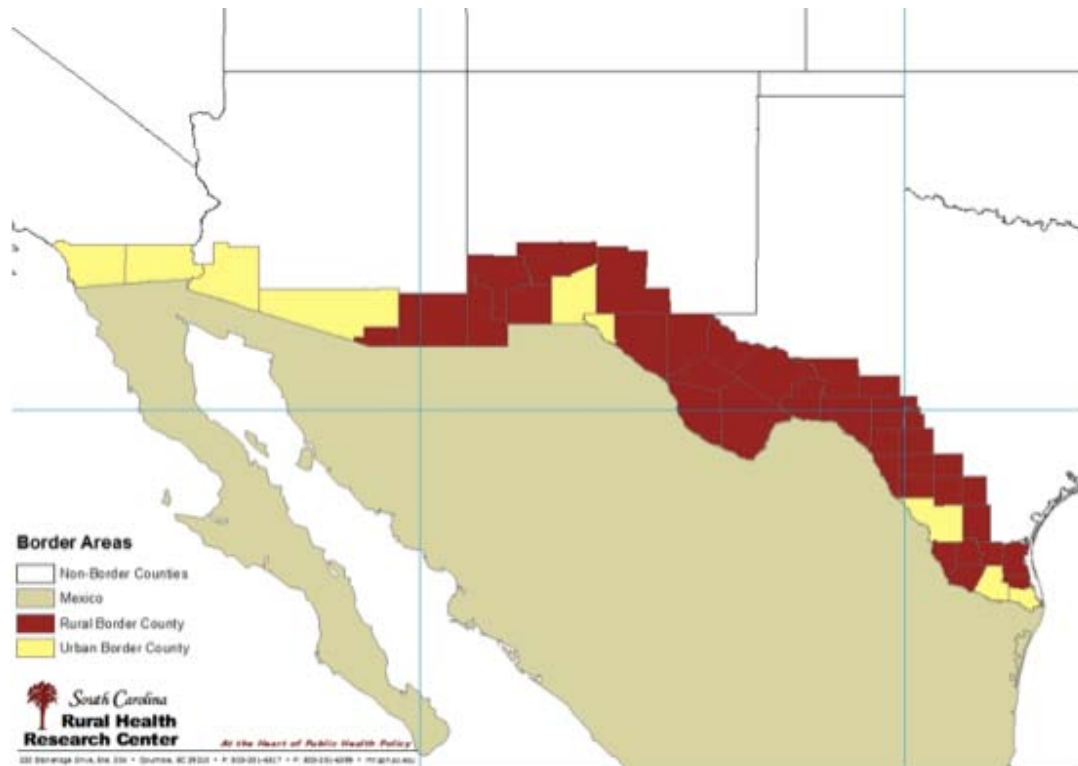


RURAL BORDER HEALTH CHARTBOOK



South Carolina
Rural Health
Research Center

At the Heart of Health Policy

RURAL BORDER HEALTH CHARTBOOK

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EXECUTIVE SUMMARY

Similarities exist in the health issues and priorities in the United States (U.S.) and Mexico, particularly in the border region where eight of the ten leading causes of death are the same on either side of the border. Given these similarities, the changing dynamics of the U.S. population, and the fluidity with which people cross the border each day, it is essential to better understand health status and health care utilization among border residents. A majority of research related to the health of U.S.-Mexico border residents has examined selected health topics or locations within border states. Other studies have analyzed specific interventions, social factors related to border crossings to obtain healthcare and health disparities. There is little documentation of the health status and health care utilization among persons residing on the U.S. side of the entire U.S.-Mexico border.

Our chartbook adds to existing knowledge regarding conditions in the border region by examining potential geographic and ethnic disparities among U.S. border residents. Our chartbook describes select indicators related to access to care, women's preventive services, oral health, infectious and communicable diseases and mental health that have been previously identified as serious disparities warranting programmatic and policy interventions. We examine these issues among residents of the four border states, Arizona, California, New Mexico, and Texas, comparing indicators by ethnicity (Hispanic vs. non-Hispanic), rurality (rural vs. urban), and proximity to border (border vs. non-border). Our findings should be useful in educating public health officials, policymakers and intervening organizations such as the United States Border Health Commission, the Office of Rural Health Policy, and the National Rural Health Association.

Data for this chartbook were drawn from three sources: 2005-2009 State Behavioral Risk Factor Surveillance System (BRFSS) Surveys obtained from four border states (Arizona, California, New Mexico, and Texas), 2006-2009 National Health Interview Surveys (NHIS), and 2008 Area Resource File (ARF).

Access to Care

Border – Non Border Comparisons

- Border county adults were less likely to have health insurance coverage than their respective non-border county peers [border 82.6%, other counties, 84.7%].
- Border county adults were less likely to report having a usual source of care than were non-border residents [border adults, 81.6%, non-border county adults, 85.7%].

Comparisons within Border Counties

- Within border counties, Hispanic adults were less likely to have health insurance coverage than were non-Hispanic peers [Hispanic border adults, 65.6%; non-Hispanic border adults, 91.9%]. Hispanic adults were also less likely to report a usual source of care than were their non-Hispanic counterparts [Hispanic border adults, 74.9%, non-Hispanic border adults, 84.6%].
- Within border counties, rural adults were less likely to report having a usual source of care than were urban residents [rural border adults, 75.7%, urban border adults 82.1%].

- Within border counties, Hispanics were more likely to report delaying care due to costs than were non-Hispanic residents [Hispanic border adults, 23.2%, non-Hispanic border adults, 10.6%].

Women's Preventive Services

Border – Non Border Comparisons

- Across rural counties, women aged 40 years or older residing in rural border counties were more likely to report ever receiving a mammogram compared to their rural non-border peers [rural border women, 93.3%, rural non-border women, 83.9%].

Comparisons within Border Counties alone

- Within border county residents, Hispanic women were less likely to report ever having received a clinical breast examination than were their non-Hispanic peers [Hispanic border women, 83.8%, non-Hispanic border women, 93.2%].
- Within border county residents, Hispanic women were less likely to report having every received a Pap test than were non-Hispanic women [Hispanic border women, 88.7%, non-Hispanic border women, 96.4%].

Chronic Disease and Associated Risk Factors

Border – Non Border Comparisons

- Adults with asthma who lived in border counties were less likely than those living in non-border counties to report visiting a healthcare provider for routine asthma care [border adults, 87.0%, non-border adults, 97.0%].

Comparisons within Border Counties alone

- Within border county residents, Hispanic adults with asthma were more likely to report visiting a health care provider for routine check-ups for asthma than were non-Hispanic adults [Hispanic border adults, 96.4%, non-Hispanic border adults, 77.4%].

Oral Health

Comparisons within Border Counties alone

- Among border county residents, non-Hispanic adults were more likely to have a dental visit in the past year than were Hispanic adults [Hispanic border adults, 58.8%, non-Hispanic border adults, 72.9%].

Infectious Disease Risks, Screenings, and Immunizations

Border – Non Border Comparisons

- Among residents of rural counties in border states, older adults, age 65 years or above, residing in rural border counties were less likely to receive a flu shot than were rural older adults in non-border counties [rural border adults, 38.5%, rural non-border adults, 64.5%]. Border disparities were not present in urban counties.

Comparisons within Border Counties alone

- With border counties, older adults residing in rural border counties were less likely to receive a flu shot than were older adults in urban border counties [rural border adults, 38.5%, urban border adults, 64.6%].

- Within border county residents, Hispanic adults [overall and rural] were less likely to have ever received an HIV test than were non-Hispanic adults [Hispanic border adults, 40.9%, non-Hispanic border adults, 48.2%].
- Within border county residents, Hispanic adults were less likely to have ever received Hepatitis B immunization than were non-Hispanic adults [Hispanic border adults, 29.6%, non-Hispanic border adults, 35.1%].
- Among border county residents, Hispanic adults were less likely to report personally knowing an individual with tuberculosis than were their non-Hispanic peers [Hispanic border adults, 18.9%, non-Hispanic border adults, 23.9%].

Behavioral Health

Border – Non Border Comparisons

- Across levels of rurality, border county residents were less likely to report poor mental health compared to their non-border counterparts.

Comparisons within Border Counties alone

- Within border counties, Hispanic adults were less likely to report ever having been diagnosed with a depressive disorder than were non-Hispanic adults [Hispanic border adults, 12.5%, non-Hispanic border adults, 19.7%]. This difference was present within both rural and urban border residents.

DEDICATION & ACKNOWLEDGEMENT

The completion of this chartbook would not have occurred without the technical support provided by our partners dedicated to improving health along the U.S.-Mexico border region. We thank them for their partnership and assistance in the sharing and analysis of data, as well as their guidance throughout the writing process.

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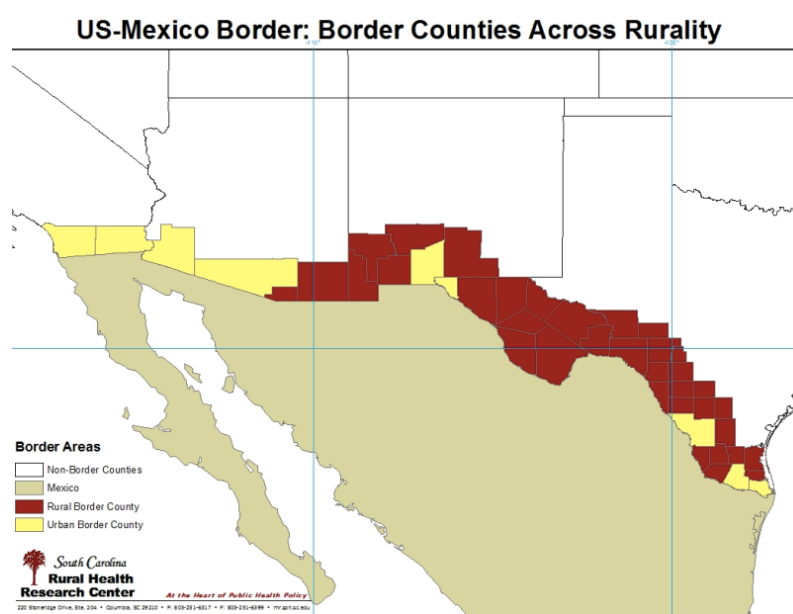
During the writing of this chartbook, we lost two important advocates for our work, Ms. Rosemary McKenzie and Mr. Dan Reyna. Rosemary served as the Minority Liaison and Program Services Manager for the National Rural Health Association for 27 years. She also served on the Expert Work Group for our Center since its inception. Dan was the General Manager for the U.S.-Mexico Border Health Commission, U.S. Section. Both Rosemary and Dan provided significant counsel to the team who assembled this report and had visions of how it could be used to improve the health status for people they championed on a daily basis. We dedicate this chartbook to their years of service.

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Introduction

Hispanics are the largest minority group in the United States, comprising about 16% of the total population.¹ Nearly 67% of Hispanic residents live along the U.S.-Mexico border. This area, defined by the U.S.-Mexico Border Commission as the 62.5 miles north or south of the border, is approximately 2000 miles long and runs across four U.S. states: Arizona, California, New Mexico, and Texas, and six Mexican states: Baja California Norte, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas.² In total, approximately 13 million people inhabit the border region; over 6.5 million of them live on the U.S. side. Most of the counties in the border region are rural, as illustrated in the map below.



Similarities exist in the health issues and priorities in the border region of the United States (U.S.) and Mexico where eight of the ten leading causes of death are the same on either side of the border.³ Each day there are nearly 1.1 million crossings at the U.S.-Mexico border (entry and departure).⁴ Population growth rates along the border region surpassed the anticipated U.S. average growth rate by more than 40% in some cases.⁵ The U.S.-Mexico Border Health Commission reports that three of the ten poorest U.S. counties are located along the border with twenty-one of twenty-four counties designated as economically distressed areas.⁶ As the region continues to grow, residents living along the U.S.-Mexico border may be adversely affected by the burdens placed on the existing natural resources and the health threats created as a result. Examining and assessing health needs is key to documenting and, as needed, eliminating disparities and to improving the health of both nations. Becoming more knowledgeable about the health concerns faced by border residents will help public health practitioners develop strategies to prevent diseases from migrating in either direction.

Purpose of Chartbook

Given the health disparity similarities for residents on either side of the U.S.-Mexico border, the changing dynamics of the U.S. population, and the fluidity with which people cross the border each day, it is essential to better understand the health status and health care utilization among border residents. A majority of research related to the health of U.S.-Mexico border residents has examined specific health topics or geographic locations within border states.⁷⁻⁹ Other studies have analyzed specific interventions, social factors related to border crossings to obtain healthcare, and health disparities. However, few studies have examined the health status and health care utilization among persons residing on the U.S. side of the entire U.S.-Mexico border.

Our chartbook adds to and expands the existing knowledge base on conditions in the border region by examining potential geographic and ethnic disparities among U.S. border residents. Our chartbook describes select indicators related to access to care, women's preventive services, oral health, infectious and communicable diseases and mental health that have been previously identified as serious disparities warranting programmatic and policy interventions. We examine these issues among residents of the four border states, Arizona, California, New Mexico, and Texas, comparing indicators by ethnicity (Hispanic vs. non-Hispanic of any race), rurality (rural vs. urban), and proximity to border (border vs. non-border). Because much of the analysis relies on information provided by individual border states and not available in public use data sets, the study does not examine the rest of the U.S.

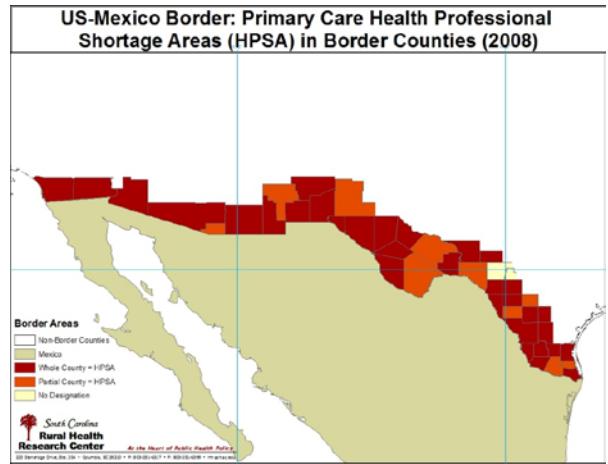
We reference relevant Healthy People 2010 objectives for each section to provide context on how border state findings from 2005-2009 compare to national public health targets for the same time period. Given data limitations, direct comparisons cannot always be made. Our findings should be useful in informing public health officials, policymakers and relevant organizations such as the United States Border Health Commission, the Office of Rural Health Policy, and the National Rural Health Association.

Chartbook Methodology

We analyzed information from multiple sources to develop an effective picture of health and health services use among persons residing on the U.S. side of the U.S./Mexico border. We drew extensively from the Behavioral Risk Factor Surveillance System (BRFSS), coordinated by the Centers for Disease Control and Prevention and implemented within each U.S. state. To get county-level information for small rural counties, we worked with BRFSS coordinators in each state, who are acknowledged in the Dedication and Acknowledgement. We also used the National Health Interview Survey of the National Center for Health Statistics, and the 2008 Area Resource File, a compendium of county-level information about hospitals, physicians and other providers which is sponsored by the Health Resources and Services Administration, United States Department of Health and Human Services. Details about each of these sources are provided in Appendix A, Technical Notes. Appendix B lists citations used. Appendix C provides background tables showing the number of observations that underlie each table and figure in the chartbook.

Access to Care – Health Services Availability

Accessing health care can be challenging for border residents in Arizona, California, New Mexico and Texas. Only one border county, located in Texas, is *not* a Primary Care Health Professional Shortage Area (HPSA), either at the whole or partial county level (map at right).



Access to mental health services presents even greater challenges. All but one Arizona border county is a whole county Mental Health HPSA (map at right).



Access to oral health care is equally challenging along the U.S.-Mexico border. As illustrated by the map at right, most U.S.-Mexico border counties are whole county dental HPSAs.



Access to Care: Insurance Coverage

Border county adults were significantly less likely ($p=.047$) to report having health insurance coverage than were adults residing in non-border counties in Arizona, California, New Mexico and Texas (See chart at right). Rural border adults were not less likely to be insured than adults in non-border counties in the same states. However, urban border adults were significantly less likely to report having health coverage compared to their urban non-border counterparts ($p=.018$).

Among border county adults, insurance rates were similar in rural and urban counties (Table 1, below). Urban non-Hispanic adults had the highest rates of health coverage (92.0%) whereas urban Hispanics had the lowest rates (65.1%). Hispanic adults were less likely to report health insurance regardless of where they lived.

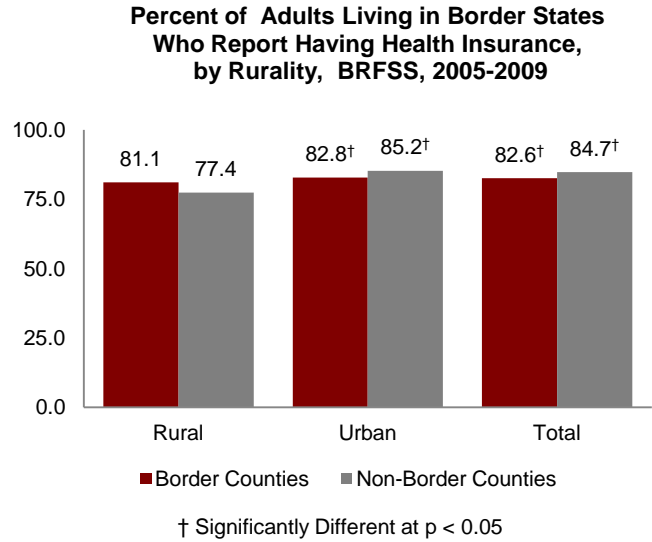


Table 1. Percent of Border County Adults Who Report Having Health Coverage, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	82.6	65.6	91.9	< .0001
Rural	81.1	69.3	90.4	.0146
Urban	82.8	65.1	92.0	< .0001
p-value for rurality	0.75	0.71	0.53	

Bold numbers indicate significant differences at $p < 0.05$

Results are based on responses to the Behavioral Risk Factor Surveillance System. Respondents were asked, "Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?"

Healthy People 2010 Objective 1-1: Increase the proportion of persons with health insurance to 100%

Previous national estimates: 83% (1997)

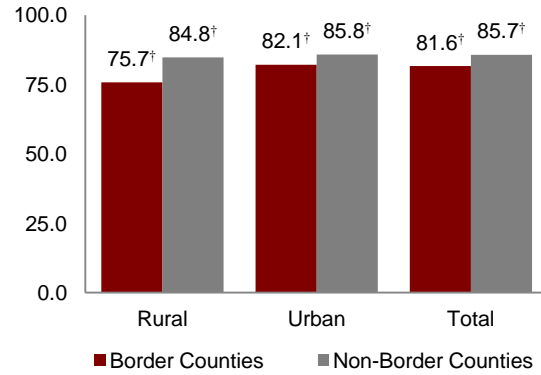
Source: National Health Interview Survey

Access to Care: Usual Source of Care

Border county adults in Arizona, California, New Mexico and Texas were significantly less likely to report having a personal doctor or health care provider than were non-border adults ($p < .0001$). This was true within both rural and urban counties, as well as for the border area as a whole (See chart at right).

Hispanic adults living in rural border counties were least likely to report a personal healthcare provider. (73.3%), while non-Hispanic residents of urban border counties were most likely to report a personal doctor or provider (85.1%).

Percent of Adults Who Report Having a Personal Doctor, by Rurality, 2005-2009



† Significantly Different at $p < 0.05$

Within border residents:

- Hispanic adults living in urban areas and across the border region were less likely to report a personal provider than rural residents.
- Within non-Hispanic populations, rural residents were less likely to report a personal provider compared to urban residents.

Table 2. Percent of Border County Adults Who Report Having a Personal Doctor, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	81.6	74.9	84.6	< .0001
Rural	75.7	73.3	77.3	.3682
Urban	82.1	75.1	85.1	< .0001
p-value for rurality	.0018	.6882	.0005	

Bold numbers indicate significant differences at $p \leq 0.05$

Responses to the BRFSS question, "Do you have one person you think of as your personal doctor or health care provider?"

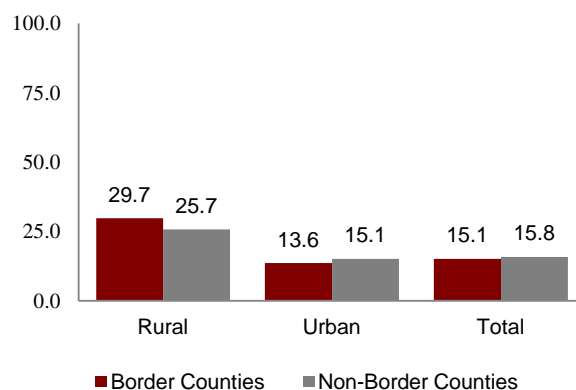
Healthy People 2010 Objective 1-5: Increase the proportion of persons with a usual primary care provider to 85%.
 Previous national estimates: 77% (1996)
 Source: Medical Expenditure Panel Survey

Access to Care: Delayed Care Due to Cost

Adults living in border counties were not more likely than adults living in non-border counties in Arizona, California, New Mexico and Texas to report delaying care due to cost (chart at right). Overall, between 15% and 16% of adults reported this cost barrier.

Within border county residents, rural non-Hispanic adults were most likely to report delaying care (35.6%) while urban non-Hispanics were least likely (8.5%). Hispanics (overall and urban) were more likely than their respective non-Hispanic peers to delay care due to costs (Table 3).

Percent of Adults Who Report Delaying Care Due to Cost, by Rurality, 2005-2009



Among border county residents, differences included:

- Among non-Hispanic adults, rural residents were more likely than urban to forgo a doctor's visit due to cost.
- Hispanic adults (overall and urban) were more likely than their respective non-Hispanic peers to delay care due to cost.

Table 3. Percent of Border County Adults Who Report Delaying Care Due to Cost, by Rurality and Ethnicity, 2005-2009

Area of Residence	Total	Ethnicity		p-value for ethnicity
		Hispanic	Non-Hispanic	
Total	15.1	23.2	10.6	< .0001
Rural	29.7	22.3	35.6	.4490
Urban	13.6	23.4	8.5	< .0001
p-value for rurality	.0627	.8982	.0150	

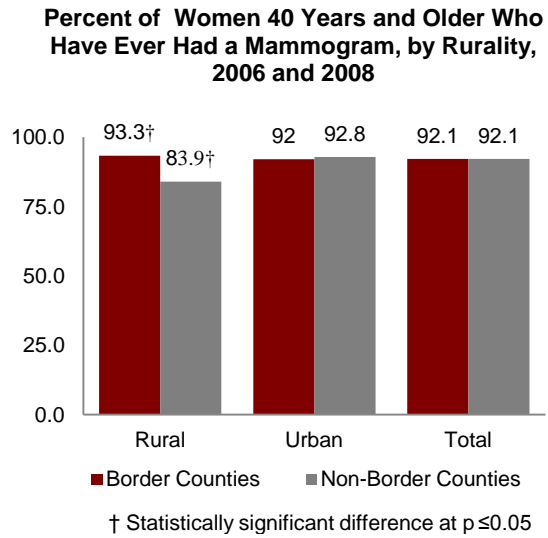
Bold numbers indicate significant differences at $p \leq 0.05$.

Responses to the BRFSS question: "Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?"

Healthy People 2010 Objective 1-6: Reduce the proportion of families to 7% that experience difficulties or delays in obtaining health care or do not receive needed care for one or more family members. Previous national estimates: 12% (1996)
Source: Medical Expenditure Panel Survey

Women’s Preventive Services: Mammography

Reported receipt of a mammogram at any time was explored among women age 40 and older. While receipt of a mammogram “ever” in a woman’s lifetime does not reflect current screening recommendations, it was the best measure available in the data used. Most women in border states had received a mammogram at least once (92.1%). Women residing in rural border counties were significantly more likely to report mammograms ($p=.0165$) than were non-border rural women (chart at right).



No significant ethnic and geographic disparities were observed for receipt of a mammogram among adult female residents of border counties (Table 4).

Table 4. Percent of Female Border County Adults Aged 40 and Older Who Have Ever Received a Mammogram, by Rurality and Ethnicity, 2006 and 2008

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	92.1	91.5	92.3	.7793
Rural	93.3	94.2	92.4	.6336
Urban	92.0	91.1	92.3	.6905
p-value for rurality	.6167	.4719	.9777	

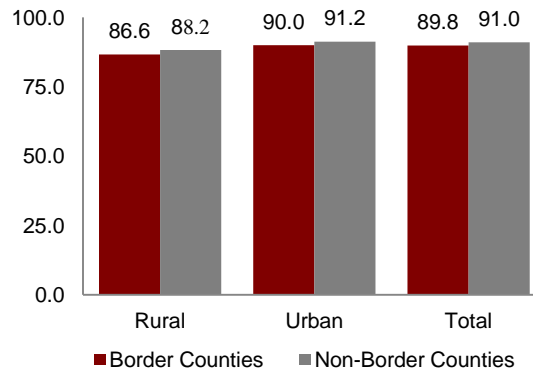
Responses to the BRFSS question, “A mammogram is an x-ray of each breast to look for breast cancer. Have you ever had a mammogram?”

Healthy People 2010 Objective 03-13: Increase the proportion of women aged 40 years and older receiving a mammogram within the past 2 years to 70%.
 Previous national estimates: 67% (2005); 67% (2008)
Source: National Health Interview Survey

Women’s Preventive Services: Clinical Breast Examination

Where women lived was not associated with reported receipt of a clinical breast examination (CBE). While receipt of a CBE “ever” in a woman’s lifetime does not reflect current screening recommendations, it was the best measure available in the data used. Between 86.6% and 91.2% of women living in border states had received this service at some point (chart at right), with no significant differences by residence.

Percent of Women Age 40 and Older in Border States Who Have Ever Had a Clinical Breast Examination by Rurality, 2006 and 2008



Significant ethnic disparities were found in receipt of CBE among female border residents. Hispanic women living in both urban and rural border counties were significantly less likely to report having received CBE compared to their respective non-Hispanic peers (Table 5).

Table 5. Percent of Female Border County Adults Who Have Ever Had a Clinical Breast Examination, by Rurality and Ethnicity, 2006 and 2008

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	89.8	83.8	93.2	.0022
Rural	86.6	79.2	94.6	.0035
Urban	90.0	84.3	93.1	.0076
p-value for rurality	.3290	.5370	.3167	

Bold numbers indicate significant differences at $p \leq 0.05$

Responses to the BRFSS question, “A clinical breast exam is when a doctor, nurse, or other health professional feels the breasts for lumps. Have you ever had a clinical breast exam?”

No Relevant Healthy People 2010 Objective

Women’s Preventive Services: Pap Test

Women living in border counties in Arizona, California, New Mexico and Texas were no less likely than women living in non-border counties to report having ever received a Pap test (chart at right).

Within border counties, there were no differences in Pap receipt associated with residence. Significant differences were found among urban women:

- Hispanic urban female residents were less likely to report receiving a Pap test (88.3%) than were non-Hispanic urban residents (96.5%).
- Hispanic women overall, were less likely than non-Hispanic women to report receiving a Pap test (Table 6).

Percent of Women Living in Border States Who Have Ever Had a Pap Test, by Rurality, 2006 and 2008

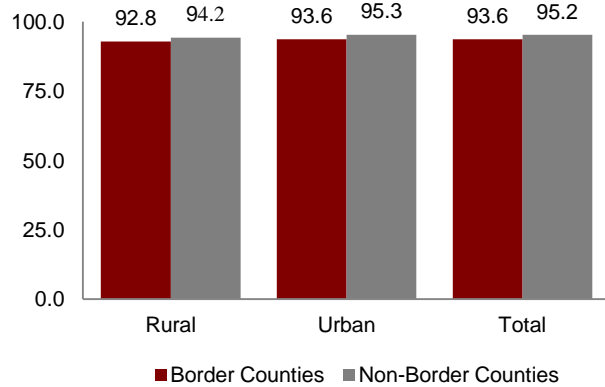


Table 6. Percent of Female Border County Adults Who Have Ever Had a Pap Test, by Rurality and Ethnicity, 2006 and 2008

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	93.6	88.7	96.4	.0016
Rural	92.8	91.9	93.8	.6542
Urban	93.6	88.3	96.5	.0018
p-value for rurality	.7367	.4591	.2818	

Bold numbers indicate significant differences at $p \leq 0.05$.

Responses to the BRFSS question, “A Pap test is a test for cancer of the cervix. Have you ever had a Pap test?”

Healthy People 2010 Objective 03-11a: Increase the proportion of women who have ever received a Pap test to 97%.

Previous national estimates: 92% have ‘ever’ had a Pap test (1998)

Source: National Health Interview Survey

Chronic Disease: Diabetes

Reported diabetes prevalence was similar across border and non-border counties in Arizona, California, New Mexico and Texas. There were no significant differences in diabetes prevalence among border and non-border adult residents (chart at right).

Within border counties, 10% of adults reported having diabetes. No significant ethnic or geographic (rural-urban) disparities were observed for diabetes among adult border residents (Table 7).

Percent of Adults Living in Border States Who Reported Having Diabetes, by Rurality, 2005-2009

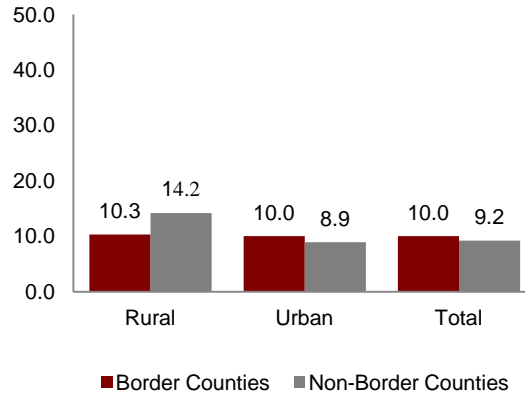


Table 7. Percent of Adult Border County Adults Who Reported Having Diabetes, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	10.0	11.4	9.2	.0906
Rural	10.3	16.1	5.7	.0620
Urban	10.0	10.7	9.5	.2895
p-value for rurality	.9157	.3966	.0671	

Responses to the BRFSS question, "Have you ever been told by a doctor that you have diabetes?"

No Relevant Healthy People 2010 Objective.

Chronic Disease: Overweight or Obesity

Approximately three of every five border state adults were overweight or obese, with no differences between urban and rural counties, or border versus non-border counties (chart, at right).

Nearly 60% of the adults living in border counties were overweight or obese. No significant rural-urban disparities were observed within adult border county residents (Table 8). However, within urban border adults, Hispanics were more likely to be overweight or obese than were urban non-Hispanic border residents.

Percent of Adults Living in Border States Who were Overweight or Obese by Rurality, 2005-2009

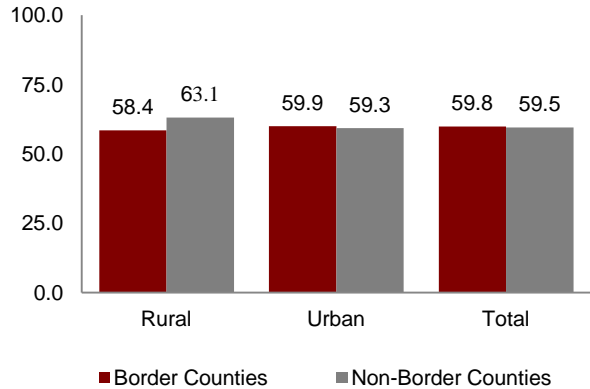


Table 8. Percent of Adult Border County Adults Who were Overweight or Obese, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	59.8	61.9	58.6	.2890
Rural	58.4	45.7	68.5	.1454
Urban	59.9	64.0	57.7	.0140
p-value for rurality	.8738	.1600	.2326	

Bold numbers indicate significant differences at $p \leq 0.05$.

BRFSS respondents were asked their height and weight, from which Body Mass Index (BMI) was calculated. BMI values of 25 or higher were categorized as overweight or obese.

Healthy People 2010 Objective 19-2: Reduce the proportion of adults who are obese to 15%
 Previous national estimates: 23% (1988-94) for adults 20 years and older.
Source: National Health and Nutrition Examination Survey

Chronic Disease: Routine Check-ups for Asthma

Among residents of border states who report having asthma, adults living in non-border counties were significantly more likely ($p < .0001$) to visit their health care provider for routine checkups for asthma than were border county residents. This difference was present in both rural ($p = .0002$) and urban ($p < .0001$) counties (chart at right).

Within border counties alone, Hispanic adults (overall, rural, and urban) were significantly more likely to visit a health care provider for a routine check up than were their respective non-Hispanic peers (Table 9). There were no residence-based differences in border counties.

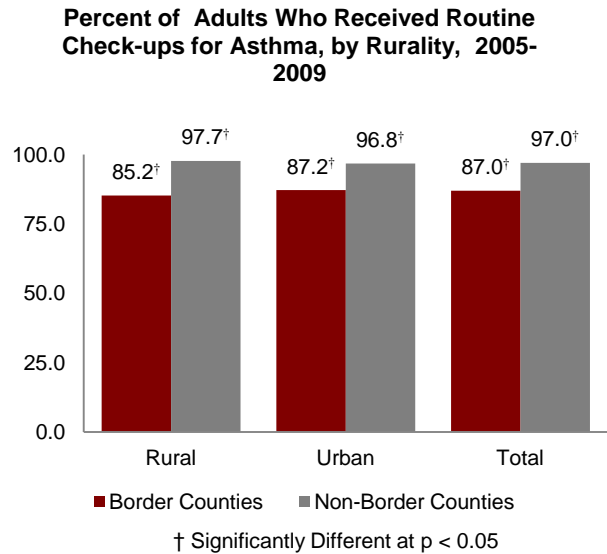


Table 9. Percent of Border County Adults Who Report Receiving Routine Check-ups for Asthma, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	87.0	96.4	77.4	< .0001
Rural	85.2	94.8	73.3	.0178
Urban	87.2	96.7	77.9	< .0001
p-value for rurality	.7690	.5109	.6891	

Bold numbers indicate significant differences at $p \leq 0.05$

BRFSS respondents with asthma were asked, "During the past 12 months, how many times did you see a doctor, nurse, or other health professional for a routine checkup for your asthma?"

No Relevant Healthy People 2010 Objective

Chronic Disease: Emergency Visits for Asthma among Adults

Adequate primary care should reduce the need for emergency department visits for asthma. Among adults with asthma living in border states, non-border county residents were significantly more likely ($p=.0033$) to report visiting an emergency room or urgent care center for treatment of their asthma than were border county residents. This difference was present in urban counties ($p=.0044$). Differences between border and non-border rural counties could not be assessed; there were too few rural adults with an asthma-related visit for accurate estimation (chart, at right).

Within border counties, an estimated 53.3% of adults with asthma made an emergency department or urgent care visit for asthma. The number of respondents with visits in rural border counties, and within Hispanic border residents, was too small to allow valid estimates to be made.

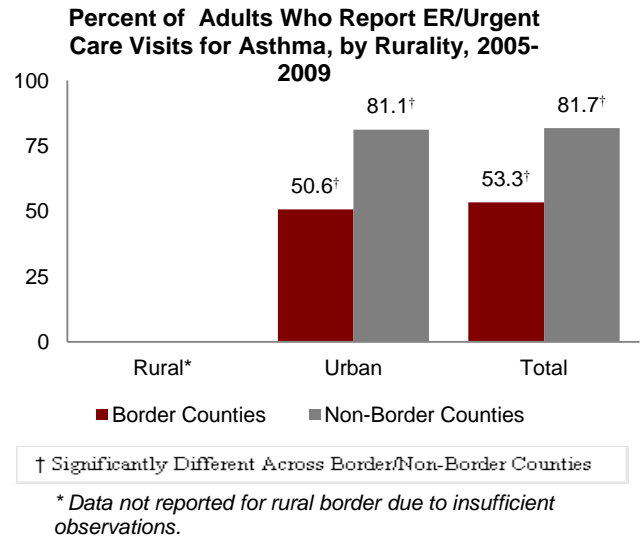


Table 10. Percent of Border County Adults with Asthma Who Report ER/Urgent Care Visits for Asthma, by Rurality and Ethnicity, BRFSS 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	53.3	*	26.6	
Rural	*	*	*	
Urban	50.6	*	*	

p-value for rurality

*Estimates not reliable since the cell sizes are <50. No statistical tests performed when both cells contain unreliable estimates.

BRFSS respondent who reported having asthma were asked, "During the past 12 months, how many times did you visit an emergency room or urgent care center because of your asthma?"

No Relevant Healthy People 2010 Objective

Chronic Disease: Symptomatic Treatment for Asthma

Border-state adults with asthma who lived in non-border counties were significantly more likely ($p < .0001$) to report visiting a doctor, nurse or other health professional for urgent treatment of worsening asthma symptoms than were border county residents (chart at right). This BRFSS question excludes visits to emergency rooms or urgent care, but focuses on other visits to a healthcare practitioner.

Within border counties, 92.3% of Hispanic adults versus 53.2% of non-Hispanic adults reported visiting a healthcare provider for worsening asthma symptoms ($p < 0.0001$, Table 11). Rural urban differences are difficult to assess because of the low numbers of Hispanic respondents.

Percent of Adults Who Report Having Treatment for Asthma Symptoms, by Rurality
Source: BRFSS, 2005-2009

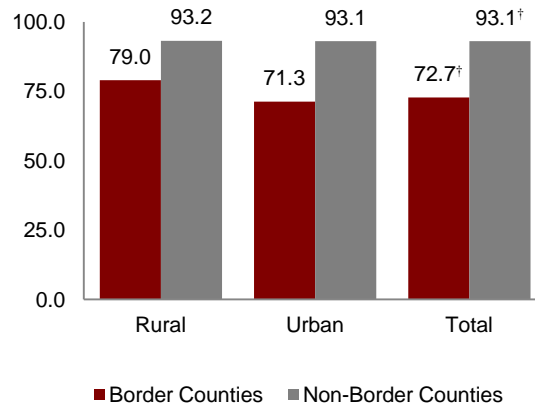


Table 11. Percent of Border County Adults Who Report Having Urgent Treatment for Asthma, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	72.7	92.3	53.2	< .0001
Rural	79.0	*	*	
Urban	71.3	*	54.5	
p-value for rurality	.5625	.9355	.2433	

*Estimates not reliable since the cell sizes are <50. No statistical tests performed when both cells contain unreliable estimates.

Bold numbers indicate significant differences at $p \leq 0.05$.

BRFSS respondents with asthma were asked, "Besides emergency room or urgent care center visits [emphasis added], during the past 12 months, how many times did you see a doctor, nurse or other health professional for urgent treatment of worsening asthma symptoms?"

No Relevant Healthy People 2010 Objective

Oral Health: Any Dental Visits

Across the border states, similar proportions of adults living in border and non-border counties reported having a dental visit for any reason in the past year (See chart on right).

Within border county residents:

- Non-Hispanic adults (total and urban) were significantly more likely to report any dental visits compared to their Hispanic counterparts.
- Within non-Hispanic adults, urban residents were more likely to have any dental visits compared to their rural peers (Table 12).

Percent of Adults Who Report Having a Dental Visit, by Rurality, 2005-2009

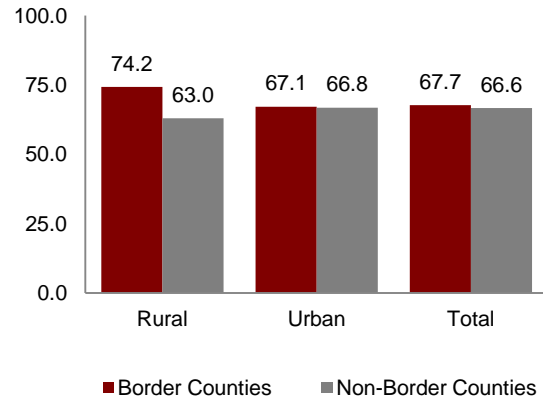


Table 12. Percent of Border County Adults Reporting Dental Visits, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	67.7	58.8	72.9	.0038
Rural	74.2	78.5	68.0	.4791
Urban	67.1	56.0	73.2	.0002
p-value for rurality	.4724	.1730	.0398	

Bold numbers indicate significant differences at $p \leq 0.05$.

BRFSS respondents were asked, "How long has it been since you last visited a dentist or a dental clinic for any reason? Include visits to dental specialists, such as orthodontists."

Healthy People 2010 Objective 21-10: Increase the proportion of adults who use the oral health care system each year to 56%.

Previous national estimates: 43% (1996) adults 18 years and older

Source: *Medical Expenditure Panel Survey*

Oral Health: Dental Cleaning

There were no significant differences in reported receipt of dental cleaning among border and non-border residents (at right). Across the four border states, 65.2% of border county adults and 58.7% of adults in other counties in the state reported having their teeth cleaned by a dentist or hygienist during the past 12 months.

Within border counties, reported receipt of a dental cleaning in the past year did not differ by residence or ethnicity (Table 13).

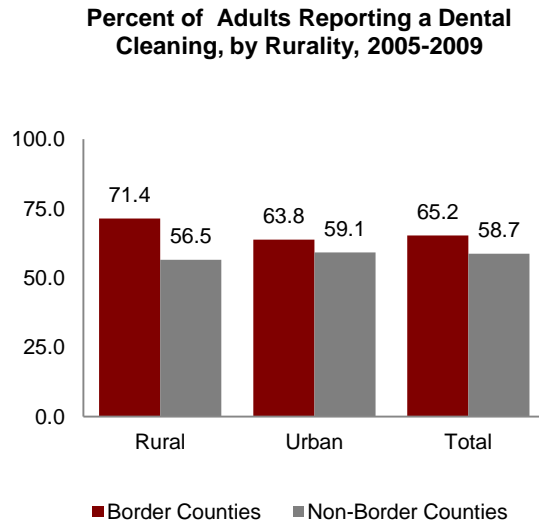


Table 13. Percent of Border County Adults Who Reported having a Dental Cleaning, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	65.2	65.6	64.8	.9243
Rural	71.4	77.6	62.3	.3328
Urban	63.8	62.2	65.2	.7276
p-value for rurality	.4987	.3646	.4723	

BRFSS respondents were asked, "How long has it been since you had your teeth cleaned by a dentist or dental hygienist?" Responses shown are those reporting a cleaning in the past 12 months.

No Relevant Healthy People 2010 Objective.

Infectious Disease: Influenza (Flu) Shot

Reported receipt of a flu shot during the past year was explored among adults aged 65 and older. Older adults residing in rural border counties were significantly less likely (p=.0021) to have received a recommended annual flu shot compared to their rural non-border peers (chart at right).

Residence-based disparities in receipt of a flu shot were present among both Hispanic and non-Hispanic residents of border counties. Within both populations, rural older adults were significantly less likely to receive a flu shot than their respective urban peers (Table 14). There were no significant ethnic disparities.

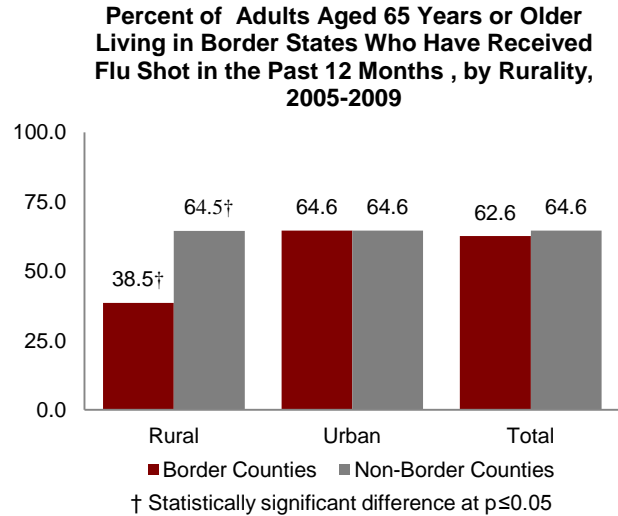


Table 14. Percent of Adult Border County Adults Aged 65 Years or Older Who Have Received Flu Shot in the Past 12 Months, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	62.6	57.3	64.0	.2446
Rural	38.5	26.3	44.8	.2226
Urban	64.6	61.7	65.3	.4940
p-value for rurality	.0016	.0290	.0018	

Bold numbers indicate significant differences at p ≤ 0.05

BRFSS respondents were asked, "A flu shot is an influenza vaccine injected into your arm. During the past 12 months, have you had a flu shot?" A question about receipt of vaccination by nasal mist was also asked but there were too few observations to include in our analysis.

Healthy People 2010 Objective 14-29: Increase the proportion of adults who are vaccinated annually against influenza to 90%

Previous national estimates: 64% (1998) non-institutionalized adults aged 65 and older

Source: *National Health Interview Survey*

Infectious Disease: HIV Testing

Across the border states, there were no significant geographic disparities in the proportion of adults who reported ever having received an HIV test (not counting tests associated with blood donation). Rates only varied slightly (between 44.0 and 45.5) across rural and urban counties between non-border and border county residents (chart at right).

Within border counties, no significant rural-urban disparities were observed for HIV testing. However, there were significant ethnic disparities in receipt of HIV tests. Within both the rural and the total categories, rural Hispanic adults were significantly less likely to report receiving an HIV test than were their non-Hispanic peers (Table 15).

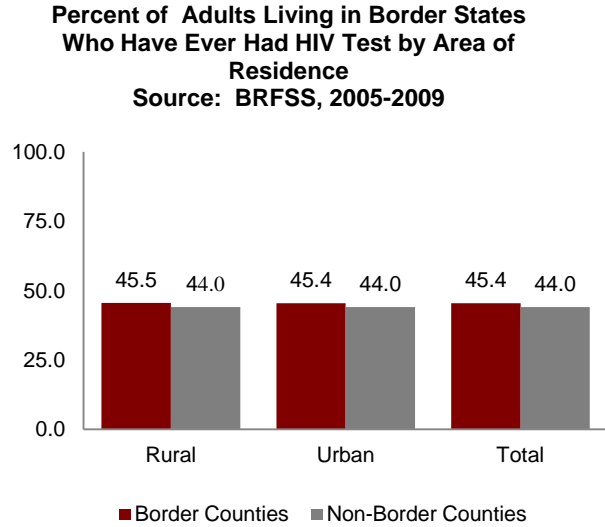


Table 15. Percent of Adult Border County Residents Who Have Ever Had an HIV Test, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	45.4	40.9	48.2	.0318
Rural	45.5	23.9	63.8	.0152
Urban	45.4	43.2	46.7	.2326
p-value for rurality	.9903	.0728	.1799	

Bold numbers indicate significant differences at $p \leq 0.05$.

BRFSS respondents were asked, "Have you ever been tested for HIV? Do not count tests you may have had as part of a blood donation. Include testing fluid from your mouth."

No Relevant Healthy People 2010 Objective.

Infectious Disease: Hepatitis B Immunization

Overall, approximately a third of adult border residents, in both border and non-border counties, reported ever receiving Hepatitis B immunization (chart at right). No significant differences between rural and urban counties were observed.

No significant rural-urban disparities were observed for receipt of Hepatitis B immunization among adult border county residents (Table 16). However, Hispanic adults (total and urban) were less likely to report having received hepatitis B immunizations than their non-Hispanic counterparts (Table 16).

Percent of Adults Living in Border States Who Have Ever Received Hepatitis B Immunization, by Rurality, 2006-2009

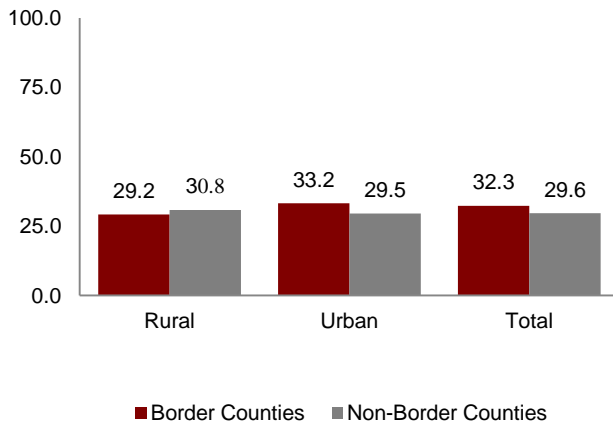


Table 16. Percent of Adult Border County Residents Who Have Ever Received a Hepatitis B Immunization, by Rurality and Ethnicity, 2006-2009 NHIS

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	32.3	29.6	35.1	.0027
Rural	29.2	28.0	30.6	.2631
Urban	33.2	30.0	36.4	.0038
p-value for rurality	.2708	.6015	.1424	

Bold numbers indicate significant differences at $p \leq 0.05$

Participants in the NHIS were asked, "Have you EVER received the hepatitis B vaccine?"

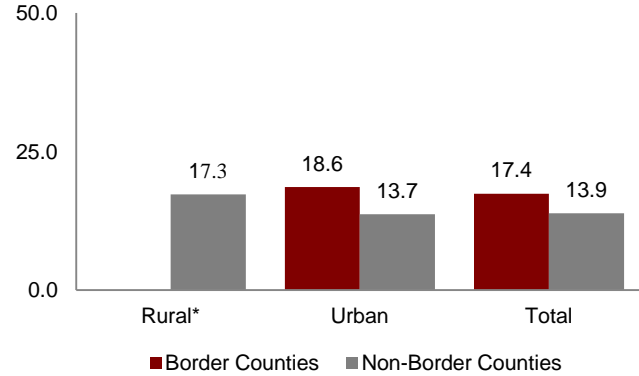
No Relevant Healthy People 2010 Objective.

Infectious Disease: Perceived Susceptibility to Tuberculosis (TB)

Overall, less than a fifth (17.4) of adults living in border states reported that they felt their own chance of contracting tuberculosis was “high” (chart at right). There were no significant differences between border and non-border counties, or rural versus urban residents.

Among border county residents, an estimated 17.4% of adults perceived themselves to have a “high” likelihood of contracting tuberculosis. There were too few observations for valid estimates within most population subgroups, thus no statistical comparisons were performed.

Percent of Adults Living in Border States Who Reported High Perceived Susceptibility to TB, by Rurality, 2006-2009



* Findings not reliable for rural border due to small number of observations.

Table 17. Percent of Adult Border County Residents Who Reported High Perceived Susceptibility to TB, by Rurality and Ethnicity, 2006-2009 NHIS

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	17.4	30.0	*	
Rural	*	*	*	
Urban	18.6	32.7	*	
p-value for rurality				

*Estimates not reliable since the cell sizes are <50. No statistical tests performed when both cells contain unreliable estimates.

NHIS respondents were asked, “What are your chances of getting TB? Would you say high, medium, low, or none?”

No Relevant Healthy Border 2010 Objective.

Infectious Disease: Personally Knowing a Tuberculosis (TB) Patient

Approximately one in five border state adults (21.5%) reported knowing a person who had experienced tuberculosis. No differences were observed between respondents living in border and non-border counties or rural versus urban residents (chart at right).

Among border county residents, significant rural-urban and ethnic disparities were observed (Table 18). For the total population, urban residents were less likely to have known of a TB victim than were rural residents. Across the total population and among urban residents, non-Hispanic adults were more likely to have known a person with tuberculosis than their Hispanic peers.

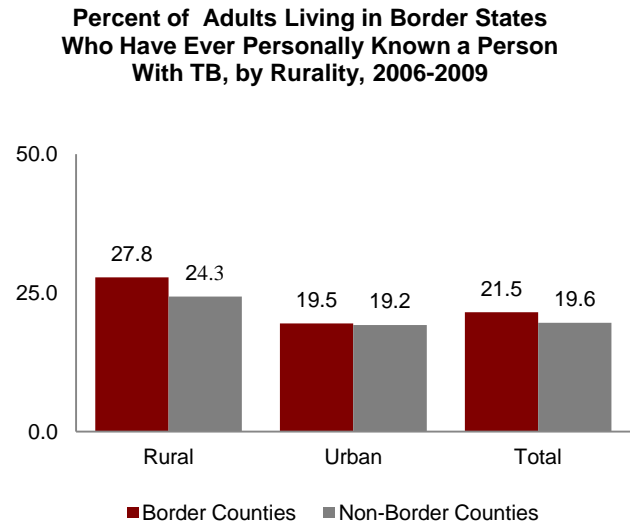


Table 18. Percent of Adult Border County Residents Who Have Ever Personally Known a Person with Tuberculosis, by Rurality and Ethnicity, 2006-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	21.5	18.9	23.9	.0101
Rural	27.8	*	27.5	
Urban	19.5	16.2	22.8	.0042
p-value for rurality	.0008		.1220	

*Estimates not reliable since the cell sizes are <50. No statistical tests performed when both cells contain unreliable estimates.

Bold numbers indicate significant differences at $p \leq 0.05$.

NHIS respondents were asked, "Have you ever personally known anyone who had TB?"

No Relevant Healthy People 2010 Objective.

Infectious Disease: Homelessness

Homelessness is a risk factor for acquiring tuberculosis, as well as other poor health outcomes. Overall, between 5.7% and 9.0% of respondents reported that they had been homeless for more than 24 hours (chart, at right). No differences were observed between border and non-border county residents, or rural-urban residents.

The overall experience of homelessness among border county residents was 6.2%, similar to the rate at non-border counties (6.4%). There were with no differences based on ethnicity. Because of the low number of observations for rural counties, no residence based comparisons were done.

Percent of Adults Living in Border States Who Reported Being Homeless for at least 24 Hours, by Rurality, 2006-2009

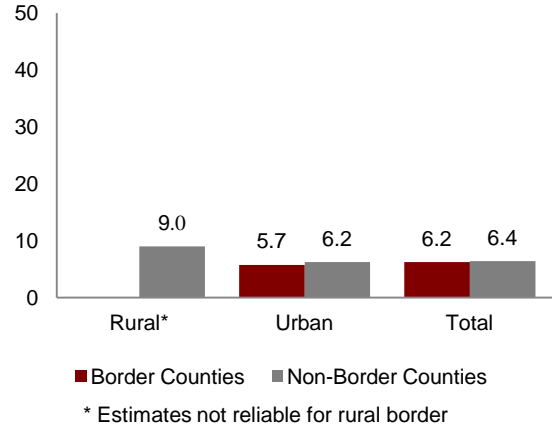


Table 19. Percent of Adult Border County Residents Who Reported Homelessness for at least 24 Hours, by Rurality and Ethnicity, 2006-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	6.2	6.0	6.4	.8594
Rural	*	*	*	
Urban	5.7	6.1	*	.6543

p-value for rurality

*Estimates not reliable since the cell sizes are <50. No statistical tests performed when both cells contain unreliable estimates.

NHIS respondents were asked, "Have you ever spent more than 24 hours living on the streets, in a shelter, or in a jail or prison?"

No Relevant Healthy People 2010 Objective.

Behavioral Health: Poor Mental Health

Across the border states, adults living in border counties were significantly less likely to report poor mental health in the past month than residents in non-border counties. This tendency was present for the population overall and within both rural and urban counties (total; $p=.0001$; rural: $p=.0013$; and urban: $p=.0218$). With the exception of rural border county residents, more than a third of respondents reported having at least one day in the past month when their mental health was not good (chart at right).

Within border county adults, no significant ethnic or geographic (rural-urban) disparities were observed (Table 20).

Percent of Adults Living in Border States Who Reported One or more Days of Poor Mental Health in the Past Month, by Rurality, 2005-2009

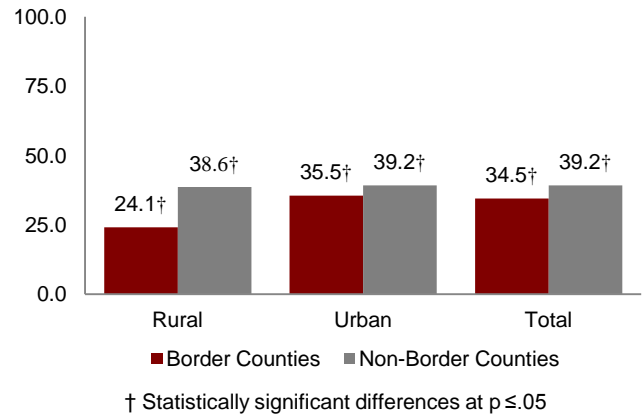


Table 20. Percent of Adult Border County Residents Who Reported Poor Mental Health in the Past Month, by Rurality and Ethnicity, 2005-2009

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	34.5	34.7	34.3	.8765
Rural	24.1	25.3	23.2	.8391
Urban	35.5	35.9	35.3	.7821
p-value for rurality	.0511	.2609	.0965	

BRFSS respondents were asked, "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?" The responses were categorized into two categories: persons reporting poor mental health for at least one day in the past month, and persons reporting no days of poor mental health.

No Relevant Healthy People 2010 Objective.

Behavioral Health: Depressive Disorder

An estimated 17.4% of adults, living in border states, report having been told by a health care provider at some point in their lives that they suffered from a depressive disorder. There were no residence-based disparities in the prevalence of a history of depression.

Among border county residents, ethnic disparities were observed irrespective of area of residence. Hispanic respondents were less likely than non-Hispanic to report ever being diagnosed with a depressive disorder in every residential category (total, rural, urban), as demonstrated in Table 21.

Percent of Adults Living in Border States Who Have Ever Been Diagnosed with Depressive Disorder, by Rurality CA, NM, TX, 2006 and AZ, 2008

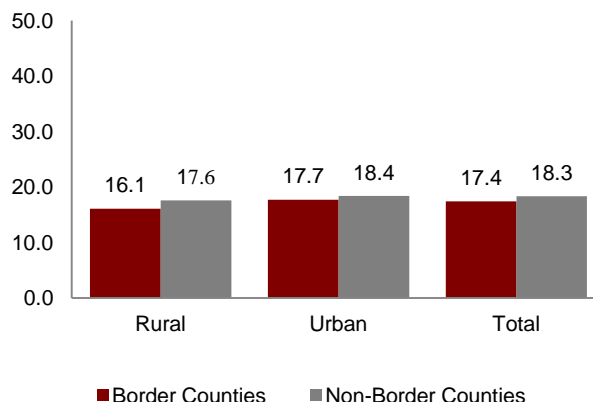


Table 21. Percent of Adult Border County Residents Who Have Ever Been Diagnosed with Depressive Disorder by Rurality and Ethnicity, 2006 (CA, NM, and TX) and 2008 (AZ)

Area of Residence	Ethnicity			p-value for ethnicity
	Total	Hispanic	Non-Hispanic	
Total	17.4	12.5	19.7	<.0001
Rural	16.1	12.5	18.1	.0129
Urban	17.7	12.5	20.0	<.0001
p-value for rurality	.4208	.9849	.4878	

Bold numbers indicate statistically significant differences at $p \leq .05$

BRFSS respondents were asked, "Has a doctor or other healthcare provider EVER told you that you have a depressive disorder (including depression, major depression, dysthymia, or minor depression)?" Because this question comes from an optional BRFSS module, it was not asked by all states in all years.

No Relevant Healthy People 2010 Objective.

Appendix A: Technical Notes

DATA SOURCES

Data for the preceding report were obtained from the Behavioral Risk Factor Surveillance System (BRFSS), 2005 – 2009, and the National Health Interview Survey (NHIS), 2006-2009.

Behavioral Risk Factor Surveillance System (BRFSS) – 2005-2009

The Behavioral Risk Factor Surveillance System (BRFSS) is a large landline telephone survey coordinated through the Centers for Disease Control and Prevention (CDC) and implemented by individual states. Capturing approximately 400,000 responses per year, it is one of the largest continuing telephone surveys in the world. Respondents are adults aged 18 years and older. The BRFSS questionnaire includes a core set of standard questions asked by all states, a series of optional modules on topics of special interests that states may choose to use, and state developed questions, at the request of individual states.

The BRFSS sampling frame is intended to provide accurate estimates at the state level. Generally, each state constitutes a single stratum. However, to provide adequate sample sizes for smaller geographically defined populations of interest, some states sample disproportionately from strata defined to correspond to sub-state regions. From 2005-2009, the Border States (Arizona, California, New Mexico, and Texas) collected the BRFSS data from disproportionately sampled geographic strata. This sampling frame was reflected in our analysis.

We used BRFSS data from four Border States: Arizona, California, New Mexico and Texas for the years 2005-2009. We obtained BRFSS data directly from these states, as publicly available data released by the Centers for Disease Control and Prevention suppresses information for any counties with less than 10,000 residents. In highly rural states such as Texas, this data suppression would impede comparisons across rural counties. We completed Institutional Review Board (IRB) applications to each state, in addition to the University of South Carolina IRB, to obtain state-specific BRFSS data. Concatenating the four years of data yielded 89,220 total observations. Since some analyses are restricted to border counties alone, while others are based on optional modules only used in alternating years, the actual number of observations used for each table will vary. Documentation for the number of observations included with each study is provided in Appendix C.

BRFSS data modules used for the report include: healthcare access, cancer screenings, diabetes mellitus, HIV testing, immunizations, injury prevention, mental health, oral health and respiratory diseases. These data modules also reflect the Healthy Border 2010 initiative, which outlines 21 health objectives grouped into 11 focus areas (<http://www.dshs.state.tx.us/borderhealth/hb2010.shtm>).

National Health Interview Survey (NHIS) -- 2006-2009

The National Health Interview Survey (NHIS), initiated in 1957 and administered since that time, is an annual household-based personal interview survey.¹⁰ Surveys are conducted by the U.S. Census Bureau, which trains and supervises household interviewers. Basic demographic and health information is collected for each household. In addition, one adult and one child in each household are randomly selected to receive a detailed interview regarding health and use of health care services. Chartbook findings are based on the Sample Adult file.

The NHIS is designed to produce nationally representative estimates; unlike the BRFSS, it cannot generally be used for public health surveillance for a single state. However, it provides sufficient observations for estimation across the four-state border region. In addition, black and Hispanic populations generally, as well as black, Hispanic or Asian populations age 65 and older, are oversampled.

Description of NHIS questionnaires and data documentation can be found at http://www.cdc.gov/nchs/nhis/quest_data_related_1997_forward.htm.

KEY DEFINITIONS

Border States and Counties

The four U.S. states that abut the Mexican border are Arizona, California, New Mexico and Texas. Counties within the four-state region are classified as border counties and non-border counties. The border counties are defined by the U.S.-Mexico Border Commission.

- For Arizona, border counties are: Cochise, Pima, Santa Cruz and Yuma.
- For California, border counties are Imperial and San Diego.
- For New Mexico, border counties are Doña Ana, Grant, Hidalgo, Luna, Otero and Sierra.
- For Texas, border counties are Brewster, Brooks, Cameron, Crockett, Culberson, Dimmit, Duval, Edwards, El Paso, Frio, Hidalgo, Hudspeth, Jeff Davis, Jim Hogg, Kenedy, Kinney, La Salle, Maverick, McMullen, Pecos, Presidio, Real, Reeves, Starr, Sutton, Terrell, Uvalde, Val Verde, Webb, Willacy, Zapata and Zavala.

Rurality

County of residence was classified as urban or rural using the 2003 Urban Influence Codes of the U.S. Department of Agriculture's Economic Research Service.¹¹ The 2003 Urban Influence Codes (UIC) categorize counties into 12 groups based on population and commuting data from the 2000 Census of the Population, in the case of metropolitan counties, and adjacency to metro area in the case of nonmetropolitan counties. The 12 UICs were grouped into two categories: UICs 1 (metropolitan area with one million or more residents) and 2 (metropolitan area with less than one million residents) were classified as urban; all other counties were classified as rural.

Ethnicity

Respondents to the BRFSS and the NHIS were classified based on self-reported ethnicity as “Hispanic” or “non-Hispanic.” The BRFSS question asks, “Are you Hispanic or Latino?” The NHIS question reads, “Do you consider yourself to be Hispanic or Latino?” with an alternate question of “Where did your ancestors come from?” NHIS prompts list several Central and South American countries. In the current report, only ethnicity was used, with no attempt to subcategorize Hispanic or non-Hispanic populations by race.

DATA ANALYSIS

Statistical analyses were conducted using SAS-callable SUDAAN, to account for weighting and complex sample design. Responses of “don’t know” and “refused to answer” were counted as missing data. All outcome variables are presented by ethnicity and residence.

The data from four states were combined across five years from 2005-2009 for analyses. For the NHIS data, we used Sample Adult files combined across four years from 2006-2009. The sampling weights for both pooled data were adjusted in accordance with recommendations of BRFSS and NHIS.

For all analyses, a Likelihood Ratio Chi Square (LLQ) test was carried out for detecting the statistical significance at 95% confidence interval ($\alpha=0.05$) because of multilevel frequency tables. The LLQ has advantages over the usual Pearson Chi Square for large dimensional table decomposition.

Accuracy of Results

Data from border states BRFSS and NHIS results are subject to the usual variability associated with sample surveys. Small differences between survey estimates may be due to random errors and these do not reflect true differences among adults or across states. When the number of respondents within a category was too small for reliable statistical estimates to be made (e.g., ≤ 50 unweighted BRFSS observations), results are not reported. Low sample size is principally a problem when questions are not asked of the whole survey population, as for example age-specific preventive health practices.

Data Limitations

Data from land-line surveys are becoming increasingly biased, as different types of households use only wireless telephone technology. During the period covered, the national proportion of wireless-only households increased from 5.8% in January-June, 2005¹¹ to 24.5% in July-December, 2009.¹³ Within the states studied, estimated wireless only prevalence as of January-December 2009 was as follows: Arizona, 27.2% ($\pm 1.5\%$); California, 16.3% ($\pm 0.6\%$); New Mexico, 26.3% ($\pm 1.9\%$), and Texas, 30.0% ($\pm 1.0\%$).¹⁴ While BRFSS responses are statistically weighted to adjust for the differing characteristics between landline and wireless only households, the potential for bias, and thus inaccuracy, remains. This is particularly true for Hispanic respondents, as Hispanic adults are more likely to be wireless only than are other adults (40.8% in January – June, 2011).¹⁴

Appendix B: Bibliography

1. The United States Bureau of the Census. Facts for Features, CB10-FF.17. July 15, 2010. Retrieved from http://www.census.gov/newsroom/releases/pdf/cb10ff-17_hispanic.pdf on November 15, 2011.
2. The United States Border Health Commission. Retrieved from http://www.borderhealth.org/border_region.php on November 15, 2011.
3. United States-Mexico Border Health Commission (USMBHC) (2003). *Healthy Border 2010: An Agenda for Improving Health on the United States-Mexico Border*.
4. United States-Mexico Border Health Commission (USMBHC) (2003). *Healthy Border 2010: An Agenda for Improving Health on the United States-Mexico Border*.
5. US Environmental Protection Agency (2009). US-Mexico Border 2012 Program. Retrieved January 26, 2010 from: <http://www.epa.gov/border2012/framework/index.html>.
6. The United States Border Health Commission. The United States-Mexico Border Region at a Glance. (2009). Retrieved from <http://www.nmsu.edu/~bec/BEC/Readings/10.USMBHC-TheBorderAtAGlance.pdf> on November 15, 2011.
7. Robinson KL, Ernst KC, Johnson BL, Rosales C. Health status of southern Arizona border counties: a Healthy Border 2010 midterm review. *Rev Panam Salud Publica*. 2010 Nov;28(5):344-52.
8. Garza A, Rodriguez-Lainz A, Arnelas IJ. The health of the California region bordering Mexico. *J Immigr Health*. 2004 Jul;6(3):137-44.
9. Brown HS 3rd, Pagan JA, Bastida E. International competition and the demand for health insurance in the US: evidence from the Texas-Mexico border region. *Int J Health Care Finance Econ*. 2009 Mar;9(1):25-38. Epub 2008 Jul 29.
10. Centers for Disease Control and Prevention (CDC). National Health Interview Survey. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics (2006-2009).
11. Economic Research Service. Urban Influence Codes. U.S. Department of Agriculture. Available at <http://www.ers.usda.gov/Briefing/Rurality/NewDefinitions/>
12. Blumberg SJ, Luke JC. Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December 2008; National Center for Health Statistics May 2009. Available from: <http://www.cdc.gov/nchs/nhis.htm>.
13. Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, January-June 2011. National Center for Health Statistics. December 2011. Available from: <http://www.cdc.gov/nchs/nhis.htm>.
14. Blumberg SJ, Luke JV, Ganesh N, et al. Wireless substitution: State-level estimates from the National Health Interview Survey, January 2007-June 2010. National health statistics reports; no 39. Hyattsville, MD: National Center for Health Statistics. 2011.

Appendix C: Number of Observations for Each Indicator

Number of residents in the U.S.-Mexico Border States who reported having health coverage by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	17,727	5,639	12,088
Non-Border Counties	71,493	15,052	56,441

Number of border county adults who reported having health coverage by rurality and ethnicity, BRFSS 2005-2009 (Table 1)

	Total	Hispanics	Non-Hispanics
Total	17,727	4,841	12,886
Rural	5,639	1,869	3,770
Urban	12,088	2,972	9,116

Number of residents in the U.S.-Mexico Border States who reported having a usual source of care by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	16,221	5,372	10,849
Non-Border Counties	62,856	14,310	48,546

Number of border county adults who reported having a usual source of care by rurality and ethnicity, BRFSS 2005-2009 (Table 2)

	Total	Hispanics	Non-Hispanics
Total	16,221	4,599	11,622
Rural	5,372	1,845	3,527
Urban	10,849	2,754	8,095

Number of residents in the U.S.-Mexico Border States who reported having delayed care due to costs by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	2,901	1,044	1,857
Non-Border Counties	10,950	2,768	8,182

Number of border county adults who reported having delayed care due to costs by rurality and ethnicity, BRFSS 2005-2009 (Table 3)

	Total	Hispanics	Non-Hispanics
Total	2,901	1,620	1,281
Rural	1,044	579	465
Urban	1,857	1,041	816

Number of women (40 years or older) in the U.S.-Mexico Border States who reported ever having mammogram by area of residence, BRFSS 2006 & 2008

	Total Counties	Rural Counties	Urban Counties
Border Counties	3,213	1,094	2,119
Non-Border Counties	12,886	3,015	9,871

Number of border county female residents aged 40 years or older who reported ever having mammogram by rurality and ethnicity, BRFSS 2006 & 2008 (Table 4)

	Total	Hispanics	Non-Hispanics
Total	3,213	825	2,388
Rural	1,094	361	733
Urban	2,119	464	1,655

Number of women in the U.S.-Mexico Border States who reported ever having a clinical breast examination by area of residence, BRFSS 2006 & 2008

	Total Counties	Rural Counties	Urban Counties
Border Counties	4,539	1,570	2,969
Non-Border Counties	17,248	4,102	13,146

Number of border county female residents who reported ever having a clinical breast examination by rurality and ethnicity, BRFSS 2006 & 2008 (Table 5)

	Total	Hispanics	Non-Hispanics
Total	4,539	1,459	3,080
Rural	1,570	615	955
Urban	2,969	844	2,125

Number of women in the U.S.-Mexico Border States who reported ever having a pap test by area of residence, BRFSS 2006 & 2008

	Total Counties	Rural Counties	Urban Counties
Border Counties	4,804	1,663	3,141
Non-Border Counties	18,138	4,361	13,777

Number of border county female residents who reported ever having a pap test by rurality and ethnicity, BRFSS 2006 & 2008 (Table 6)

	Total	Hispanics	Non-Hispanics
Total	4,804	1,631	3,173
Rural	1,663	688	975
Urban	3,141	943	2,198

Number of residents in the U.S.-Mexico Border States who reported having diabetes by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	2,355	796	1,559
Non-Border Counties	8,620	2,288	6,332

Number of border county adults who reported having diabetes by rurality and ethnicity, BRFSS 2005-2009 (Table 7)

	Total	Hispanics	Non-Hispanics
Total	2,355	943	1,412
Rural	796	373	423
Urban	1,559	570	989

Number of residents in the U.S.-Mexico Border States who were overweight or obese by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	12,324	4,024	8,300
Non-Border Counties	48,645	11,403	37,242

Number of border county adults who were overweight or obese by rurality and ethnicity, BRFSS 2005-2009 (Table 8)

	Total	Hispanics	Non-Hispanics
Total	12,324	4,346	7,978
Rural	4,024	1,559	2,465
Urban	8,300	2,787	5,513

Number of residents with asthma in the U.S.-Mexico Border States who reported routine check-ups for asthma by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	426	145	281
Non-Border Counties	1,385	392	993

Number of border county adults with asthma who reported routine check-us for asthma by rurality and ethnicity, BRFSS 2005-2009 (Table 9)

	Total	Hispanics	Non-Hispanics
Total	426	123	303
Rural	145	50	95
Urban	281	73	208

Number of residents with asthma in the U.S.-Mexico Border States who visited emergency room (ER) or urgent care center for treatment by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	117	46	71
Non-Border Counties	315	91	224

Table 9B: Number of border county adults with asthma who visited an ER or urgent care center for treatment by rurality and ethnicity, BRFSS 2005-2009 (Table 10)

	Total	Hispanics	Non-Hispanics
Total	117	39	78
Rural	46	14	32
Urban	71	25	46

Number of residents with asthma in the U.S.-Mexico Border States who needed urgent treatment for worsening asthma (Excluding ER or urgent care center visits) by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	190	68	122
Non-Border Counties	658	170	488

Number of border county adults with asthma who needed urgent treatment for worsening asthma (Excluding ER or urgent care center visits) by rurality and ethnicity, BRFSS 2005-2009 (Table 11)

	Total	Hispanics	Non-Hispanics
Total	190	61	129
Rural	68	21	47
Urban	122	40	82

Number of residents in the U.S.-Mexico Border States who reported having any dental visit by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	5,160	1,640	3,520
Non-Border Counties	20,841	4,254	16,587

Number of border county adults who reported having any dental visit by rurality and ethnicity, BRFSS 2005-2009 (Table 12)

	Total	Hispanics	Non-Hispanics
Total	5,160	1,460	3,700
Rural	1,640	585	1,055
Urban	3,520	875	2,645

Number of residents in the U.S.-Mexico Border States who reported having a dental cleaning by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	3,811	1,573	2,238
Non-Border Counties	10,141	3,915	6,226

Number of border county adults who reported having a dental cleaning by rurality and ethnicity, BRFSS 2005-2009 (Table 13)

	Total	Hispanics	Non-Hispanics
Total	3,811	1,191	2,620
Rural	1,573	584	989
Urban	2,238	607	1,631

Number of residents aged 65 years or older in the U.S.-Mexico Border States who reported having a flu shot by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	3,030	878	2,152
Non-Border Counties	13,068	3,194	9,874

Number of border county adults aged 65 years or older who reported having a flu shot by rurality and ethnicity, BRFSS 2005-2009 (Table 14)

	Total	Hispanics	Non-Hispanics
Total	3,030	538	2,492
Rural	878	189	689
Urban	2,152	349	1,803

Number of residents in the U.S.-Mexico Border States who reported having an HIV test (excluding blood donation) by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	5,469	1,728	3,741
Non-Border Counties	21,755	3,961	17,794

Number of border county adults who reported having an HIV test (excluding blood donation) by rurality and ethnicity, BRFSS 2005-2009 (Table 15)

	Total	Hispanics	Non-Hispanics
Total	5,469	2,069	3,400
Rural	1,728	716	1,012
Urban	3,741	1,353	2,388

Number of residents in the U.S.-Mexico Border States who reported receiving Hepatitis B immunization by area of residence, NHIS 2006-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	643	117	526
Non-Border Counties	5,463	350	5,113

Number of border county adults who reported receiving Hepatitis B immunization by rurality and ethnicity, NHIS 2006-2009 (Table 16)

	Total	Hispanics	Non-Hispanics
Total	643	344	299
Rural	117	58	59
Urban	526	286	240

Number of residents in the U.S.-Mexico Border States who perceived themselves susceptible to Tuberculosis by area of residence, NHIS 2006-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	128	20	108
Non-Border Counties	1,189	82	1,107

Number of border county adults who perceived themselves susceptible to Tuberculosis by rurality and ethnicity, NHIS 2006-2009 (Table 17)

	Total	Hispanics	Non-Hispanics
Total	128	90	38
Rural	20	12	8
Urban	108	78	30

Number of residents in the U.S.-Mexico Border States who reported knowing personally a case of Tuberculosis by area of residence, NHIS 2006-2009 (Reference: Figure 18)

	Total Counties	Rural Counties	Urban Counties
Border Counties	357	104	253
Non-Border Counties	3,549	310	3,239

Number of border county adults who reported knowing personally a case of Tuberculosis by rurality and ethnicity, NHIS 2006-2009 (Table 18)

	Total	Hispanics	Non-Hispanics
Total	357	163	194
Rural	104	48	56
Urban	253	115	138

Number of residents in the U.S.-Mexico Border States who reported ever being homeless for more than 24 hours by area of residence, NHIS 2006-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	136	38	98
Non-Border Counties	1,364	107	1,257

Number of border county adults who reported ever being homeless for more than 24 hours by rurality and ethnicity, NHIS 2006-2009 (Table 19)

	Total	Hispanics	Non-Hispanics
Total	136	68	68
Rural	38	14	24
Urban	98	54	44

Number of residents in the U.S.-Mexico Border States who reported poor mental health by area of residence, BRFSS 2005-2009

	Total Counties	Rural Counties	Urban Counties
Border Counties	6,507	2,027	4,480
Non-Border Counties	28,420	5,796	22,624

Number of border county adults who reported poor mental health by area of residence, BRFSS 2005-2009 (Table 20)

	Total	Hispanics	Non-Hispanics
Total	6,507	2,221	4,286
Rural	2,027	785	1,242
Urban	4,480	1,436	3,044

Table 20A: Number of residents in the U.S.-Mexico Border States who reported ever being diagnosed with depression by area of residence, BRFSS CA, NM, TX 2006 and AZ 2008

	Total Counties	Rural Counties	Urban Counties
Border Counties	568	238	330
Non-Border Counties	1,601	701	900

Table 20B: Number of border county adults who reported ever being diagnosed with depression by area of residence, BRFSS CA, NM, TX 2006 and AZ 2008 (Table 21)

	Total	Hispanics	Non-Hispanics
Total	568	169	399
Rural	238	83	155
Urban	330	86	244