

## *Health Status Disparities in the United States*

Woodrow Wilson International Center for Scholars Conference Paper

### Geography and Health Disparity

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Although it is well established that, nationally, there are disparities in health status and access to health care between whites and racial and ethnic minorities, less is known about geographic variations in health status and access to care. It is possible that the health gap that exists for minorities is exacerbated by a variety of factors tied to local or regional conditions, including the health care delivery environment or the larger socio-economic characteristics of places. There are wide variations in the conditions of communities across the nation in income and wealth poverty, transportation infrastructure, and the distribution of health care resources. The interaction between geography and health has not captured the level of attention that racial and ethnic differences have in the American context, but there are significant and persistent differences in health status that should be considered.

What do we mean when we speak of geographic differences in health? The United States is a continental nation that includes two very different non-contiguous areas, Alaska and Hawaii, and encompasses almost the full range of physical geographies present on the planet. However, it is the human use of these places that is more important in determining health. The most apparent differences are in settlement and economic use of space. America changed from a largely rural, agricultural nation to one that was, and remains, dominated by cities and manufacturing or concentrated service activities. This population distribution is reflected in the clustering of health services in urban areas. Modern health care is resource and technology-intensive and requires a large population base to justify the levels of investment needed to build that capacity.

Rural-urban differences in health status represent one of the more common forms of geographic gradients considered to be amenable to policy change. The health and health services conditions of rural communities have been the focus of policy initiatives intended to overcome perceived inequalities (Ricketts, 1999). The health status of rural versus urban America was the focus of a special supplement to *Health, United States, 2001*, the “official” annual summary of the nation’s health condition (Eberhardt et al., 2001). Figure 1 provides a multi-year summary of the differences in mortality between urban and rural counties for the period 1984-2003. This shows a consistent and persistent increase in mortality

from the most urban to the most rural counties and reflects underlying differences in population health as well as access to health services.

The interaction of rurality with race and ethnicity is not often examined. A review of studies compiled in 2000 (Slifkin, Goldsmith, & Ricketts, 2000) found that rural minorities were, on average, worse off than rural whites when assessing infant mortality rates (IMR) (6 studies), cancer screening and management (4 studies), HIV/AIDS (3 studies), and childhood immunization coverage (1 study). However, for IMR and HIV/AIDS rural minorities were found to be better off than their urban counterparts (2 and 3 studies, respectively).

Analyses of secondary data (Table 1) support the notion that there is an intensification of racial and ethnic disparities when the urban-rural location is considered. For example, rural non-white female Medicare beneficiaries show a significantly lower rate of receiving mammograms and Pap tests than all other groups of individuals (Slifkin, Goldsmith & Ricketts, 2000). The rural black population has a higher age-adjusted death rate from heart disease and diabetes than individuals in other categories; death rates are also much higher among rural than urban “other race” persons.

However, there are other geographic gradients that are tied to population distribution and related to race, ethnicity, and economic factors. These are primarily seen across regions and in the distinct housing patterns within cities. Neighborhood and regional gradients should also be considered in policy discussions about disparities in health.

People tend to live in areas where there is greater homogeneity to their individual characteristics—low-income people cluster as do people of various races and ethnicities. This is especially apparent in cities and suburbs. This “neighborhood” phenomenon creates a conundrum: does place itself contribute to the differences in health seen among certain population groups? Or is it exclusively a function of the sum of the individual characteristics in a place? The evidence of neighborhood effects has been the subject of much recent research and there is strong evidence that the physical characteristics of a place can inhibit healthy behaviors and create much greater risk for unhealthy influences and factors.

The analysis of city data at the neighborhood level reveals very sharp contrasts and gradients in health status that reflect what are probably the most striking effects of geography on health and health care access. Mortality ratios that have

not been adjusted for age and gender of up to 10:1 have been observed within cities when comparing ZIP code or small census areas. These differences in mortality remain after age and gender adjustment but the ratios are smaller after adjustment (Kawachi & Berkman, 2003).

However, there is another level of geography, the regional level, which is associated with very large health status and care access differentials but receives less attention than the neighborhood level. The “mega” regions of the US are recognizable to most Americans. We speak easily of the “South,” the “West Coast,” the “Bos-Wash Corridor,” the “Mississippi Delta”, or the “Appalachians” – all reflect both perceptual as well as geographical realities in the American context. More importantly, these regions also reflect important health and health care resource differences.

The evidence of geographic effects on health is apparent in analyses of mortality rates. Geographers have described these differences in many places, (Pickle et al., 1996) and these patterns have suggested that this is an important national policy problem in public health (Kindig, Seplaki & Libby, 2002). The regional nature of the mortality rates has further been confirmed using measures of spatial autocorrelation, (Cossman et al., 2003) supporting the contention that there are “true” regional mortality clusters. Figure 2 illustrates the clustering of mortality in the southeast, lower Mississippi valley (the Delta), and in Appalachia – as indicated by the dark red shading in these areas. Significantly higher mortality rates also occur along a corridor of counties making up the “black belt” of Virginia, North and South Carolina, Georgia, and Alabama.

These geographic differences in mortality have been apparent for a long time, but recently have been used to argue against the relative importance of race and ethnicity as the leading factors determining health disparities (Baicker, Chandra, & Skinner, 2005). Likewise, the relative importance of health care access on health is challenged by mortality data showing regional clusters, with some areas of the U.S. showing positive relationships between access and others, negative (Ricketts & Holmes, 2007). Figure 3 shows very distinct clusters of mortality when the supply of practitioners, and the level of education, income, and employment are considered. The Gulf Coast and the Southwest, including Arizona, Utah and parts of New Mexico, Nevada, Texas and California, have much higher mortality rates given when controlling for physician supply and the characteristics of the population. The upper Midwest and northern counties of Michigan, along with most of Washington state – have much lower than expected rates.

It is clear that where you live makes a difference in your life chances. The causal pathways are myriad and depend upon the formal governmental structure of a place as well as its prevailing customs and values. What is most striking, however, are the very wide differences in health status across relatively large regions of the United States. Contrasts that would seem too great to be ignored lack an effective stakeholder group to push the issue onto the policy agenda. There are few advocates for “regional” solutions when priorities are allocated. States, urban-rural, racial and ethnic, and special population groups are all able to make their cases more effectively. National leadership could change this by taking a broader look at national data and making policy decisions that target the reduction in disparities in health status between regions.

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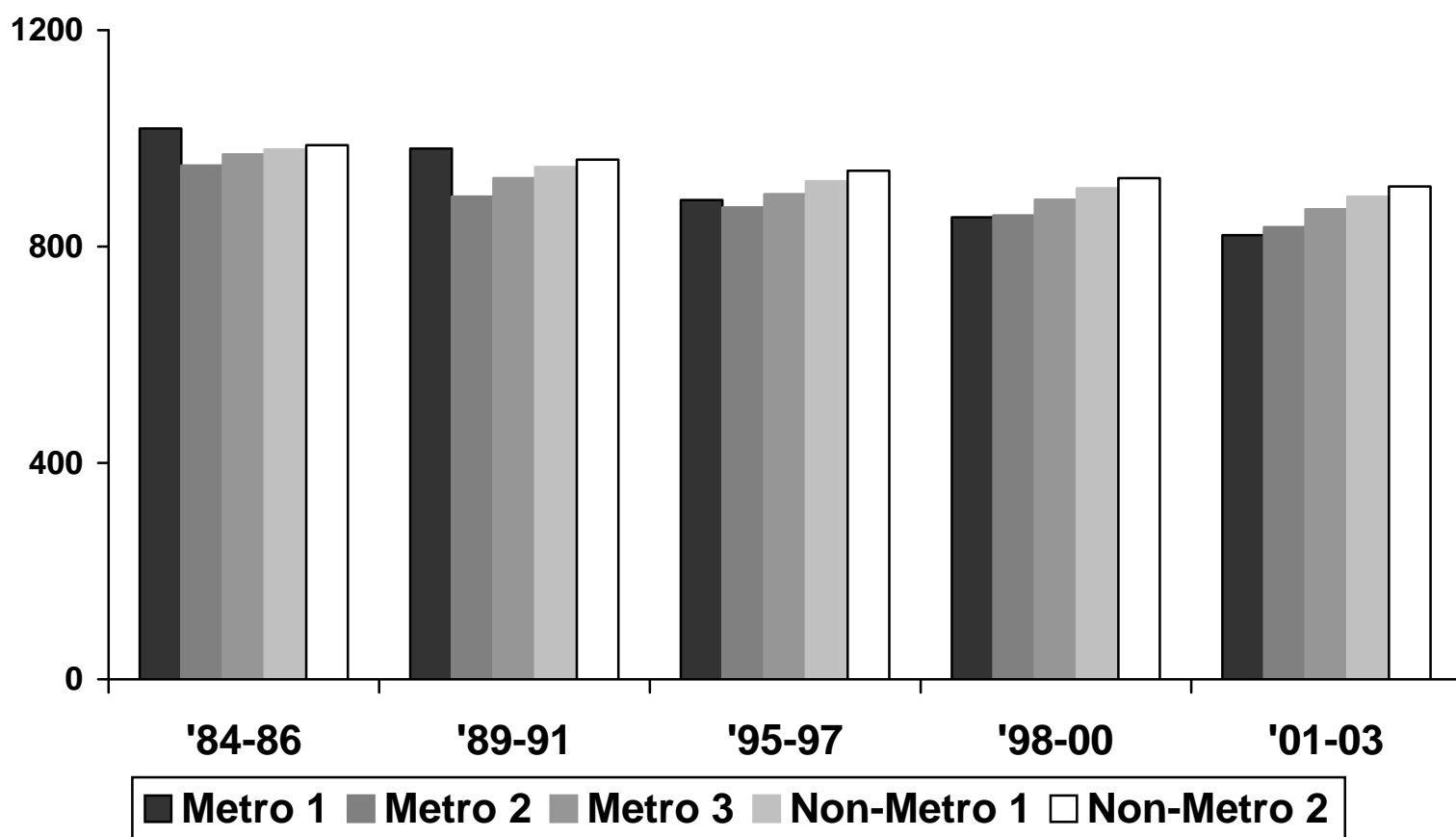
**Figure 1**

**Age Adjusted Mortality Rates, Urban-Rural Counties, United States, 1984-2003.**

**Metro 1: Large Central Metropolitan Counties; Metro 2: Large-Fringe**

**Metropolitan Counties; Metro 3: Small Metropolitan Counties; Non-Metro-1;**

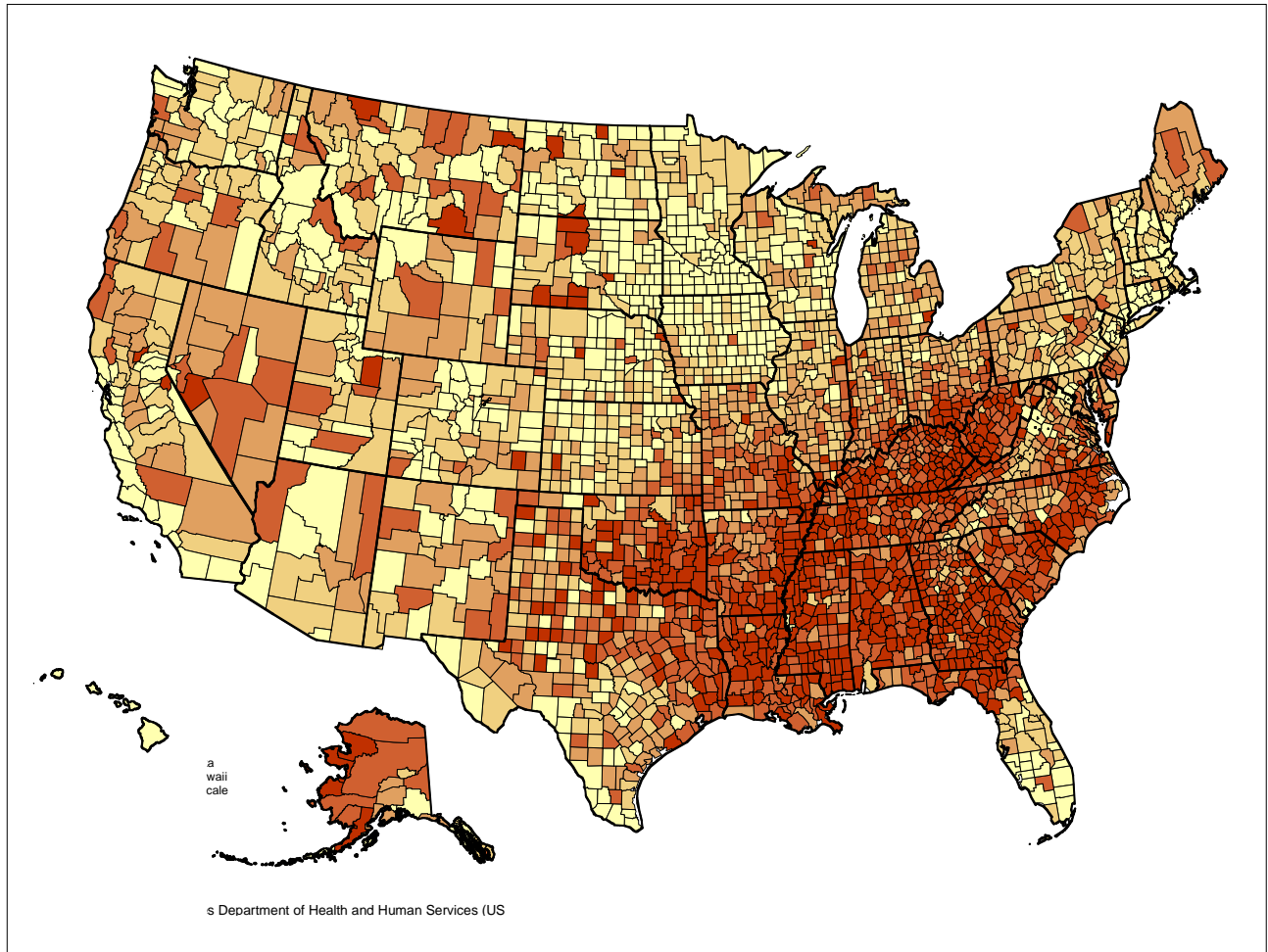
**Nonmetropolitan Counties with City or Micropolitan; Non-Metro 2**



**Nonmetropolitan Counties without city or Non-core Counties**

Source: National Center for Health Statistics, National Vital Statistics System, 1985-2005

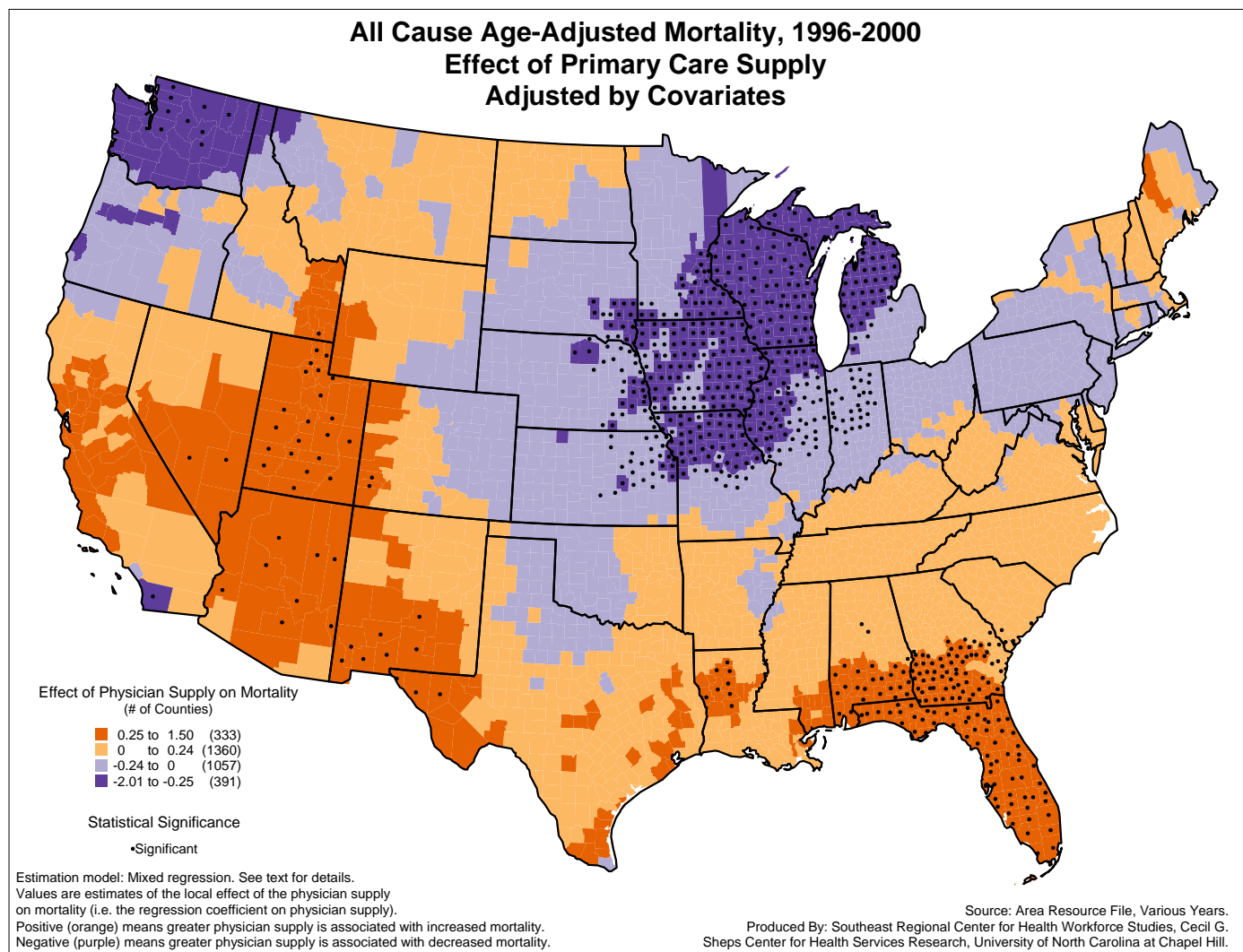
**Figure 2**  
**Age Adjusted Mortality Rates, United States, 1999-2003**



Source: National Center for Health Statistics, Office of Analysis and Epidemiology. Compressed Mortality File. 2005



**Figure 3**





**Table 1**  
**Summary of Secondary Data Analyses of Race/Ethnicity and Urban Rural Residence**

	MSA-Urban			Non-MSA-Rural		
	White	Non-White		White	Non-White	
% Medicare beneficiaries with influenza shot <sup>1</sup>	52%	36%		53%	34%	
% Medicare beneficiaries with pneumonia shot <sup>1</sup>	22%	14%		24%	10%	
% Medicare beneficiaries with Pap test <sup>1</sup>	29%	28%		23%	17%	
% Medicare beneficiaries with mammogram <sup>1</sup>	35%	35%		29%	19%	
		Black	Other		Black	Other
% Children with all shots <sup>2</sup>	88%	84%	82%	87%	85%	87%
% Population with diabetes <sup>3</sup>	1.93%	3.61%	2.64%	2.31%	5.34%	2.86
Diabetes mortality rate <sup>4</sup>	116	284	99	122	295	273
Heart disease mortality rate <sup>4</sup>	1638	2555	1017	1793	2796	1486
AIDS mortality rate <sup>4</sup>	128	565	37	40	209	41
Infant mortality rate <sup>5</sup>	6.1	15.1	4.5	7.1	15.4	7.8

<sup>1</sup> Medicare Current Beneficiary Survey

<sup>2</sup> Immunization Supplement to the 1994 NHIS

<sup>3</sup> 1994 National Health Interview Survey

<sup>4</sup> Death rates per million, National Center for Health Statistics 1991-1995 Compressed Mortality Files

<sup>5</sup> Deaths per 1000 live births, National Center for Health Statistics 1991-1995 Compressed Mortality Files