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Behavioral Risk Factor Surveillance System

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Rural-Urban Comparisons of Access to Health Care and Preventive Care Measures for Montana Adults: 2008 BRFSS Findings[1]

Multiple studies have demonstrated that where you live has an impact on your health.[2-6] Rural populations face significantly different economic and social environments than their urban counterparts. Rural communities are generally poorer, and have a higher proportion of elderly persons, as well as have higher proportions of the population being uninsured or underinsured.[7,8] These risk characteristics are all associated with poorer health outcomes and a greater need for health care services among rural populations. Because roughly 65% of its population lives in rural counties, these risks require particular attention in Montana.[9] Many studies have documented the efficacy of preventive health services (e.g., mammograms, Papanicolaou (Pap) tests, and other health screening tests) in reducing morbidity and mortality.[10] However, it is unclear whether use of healthcare or prevention services is limited in Montana's rural communities.

Using 2008 data from the Montana Behavioral Risk Factor Surveillance System, this Fact[or]s report explores differences in health care access and preventive health practices between Montana's rural and urban populations. All Montana counties are grouped according to their relative degree of rurality using the USDA Rural Urban Continuum Code (RUCC) classification system[11] and data are reweighted accordingly (Table 1). The RUCC classification scheme groups metropolitan counties according to the population size of the metropolitan statistical area in which they are a part. Three metropolitan classifications result although only the least populated metro classification (fewer than 250,000 individuals) exists in Montana. Non-metro counties are grouped according to their total urban population and *functional adjacency* to a metro area. To be *functionally adjacent*, the county has to physically adjoin one or more metro areas, and have at least 2% of its employed labor force commuting to that central metro county. Figure 1 is a map of Montana showing the distribution of metropolitan and non-metropolitan counties based on this RUCC classification. Non-metropolitan counties (coded in various shades of blue in the map) are the majority of Montana's counties with the more populated non-metropolitan (rural) counties being clustered in the western region of the state. Metropolitan (urban) counties (coded in green in the map) are the reference group for statistical comparisons of access to health care and preventive care utilization across all other RUCC classifications in multiple logistic regression analyses.

Figure 1: Montana Counties by Rural Urban Continuum Code (RUCC) Classification.

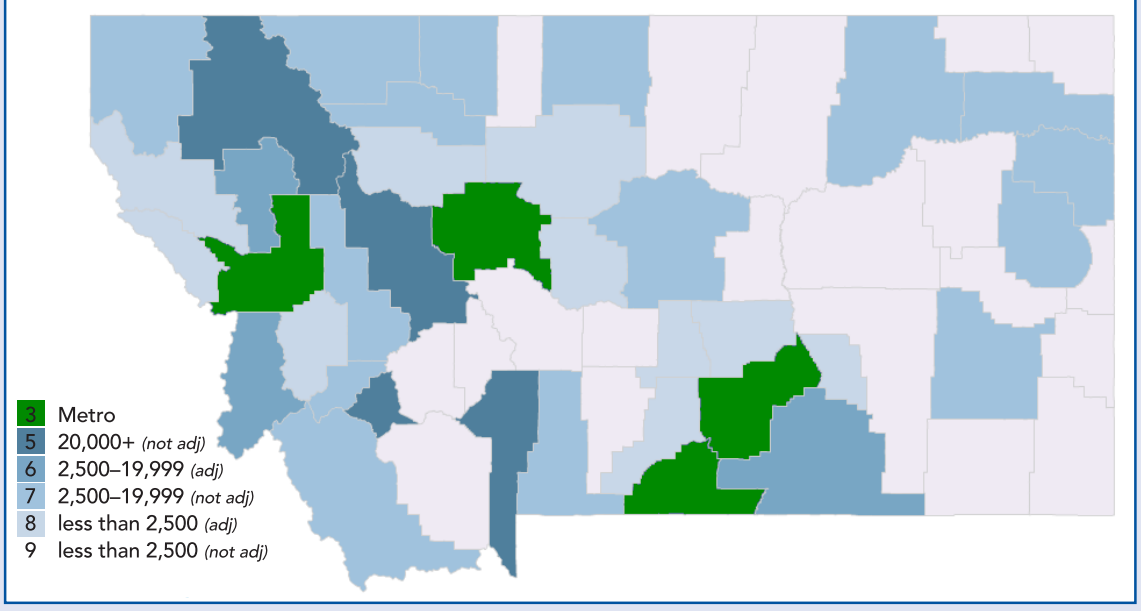

Table 1: Rural Urban Continuum Code Classification Definitions, USDA Office of Budget and Management, 2003

RUCC	Description
Metropolitan Counties:	
1	Counties in metro areas of more than 1 million population
2	Counties in metro areas of 250,000 to 1 million population
3	Counties in metro areas of fewer than 250,000 population
Non-metropolitan Counties:	
4	Urban population of 20,000 or more, adjacent to a metropolitan area
5	Urban population of 20,000 or more, not adjacent to a metropolitan area
6	Urban population of 2,500 to 19,999, adjacent to a metropolitan area
7	Urban population of 2,500 to 19,999, not adjacent to a metropolitan area
8	Urban population of fewer than 2,500, adjacent to a metropolitan area
9	Urban population of fewer than 2,500, not adjacent to a metropolitan area

Demographic Characteristics of Adult Montanans by RUCCs

Table 2. Demographic Characteristics of Montana Adult Population by Rural Urban Continuum Code, BRFSS 2008 (with 95% confidence intervals)

	Metro 3			Non-Metro 5			Non-Metro (adj) 6			Non-Metro 7			Non-Metro (adj) 8			Non-Metro 9		
	Wt.%	95% CI LL	UL	Wt.%	95% CI LL	UL	Wt.%	95% CI LL	UL	Wt.%	95% CI LL	UL	Wt.%	95% CI LL	UL	Wt.%	95% CI LL	UL
All Adults	34.4	32.9	35.9	28.0	26.7	29.4	8.4	7.6	9.3	16.3	15.4	17.2	4.9	4.4	5.5	8.0	7.4	8.7
Sex:																		
Male	49.2	45.7	52.7	50.1	46.8	53.4	49.8	44.3	55.2	50.3	47.0	53.6	49.9	43.9	55.9	45.2	40.8	49.8
Female	50.8	47.3	54.3	49.9	46.6	53.2	50.2	44.8	55.7	49.7	46.4	53.0	50.1	44.1	56.1	54.8	50.2	59.2
Age:																		
18 - 34	30.9	27.1	34.9	32.4	28.8	36.3	27.7	23.9	34.6	25.4	22.0	29.2	22.6	16.8	29.7	**19.5**	**15.6**	**24.2**
35 - 44	16.9	14.6	19.5	15.8	13.7	18.2	14.6	11.5	18.3	14.6	12.4	17.1	13.2	9.6	17.9	17.2	13.8	21.1
45 - 54	19.8	17.4	22.5	20.0	17.8	22.3	19.6	16.1	23.6	21.0	18.6	23.7	21.2	17.1	26.0	21.6	18.2	25.5
55 - 64	15.8	14.0	17.9	16.2	14.5	18.2	17.4	14.5	20.6	17.8	15.8	20.0	19.8	15.9	24.4	19.7	16.8	23.0
65+	16.6	14.9	18.4	15.5	13.9	17.3	20.7	17.7	24.2	**21.2**	**19.0**	**23.4**	**23.1**	**19.2**	**27.6**	**21.9**	**18.8**	**25.3**
Race/Ethnicity:																		
White, non-Hispanic	93.2	91.0	94.9	95.4	93.5	96.7	**75.7**	**69.7**	**80.8**	**86.6**	**84.1**	**88.7**	93.9	90.7	96.1	90.7	87.9	93.0
AI/AN*	1.9	1.0	3.6	0.8	0.5	1.5	**16.2**	**12.7**	**20.4**	**8.7**	**7.1**	**10.6**	1.9	1.0	3.8	**6.5**	**4.7**	**8.7**
Other or Hispanic**	4.9	3.5	6.7	3.8	2.5	5.6	**8.1**	**4.4**	**14.7**	4.7	3.3	6.8	4.2	2.4	7.2	2.8	1.5	5.1
Education:																		
<High School	4.9	3.7	6.4	5.4	4.0	7.4	5.8	4.0	8.4	**8.1**	**6.5**	**10.2**	**11.0**	**7.3**	**16.1**	**8.7**	**6.4**	**11.6**
High School	27.9	24.9	31.2	27.9	24.9	31.1	37.3	31.8	43.2	34.0	30.9	37.2	34.3	28.8	40.2	**38.4**	**34.0**	**42.9**
Some College	28.2	25.2	31.5	26.2	23.4	29.2	27.1	22.9	31.7	30.6	27.6	33.9	25.7	20.9	31.2	27.7	24.0	31.8
College Degree	39.0	35.7	42.4	40.5	37.4	43.7	**29.8**	**25.4**	**34.6**	**27.2**	**24.5**	**30.1**	**29.1**	**24.0**	**34.7**	**25.2**	**21.5**	**29.4**
Income:																		
<$15,000	7.7	5.9	9.9	6.9	5.2	9.1	9.0	7.0	11.5	9.4	7.7	11.3	12.7	8.7	18.2	7.4	5.3	10.3
$15,000 - $24,999	13.6	11.3	16.4	12.3	10.3	14.6	20.0	15.8	25.0	**20.3**	**17.7**	**23.2**	**23.2**	**18.1**	**29.4**	**23.6**	**19.6**	**28.2**
$25,000 - $49,999	31.8	28.4	35.3	31.1	27.9	34.4	34.1	28.4	40.4	36.4	33.1	39.8	30.1	24.8	36.1	34.2	29.7	38.9
$50,000 - $74,999	19.3	16.5	22.5	23.7	20.8	27.0	18.3	14.2	23.3	16.1	13.7	18.8	18.6	14.2	24.0	16.7	13.5	20.5
$75,000+	27.5	24.4	30.9	26.0	23.2	29.0	**18.6**	**14.8**	**23.1**	**17.8**	**15.3**	**20.7**	**15.3**	**11.1**	**20.8**	**18.1**	**14.5**	**22.3**
Employment:																		
Employed for wages	54.6	51.2	58.0	52.1	48.7	55.3	**40.1**	**35.2**	**45.2**	**46.6**	**43.2**	**49.9**	**43.4**	**37.5**	**49.6**	**45.4**	**40.9**	**50.0**
Self-employed	11.2	9.2	13.4	13.8	11.7	16.2	**19.6**	**15.3**	**24.7**	13.8	11.6	16.3	14.1	10.8	18.3	**19.7**	**16.5**	**23.4**
Out of work	3.4	2.2	5.2	3.4	2.2	5.1	6.2	3.7	10.2	5.2	3.5	7.6	5.3	2.7	10.0	2.9	1.7	4.9
Homemaker / Student	10.7	8.6	13.3	10.9	8.8	13.5	9.8	7.3	13.2	9.5	7.6	11.7	9.9	6.5	14.7	9.8	7.3	13.0
Retired	15.3	13.6	17.1	15.7	14.1	17.5	19.0	15.9	22.5	19.0	16.9	21.2	**21.2**	**17.3**	**25.7**	18.6	15.7	21.9
Unable to work	4.8	3.6	6.4	4.1	3.0	5.8	5.3	3.9	7.2	6.0	4.5	8.0	6.1	3.9	9.3	3.6	2.4	5.4

* American Indian or Alaska Native only
** All other non-White (including multiracial) or Hispanic

Demographic characteristics vary significantly between metropolitan counties and non-metropolitan counties (Table 2). The age distribution in Montana follows national trends with the percentage of young adults (18-34) decreasing and the percentage of older adults (65+) increasing as rurality increases. The most rural counties (RUCC 9) have significantly fewer young adults, aged 18 to 34, than metropolitan counties. Further, RUCC 7, 8, and 9 have a higher percentage of adults aged 65 and older compared to metropolitan counties. RUCC 6, 7, and 9 have significantly higher percentages of American Indian adults than metro counties. Rural adults (RUCC 7, 8, and 9) are generally less educated with significantly fewer college educated adults and significantly more adults with less than a high school education. While there are no significant difference among the lowest income group, rural counties (RUCC 7, 8 and 9) have a significantly higher percentage of adults with household income between $15,000 and $24,999 and significantly fewer adults with household income of $75,000 or more compared to metropolitan counties. Finally, rural adults are more likely to be self-employed rather than employed for wages than are adults in urban areas.

Access to Health Care

Uninsured adults are less likely than those with insurance to use preventive services.[12] Seventeen percent of all Montana adults aged 18-64 report having no health care coverage. Comparing rural and urban differences reveals a much different picture for the state; among adults aged 18-64 an estimated 15% in urban areas and twice as many (30%) in rural counties adjacent to metro counties (RUCC 8) report being uninsured (Table 3). After adjusting for age, race, education, and income using multiple logistic regression analyses, in all but the most rural counties (RUCC 9) adults living in rural counties are *significantly* more likely not to have health care coverage than adults living in urban areas (AOR=1.47 to 1.97). Because of the importance of age, education, race, and income (Model 1) as well as health insurance status (Model 2), these measures are used as controls in the assessment of rurality and health services use and access in the remaining multiple logistic regression analyses.

About eleven percent of Montana adults report no usual place for health care access. Approximately 12% of urban county adults and 10% to 13% of rural adults report not having a usual place for health care. Only adults living in the most rural, non-adjacent counties (RUCC 9) have a significantly *lower* likelihood of having no usual place of health care (OR=0.63; 95%CI=0.42-0.96). Even after adjusting for demographics characteristics and health care coverage status (Model 1 and Model 2), adults in the least populated and most isolated counties (RUCC 9) report significantly lower estimates of no usual place of care (AOR=0.59; 95%CI=0.38-0.92 and AOR=0.60; 95%CI=0.38-0.93, respectively).

Table 3. Multivariate Associations Between Degree of Rurality and Access to Care Measures, Montana Adults, 2008

	Weighted (%)	Crude OR (95%CI)	Adjusted OR, Model 1* (95% CI)	Adjusted OR, Model 2** (95% CI)
ACCESS TO CARE MEASURES				
No Health Care Coverage (aged 18-64)				
3, Metro	15.1	1.00	1.00	N/A
5, 20,000+ not adjacent	20.4	**1.43(1.05-1.96)**	**1.47(1.03-2.10)**	
6, 2,500-19,999 adjacent	28.8	**2.26(1.54-3.33)**	**1.97(1.20-3.23)**	
7, 2,500-19,999 not adjacent	23.9	**1.76(1.30-2.37)**	**1.50(1.07-2.12)**	
8, <2,500 adjacent	29.8	**2.38(1.58-3.58)**	**1.77(1.09-2.86)**	
9, <2,500 not adjacent	18.4	1.26(0.88-1.01)	0.92(0.60-1.43)	
No Usual Place for Health Care				
3, Metro	11.6	1.00	1.00	1.00
5, 20,000+ not adjacent	9.8	0.82(0.59-1.15)	0.79(0.55-1.12)	0.75(0.52-1.07)
6, 2,500-19,999 adjacent	12.8	1.12(0.74-1.70)	1.17(0.74-1.83)	1.11(0.70-1.77)
7, 2,500-19,999 not adjacent	12.2	1.06(0.77-1.47)	0.99(0.70-1.38)	0.95(0.67-1.33)
8, <2,500 adjacent	10.5	0.89(0.54-1.47)	0.74(0.44-1.26)	0.69(0.41-1.17)
9, <2,500 not adjacent	7.7	**0.63(0.42-0.96)**	**0.59(0.38-0.92)**	**0.60(0.38-0.93)**
No Personal Health Care Provider				
3, Metro	30.7	1.00	1.00	1.00
5, 20,000+ not adjacent	26.1	0.79(0.63-1.00)	0.80(0.62-1.03)	**0.75(0.58-0.97)**
6, 2,500-19,999 adjacent	27.5	0.85(0.62-1.17)	0.83(0.58-1.18)	0.78(0.55-1.10)
7, 2,500-19,999 not adjacent	27.6	0.86(0.68-1.08)	0.78(0.60-1.00)	**0.72(0.56-0.94)**
8, <2,500 adjacent	26.4	0.81(0.59-1.11)	0.84(0.57-1.25)	0.76(0.51-1.15)
9, <2,500 not adjacent	30.8	1.00(0.77-1.30)	1.09(0.81-1.46)	1.12(0.83-1.52)

* adjusted for age, education, race and income
** adjusted for age, education, race, income and health care coverage status

Overall, 28% of Montana adults report not having a personal health care provider or physician; 31% of urban adults and 26% to 31% of rural adults. Adjusting for the demographic factors of age, race, education and income in Model 1, did not identify significant difference in the relationship between geographic location of residence and having a personal health care provider. However, when also controlling for health insurance coverage in Model 2, adults in rural counties of population 20,000 or more and not adjacent to a metro area (RUCC 5) and in smaller populated rural counties of 2500 to less than 20,000 that are not adjacent to a metro area (RUCC 7) are less likely to report that they had a personal healthcare provider (AOR=0.75; 95%CI=0.58-0.97 and AOR=0.72; 95%CI=0.56-0.94, respectively).

Preventive Care Utilization

Routine Check-ups:

Two out of five (40%) Montana adults report not having had a routine check-up in the past year. Having routine check-ups does not vary significantly by geographic location of residence as shown in the crude prevalence estimates (Table 4). Statistical adjustments used in model 1 and model 2 did not identify geographic variation in having had routine check-ups.

Influenza Vaccinations:

In 2008, almost 50% of high risk adults living in metro areas of Montana report *not* having an influenza vaccination in the past 12 months, while anywhere from 45% to 58% of high risk adults living in rural areas report *not* receiving a flu vaccine within the past 12 months. The crude odds ratios indicate that high risk adults in counties of 20,000 or more people and not adjacent to metro areas (RUCC 5, 58%) are more likely not to be vaccinated than high risk adults in metro areas (50%). After controlling for age, race, education, income and health care coverage the relationship between rurality and influenza vaccinations remains the same. Only high risk adults living in the non-metropolitan counties (RUCC 5: Flathead, Gallatin, Lewis & Clark, and Silver Bow counties) with largest population sizes (AOR=1.54; 95%CI=1.16-2.03) are more likely not to have an influenza vaccine than metro high risk adults.

Health care providers and public health professionals recommend that all people aged 6 months and older have an influenza vaccination every year. Also, it is particularly important for those with any one of the following high risk health conditions to be immunized yearly: being age 65 or older, working or volunteering in any kind of health care facility, or having one or more of the following conditions: diabetes, current asthma, current smoker, a history of a heart attack, coronary heart disease, angina, or a stroke.

Table 4. Multivariate Associations Between Degree of Rurality & Preventive Care Measures, Montana Adults, 2008

	Weighted (%)	Crude OR (95%CI)	Adjusted OR, Model 1* (95% CI)	Adjusted OR, Model 2** (95% CI)
PREVENTIVE CARE MEASURES				
No Routine Check-up, past 12 months				
3, Metro	38.9	1.00	1.00	1.00
5, 20,000+ not adjacent	41.1	1.10(0.89-1.34)	1.06(0.85-1.33)	1.01(0.81-1.27)
6, 2,500-19,999 adjacent	39.6	1.03(0.79-1.35)	1.11(0.82-1.51)	1.08(0.79-1.47)
7, 2,500-19,999 not adjacent	38.4	0.98(0.80-1.20)	0.97(0.77-1.21)	0.91(0.73-1.47)
8, <2,500 adjacent	42.5	1.16(0.87-1.55)	1.09(0.78-1.52)	1.01(0.72-1.41)
9, <2,500 not adjacent	42.1	1.14(0.90-1.45)	1.19(0.91-1.55)	1.22(0.93-1.59)
No Flu Vaccine, past 12 months (high risk)				
3, Metro	49.8	1.00	1.00	1.00
5, 20,000+ not adjacent	58.0	**1.39(1.08-1.78)**	**1.54(1.17-2.04)**	**1.54(1.16-2.03)**
6, 2,500-19,999 adjacent	52.5	1.11(0.82-1.51)	1.38(0.97-1.95)	1.38(0.97-1.97)
7, 2,500-19,999 not adjacent	51.6	1.07(0.85-1.36)	1.21(0.92-1.59)	1.21(0.92-1.60)
8, <2,500 adjacent	48.8	0.96(0.67-1.36)	1.11(0.73-1.69)	1.08(0.72-1.64)
9, <2,500 not adjacent	45.2	0.83(0.62-1.12)	0.93(0.65-1.31)	0.96(0.68-1.37)
No Mammogram, past 2 yrs (women 40+)				
3, Metro	22.1	1.00	1.00	1.00
5, 20,000+ not adjacent	27.8	**1.36(1.03-1.79)**	1.24(0.91-1.69)	1.20(0.88-1.64)
6, 2,500-19,999 adjacent	29.1	**1.45(1.03-2.04)**	1.14(0.77-1.69)	1.07(0.71-1.61)
7, 2,500-19,999 not adjacent	30.9	**1.58(1.19-2.09)**	**1.49(1.08-2.04)**	**1.41(1.03-1.94)**
8, <2,500 adjacent	37.3	**2.10(1.45-3.05)**	**2.07(1.36-3.17)**	**1.85(1.22-2.82)**
9, <2,500 not adjacent	33.9	**1.81(1.27-2.58)**	**1.63(1.10-2.42)**	**1.63(1.09-2.45)**
No Pap Smear, past 3 yrs (all women)				
3, Metro	13.0	1.00	1.00	1.00
5, 20,000+ not adjacent	15.8	1.26(0.81-1.95)	1.14(0.71-1.84)	1.09(0.67-1.76)
6, 2,500-19,999 adjacent	17.5	1.42(0.83-2.44)	1.49(0.79-2.80)	1.43(0.72-2.85)
7, 2,500-19,999 not adjacent	16.7	1.34(0.88-2.06)	1.01(0.63-1.63)	0.93(0.57-1.52)
8, <2,500 adjacent	36.3	**3.83(2.16-6.79)**	**2.24(1.03-4.86)**	2.13(0.99-4.60)
9, <2,500 not adjacent	21.2	**1.80(1.12-2.90)**	1.56(0.93-2.62)	1.55(0.92-2.62)
No Colorectal Cancer Screening (aged 50+)				
3, Metro	33.2	1.00	1.00	1.00
5, 20,000+ not adjacent	31.9	0.94(0.75-1.19)	0.92(0.71-1.18)	0.91(0.71-1.18)
6, 2,500-19,999 adjacent	39.8	1.33(1.00-1.77)	1.19(0.87-1.64)	1.17(0.85-1.60)
7, 2,500-19,999 not adjacent	37.8	1.23(0.97-1.55)	1.10(0.85-1.43)	1.10(0.84-1.43)
8, <2,500 adjacent	43.0	**1.52(1.10-2.09)**	**1.48(1.03-2.13)**	**1.45(1.01-2.09)**
9, <2,500 not adjacent	44.8	**1.63(1.24-2.14)**	**1.51(1.10-2.06)**	**1.51(1.10-2.06)**

* adjusted for age, education, race and income
** adjusted for age, education, race, income and health care coverage status

Mammography Screenings:

About 28% of all Montana women aged 40 and older report *not* having a mammogram within the past two years. Examining urban-rural differences reveals a much different picture for the state. Women aged 40 or more in urban areas (22%) are less likely to report not having had a mammogram in the past two years than were women in all non-urban areas (28% to 37%). Statistical adjustments in Model 1 and 2 reveal that women living in the least populated counties, either adjacent or not (AOR=1.85; 95%CI=1.22-2.82 and AOR=1.63; 95%CI=1.09-2.45, RUCC 8 and 9, respectively) and not adjacent counties of 2500 to less than 20,000 population (AOR=1.41; 95%CI=1.03-1.94, RUCC 7) are significantly more like to report no mammogram in the past 2 years than women living in metro areas.

The Montana Cancer Control Programs (MCCP) and the Centers for Disease Control and Prevention (CDC) support screening mammography for reducing mortality from breast cancer in women aged 50-74 years. A woman of any age and her provider should routinely assess the need for screening mammography, discuss options, and decide on a schedule.[13]

Pap Test Screenings:

In 2008, nineteen percent of Montana women aged 18 and older report not having a Pap Smear test within the past three years; with 13% of women living in urban areas and 16% to 36% of women living in rural areas. The crude odds ratios suggest that women living in the least populated counties <2500, whether adjacent or not to metro areas (OR=3.83; 95%CI=2.16-6.79 and OR=1.80; 95%CI=1.12-2.90, RUCC 8 and 9, respectively) are more likely to not have the screening test than women living in urban areas. However, after adjusting for age, race, education and income in Model 1, only the women living in the least populated counties adjacent to urban area (RUCC 8) report significantly greater percentages (36%, AOR=2.24; 95%CI=1.03-4.86) of no pap test in the past three years than urban women (36%). Adjusting for health care coverage reveals that geographic location is not an important predictor of Pap test screening.

The Montana Cancer Control Programs (MCCP) and the Centers for Disease Control and Prevention (CDC) state that most cervical cancers occur in women never screened or not screened within the past 5 years; additional cases occur in women who do not receive appropriate follow-up after an abnormal Pap test. After having a negative conventional Pap test each year for 3 years in a row, a woman can get a Pap test once every 3 years. If liquid based Pap tests are used, the screening interval is every 2 years.[15]

Colorectal Cancer Screening Tests:

Statewide, 36% of Montana adults aged 50 and older report *no* colorectal cancer screening tests - neither a blood stool test in the past 2 years nor ever having a sigmoidoscopy or colonoscopy. Urban-rural differences for this preventive cancer screening practice indicates that one in three (33%) urban area adults, while 32% to 45% of rural adults, age 50 and older report not having any colorectal cancer screening. Adults living in the least populated counties, whether adjacent to metro or not (OR=1.52; 95%CI=1.10-2.09 and OR=1.63; 9%CI=1.24-2.14, RUCC 8 and 9, respectively) are more likely to report not having had a colorectal cancer screening test than adults in metro area. After statistical adjustments used in Model 1 and Model 2 adults in the most rural counties of Montana remain more likely *not* to follow the recommended guidelines for colorectal cancer screenings.

Colorectal cancer can be prevented and detected early through screening. Primary screening modalities include the fecal occult blood test also called blood stool test, flexible sigmoidoscopy and colonoscopy. Precancerous polyps can be identified and may be removed during sigmoidoscopy, or colonoscopy to prevent the development of cancer; cancers can also be detected at an early and curable stage.[16,17]

Discussion and Implications:

This study suggests that not all rural areas in the state are the same, but that measuring the degree of rurality and proximity to metropolitan areas does appear to have important public health implications. Population size and adjacency to metropolitan counties influence all the access to health care measures and most of the preventive care utilization measures. Location of residence does not appear to be a factor in whether or not adults report having had a routine checkup in the past year. However, for most indicators assessed, rurality does have an impact on prevalence estimates. Rural adults are less likely to have health care coverage, more likely to have a personal health care provider or usual place for care and less likely to have recommended cancer screening tests. Geographic variation in the use of Pap tests seems to be related to differences in health care coverage, while variations in colorectal cancer screenings, high risk influenza vaccinations, and mammography screening behaviors do not seem to be similarly related.

Examining rurality as a continuum provides additional information about Montanans health care access and preventive services utilization patterns in the state that would not necessarily be revealed in a simple rural-urban dichotomy. The RUCC classification scheme allows for further refinement of BRFSS measures to examine the health-related characteristics of the adult population within this continuum of "ruralness." Use of such analyses also has the potential to allow for more focused public health interventions, specific to communities or geographic locations in the state, in order to make the most use of limited resources.

However, findings regarding differences between rural areas must be regarded cautiously because of the limitations of the data and restrictions of the factors known to influence the barriers to access and health care services.[18] Additional investigations are needed to examine the usefulness of the findings described herein to inform public health program strategies in order to increase use of preventive health services. The implications for community health programs are substantial if specific geographic areas can be targeted knowing that the health practices and outcomes of individuals in all rural areas are not the same.

Survey Limitations:

The BRFSS relies on self-reported data. This type of survey has certain limitations: many times, respondents have the tendency to underreport some behaviors that may be considered socially unacceptable (e.g., smoking, heavy alcohol use); conversely, respondents may over report behaviors that are desirable (e.g., physical activity, nutrition). Cross-sectional design makes causal conclusions impossible. BRFSS data through 2008 excludes households without land-line telephones.

Background:

The Montana Behavioral Risk Factor Surveillance System (BRFSS) has been collecting and reporting state-specific, population-based estimates of health-related data since 1984. The purpose of this statewide telephone survey of Montana residents aged 18 and older is to gather information regarding personal health risk behaviors, selected medical conditions, and the prevalence of preventive health care practices among Montana adults. These BRFSS results have been used by public health agencies, academic institutions, non-profit organizations, and others to develop programs that promote the health of Montana adults and reduce risks that contribute to the leading causes of death in the state. A full set of Montana yearly questionnaires and health indicators can be found on the Department of Public Health and Human Services (DPHHS) BRFSS database query system website at www.brfss.mt.gov. The CDC website (www.cdc.gov/brfss) also provides national, state, and some local area prevalence estimates of health indicators, as well as access to downloadable datasets for further analyses.

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