

Section VI. Summary and Conclusions

The Appalachian region experiences excesses in mortality from major causes of death and illness relative to the non-Appalachian U.S. To clarify the extent and nature of regional excesses, this report analyzed rates of mortality for eight demographic subgroups: white and black men and women aged 35 to 65 and 65 and older. In addition, we conducted county-level analyses to identify geographic disparities within the Appalachian region and highlighted clusters of counties that exhibit both favorable and adverse health outcomes in the region.

To further clarify the level of disparities in health outcomes within the Appalachian region, hospitalization data was used in this study to provide an indicator of morbidity among local populations. Considerable disparities in county rates of hospitalization were documented for major causes of illness. Clusters of counties with both favorable and adverse rates of hospitalization were highlighted.

To aid in understanding potential causes of observed disparities in health outcomes, we examined the uneven distribution of socioeconomic conditions, prevalence of behavioral risk factors, and medical care resources in the region.

The combined data presented in this report provide a detailed account of health status in the Appalachian region, and provide evidence for targeted interventions aimed at reducing health disparities and improving the overall health of the

region. The data suggest that health disparities are highly localized in the region and result from a combination of factors that are unique to each local area. Developing targeted interventions and local policies to reduce and eliminate health disparities in the region requires an understanding of local conditions that influence health outcomes. Additional research is necessary to identify specific combinations of factors that contribute to the health experience of places within Appalachia.

Mortality

The Appalachian region as a whole experiences excess mortality compared to the non-Appalachian U.S. Among the causes of death examined in this study, Appalachian populations suffer the most significant excesses in heart disease mortality, the leading cause of death in the U.S (see Fig. 1, Section I.). There are, however, considerable differences in the burden of mortality among age/gender/ethnic groups. Although heart disease is the leading cause of death in the U.S., the leading cause of premature death (among persons ages 35 to 64) is from cancers in both the U.S. and in Appalachia.

The Appalachian region suffers excess mortality from all causes of death examined in this report, except breast cancer, when compared to the non-Appalachian U.S. (see Fig 4 and 5, Section I.). Although elderly populations in Appalachia suffer excess mortality from all causes of death examined in this report (except breast cancer), the relative differences among rates of mortality between the Appalachia and the non-Appalachian, for people under the age of 65, are generally greater.

Younger black men (ages 35 to 64) experience considerably higher death rates for the major causes of death (heart disease, cancers, stroke, lung cancer, and accidental) than either black women or white men and women of comparable age. In addition, the greatest disparities (differences in county rates) in the major causes of death occur among populations of black men of both age groups examined in this study.

There is considerable variability among rates of mortality in the Appalachian region. For a number of specific causes of death, clear geographic gradients exist where the central and southern portion of the region experience more adverse outcomes relative to the northern portion of the region. Analyses of national, county-level death rates revealed large clusters of high death rate counties in the Appalachian region, which represent the largest such clusters in the country. Among specific causes of death that exhibit large clusters of high death rate counties in the Appalachian region, some of the most notable exist for heart disease, all cancers, lung cancer, COPD, and diabetes.

Morbidity (Hospitalizations)

Rates of hospitalizations, calculated for major causes of illness, show considerable variability throughout the Appalachian region. Although less geographic clustering occurs for most causes of illness, the geographic distribution of hospitalization rates appears similar to rates of mortality for

coincident diseases. However fewer differences occur between population subgroups than with rates of mortality. The central region of Appalachia, consisting of counties in Eastern Kentucky, Southern West Virginia, and Western Virginia, is most frequently represented by high rates of hospitalization for most primary diagnoses including all cause, heart disease, lung cancer, COPD, and diabetes. Rates of stroke hospitalization appear to be more evenly distributed throughout the region in contrast to stroke death rates, which cluster primarily in the southern portion of the region.

Socioeconomic Condition

The rural character of Appalachia is readily apparent, with few major metropolitan areas. Relative to the non-Appalachian U.S., Appalachian counties are generally more represented by more adverse socioeconomic conditions. Appalachia has a greater proportion of counties with higher unemployment rates and levels of poverty, lower incomes, and lower levels of educational attainment. However, there remains considerable variability within the region. Counties in the Central Appalachian region, consisting of counties in Eastern Kentucky, Southern West Virginia, and Western Virginia, generally experience more adverse socioeconomic conditions compared to counties in other parts of the region.

General socioeconomic improvements within the region between 1990 and 2000 were suggested by increased levels of educational attainment and income, as well as lower levels of poverty. However, relative socioeconomic disparities among

counties within the region seemed to persist over this time period.

Behavioral Risk Factors

Relative to the non-Appalachian U.S., the Appalachian region experiences generally higher levels of prevalence of obesity, smoking, and physical inactivity and also experiences less utilization of cancer screening. Within the Appalachian region, there is a great deal of variation in the prevalence of these behavioral risk factors. In general, the more adverse levels of prevalence occur in the central portion of the region including areas within Eastern Kentucky, Southeastern Ohio, Southern and Central West Virginia, and Western Virginia.

Medical Care Resources

Medical care resources are unevenly distributed among counties in the Appalachian region. These data suggest that counties with metropolitan areas have greater access to general medical services. In addition, hospitals and physicians offering services of a specialized nature tend to aggregate in more metropolitan and urban areas.

Many counties in Appalachia do not have ready access to critical resources for cardiovascular care and rehabilitation, which may contribute to excesses in cardiovascular-related mortality.

Key Findings and Challenges

This report represents the first such analysis found in the literature involving a regional review of mortality, morbidity and risk and represents a new, fruitful approach in disparities research. The central finding of this report of pervasive disparities in premature mortality in the region as compared to the rest of the nation, provides evidence for identifying Appalachia as a geographic health disparity population.

The findings of this report indicate that the Appalachian Region as a whole suffers considerable excess in mortality from leading causes of death when compared to the non-Appalachian U.S. Among the causes of death examined in this study, Appalachian populations suffer the most significant excesses in heart disease mortality, the leading cause of death in the U.S. In addition, the Appalachian region suffers an excess in premature deaths (among persons ages 35 to 64) from heart disease, all cancers combined, lung cancer, colorectal cancer, chronic obstructive pulmonary disease, diabetes, and motor vehicle accidents, relative to comparable non-Appalachian U.S. populations. As this report has shown, there are considerable differences in the burden of mortality among age/gender/ethnic groups. The geographic patterns in national mortality rates for different causes of death are often mirrored in the Appalachian region, particularly by the apparent north-south gradients for breast, colorectal and lung cancer mortality, strokes, accidental deaths, and diabetes.

There is a discernable pattern of large clusters of high death rate counties in Central Appalachia for multiple causes of

death. In many cases these concentrations represent the largest such clusters in the country. Among specific causes of death, which exhibit large clusters of high death rate counties in the Appalachian region, some of the most notable exist for heart disease, all cancers, lung cancer, COPD, and diabetes.

Analysis of hospitalization for different illnesses reveal similarities to the geographic distribution to mortality rates, however there is a high degree of within-region variability in both the rates of mortality and hospitalization. The lack of morbidity data hinders more extensive analysis. Key morbidity data is lacking for individual states in the nation and the region.

This report finds higher percentages of obesity, smoking and lack of physical activity in Appalachian labor market areas compared with the U.S. These behaviors are all considered risk factors to leading causes of mortality. There appear to be some associations among counties and clusters of counties with high mortality/hospitalization rates and high prevalence of behavioral risk factors.

Appalachia continues to suffer adverse socio-economic conditions (higher unemployment, lower educational achievement, lower per capita income), and there does appear to be some association between areas with more adverse socioeconomic conditions and adverse health outcomes. However, the direct role of socioeconomic condition in influencing health disparities is not clear. There are places with adverse socioeconomic conditions that do not endure the burden of adverse health outcomes relative to other areas in the region.

Measures of health service availability are generally crude and limited in terms of measures of actual utilization rates, access barriers, quality issues and cross-county and cross-state utilization patterns. The available data indicate an apparent centralization of specialty health services in the region's metropolitan areas.

Policy Implications

The distributions of excess mortality rates found in this report may indicate a need for regional approaches to address such health disparities, especially in the case of excess premature deaths. In some cases, clusters of counties with high death rates correspond to clusters of counties with high risk factor prevalence. In such cases, regional health prevention approaches may make sense as an intervention strategy. The clusters cross state boundaries and suggest that interventions should be considered on a multi-state, regional basis.

Deficiencies in key morbidity data for every state suggest that additional incentives ought to be considered to encourage participation by all of the states in the HCUP program and that a standardized data base that guarantees both confidentiality and a robust national research capability be developed for use by public health researchers.

The effects of the apparent centralization of specialized health services in metropolitan areas on mortality and morbidity rates in non-metro areas are not yet clear. An alternative approach to measuring access to specialized health services might be to identify services required for a typical

course of care by disease and to measure relative access at multiple local levels.

It appears that the reasons for disparities in health outcomes are highly variable and localized. Additional research is necessary to identify specific combinations of factors that contribute to the health experience of places within Appalachia. The detailed findings of county-level health status suggest that many health disparities are highly localized in the region and result from a combination of factors that are unique to each local area. Developing targeted interventions, and local policies, to reduce and eliminate health disparities in the region requires an understanding of local conditions that influence health outcomes.

In conjunction with developing regional health policies, one of the most significant challenges that is posed by this type of study is addressing the key disparities with local knowledge of conditions that exist in these geographic areas. Although analysis of secondary data sources is a critical part of developing an understanding of the health conditions in Appalachia, understanding the causes of disparities at the local level often requires specific and detailed local knowledge regarding events and conditions that influence local health outcomes. Preliminary analyses suggest a highly variable landscape of associations between various health disparities and socioeconomic condition, prevalence of behavioral risks, and access to available medical care resources. Local responses and more extensive analysis is required to identify how these factors combine and intersect at the local level to influence local health outcomes.

These findings will be communicated to each of the states included in the Appalachian Regional Commission's area. The Commission should consider promoting regional collaborations among states and partnerships with other Federal agencies to address the disparities identified in this report.