The Economic Case for Health Equity in Minnesota

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I. Introduction

Across all types of diseases, illnesses, and accidents, blacks are 1.16 times as likely to die as are whites. (Cunningham et al.). Blacks are 1.22[5] and 1.72[6] times more likely than whites to die from heart disease and hypertension, both preventable diseases. According to Lavist, et al. (2011), the annual cost of racial differences in overall mortality rates in the U.S. ranges from $236.1 billion to $243.1 billion. Racial disparities also arise in labor market outcomes in the form of participation. Again, Lavist et al. (2011) estimate these costs to amount to $11.7 billion to $13.3 billion. Other attempts to estimate the economic costs associated with health disparities produce values that range from $193[7] billion (smoking) to $250[8] billion (fatal and non-fatal cost of occupational injuries).

Although there are cases to be made for addressing racial and ethnic disparities in health for epidemiological reasons or social justice, the novelty of the Lavist, et al. work rests in the ability to make a business case for reducing health disparities in the United States.

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The business case for reducing health disparities might appear to be more difficult to make in places like Minnesota with relatively few racial minority group members. While Minnesota boasts of having some of the very best health care in the nation with overall mortality rates much lower than elsewhere and with lower labor market impacts overall from health-related absences from work, there are huge racial disparities in major health outcomes. This paper demonstrates that even in locations where there are few racial minorities, there are sizeable economic benefits from eradicating health disparities.

II. Methodology

Estimates of the economic cost of racial disparities are obtained for two health outcomes: mortality rates and labor market effects of illnesses. The analysis of mortality rate disparities conceptually computes the number of lives lost due to disparate mortality rates between each racial minority group and the overall mortality rates within age group and cause of death. This analysis uses the method proposed by LaVeist, Gaskin, and Richard (2009). One converts the mortality rate differentials of each age group into number of deaths per year for the given state. These estimates are stratified by cause of death, defined using the ICD-10 classification system. The excess deaths due to the disparities in mortality rates for each age group and cause of death equals the real deaths minus the predicted deaths, where the predicted deaths assumes each racial and ethnic minority group faces the same mortality rates as the general population according to age and cause of death categories. This is akin to eliminating all within-age and type of death disproportionalities.[9] For some age groups and causes of death, some minorities have lower death rates than the total population. We report two calculations, one that retains these negative excess

[9] Which is also akin to equating the mortality disparity ratio to one, where the mortality disparity ratio is the ratio of the mortality rate for the ith group and the jth cause of death to the overall mortality rate for the jth cause of death within age groups.

deaths, which results in a lower bound of estimates, and another that only measures disparity in deaths when minorities have worse outcomes, which yields an upper bound of estimates. The valuation of these lives lost uses conventional estimates of foregone earnings. The cost of early mortality uses the Value of a Year of a Statistical Life according to Hirth et al. (2000), a proxy for the opportunity cost of treating an underlying condition. This measure is widely used in health research and equals $50,000 in 1997 dollars or $76,316.47 in 2017 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), and $94,762.96 using the medical care service subsection of the CPI-U[10]. Life expectancy is assumed to be 75 years. Deaths after 75 are not deemed amenable, and are dropped.

The labor market effects of illness are captured by estimating logistic models of the probability of having a work-limiting condition and of log-number of weeks in a year not working given that you have a work-limiting condition. These models are estimated separately for each racial and ethnic group controlling for education, age, family structure and other relevant demographic characteristics.

Our labor market participation estimates reflect net increases in the number of minorities who would have worked had there been no unexplained disparity in time lost from work[11]. This estimate is based on the likelihood that a respondent reports having a health condition that limits their ability to work[12]. We estimate the share of the Minnesota population with a health condition according to race, ethnicity, or national origin. To identify the degree to which race, ethnicity, and

[10] https://www.bls.gov/cpi/cpid01av.pdf table 1ahttps://www.bls.gov/cpi/cpid1705.pdf table 2

[11] The comparison group of labor market participation is White non-Hispanics, which is different from the comparison group of Mortality disparities in Section 3.3.

[12] Indicates whether respondents have any lasting physical or mental health condition that causes difficulty working, limits the amount or type of work they can do, or prevents them from working altogether. This does not include temporary health conditions, such as broken bones or pregnancies - as defined by the Minnesota Population Center (MPC 2017)

national origin relate to this measure of health, we generate a ratio of the probability of having such a condition for members of a given racial/ethnic group that have this condition to the probability for the entire population of Minnesota in a single year (we use 2007 for our estimates).

We estimate the probability of a work-limiting condition using a logit (log of odds ratio) model. This model is used to generate an estimation of the probability of a work-limiting condition, p, while adjusting for controllable demographic factors[13], [14]. After estimating the probability of having a work-limiting condition, we generate an estimate of the increase in the probability of a work-limiting condition according to racial/ethnic minority status. This estimate produces a factor that adjusts the estimated probability of having a work-limiting condition for minorities.

To estimate the number of minorities who would have worked had there been no unexplained disparity, we estimate the differences in the probability in reporting a work-limiting condition according to minority status. We then estimate the probability of a work-limiting condition for minorities had they faced the same treatment as white non-Hispanics.

Once we have an estimate of the change in an individual's probability of having a work-limiting condition according to minority status, we multiply this estimate by the size of the estimated minority working-age population to generate an estimate of the population-wide economic effect of reducing health disparities in labor market participation[15].

After estimating the number of minorities that would be affected by the possibility of equal health treatment, we perform another Blinder-Oaxaca Decomposition to obtain estimates of the number of weeks worked in a year according to minority status and according to our controls. We differentiate between the difference in the average number of weeks worked by Minorities and

[13] *Greene, W. H. 2012. Econometric Analysis. 7th ed. Upper Saddle River, NJ: Prentice Hall.*

[14] For a list of controls from our American Community Survey Analysis, see Section 2

[15] Weighted population estimate of working age range from 15-65, while workforce estimates range from 16-65

non-Minorities that can be explained with our controls and the portion of this difference that is not explained by our controls but still is distinguishable by minority status. We use the unexplained portion of the number of weeks Minorities lost in a year and multiply this by the weighted number of minorities among working ages 15-65 to obtain the total number of weeks lost by minorities.

III. Data

The estimates provided herein utilize two publicly available databases: American Community Survey (years 2007, 2011-2015[16]), and the Minnesota Center for Health Statistics Vital Records on Mortality (years 2011-2015). The American Community Survey provides information on demographic, economic, and geographic characteristics of a random sample of the general population. Among demographic variables used in the models are age, military service, gender, race, ethnicity, head of the household, the highest level of education achieved, and ancestry. Among economic variables are individual income, household income, federal household poverty status, number of weeks worked in the last year, the presence of a work-limiting condition[17], and public sector employment. The sample was limited to Minnesotans who are of working age (over 16 and under 65).

The Minnesota Center for Health Statistics provided administrative data that represents the population of Minnesota residents with death certificates in the years 2011 – 2015[18]. Cause of

[16] To estimate the population of Minnesota, a five-year sample of the American Community Survey for the years 2011-2015 was used, and the three-year sample of the American Community Survey Administered by the Minnesota Population Center was used for the year of 2007 (Ruggles et al. 2015)

[17] Indicates whether respondents have any lasting physical or mental health condition that causes difficulty working, limits the amount or type of work they can do, or prevents them from working altogether. This does not include temporary health conditions, such as broken bones or pregnancies - as defined by the Minnesota Population Center (Ruggles et al. 2015)

[18] Because our measures of health outcomes rely on mortality data from the Minnesota Department of Health, our estimates of health outcomes will only be applicable to those who were Minnesota residents at their time of death

death is reported according to the International Classification of Disease (ICD-10), race/ethnicity, and national origin, age, gender, marital status, level of education, and geography in the form of a zip code. Only Minnesota residents for whom a death certificate is available were included in the analysis. If a Minnesota resident died in another state, the circumstances of their death are still reflected in this data. However, information about non-Minnesota residents who die in Minnesota is not included in this data. We aggregate these populations to form estimates of the age-adjusted mortality rate by a given cause of death.

IV. Results

Between 2011 and 2015 there were 204,723 deaths with certification numbers recorded in Minnesota. Of that total, 20,673 or about 10% were listed as American Indians, African Americans, or Asian Americans. Of these 20,673 Minnesotans, 5,819 (2.84%) were African Americans, 2,773 (1.35%) were American Indians, 2,951 (1.44%) were Asian Americans or Pacific Islanders, and 763 (0.37%) were Other races. We found that in comparison to the age-adjusted mortality rates for Whites, age-adjusted mortality rates are twice as high for American Indians, 1.22 times as high for African Americans, and 1.05 times as high for Southeast Asians. If we break down potential lives saved by illness-related and non-illness-related causes, then 229 to 585 Minority lives could be saved per year for illness-related causes; and 64 to 183 Minority lives for non-illness-related causes.

The total number of minorities who missed work due to illnesses in the 2005-2007 was 29,103. Our logit model estimation of the probability of missed work due to illnesses obtained a range of 3,308 to 4,461 additional Minorities who would have worked had there been no

unexplained racial disparity. In short, 11% to 15% more Minorities of working age would have worked had there not been an unexplained racial disparity.

For those additional minorities who would have worked, the average number of weeks persons would have worked in the last year is 39.98 weeks. The average estimated economic benefits of increased work had there been no unexplained racial disparities in weeks not working due to illness is $231,916,621. In 2007, 164,396 persons did not work sometime during the year because of illness in Minnesota. Of those, 29,103 or 17.7% were minorities. A white non-Hispanic worker with an illness missed an average of 43.93 weeks whereas Minorities missed 46.13 weeks on average. This suggests that although there are some who may continue to work while they have a work-limiting condition by changing the nature of their work, most miss out on work altogether.

We include controls for these estimates, such as age, education, gender, household poverty, military service history, household head, and employment in the public sector. The gains in the number of weeks worked after eliminating the unexplained racial disparity increases from 3.7% to 4.6% after including these controls.

The Special Case of Hispanics

White non-Hispanics experience higher mortality rates than Hispanics in Minnesota, with 711.79 per year mortality rate for White non-Hispanic population and 527.21 for Hispanics. This finding is consistent with research on the Hispanic/Latino population nationwide and is known as the Hispanic or Latino Paradox (Palloni & Arias, 2004; Turra & Goldman, 2007). This paradox states that Hispanics and Latinos experience overall mortality and morbidity advantages over White non-

Hispanics (Ruiz, Steffen, and Smith, 2013) but that this benefit is lost at a population level over time.[19]

American Indians in Minnesota experience the worse health disparities of all ethnic/racial groups. They have the highest mortality disproportionality ratios for chronic liver disease and cirrhosis, diabetes, motor vehicle and other accidents, homicide and suicide. American Indians are 2.5 more likely to have a work-limiting health condition than White non-Hispanics. These adverse health outcomes are linked to poverty and barriers to employment due to geographic isolation and lack of employment opportunities (Sarche & Spicer, 2008).

Conclusions:

Even in Minnesota, with a relatively small minority population, there are substantial benefits associated with reductions in health disparities. The benefits accrue through fewer lives lost and fewer weeks lost from work due to illnesses. That there are nontrivial cost savings via reductions in racial disparities in health suggests that public and private investments can be justified in producing targeted improvements in the health of racial and ethnic minority group members.

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