Rural Population Research Network

A USDA supported multi-state research project on the causes and consequences of demographic change in rural America

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Mortality Rates are Higher in Rural than in Urban Areas, and the Gap is Growing

Shannon M. Monnat

KEY FINDINGS

- The rural mortality penalty is wide and growing and is pronounced across multiple causes of death.
- The increasing gap is driven by mid-life adults (ages 25-64)
- Nearly every major cause of death contributes to the rural mortality disadvantage.
- COVID-19 has worsened the rural mortality disadvantage.

After decades of lower or similar mortality rates in rural areas than in urban areas of the United States, a rural mortality penalty emerged in the 1990s and has continued to grow over time.[1]

This brief summarizes trends in mortality rates for males and females by metropolitan status from 1990 to 2020 and identifies the causes of death contributing to the rural mortality penalty.

Results show that the rural mortality penalty is wide and growing and is pronounced across multiple causes of death. Mortality trends are particularly concerning for mid-life adults (ages 25-64). Ultimately, high and rising mortality rates across a variety of causes, suggest that there is not one underlying explanation. Instead, failures across a variety of institutions and policies have contributed to rural America's troubling mortality trends.

The Rural Mortality Penalty is Wide and Growing

As shown in Figure 1, nonmetro mortality rates started to diverge from metro rates in the 1990s, and the gap has grown wider since. In 1990, nonmetro males had a mortality rate that was 38.2 deaths per 100,000 population higher than that for nonmetro males. Metro and nonmetro females had comparable rates in 1990. By 2019 (before COVID-19 deaths were a major factor in overall mortality), the nonmetro male rate was 18.9% higher (155.4 more deaths per 100,000 population) than the metro male rate. The nonmetro female rate was 20.5% higher (119.9 more deaths per 100,000 population) than the metro female rate.

The increase in the gap among males throughout the 1990s and 2000s was driven by larger mortality rate declines in metro than in nonmetro areas. Rate declines stagnated for both metro and nonmetro males in the 2010s, but then started to tick up for nonmetro males in the late-2010s. Among females, the gap increased throughout the 1990s due to declines among metro females but no change among nonmetro females. Throughout the 2000s, metro female rates declined at a faster pace than nonmetro female rates. As metro female rates continued to decline in the 2010s, nonmetro female rates stayed mostly stagnant. With

the emergence of COVID-19, rates increased dramatically for both males and females in both metro and nonmetro areas, but the increases were slightly larger for nonmetro males and females, thereby widening the rural mortality penalty.

The Increase in the Gap Has been Driven by Midlife Adults

Nonmetro mortality rates are higher than metro mortality rates across all age groups, but the increase in the gap since the 1990s has been driven by midlife adults (ages 25-64). In 1990, metro and nonmetro mortality rates among ages 25-64 were comparable for both males and females (see Figure 2). However, by 2019, nonmetro males had a mortality rate that was 26% higher than the rate for metro males, and nonmetro females had a mortality rate that was a whopping 40% higher than the rate for metro females. Just as in the population overall, midlife mortality rates increased dramatically in 2020 in both metro and nonmetro areas, but the absolute increases were larger in nonmetro areas.

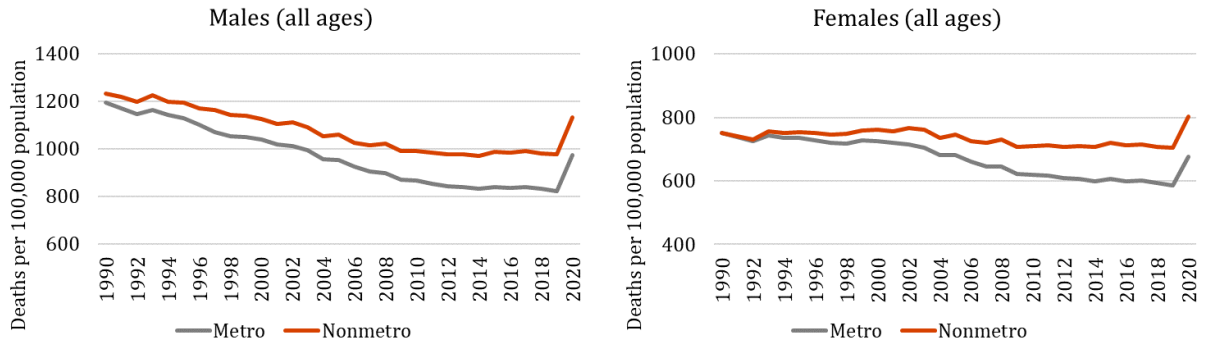

Figure 1. Mortality Rates by Metro Status, 1990-2020
Data Source: U.S. Centers for Disease Control and Prevention, CDC WONDER
Notes: rates are age adjusted

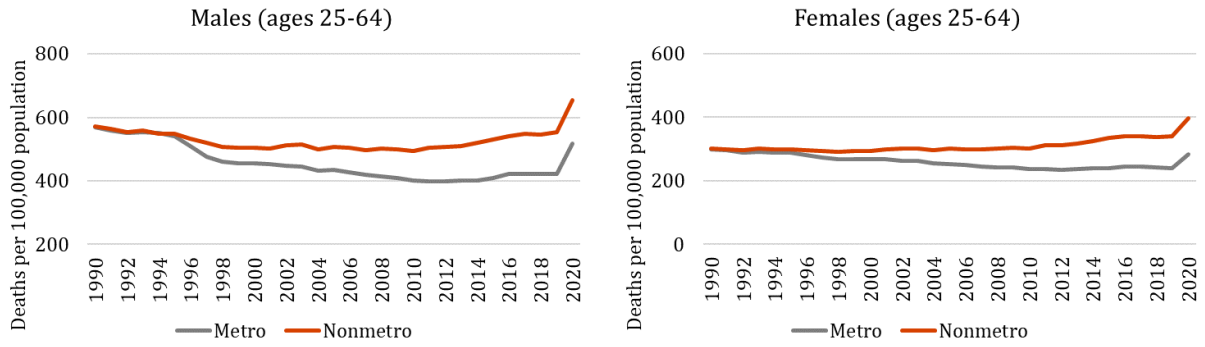

Figure 2. Mortality Rates among ages 25-64 by Metro Status, 1990-2020
Data Source: U.S. Centers for Disease Control and Prevention, CDC WONDER
Notes: rates are age adjusted

Nearly Every Major Cause of Death Contributes to the Rural Mortality Penalty

Across nearly every major cause of death, nonmetro rates are higher than metro rates. Figure 3 shows mortality rates pooled for the years 2010 to 2019 for major causes of death among ages 25-64. Of the 11 causes of death shown, rates are higher in nonmetro areas for nine causes among males and 10 causes among females. Some gaps are especially striking. For example, among males, nonmetro rates are over 41% higher for coronary heart disease, 90% higher for transport accidents, 46% higher for suicides, 51% higher for lung cancer, and 54% higher for respiratory disease. Among females, nonmetro rates are 62% higher for coronary heart disease, 70% higher for respiratory disease, 49% higher for lung

cancer, 47% higher for diabetes and metabolic diseases, 132% higher for transport accidents, and 37% higher for suicides. Although these figures do not present changes in rates over time, I have previously shown that across most causes of death, rates have either declined less in nonmetro areas (e.g., cancers, coronary heart disease) or increased more in nonmetro areas (e.g., suicide, alcohol induced, respiratory disease, diabetes and metabolic diseases) than in metro areas since the 1990s.[1]

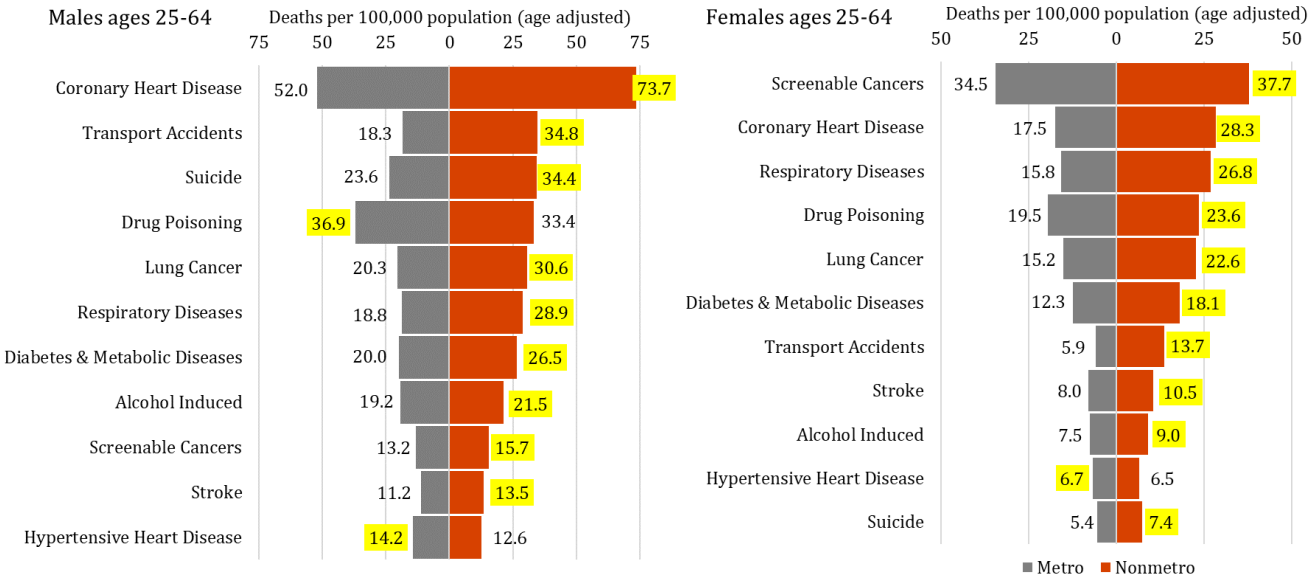

Figure 3. Pooled Mortality Rates (2010-2019) for Major Causes of Death among ages 25-64 by Metro Status,
Data Source: U.S. Centers for Disease Control and Prevention, CDC WONDER
Notes: rates are age adjusted

How Should We Address these Troubling Disparities?

Long before COVID-19 emerged in the U.S., mortality rates were higher in rural than in urban areas. Higher rural rates of COVID-19 mortality mean that it will further exacerbate the existing rural mortality disadvantage.

So, what can be done to reduce these troubling disparities? Disparities across multiple causes of death suggest that there is not one underlying explanation or one solution. Behavioral interventions targeting smoking, diet, and exercise have been attempted for decades. They have remained largely ineffective in reducing the rural mortality gap. This is because behavioral interventions rarely account for the fact that people's choices are influenced by our environments. For example, tobacco use is heavily driven by corporate behaviors and policies. Tobacco taxes are lower in predominantly rural states, tobacco advertising is more pronounced in rural communities, and youth in rural areas are less likely to be exposed to anti-tobacco messages in the media.[2,3] Is it any wonder that tobacco use (a leading cause of heart disease, multiple cancers, and respiratory disease) is higher in rural areas?

There are also regular calls for increasing rural health care access, particularly as rural hospitals have closed at alarming rates across the U.S. over the past decade. Yet, despite attempts to increase access to health care (e.g., the Affordable Care Act), the rural mortality penalty has continued to grow. This may be because lack of access to medical care accounts for only about 10% of premature deaths in the U.S.[4,5] The modest effect of medical care on premature mortality is astonishing considering that the U.S. spends $4.1 trillion ($12,530 per person) on health care annually, accounting for nearly 20% of the country's gross

domestic product. Instead, social determinants and health behaviors (which are influenced by social and policy determinants) contribute the most to premature mortality in the U.S.[5]

To be sure, helping people make healthier choices and ensuring equitable access to quality health care are both important. However, neither behavioral interventions nor increasing health care access will on their own reduce the rural mortality penalty. The U.S.'s approach to population health has been costly and ineffective because it treats problems after they arise rather than preventing their onset. To truly improve population health and reduce mortality disparities, we must target the structural (economic, social, environmental), corporate, and policy determinants of health. High and rising rural–urban disparities may reflect inequities in various social-structural factors, including educational attainment, which is becoming an increasingly important determinant of mortality disparities,[7] as well as economic resources, opportunities for employment and upward mobility, social capital and integration, housing quality, and environmental quality (e.g., pollution).

In addition, there is growing evidence that state's policy choices are contributing to widening mortality gaps.[8] State policies have become increasingly polarized since the early 2000s and especially since 2010. Research shows that states with more progressive or liberal policy orientations on a variety of domains (tobacco, civil rights, labor, the environment) have experienced larger increases in life expectancy over the last 20 years than states with more conservative policy orientations.[8] Policies tend to be more conservative in more rural states, and some of these policies can be viewed as health harming (e.g., low tobacco taxes, lax environmental regulations, low minimum wage, anti-union laws) rather than health promoting.

Ultimately, interventions targeting social, structural, and policy determinants of health in rural areas must be prioritized if we are to have any hope of improving rural health and eliminating the rural mortality penalty.

Data and Methods

Data are from the U.S. Centers for Disease Control and Prevention CDC WONDER online database. Causes of death were classified based on the International Classification of Disease (ICD) standards for 1990-1998 (ICD-9) and 1999-2019 (ICD-10). Contact the author for the specific ICD-9 and ICD-10 codes used to classify the causes of death examined in this brief. Mortality rates are age adjusted to account for differences in age composition over time and between rural and urban areas. Metro status was based on the 2013 USDA Economic Research Service Rural-Urban Continuum Codes. Codes 1-3 represent metropolitan (urban) counties and codes 4-9 represent nonmetro (rural) counties. I use the terms 'rural' and 'nonmetro' interchangeably.

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About the Author

Shannon Monnat (smmonnat@syr.edu) is the Lerner Chair for Public Health Promotion, Professor of Sociology, and Co-Director of the Policy, Place, and Population Health (P3H) Lab in the Maxwell School at Syracuse University.

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