



# Information and Services for Prenatal Testing in Oregon: A Comparison of Urban and Rural Counties



Beth Webber<sup>†</sup>, Jia Yin Wan<sup>†</sup>, Al Sandoval<sup>‡</sup>, Kenneth D. Rosenberg<sup>†</sup>, Amy Zlot<sup>‡</sup>, Karen Edwards<sup>†</sup>  
<sup>†</sup> University of Washington Center for Genomics and Public Health, Department of Epidemiology,  
<sup>‡</sup> Oregon Department of Human Services

## Background and Aims:

The Oregon Pregnancy Risk Assessment Monitoring System (PRAMS) is a project conducted through the Oregon Office of Family Health with support from the national Centers for Disease Control and Prevention (CDC). The purpose of the PRAMS survey is to collect data on maternal attitudes and experiences prior to, during, and immediately after pregnancy for a sample of Oregon women.<sup>1</sup>

The goal of this project was to evaluate the association between residence in urban and rural counties and receiving information about prenatal testing or being offered a prenatal blood test using data from the 2003 Oregon PRAMS survey.

## Methods:

### PRAMS Survey:

- A stratified random sample is drawn every month from Oregon resident women whose babies were born 60-180 days before survey selection date.

### Study Sample:

- Mothers of American Indian, Hispanic, African-American, and Asian descent are over-sampled.
- Mothers whose babies weighed less than 2500 grams (5.5 pounds) are over-sampled.
- Mothers are mailed an explanatory letter and 20-page survey.
- Two follow-up attempts are made—a second mailed survey and a phone interview.
- Surveys and phone interviews are available in both Spanish and English.

### Data Selection:

- This research involves the analysis of preexisting anonymized data from the Oregon Department of Human Services (Oregon Public Health Division).
- The 2003 survey included two questions on prenatal testing (See Box 1).

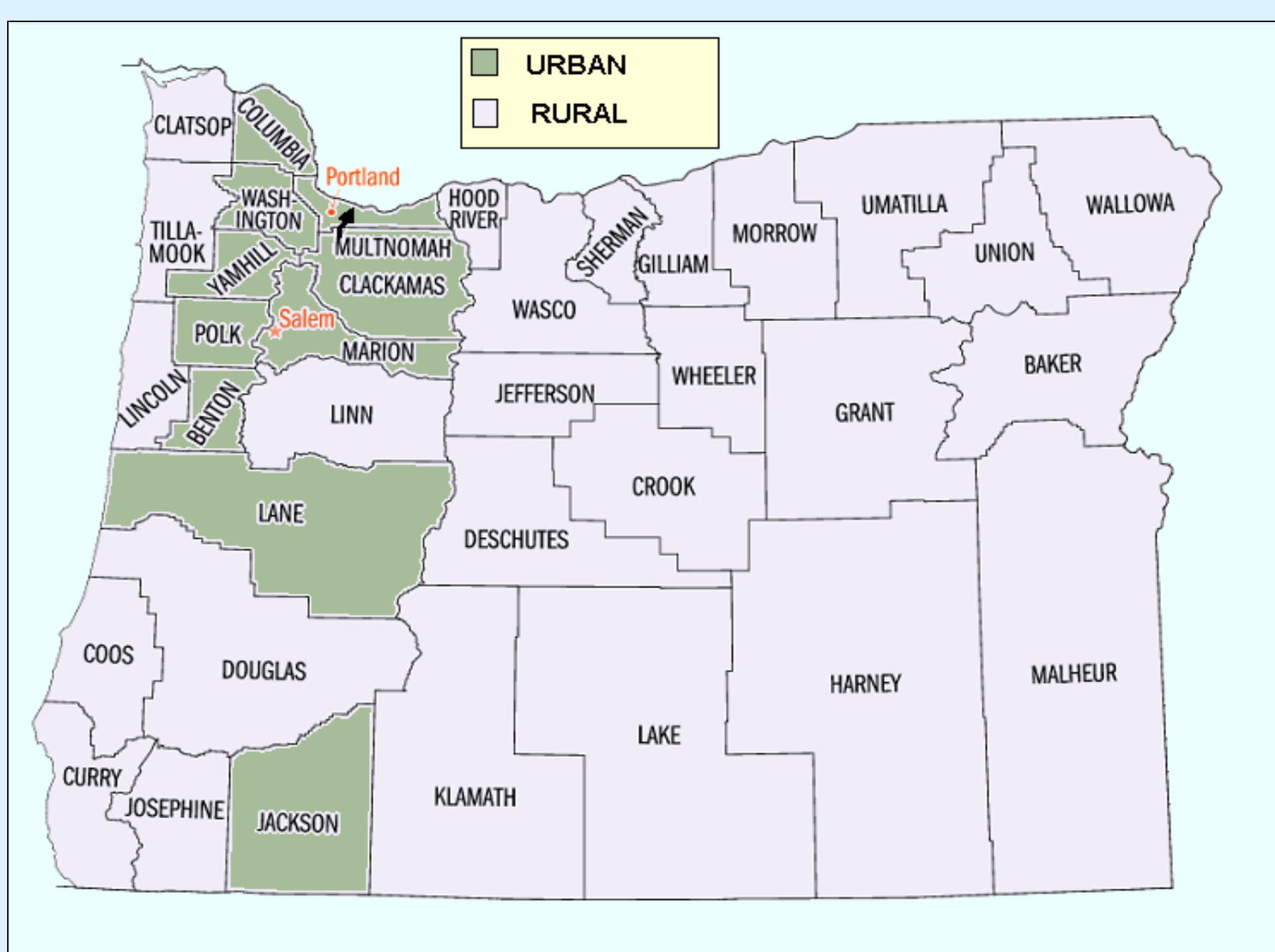


Figure 1: Classification of Oregon Counties as Urban or Rural as Determined by the Oregon Department of Human Services

## References:

- Oregon Department of Human Services. Oregon PRAMS: An Overview. Available at: <http://www.oregon.gov/DHS/ph/pnh/prams/prams.shtml>. Accessed July 11, 2007.
- Oregon Department of Human Services. Oregon PRAMS: Report, 1998-99. Available at: <http://oregon.gov/DHS/ph/pnh/prams/9899/ar9899.shtml#method>. Accessed July 11, 2007.

### Box 1: Survey Questions Used for Analysis

Question 1: During any of your prenatal care visits, did a doctor, nurse or other health care worker talk with you about doing tests to screen for birth defects or diseases that run in your family?

Question 2: During any of your prenatal care visits, did a doctor, nurse or other health care worker offer you a blood test to see whether your baby had a birth defect or diseases that run in your family?

## Statistical Analysis:

- Only women who received prenatal care were included in the analysis.
- Urban/Rural status was determined by county of residence (See Figure 1).
- County status was defined by total county population.
- Logistic regression was used to obtain odds ratios to evaluate the association between discussion and offering of blood tests and urban or rural county residence.
- Analyses were adjusted for age, income, education, race, parity, when and where care was received, and health insurance status. Survey weights were used to account for the sampling technique.
- STATA 8 was used for all statistical analysis.

TABLE 1: Demographic Characteristics of Women who Received Prenatal Care by Urban/Rural County Status\*

	Total % <sup>†</sup>	Urban % <sup>†</sup> n= 1139	Rural% <sup>†</sup> n= 298
Age:			
<20	8.79	6.43	16.01
20-24	25.04	22.88	31.66
25-29	28.84	30.37	24.15
30-34	24.43	25.10	22.36
35+	12.89	15.21	5.81
Family Income: (approximate percent of poverty level based on a family of two)			
<1220 (poverty)	25.64	24.90	27.90
1220-1789 (100-150%)	13.20	11.89	17.17
1790-3189 (150-300%)	24.62	23.74	27.30
3190-4220 (above 300%)	32.82	36.28	22.25
Education:			
less than 12 years	36.21	38.59	28.93
at least 12 years	63.32	60.85	70.87
Race:			
White	72.14	69.77	79.37
Hispanic	18.66	19.50	16.08
Asian/Pacific Islander	5.38	6.75	1.17
Black	2.07	2.57	0.56
Native American/Indian	1.56	1.15	2.82
Parity:			
1st born	41.87	40.18	47.02
Not 1st born	58.13	59.82	52.98
When Care was First Received:			
First Trimester	91.38	91.16	92.04
Second Trimester	8.08	8.19	7.73
Third Trimester	0.54	0.64	0.23
Where Care was Received:			
Hospital Clinic	17.70	18.17	16.27
Health Department Clinic	8.67	9.91	4.88
Private Doctor's Office or HMO Clinic	55.84	54.22	60.76
Midwife's Office	11.73	12.36	9.81
Other	4.06	3.27	6.49
Prenatal Care Paid by Health Insurance:			
Paid by Health Insurance §	89.59	89.13	90.99
Not Paid by Health Insurance	7.86	8.40	6.22

\* Data presented as weighted percentages to account for PRAMS sampling scheme  
<sup>†</sup> Percentages do not add to 100 due to missing data  
<sup>§</sup> Indicated having care paid for by Oregon Health Plan, Medicaid, HMO, Private Health Insurance, or Indian Health Services

## Funding Source:

University of Washington Center for Genomics and Public Health: CDC Grant #U10/CCU025038-2

	Unadjusted		Adjusted <sup>†</sup>	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Discussed Prenatal Testing	1.48 (0.82-2.68)	0.194	1.73 (0.88-3.40)	0.114
Offered Prenatal Blood Test	0.89 (0.48-1.66)	0.724	1.11 (0.56-2.22)	0.762

\* Urban counties used as baseline  
<sup>†</sup> Adjusted for age, income, education, race, parity, where care was received, when care was received, and insurance status

## Results:

- Table 1 shows the demographics of the women included in the analysis. This population is representative of the Oregon birthing population.
- Table 2 shows the unadjusted and adjusted odds ratios comparing discussion and offering of prenatal testing in rural and urban counties.

### Question 1:

- 82% of women reported discussing prenatal testing with their providers.
- Residence in rural counties compared to urban counties was associated with a 48% increase (95% CI: 18% decrease to 168% increase p=0.194) in the odds of discussing prenatal testing. After adjustment, rural residence was associated with a 73% increase (95% CI: 12% decrease to 240% increase p=0.114). However, these results were not statistically significant.

### Question 2:

- 83% of women reported being offered a blood test to check for birth defects.
- Residence in a rural county compared to urban counties was associated with a 11% decrease (95% CI: 52% decrease to 66% increase p=0.724) in the odds of being offered a blood test. After adjustment, rural residence was associated with a 11% increase (95% CI: 44% decrease to 122% increase p=0.762). However these results were not statistically significant.

## Conclusions:

- In 2003 most women in Oregon receiving prenatal care discussed prenatal testing with their provider and were offered a prenatal blood test.
- Though not statistically significant, it appears that women in rural counties may be more likely to discuss prenatal testing with their provider than women in urban counties.
- There appears to be no difference in the offering of prenatal blood tests between women of urban and rural counties.
- Though this analysis is strengthened by its population-based survey approach, the smaller number of women in rural counties may affect the power of this analysis.
- Education of providers and patients should continue so that all women can have equal and widespread access to this information.

## Future Research:

Future analyses will include examinations of other factors which may alter the rates of prenatal genetic testing, including racial differences as well as differences in insurance status.