

3-27-2023

Rural Working-Age Adults Report More Cost Barriers to Health Care

Erika C. Ziller PhD

University of Southern Maine, Muskie School of Public Service, Maine Rural Health Research Center

Carly Milkowski MPH

University of Southern Maine, Muskie School of Public Service, Maine Rural Health Research Center

Amanda Burgess MPPM, MPH

University of Southern Maine, Muskie School of Public Service, Maine Rural Health Research Center

Follow this and additional works at: <https://digitalcommons.usm.maine.edu/insurance>



Part of the [Health Policy Commons](#), and the [Health Services Research Commons](#)

Recommended Citation

Ziller, E., Milkowski, C., & Burgess, A. (2023, March). Rural Working-Age Adults Report More Cost Barriers to Health Care [Policy Brief](PB-80). University of Southern Maine, Muskie School, Maine Rural Health Research Center.

This Policy Brief is brought to you for free and open access by the Maine Rural Health Research Center (MRHRC) at USM Digital Commons. It has been accepted for inclusion in Access / Insurance by an authorized administrator of USM Digital Commons. For more information, please contact jessica.c.hovey@maine.edu.



Rural Working-Age Adults Report More Cost Barriers to Health Care

Erika Ziller, PhD, Carly Milkowski, MPH, Amanda Burgess, MPPM, MPH

BACKGROUND

Despite national and state-level policy efforts to increase access to insurance and decrease aggregate and personal health care costs, affordable health care remains an ongoing concern for rural families.¹ Compared with urban residents, Americans in rural areas have lower incomes, poorer overall health, and are more likely to be uninsured,^{2,3} factors which may put them at greater risk of experiencing health care related financial challenges.

Since implementation of the Affordable Care Act (ACA), there has been a significant increase in rates of insurance coverage, with the rate of uninsurance among non-elderly rural adults decreasing from 24 percent in 2010 to 16 percent in 2019.⁴ Despite these gains in insurance coverage, rural residents continue to have higher rates of uninsurance than their urban counterparts (16% versus 13% in 2019).⁴ Among rural residents with health insurance, a large share encounter difficulties paying for care.⁵ These difficulties may be exacerbated by rising health insurance premiums and deductibles. Among all U.S. workers, the average premium for employer-based family coverage increased 47 percent and worker contributions to these premiums increased 45 percent between 2011 and 2021.⁶ Within ACA Marketplace plans, premiums tend to be higher in coverage areas with single insurers compared with multiple insurer coverage areas.⁷ Given that rural counties are more likely to have fewer insurers,⁸ unsubsidized premiums may be higher in rural areas. However, premiums in the Marketplace are greatly reduced by ACA subsidies and rural residents with plans through Healthcare.gov are equally as likely as urban residents to be in a zero or low-premium plan.⁴

As premiums have increased, so too has enrollment in high deductible health plans (HDHPs), which offer lower premiums but at increased consumer cost-sharing. In 2021, 29% of workers with employer-based coverage were enrolled in a plan with an average single-coverage deductible of more than \$2,000, up from 7% in 2009.⁶ Patient cost sharing can have important impacts on personal finances, health care use, and health outcomes. Studies have linked HDHP enrollment to increased financial burden⁹ and delayed or forgone care.¹⁰

Prior to implementation of the ACA, we found that rural adults were more likely than their urban counterparts to report problems paying for medical bills, to delay or forgo care due to cost, and to undertake cost-saving strategies such as delaying or skipping doses of prescription medication.¹¹ It is unclear to what extent factors such as insurance coverage gains under the ACA or the growing trend of HDHPs have influenced rural experiences of cost-related barriers to

Key Findings

- Rural adults (18-64) were more likely than their urban counterparts to report problems paying, or being unable to pay, their medical bills. They were also more likely to delay or go without needed care because of the cost.
- Compared with urban adults, those in rural areas were more likely to engage in prescription drug cost-saving measures such as skipping doses, delaying refills, or taking less medication than prescribed.
- For all affordability measures, adjusted analyses showed that rural adults who were uninsured, lower income, or in fair or poor health were more likely to experience affordability problems compared with other rural adults.

For more information about this study, please contact

Erika Ziller, PhD

erika.ziller@maine.edu

care, and whether rural populations continue to experience more barriers than urban residents. In this study we use national health survey data to examine rural-urban differences in affordability of care and cost-saving strategies among working-age adults in 2019-2020.

METHODS

Data source. This study used data from the 2019 and 2020 public use adult sample files of the National Health Interview Survey (NHIS).¹² The NHIS is a nationally representative survey conducted by the National Center for Health Statistics (NCHS). The NHIS is designed to monitor the health of the civilian noninstitutionalized U.S. population on a broad range of topics including health status, access barriers, health-related behaviors and risk factors, as well as socio-economic and demographic information. Beginning with the 2019 data release, the NHIS included a publicly available 4-level rural-urban variable based on the 2013 NCHS' classification scheme for counties.¹³

Study sample. Our sample contained 35,964 adult respondents ages 18 to 64 ("working age"). Of these, 4,964 (13%) lived in a rural county. We limited our sample to adult respondents under age 65 because this population may have different experiences with affordability and health care access than adults over age 65 covered by Medicare. However, our sample does include some individuals with Medicare who have qualified based on disability or end-stage renal disease.

Study variables. To examine whether rural residents were more likely than urban residents to experience cost-related health care barriers, we looked at the following dependent variables: 1) having problems paying or being unable to pay medical bills; 2) delaying or going without needed medical care due to cost; and 3) engaging in prescription drug cost-saving strategies or going without needed prescription drugs due to cost. Respondents who reported skipping medication doses, taking less medication than prescribed, or delaying filling medication prescriptions were categorized as engaging in prescription drug cost-saving strategies.

Our independent variable was rural-urban county residence. We used the NCHS' 4-level classification scheme to construct a dichotomous rural-urban variable, categorizing nonmetropolitan counties as rural and all other counties (large central metropolitan, large fringe metropolitan, and medium and small metropolitan) as urban. We included respondent characteristics known to

influence health care access as study covariates: sex, race and ethnicity, physical health status, region, education, marital status, health insurance coverage, and family income. Due to small sample sizes among rural populations, we were limited to a dichotomous variable of race and ethnicity. For this variable, we identified individuals as white and not Hispanic or as belonging to a minoritized racial or ethnic group. The latter category included people who identified as: Black or African American; Asian; American Indian or Alaskan Native; or other single or multiple races, or who reported Hispanic ethnicity.

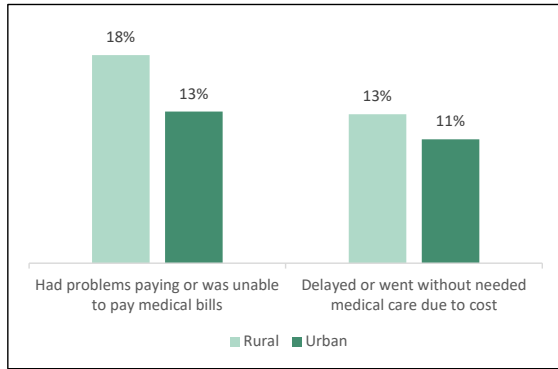
Analysis. We estimated the prevalence of experiencing health care affordability challenges by rural and urban residence and used Chi-square tests to test for statistically significant bivariate associations. We further ran a series of multivariable logistic regression models to estimate rural versus urban risk ratios for experiencing each health care affordability challenge. These models include unadjusted risk estimates of rural versus urban differences as well as risk ratios adjusting for demographic and health-status factors that may affect the affordability of health care. We then restricted the analysis to rural residents to see which demographic factors were associated with health care challenges within rural residents. To account for the complex sampling procedures in the NHIS, we used survey procedures and applied population weights using SUDAAN version 11.0.3 (RTI International, Research Triangle Park, NC). Results were considered statistically significant at $p < .05$.

FINDINGS

Population characteristics. Compared with their urban counterparts, rural adults ages 18-64 were more likely to be white and not Hispanic, to have less than a college education, to have incomes below or near the poverty level, to report having fair or poor health, and to live in the Midwest or South (data not shown). Rural residents were also more likely to be uninsured than urban residents (18% vs. 13%, data not shown).

Difficulties affording medical care. Between 2019 and 2020, rural adults under age 65 were more likely to report having problems paying or being unable to pay medical bills than urban adults (18% vs. 13%) (Figure 1). Rural adults were also more likely to report delaying or going without needed medical care due to cost than urban adults (13% versus 11%) (Figure 1).

Figure 1. Difficulty affording medical care in the past year among rural and urban adults ages 18-64



Source: National Health Interview Survey, 2019-2020.
Notes: Rural-urban differences are significant at $p < .01$.

Prescription drug cost-saving strategies.

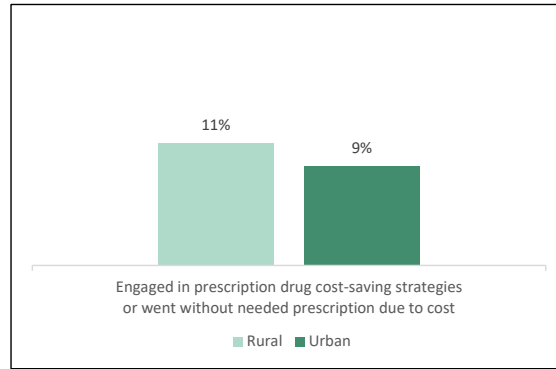
Rural adults were more likely to report having difficulty affording prescription drugs than their urban counterparts. As shown in Figure 2, rural residents were more likely to engage in prescription drug cost-saving measures (skipping doses, delaying filling prescriptions, or taking less medication than prescribed) or go without needed prescriptions due to cost than urban residents (11% versus 9%).

Factors associated with rural-urban differences in financial barriers to health care access. We fit a series of logistic regression models to further explore the factors contributing to rural-urban differences in experiences of health care affordability (Table 1).

In our unadjusted logistic regression model, we found that rural adults were more likely to report having problems paying or being unable to pay their medical bills (RR: 1.37, $p < .0001$) (Table 1, Model 1). After adjusting for demographic and health-status characteristics, however, rural-urban differences for this outcome were attenuated (Table 1, Model 1). In our adjusted model, difficulty paying medical bills was associated with being female, reporting fair or poor health status, living in the Midwest or South (as compared to Northeast), having Medicare coverage, or being uninsured (as compared to having private or military insurance). Lower educational attainment and having family income below 400% of the federal poverty level were also associated with greater difficulty paying medical bills. Having Medicaid, CHIP, or other public insurance was not associated with difficulty paying medical bills.

Similarly, after adjustment for demographic and health-status factors, rural-urban differences in delaying or going without needed medical care due to cost were no longer significant (Table 1, Model

Figure 2. Prescription drug cost-saving measures in the past year among rural and urban adults ages 18-64



Source: National Health Interview Survey, 2019-2020.
Notes: Rural-urban differences are significant at $p < .01$.

2). After adjusting for rural residence and other demographic factors, delaying or going without needed medical care due to cost was associated with being female, reporting fair or poor health status, living in the Midwest, South, or West (as compared to Northeast), and having an income below 400% FPL. In the adjusted model, adults without health insurance coverage had nearly five times the risk as those with private or military coverage of delaying or forgoing medical care due to cost (RR: 3.66, $p < .0001$). Compared with respondents who were white and not Hispanic, members of minoritized groups were at greater risk for delaying or going without needed medical care due to cost in our unadjusted model (RR: 1.18, $p = .0001$), however their risk was lower after adjustment for other demographic and health-status factors (RR: 0.77, $p < .0001$).

Finally, rural adults' risk of using prescription drug cost-saving strategies or going without needed prescriptions due to cost was significantly greater than urban residents in the unadjusted model (RR: 1.23, $p = .0007$), however, it did not differ significantly from urban residents in our adjusted model (Table 1, Model 3). After adjusting for rural residence and other demographic factors, experiencing problems paying for prescription drugs was associated with being female, reporting fair or poor health, having income below 400% FPL, and being uninsured (as compared to having private or military insurance). Adults with Medicare coverage also had increased risk of going without or engaging in cost-saving strategies for prescription drugs than those with private or military coverage (RR: 1.52, $p < .0001$), as did uninsured adults (RR: 2.37, $p < .0001$). In the adjusted model, respondents who were members of minoritized groups had lower risk of having trouble paying for prescription drugs than respondents who were white and not Hispanic in the adjusted model (RR: 0.79, $p < .0001$).

Table 1. Risk of experiencing difficulty affording medical care in the past 12 months among rural and urban adults ages 18-64 (n=35,964)

Characteristic (referent)	Model 1: Problems paying or unable to pay medical bills		Model 2: Delayed or went without medical care due to cost		Model 3: Prescription cost-savings strategies or went without needed prescription due to cost	
	Unadjusted RR	Adjusted RR ^a	Unadjusted RR	Adjusted RR ^a	Unadjusted RR	Adjusted RR ^a
Rural residence (urban)	1.37****	1.05	1.20**	0.90	1.23****	0.90
Sex (male)						
Female	1.34****	1.30****	1.45****	1.45****	1.64****	1.56****
Race and ethnicity (White, not Hispanic)						
Member of a minoritized racial or ethnic group ^b	1.13**	0.93	1.18***	0.77****	1.09*	0.79****
Physical health status (excellent/very good/good)						
Fair/poor	2.53****	2.01****	2.46****	2.01****	3.61****	2.86****
Region (Northeast)						
Midwest	1.41****	1.28***	1.42****	1.21**	1.53****	1.37****
South	1.46****	1.20**	1.80****	1.27***	1.91****	1.53****
West	0.90	0.86	1.33***	1.21**	1.20*	1.17****
Education (Bachelor's degree or higher)						
Less than high school	2.33****	1.22**	2.63****	1.01	2.23****	0.89
High school or GED	2.12****	1.36****	1.89****	1.02	1.58****	0.88****
Some college or Associate degree	1.89****	1.37****	1.72****	1.11*	1.62****	1.07
Marital status (not married)						
Married	0.87***	1.07	0.73****	0.94	0.77****	0.97
Health insurance coverage ^c (private/military)						
Medicare, any	2.69****	1.34****	2.44****	1.13	3.58****	1.52****
Medicaid, CHIP, or other public only	1.39****	0.89	1.48****	0.88	1.77****	1.07
Uninsured	2.16****	1.52****	4.95****	3.66****	3.23****	2.37****
Family income (400% FPL or higher)						
<100% FPL	2.74****	1.84****	3.79****	2.13****	3.65****	2.07****
100-199% FPL	3.28****	2.33****	3.84****	2.26****	3.30****	2.06****
200-399% FPL	2.66****	2.17****	2.62****	1.95****	2.30****	1.83****

Source: National Health Interview Survey, 2019-2020.

Notes: CHIP = Children's Health Insurance Program; GED = General Educational Development; FPL = federal poverty level; RR = risk ratio. Full tables with standard errors and confidence intervals are available by request.

P-values significant at *p<.05, **p<.01, ***p<.001, ****p<.0001.

^aAdjusted for rural residence, sex, race and ethnicity, physical health status, region, education, marital status, health insurance coverage, and family income.

^bIncludes respondents who reported their race as Black or African American, Asian, American Indian or Alaskan Native, or other single or multiple races, or who reported Hispanic ethnicity.

^cRespondents with both private and public coverage (other than Medicare) were categorized as "Private or military." Respondents with any form of Medicare coverage, including those who are dually eligible for Medicare and Medicaid and those with supplemental private insurance, were categorized as "Medicare, any." Individuals ages 18-64 may qualify for Medicare coverage based on disability or end-stage renal disease.

In adjusted models limited to only rural residents (Table 2), factors associated with experiencing difficulty affording medical care (all three dependent variables) included being female, reporting fair or poor health, being uninsured, and having income below 400% FPL. Also in these adjusted models, Medicaid coverage was found to be protective against having problems paying or being unable to pay medical bills (RR: 0.67, p=.0153) and against delaying or going without needed medical care due to cost (RR: 0.70, p=.0389). In

unadjusted models, rural residents belonging to a minoritized racial or ethnic group were more likely to delay or go without medical care due to cost compared with rural residents who were white and not Hispanic (RR: 1.26, p=.0393). However, when we adjusted for other characteristics such as income and insurance, this result ceased to be statistically significant. In each of the adjusted rural-only models, there were no significant differences by race and ethnicity for any of the outcomes measured.

Table 2. Risk of experiencing difficulty affording medical care in the past 12 months among rural adults ages 18-64 (n=4,964)

Characteristic (referent)	Model 1: Problems paying or unable to pay medical bills		Model 2: Delayed or went without medical care due to cost		Model 3: Prescription cost-savings strategies or went without needed prescription due to cost	
	Unadjusted RR	Adjusted RR ^a	Unadjusted RR	Adjusted RR ^a	Unadjusted RR	Adjusted RR ^a
Sex (male)						
Female	1.20**	1.19*	1.24*	1.27*	1.62****	1.53****
Race and ethnicity (White, not Hispanic)						
Member of a minoritized racial or ethnic group ^b	1.07	0.82	1.26*	0.81	1.25	0.85
Physical health status (excellent/very good/good)						
Fair/poor	2.44****	2.03****	2.26****	2.03****	3.23****	2.68****
Region (Northeast)						
Midwest	1.61**	1.48**	1.54*	1.33*	1.24	1.14
South	1.73***	1.43*	1.81**	1.27	1.84*	1.44
West	1.69**	1.73**	1.83*	1.59*	1.45	1.46
Education (Bachelor's degree or higher)						
Less than high school	2.41****	1.48*	1.93***	0.84	2.06**	0.92
High school or GED	1.95****	1.38**	1.43*	0.83	1.53*	0.92
Some college or Associate degree	1.86****	1.48***	1.30	0.91	1.56*	1.11
Marital status (not married)						
Married	0.81**	0.93	0.65***	0.81*	0.75*	0.94
Health insurance coverage ^c (private/military)						
Medicare, any	2.72****	1.45**	2.34****	1.06	3.00****	1.21
Medicaid, CHIP, or other public only	1.06	0.67*	1.24	0.70*	1.65**	0.88
Uninsured	1.90****	1.45***	3.84****	2.85****	2.49****	1.79***
Family income (400% FPL or higher)						
<100% FPL	2.34****	1.70**	3.83****	2.64****	4.43****	2.84****
100-199% FPL	2.79****	2.02****	4.13****	2.78****	3.74****	2.46****
200-399% FPL	1.99****	1.67***	2.73****	2.25****	2.66****	2.18****

Source: National Health Interview Survey, 2019-2020.

Notes: CHIP = Children's Health Insurance Program; GED = General Educational Development; FPL = federal poverty level; RR = risk ratio. Full tables with standard errors and confidence intervals are available by request.

P-values significant at *p<.05, **p<.01, ***p<.001, ****p<.0001.

^aAdjusted for sex, race and ethnicity, physical health status, region, education, marital status, health insurance coverage, and family income.

^bIncludes respondents who reported their race as Black or African American, Asian, American Indian or Alaskan Native, or other single or multiple races, or who reported Hispanic ethnicity.

^cRespondents with both private and public coverage (other than Medicare) were categorized as "Private or military." Respondents with any form of Medicare coverage, including those who are dually eligible for Medicare and Medicaid and those with supplemental private insurance, were categorized as "Medicare, any." Individuals ages 18-64 may qualify for Medicare coverage based on disability or end-stage renal disease.

LIMITATIONS & DISCUSSION

This analysis is limited by several important aspects of our data. First, because of sample limitations, we were unable to examine more granular measures of rural residence. We were also unable to examine Black, Indigenous, Asian, Hispanic, or multiple races separately which may mask important differences between groups. These limitations are common to rural health research using national survey data. Our study is also affected by the fact that data are self-reported and may be inaccurate. However, self-reported data may be a better measure of the access and affordability issues that this study seeks to understand than objective measures of health care use. Finally, because this study included interviews

during 2020, the findings may have been affected by the COVID-19 Public Health Emergency in important ways, including changes to the NHIS data collection methods.¹⁴

Despite these limitations, our findings suggest that rural, working-age adults face multiple cost-related barriers to health care. Compared with their urban counterparts, our unadjusted results show that rural adults are more likely to report problems affording health care services and to delay or go without needed care because of costs. Rural residents are also more likely to skip prescription drug medications or to engage in other strategies to make their prescriptions go further, such as halving their dosages. However, these differences in health care

affordability problems were no longer statistically significant after controlling for differences in socioeconomic status, health status, and insurance coverage between rural and urban adults. This suggests that rural affordability problems are associated with socioeconomic characteristics of rural places beyond their geographic location. For example, the rural sample was more likely to have low income, to be uninsured, and to report being in fair or poor health than the urban sample and each of these factors is also associated with higher rates of having a health care affordability problem, such as delayed or forgone care due to costs.

At the same time, rural adults were more likely to be covered by Medicaid than were urban adults. Among rural residents, we found that Medicaid enrollment had a protective effect on being able to afford health care services, as compared with private or military insurance. In other words, rural working-age adults with Medicaid were less likely than those with private insurance to report being unable to pay medical bills or to delay services because of costs. This is likely due to the fact that Medicaid has little to no enrollee cost-sharing for care or premium.

Over the past decade, health insurance deductibles and other cost sharing have increased in private health insurance plans, which may account for some of these affordability issues.⁶ Given that individuals in fair or poor health are at higher odds of reporting affordability problems, these barriers may also translate into worse outcomes by exacerbating poor health. More research is needed to understand how affordability problems may be affecting the longer-term health of rural adults and what policy strategies may be optimal for addressing these concerns.

REFERENCES

1. Findling MG, Blendon RJ, Benson JM, Sayde JM, Miller CE. Views of rural US adults about health and economic concerns. *JAMA Netw Open*. Jan 3 2020;3(1):e1918745. doi: 10.1001/jamanetworkopen.2019.18745
2. Cheeseman Day J. *Rates of uninsured fall in rural counties, remain higher than urban counties*. US Census Bureau. 2019. Updated April 9. Accessed February 16, 2021. <https://www.census.gov/library/stories/2019/04/health-insurance-rural-america.html>
3. Centers for Disease Control and Prevention. Rural health. 2019. Accessed October 19, 2020. <https://www.cdc.gov/chronicdisease/resources/publications/factsheets/rural-health.htm>
4. Turrini G, Branham D, Chen L, Conmy A, Chappel A, De Lew N, et al. *Access to affordable care in rural America: Current trends and key challenges*. 2021 July. Research Report No. HP-2021-16. Accessed June 6, 2022. <https://aspe.hhs.gov/sites/default/files/2021-07/rural-health-rr.pdf>
5. Collins SR, Gunja MZ, Abouafia GN. *U.S. Health insurance coverage in 2020: A looming crisis in affordability*. 2020 August. Accessed <https://www.commonwealthfund.org/publications/issue-briefs/2020/aug/looming-crisis-health-coverage-2020-biennial>
6. Kaiser Family Foundation. *2021 Employer Health Benefits Survey*. 2021 November 10. Accessed June 7, 2022. <https://www.kff.org/report-section/ehbs-2021-section-7-employee-cost-sharing/>
7. Parys JV. ACA marketplace premiums grew more rapidly in areas with monopoly insurers than in areas with more competition. *Health Aff (Millwood)*. Aug 2018;37(8):1243-1251. doi: 10.1377/hlthaff.2018.0054
8. McDermott D, Cox C. *Insurer participation on the ACA marketplaces, 2014-2021*. 2020 November 23. Accessed June 7, 2022. <https://www.kff.org/private-insurance/issue-brief/insurer-participation-on-the-aca-marketplaces-2014-2021/>
9. Abdus S, Keenan PS. Financial burden of employer-sponsored high-deductible health plans for low-income adults with chronic health conditions. *JAMA Intern Med*. Dec 1 2018;178(12):1706-1708. doi: 10.1001/jamainternmed.2018.4706
10. Kielb ES, Rhyan CN, Lee JA. Comparing health care financial burden with an alternative measure of unaffordability. *Inquiry*. Jan 1 2017;54:46958017732960. doi: 10.1177/0046958017732960
11. Ziller EC, Lenardson JD, Coburn AF. *Rural adults delay, forego, and strategize to afford their pre-ACA health care*. 2015 November. PB-61. Accessed <http://muskie.usm.maine.edu/Publications/rural/healthcare-affordability-pre-ACA.pdf>
12. National Center for Health Statistics. *National Health Interview Survey*. Centers for Disease Control and Prevention, National Center for Health Statistics. 2022. Accessed June 9, 2022. <https://www.cdc.gov/nchs/nhis/index.htm>
13. Ingram DD, Franco SJ. 2013 NCHS urban-rural classification scheme for counties. *Vital Health Stat 2*. Apr 2014;(166):1-73.
14. National Center for Health Statistics. *What's different about the 2020 NHIS data?* Centers for Disease Control and Prevention, National Center for Health Statistics. 2021. Accessed October 18, 2022. <https://www.cdc.gov/nchs/nhis/2020nhisdata.htm>

This study was supported by the Federal Office of Rural Health Policy (FORHP), Health Resources and Services Administration (HRSA), U.S. Department of Health and Human Services (HHS) under cooperative agreement #U1CRH03716. The information, conclusions and opinions expressed in this brief are those of the authors and no endorsement by FORHP, HRSA, or HHS is intended or should be inferred.