number of actual respondents in the cell. In effect, this determined the number of residents within the county or region which each respondent represented. A separate set of post-stratification weights was employed for each county and region.

Because population estimates were treated as constants throughout the study period, geographical areas which experienced rapid or extreme shifts in population during that time may have produced somewhat inaccurate or misleading estimates. Another potential problem emerged in relation to counties with a small number of respondents: because the 2 x 6 stratification scheme resulted in 12 age/gender cells, if fewer than 36 cases were observed or if they were distributed unevenly, some cells would have fewer than 3 cases. To avoid the possibility that certain demographic groups go unrepresented or being too badly misrepresented (e.g. some cells lacking any respondents), in counties with small numbers, adjacent cells were combined prior to the calculation of post-stratification weights.

Sampling variability:[6]

As mentioned earlier, statistical theory provides assurance that measures calculated on one randomly selected sample will be *quite similar* to those based on other samples obtained using the same procedures—at least, *most of the time*. They would not be precisely the same, however. The amount of variation to be expected from sample to sample is related to the degree of homogeneity within the population sampled. For diverse populations, the differences from one sample to the next would tend to be greater. Also, the more that selection procedures depart from those of a simple random sample, the more likely that the statistics would vary among samples. On the other hand, sampling variability decreases with an increase in the sample size.

Taking these factors into account, it is possible to estimate the amount of variability to be expected among samples; and sampling variability, in turn, determines the reliability of estimates based on a single sample. Although this report provides prevalence estimates for both regions and counties, the reliability of these estimates varies greatly from county to county and from one table to another.

Estimation of Confidence Intervals:

In addition to point estimates, this report provides estimated limits for the 95 percent Confidence Intervals associated with each of the sample proportions given in the tables. That is, it offers a range of values within which the actual population value may be expected to occur with a likelihood that approximates 95 percent. A corresponding 5 percent chance exists that the parameter would have fallen somewhere outside the limits of the Confidence Interval if all adult residents of the County or Region had been interviewed. In this report, estimates of the limits for confidence intervals are relatively precise when based upon the Binomial or Normal distributions (except for the complications associated with mixed sampling mentioned previously); however, estimates based upon the table of values associated with the Poisson distribution are fairly rough approximations.

Sample estimates based on fewer than 10 cases were considered too unreliable for publication. When the sample involved at least 10, and up to 30 cases, the 95 percent confidence intervals were obtained from a table of values based on the Binomial distribution.[7] In the strictest sense, this procedure presumes that the respondents constitute a simple random sample. However, because the sampling protocol changed in 1993, the data of nearly all tables depart from the model of simple randomness--at least in small degree. Tables 1A and 1B are based entirely on cases selected by two-stage cluster sampling. To the extent that the cases do not constitute a simple random sample, the confidence limits shown in the tables will tend to underestimate the true 95% Confidence Intervals.

In most cases samples were larger than 30, permitting use of the Normal or Poisson distributions to approximate Binomial estimates. The task of calculating probabilities is made simpler by using an appropriate continuous distribution. The distribution which provides the best approximation is determined by *how rare the outcome is* that is the subject of research and the *size of the sample*. Taken together these factors determine the shape and dispersion of the sampling distribution.

If the outcome of concern is fairly common in the population studied, the sampling distribution is relatively symmetrical for samples of at least 30 cases, and the Normal distribution provides an adequate basis for estimating confidence intervals. Probabilities may be obtained from a table published in any elementary statistics textbook. On the other hand, if the outcome of interest is a rare occurrence, the sampling distribution tends to be markedly skew (unless the sample size is very large), and the Poisson distribution provides a closer approximation for the limits needed to define confidence intervals. Calculations used in this report were based on Table A-15 in Dixon and Massey [8] and provide only rough approximations for confidence intervals.

Inescapably, the choice of method to use in calculating confidence intervals was, at times, somewhat arbitrary. The cutpoints chosen are listed below:

Number of Observations **N**	Frequency of Occurrence **p**	Mean of distribution **Np**	**Distribution Employed**
Less than 10			Estimated proportion not published
10 to 30 cases			Binomial
Greater than 30 cases	.17 < p < .83	**Np equal or greater than 5**	Normal
Greater than 30 cases	.00 < p <.17 .83 < p < 1.00	**Np less than 5 or N(1-p) less than 5**	Poisson

Endnotes:

[1] *Oregon Benchmarks: Standards for Measuring Statewide Progress and Institutional Performance.* Report to the 1995 Legislature by the Oregon Progress Board. December, 1994. Especially page 36 and 79. U.S. Department of Health and Human Services. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives.* Washington DC: U.S. Department of Health and Human Services, Public Health Service, 1991; DHHS publication no. (PHS) 91-50212.

[2] Kish, L. *Survey Sampling.* John Wiley & Sons, New York. 1965. p 396f, especially section 11.3B.

[3] Waksberg J. Sampling methods for random digit dialing. *Journal of the American Statistical Association* 1978;73:40-46. .

[4] Kish, op. cit., p 53f.

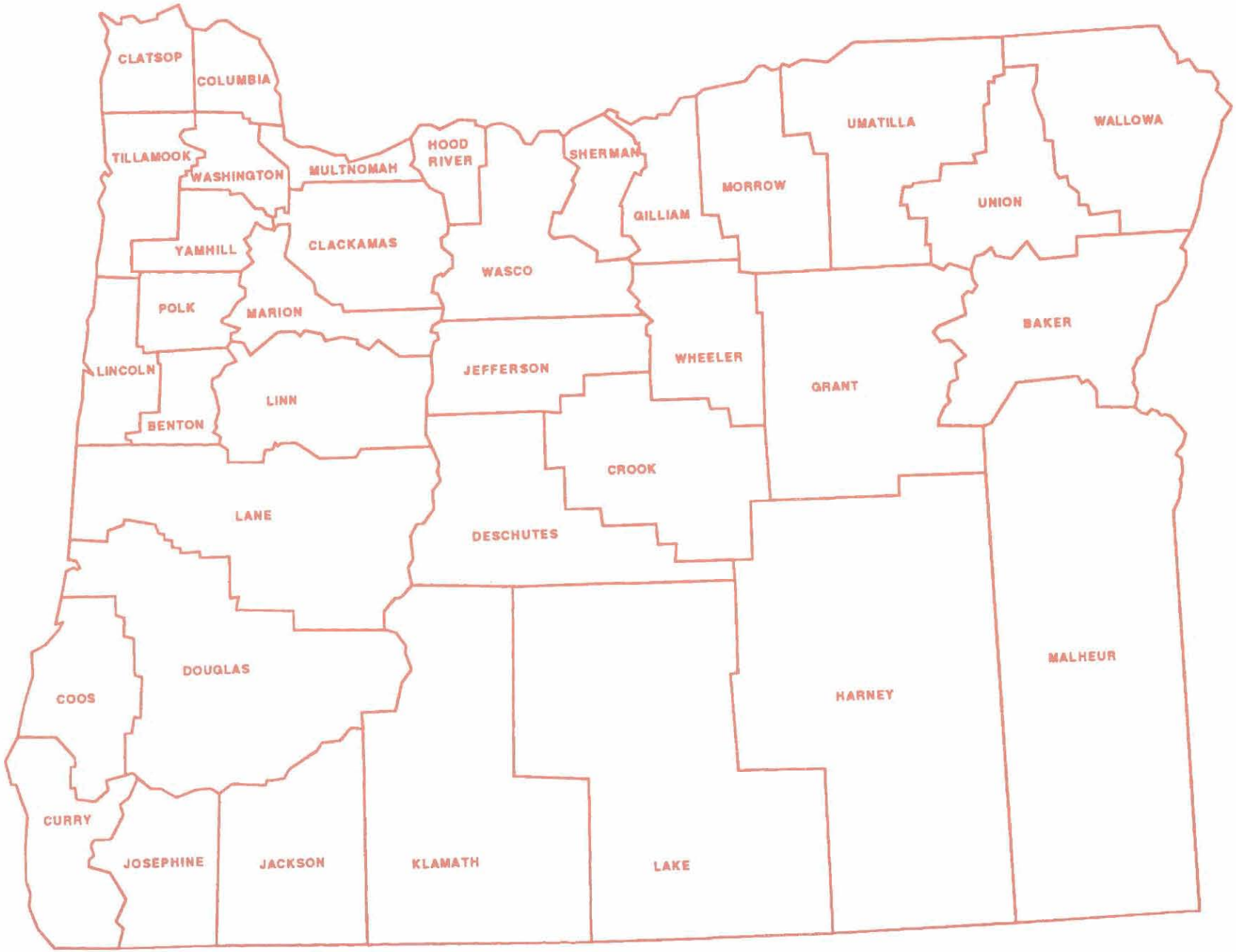
[5] Instruction packet received from Charlene Smith, M.S., Data Management Section, BRFSB of the Centers for Disease Control and Prevention of the U.S. Public Health Service.

[6] For a more extensive discussion of this, see Lilienfeld AM & Lilienfeld DE. *Foundations of Epidemiology.* Oxford University Press; New York, 1980. See pp 329-338.

[7] Crow EL, Confidence Intervals for a Proportion. *Biometrika* 1956:43:423-435.

[8] Dixon WJ & Massey FJ. Introduction to Statistical Analysis. McGraw-Hill; New York, 1957. See especially Table A-15 and pages 351-354.

OREGON COUNTIES



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