ECONOMIC IMPACTS OF HEALTH DISPARITIES IN TEXAS 2020

An Update in the Time of COVID-19

Ani Turner, Altarum

Thomas A. LaVeist, Tulane University

Patrick Richard, Uniformed Services University

Darrell J. Gaskin, Johns Hopkins University

ALTARUM

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Summary

Our health is fundamental to the quality of our lives. Many factors influence health, including individual characteristics such as genetic predispositions, and the physical and social environments in which we live, often called the "social determinants of health."[1] These social determinants have been shown to have a strong influence on lifetime health, especially for those who live in more challenging environments. We see evidence of this in the very different health outcomes and lifespans of people who live in the same city under different social and economic circumstances. For example, in Dallas County, boys born in the 75204 zip code (average household income $105,000) can expect to live to age 90, while boys born in the nearby 75215 zip code (average household income $41,000) have a life expectancy of only 63 years.[2]

In Texas, as in much of the country, the social determinants of health, including access to health care, vary considerably by race and ethnicity. Black and Hispanic children are much more likely to be growing up in neighborhoods of concentrated poverty and their families are more likely to lack health insurance. Not surprisingly, there are also large disparities in health status, disease prevalence, and premature death by race and ethnicity. The COVID-19 pandemic is a real time reminder of how differences in environments and access to care lead to different health outcomes. Being more likely to work in front line service jobs, live in crowded and multigenerational housing, rely on public transportation, have underlying health conditions, and lack health insurance, the virus has taken a disproportionately deadly toll on Black and Hispanic people in the U.S. and in Texas.

Reducing the existing disparities in health will improve the lives of millions of Texans. Health can be improved by investing in public health and neighborhood infrastructure to make environments healthier and by increasing access to needed health care services. Most Texans say health care should be a priority and support more state spending on health programs.[3] But there are always competing priorities for attention and resources. In weighing the value of investments to improve health, it is important to understand that disparities in health impose a substantial human cost and a significant economic burden to the Texas economy. This report puts numbers around that economic burden.

Updating estimates from our 2016 study,[4] we find that differences in health status, disease prevalence, and life expectancy by race and ethnicity in 2020 cost Texas[5]:

1. **$2.7 billion** in excess medical care spending annually;
2. **$5 billion** in lost productivity annually; and
3. **452,000 life years lost** due to premature deaths, conservatively valued at **$22.6 billion**.[6]

In a decade, these figures will increase by 22 percent as the Texas population grows larger and more diverse. By 2030, if current disparities remain, we estimate it will cost Texas:

4. **$3.4 billion** in excess medical care spending annually, **$6.1 billion** in lost productivity annually, and **551,000 life years lost**, conservatively valued at **$27.6 billion**.

The COVID-19 pandemic has created an additional set of economic impacts today due to environmental and underlying health disparities. Black and Hispanic populations are more likely to contract COVID-19,

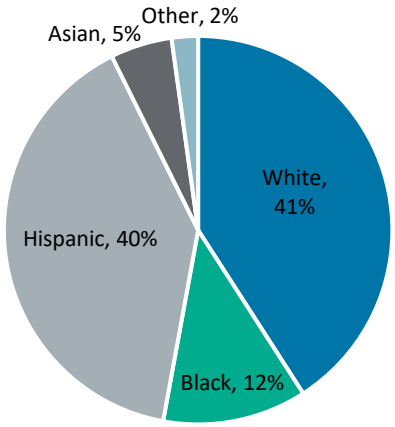
and when they do, are more likely to have a serious case that requires hospitalization or leads to death. While not a full assessment of the burden of disparities under this pandemic, we have created estimates of two types of economic impacts due to differences in the effects of COVID-19 on Black, Hispanic, and White populations in Texas.

5. If Black and Hispanic populations in Texas were hospitalized for COVID-19 at the same rates as non-Hispanic Whites, there would have been 24,000 fewer COVID-19 hospitalizations in Texas through September 2020.[7] These hospitalizations represent an estimated **$558 million** in health care spending on the virus, health care resources that could have been saved or applied to meet other health needs. This figure does not account for the disproportionate human toll of stress and loss on Black and Hispanic families, the lost work time, or any long-term health impacts.
6. If Black and Hispanic populations in Texas had the same mortality rates as their non-Hispanic White counterparts, there would have been **5,000 fewer deaths** as of the end of September 2020, reducing the Texas COVID-19 death toll by 30 percent, from 16,000 to 11,000. These premature deaths represent **60,000 life years lost**, conservatively valued at **$3 billion**.

1 Current Disparities in Health and Health Drivers

Of the more than 29 million people in Texas, about 41 percent are White, 40 percent are Hispanic, 12 percent are Black, 5 percent are Asian-American, and the remaining 2 percent are American Indian, people of more than one race, and other categories.[8,9] There are substantial differences in overall health and in the prevalence and outcomes of various health conditions among these racial and ethnic groups. There are also differences in access to health care and in social, environmental, and economic circumstances that impact health.

Racial/Ethnic Composition of Texas Population, 2020



1.1 DISPARITIES IN HEALTH

More Black and Hispanic Texans report that they are not in good health; 23 percent of Hispanics, 21 percent of Blacks, and 16 percent of Whites report being in fair or poor health.[10] Similarly, 53 percent of Whites in Texas report being in very good or excellent health compared to 48 percent of Blacks and 39 percent of Hispanics.[11]

Health disparities start early in life. Infant mortality in Texas varies by a factor of two among racial and ethnic groups. White infants have a mortality rate of 4.5 deaths per 1,000 live births. Hispanic infants have a slightly higher rate of 5.1 deaths out of every 1,000 births. Black infants are much more likely to die before their first birthday, with an infant mortality rate of 10 deaths per 1,000 births.[12]

Prevalence and severity of major diseases also varies by race and ethnicity. Deaths from diabetes are 75 percent higher for Blacks than Whites in Texas, at 20.1 deaths per 100,000 people for Whites and 35.1 deaths per 100,000 people for Blacks.[13] Deaths from cancer are also higher for Blacks, with 180.5 deaths per 100,000 people for Whites, 142.4 deaths per 100,000 for Hispanics, and 217 deaths per 100,000 people for Blacks in Texas.[14] Finally, deaths from cardiovascular disease are higher for Blacks in Texas, at rates of 264.1 deaths per 100,000 people for Whites and 214.7 per 100,000 for Hispanics, compared to 352 per 100,000 for Blacks in Texas, a rate one-third higher than the White rate and two-thirds higher than the Hispanic rate.[15]

1.2 DISPARITIES IN DRIVERS OF HEALTH

While individual factors can be important predictors of some health conditions, the circumstances of our lives – what we call the social determinants of health – are believed to have an even bigger lifetime impact on our health and longevity, especially when they create challenges to staying healthy.[16] Social determinants of health include the quality of air and water in our community[17,18], the availability of healthy food, opportunities for safe outdoor activities and physical exercise, the strength of social support systems, the opportunities for education and employment, access to quality health care, and the exposure to crime and risk of harm or loss.

There are significant differences in the social and environmental determinants of health among different racial and ethnic groups in Texas. These differences can be reduced, and the health of the population improved through public policies and funding decisions at the state and local level. The Houston Health Department recently produced an in-depth exploration of environmental, social, and economic drivers of health disparities and recommendations for action in Texas.[19] Here we highlight key metrics for the state on disparities in access to health care and other social determinants of health. We also identify potential reasons for the greater impact of COVID-19 on Black and Hispanic populations in Texas.

Access to Care

Texas has the largest population of uninsured of any state in the U.S., and the highest percentage of the population without health insurance. In 2018, 20 percent of Texans under age 65 – nearly 5 million people – lacked health insurance. Hispanic families are especially likely to be uninsured. Of adults under age 65, 29 percent of Hispanics lack health insurance, along with 17 percent of Blacks, 13 percent of Whites, and 12 percent of Asian-Americans.[20]

Studies comparing people who gain health insurance with those remaining uninsured have confirmed that those gaining coverage receive more health care, have better physical and mental health, and have improved financial stability.[21,22] For children, having health insurance has been shown to improve long-term health and well-being, including lower rates of adult diabetes and heart disease, fewer preventable hospitalizations, reduced mortality from preventable causes, and even improved academic and economic outcomes.[23]

The 2019 Texas Health Policy Survey confirms that health care is a financial burden for many families and that Texans are foregoing care because of the cost.[24] The survey found that two-thirds (67%) of Hispanic families, 60 percent of Black families, and 44 percent of White families report that it is difficult for their family to afford health care. About half of White families reported skipping or postponing care or treatment because of the cost, a figure that rises to 70 percent for Black families and 65 percent of Hispanic families.

The people of Texas recognize the importance of health care access and coverage. The 2019 Texas Health Policy Survey finds that most Texans (59%) say the state is not doing enough to make sure low-income adults are getting the health care they need, and that nearly two-thirds (64%) of Texans believe that the state's Medicaid program should be expanded to cover more low-income, uninsured people.[25] An overwhelming majority (91%) of Texans say they believe state government should play a role in making sure the health care system works well.

Social Determinants of Health

About one in five Black (20%) and Hispanic (21%) Texans are living in poverty, as are 12 percent of Asian-American and 9 percent of White Texans.[26] In addition to examining rates of poverty, it is important in the context of social determinants of health to look at those living in areas of concentrated poverty. Research shows that when 20 percent or more of families in a neighborhood are poor, there is a measurable impact on resources and opportunities available, and on children's life outcomes.[27] In Texas, Hispanic and Black children are six to seven times more likely than White children to live in an area of concentrated poverty, with 22 percent of Hispanic children, 17 percent of Black children, 5 percent of

Asian-American children and 3 percent of White children living in areas where 30 percent or more of families are living in poverty.[28]

Black and Hispanic children in Texas are also more than twice as likely as White children to live in communities that are deemed unsafe by those that live there, increasing both the likelihood of harm or loss and the level of ongoing stress. Based on data from the U.S. Department of Health and Human Services' National Survey of Children's Health, 19 percent of Black and Hispanic children in Texas are living in neighborhoods that are considered sometimes or always unsafe, compared to 8 percent of White children.[29]

Housing instability and financial insecurity can have negative effects on physical and mental health. Homeownership, a major source of middle class wealth building, is much higher for White families than families of color in Texas. More than 70 percent of White families own homes, compared to 63 percent of Asian-American families, 57 percent of Hispanic families, and 39 percent of Black families.[30] Due to the multi-generational impacts of differences in homeownership and other opportunities for wealth accumulation, net worth varies even more than income. Net worth, or a family's net assets, helps families weather financial hard times and provides capital for investment in education or entrepreneurship, bettering lives today and supporting upward mobility for the next generation. In Texas, Black and Hispanic families have an average net worth of about $36,000, while White families have an average net worth of $151,000.[31]

1.3 DISPARITIES IN COVID-19 RISKS, CASES, AND OUTCOMES

As of the end of September 2020, there have been more than 760,000 cases of COVID-19 in Texas and 16,000 deaths. According to the Texas Department of State Health Care Services, 70 percent of the confirmed fatalities were people of color.

COVID-19 mortality rates for Blacks and Hispanics are higher than for non-Hispanic Whites. In Texas, mortality rates are 30 percent higher for Blacks and 80 percent higher for Hispanics overall. However, the differences become much larger when accounting for age. For, example, in the 25 to 44-year-old age group, Black mortality rates are more than four times higher than White rates, and the Hispanic rates are more than seven times higher.

One factor in Hispanic and Black populations being more likely to contract COVID-19 is employment in occupations associated with public contact and that cannot be done remotely. These workers may also be less able to be absent from their job or to have paid time off. In Texas, people of color are more than 40 percent of cashiers, retail salespersons, child care workers, licensed practical nurses, more than 50 percent of bus drivers and transit workers, medical and nursing assistants, personal care aides, and home health aides, and more than 60 percent of building cleaners and housekeepers.[32]

In addition, as we highlighted earlier, Hispanic and Black populations in Texas are less likely to have health insurance and to have a regular health care provider, so less likely to seek or receive early care for symptoms, especially in the first months of the epidemic. We also saw that Black and Hispanic populations are also more likely to have an underlying health condition that makes them more vulnerable to the effects of COVID-19.

2 Economic Impacts of Health Disparities in Texas

The focus of this study was to estimate the economic burden represented by differences in health for historically minority racial and ethnic groups, primarily the Hispanic and Black populations in Texas. The basic approach for each type of economic impact was to compute costs under the current health of each racial/ethnic group, and then compute what costs would be if all racial/ethnic groups had the profile of the healthiest group in Texas for their corresponding age and gender. The gap between these two estimates represents the economic burden, or the lost economic potential, of racial/ethnic disparities in health. Our approach assumes that there may be conditions in Texas that affect the health of all populations, but that the gaps among racial and ethnic groups within Texas could and should be narrowed, and that the average already being achieved by the healthiest groups represents a reasonable target. The Appendix to this report presents more detail on our data and methods.

2.1 EXCESS HEALTH CARE SPENDING

If disparities in health by race and ethnicity in Texas were eliminated, then the health care spending associated with these differences in health would also be eliminated. We produced an estimate of the potential decrease in health care spending using econometric models developed by members of the study team and applied in similar studies over the past decade, including previous work in Texas.[33] these models use data from the Medical Expenditure Panel Survey (MEPS) to relate health status and the presence of various health conditions to health expenditures.

As described in more detail in Section A.2 of the Appendix, we used these models to produce an estimate of health care spending given current health disparities and an estimate of health spending with the health profile of all racial and ethnic groups set to that of the healthiest group. The difference between the two estimates is our estimate of excess health spending associated with racial and ethnic health disparities.

As of 2020, we estimate that **$2.7 billion** per year in excess health care spending is associated with current health disparities by race and ethnicity in Texas. This spending includes government payer, private insurer, and patient out-of-pocket spending on health care services and goods such as hospital care, physician services, home health care, vision and dental care, ambulance services, medical equipment and prescription drugs.

2.2 LOST PRODUCTIVITY

Productivity impacts of health disparities include differences in days off work due to illness, the likelihood of working and hours worked per year, and the impact on wages due to ill-health. As described in more detail in section A.2 of the Appendix, the team again applied a set of econometric models developed using MEPS data to estimate the labor market productivity impacts of health. Using a multi-step process, these models relate health status, disability, and illness to sick days, annual hours of work, and wages for working age adults. Following the same general approach as for other economic impacts, the models were used to produce productivity outcomes under current health disparities and under the scenario where all groups had the health profile of the healthiest group in Texas, with the difference representing the potential productivity gains associated with eliminating current disparities.

We estimate that the productivity gains associated with eliminating health disparities would be on the order of **$5 billion** per year. About **$40 million** of this figure is associated with healthier workers taking fewer days off work due to poor health. Another **$2.4 billion** is associated with healthier people having a higher probability of being employed and working more hours when employed. The remaining **$2.2 billion** reflects higher wages associated with better health (likely reflecting greater on-the-job productivity). About $3.9 billion of the total $5 billion potential productivity impact is associated with eliminating disparities in health experienced by the Hispanic working age population in Texas, $1 billion is associated with the Black population and just over $100,000 is associated with the Asian-American population.

2.3 PREMATURE DEATHS

Applying Texas-specific death rates (pre-COVID-19) for each racial and ethnic group and comparing the results to the deaths that would have occurred using the lowest death rates for that age/gender category in Texas produced an estimate of premature deaths due to health disparities. Based on these premature deaths by age, we computed lost life years by assuming people would have lived to age 75 had these deaths not occurred prematurely.

We estimate that disparities in health and life expectancy are associated with **452,000 lost life years** in Texas today, split about evenly between Blacks and Hispanics. Using a valuation of $50,000 per life year, which is at the low end of standard values used in cost-effectiveness analyses for medical interventions,[34] this loss of life carries an economic toll of **$22.6 billion.**

2.4 ECONOMIC IMPACTS OF COVID-19 DISPARITIES

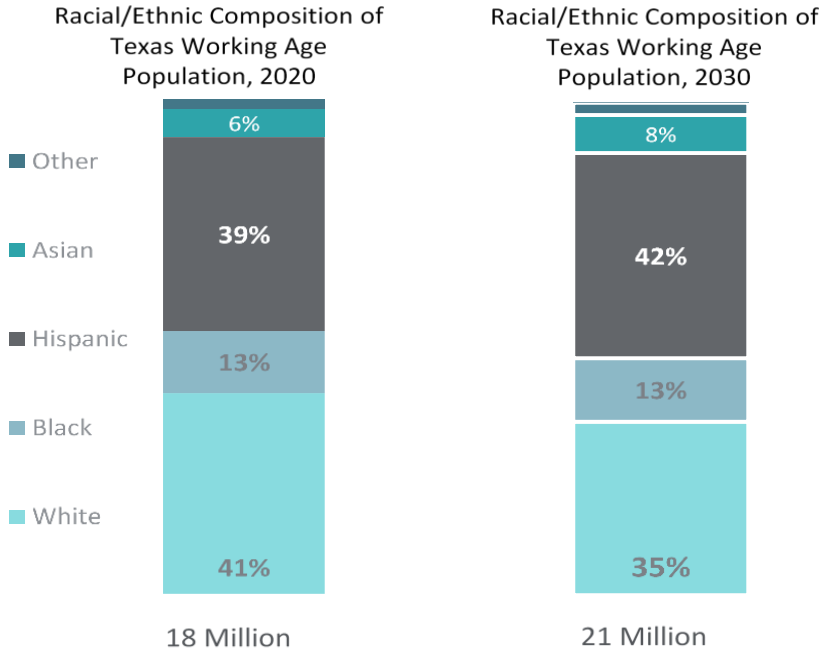
The current COVID-19 pandemic is raising the stakes and the visibility of health disparities in Texas and throughout the country. People of color are more likely to contract COVID-19, and those with the virus are more likely to require hospitalization. National data on COVID-19 hospitalization rates by race and ethnicity show that Black and Hispanic populations are hospitalized at triple the rates of the non-Hispanic white population. If Black and Hispanic populations in Texas had the same COVID-19 hospitalization rates as non-Hispanic Whites, we estimate there would have been **24,000 fewer hospitalizations**, saving an estimated **$558 million** in health care costs. Of course, this figure represents just one component of the additional cost burden and does not account for the toll on families, lost work time, or any long-term health impacts.

We have noted the much higher COVID-19 fatality rates for Black and Hispanics in Texas, especially when adjusted for age, since populations of color are dying younger. If Black and Hispanic populations in Texas had the same age-specific mortality rates as their non-Hispanic White counterparts, there would have been **5,000 fewer deaths** as of the end of September 2020, reducing the death toll by 30 percent, from 16,000 to 11,000. These premature deaths represent 60,000 life years lost by Texans, their families, colleagues, and communities. A conservative estimate of the economic value of these lost life years using $50,000 per life year is **$3 billion**.

3 The Price of Inaction

If current disparities in health remain, the impacts will grow in the years to come. The Texas population is projected to grow from 29.7 million people in 2020 to 34.9 million people by 2030.[35] Nearly 90 percent of this population growth is expected to come from people of color, about half from Texans of Hispanic ethnicity.

While Texas has a relatively young and fast-growing population compared to many parts of the country, the population of Texas is aging. The number of people age 65 and older is projected to grow by 40 percent over the next 10 years, from 3.9 million today to 5.6 million in 2030. Today, there are 4.7 people of working age (age 18 to 64) for every person of retirement age. In ten years, this ratio will drop to 3.7 people of working age for every older Texan.



The working age population in Texas is projected to grow by 10 percent over the next 10 years, from 18.3 million in 2020 to 20.9 million in 2030, and all the growth in this population will come from populations of color. In fact, the non-Hispanic White population of working age is projected to shrink by 2 percent. Texans of working age drive the workforce and tax base of communities and the state. They contribute economically and as caregivers to the retirement and health care needs of the older population. With fewer workers per retiree, it is especially important for the workforce in the coming years to be healthy and productive.

By 2030, if current disparities in health remain, the growth and changing racial and ethnic composition of the population will increase excess medical care spending due to health disparities to **$3.4 billion** per year.[36] The productivity costs of disparities by 2030 will be **$6.1 billion** per year. Without a closing of the gaps in mortality rates, an estimated **551,000 life years** will be lost due to disparities in health, at a conservative valuation of **$27.6 billion**.

Policies and programs to improve the health of the people of Texas are a long-term investment. Looking out a generation, by 2050, when today's children are in their prime working years, the Texas population is projected to grow from 29.7 million to 47.3 million people. More than 90 percent of this growth will come from people of color, about half from the Hispanic population and about one-quarter from the Asian-American population. The working age population in Texas is projected to grow from 18.3 million to 28.3 million, and to shift from about 60 percent people of color today to nearly three-quarters people of color. By 2050, if current disparities in health and life expectancy remain, excess medical care spending will double, to **$5.4 billion** per year, the productivity loss will be **$8.5 billion** per year, and an estimated **770,000 life years** would be lost, at a conservative valuation of **$38.5 billion**.

Appendix: Data and Methods

A.1. POPULATION ESTIMATES AND PROJECTIONS

We used population data from the Texas Demographic Center, 2018 Population Projections, to estimate the total and working age population in 2020, 2030, and 2050 for Non-Hispanic White, Non-Hispanic Black, Hispanic, Non-Hispanic Asian, and Non-Hispanic Other racial and ethnic categories.[37] We defined the working age population as the sum of age categories 18-24, 25-44, and 45-64.

A.2. ESTIMATING THE ECONOMIC BURDEN OF HEALTH DISPARITIES

We estimated the economic impacts of health disparities in Texas in three separate, but related, economic analyses:

1. Estimating the direct medical costs;
2. Estimating the value of lost productivity associated with health disparities; and
3. Estimating the costs of premature death.

We used data from the Medical Expenditure Panel Survey (MEPS)[38,39] to estimate the potential cost savings of eliminating health disparities for racial and ethnic minorities. We divided the sample into 14 cohorts based on gender and seven age groups: 18-24, 25-34, 35-44, 45-54, 55-64, 65-74, and 75 and over. Within each cohort, we computed the prevalence for several health conditions for four mutually exclusive racial/ethnic groups -- African Americans, Asians, Hispanics, and whites. Hispanics are persons of Hispanic origins regardless of race. The other racial groups include only non-Hispanics.

The health status and health conditions measures were:

- Self-reported general health status (ranging from excellent to poor)
- Self-reported mental health status (ranging from excellent to poor)
- Presence of a functional limitation
- Body mass index (BMI)/obesity measure
- Presence of chronic conditions (diabetes, asthma, asthma attack, high blood pressure, heart attack, angina, other heart disease, stroke, emphysema, joint pain, arthritis, and cancer).

After computing these values for Texas, we determined which racial/ethnic group had the best health outcomes within each age/gender cohort for each health status/condition. In most cases, it was Asians, but in a few cases Whites or Hispanics had the best health profile within a given age/gender group.

We estimated the impact of these health conditions on health care expenditures, days off from work because of the health condition, annual hours off work because of the health condition, and reduced hourly wages because of the health condition. We then simulated the health care and labor market outcomes by assigning each minority group the best health profile, i.e., eliminating disparities in health in the corresponding age/gender cohort. We computed the costs of disparities as the difference between the predicted outcomes with the actual health conditions and predicted outcomes with the

simulated health conditions.

We used econometric models developed for prior studies to simulate direct health care costs and labor market productivity[40,41] Using 2014 data, we developed a model to estimate health care expenditures for each racial/ethnic group (African American, Asian, Hispanic, and White). Total expenditures in MEPS include both out-of-pocket and third-party payments to health care providers, but do not include health insurance premiums. Expenditures for hospital-based services include inpatient, emergency room, outpatient (hospital, clinic, and office-based visits), prescription drugs, and other services (e.g., home health services, vision care services, dental care, ambulance services, and medical equipment). Prescription drug expenditures do not include over-the-counter purchases. We estimated health care spending as function of demographic, socioeconomic, geographic, and health status measures.

We used a two-part health care expenditure model.[42,43,44,45] First, we used a logistic regression model to estimate the probability of having any type of health care expenditures. Second, we used generalized linear models with log link and gamma expenditures to predict levels of expenditures for individuals with positive expenditures.

To compute the value of lost productivity, we developed three labor market models using the 2014 MEPS. We estimated the impact of health status, disability and illness on sick days, annual hours of work and wages for working age adults, ages 25-64. The model specifications depended upon the dependent variables. For missed days of work, we estimated the impact of health on the probability of missing a workday during the year followed by generalized linear models to predict levels of days of work missed for individuals with positive days of work missed.

We used two-part models for hours worked and wages, too.[46] The first part estimated the impact of health status on the probability that an adult is working. The second part estimated the impact of health on hours worked and hourly wages. Combining the results from these different parts of the models, we computed the productivity costs associated with health disparities. We used a two-step estimator for labor supply to predict lost productivity due to health disparities and adjusted the models by using an inverse mills ratio to account for potential selection bias.[47,48] The health expenditure and labor market models were estimated using the survey regression procedures in STATA 15, which appropriately incorporate the design factors and sample weights.

We computed the predicted values for direct and indirect savings for Texas using Monte Carlo simulations for the different race/ethnic groups (Blacks, Hispanic, and Asians) and for the best model (the racial group with the best prevalence) using the model coefficients (Direct & Indirect Costs). We randomly chose "10000" samples to get "one" predicted probability and "one" predicted mean for the models. We repeated this exercise 1000 times, so we could get 1000 predicted probabilities and 1000 predicted means by race (Stata 15 was used to complete the Monte Carlo simulations). We did not have access to the 2016 Texas MEPS data. To calculate the predictors for Texas in 2016, we used the changes in these variables for the South Region from 2014 to 2016 and applied them to the 2014 Texas data.

We used data from Texas State Vital Statistics to compute the costs of premature death. Specifically, we obtained the number of deaths and crude death rates by age and race for 2015 (the data included seven age groups: under 1, 1-14, 15-24, 25-34, 35-44, 45-54, 55-64, and 65-74). We then estimated the

number of deaths that would have occurred for each racial/ethnic group if every group's death rate were equal to that of the racial/ethnic group with the lowest death rate within the age/gender category. The difference between the actual number of deaths and the estimated deaths represents "excess deaths." For each age group, we computed number of years of life lost by subtracting its midpoint from 75, designating death prior to age 75 as premature. We valued each year of life lost at $50,000.[49] This figure is based on the standard value used in cost-effectiveness analysis for medical intervention. Given that more recent studies have valued a quality-adjusted life year at $95,000 to $264,000[50], $50,000 is a conservative estimate.

The results of our analyses are shown in Table 1.

TABLE 1

Direct Medical Care Costs, Loss of Productivity Costs and Costs of Premature Death Attributable to Health Disparities for the State of Texas (in $2016 billions)

	Blacks	Hispanics	Asians	Total
Direct Costs	**1.73**	**0.13**	**0.30**	**2.17**
Indirect Costs				
Days	0.11	0.19	0.00	0.30
Hours	0.18	1.77	0.10	2.05
Wages	0.59	1.32	0	1.90
Sub-total Indirect Cost	**0.87**	**3.41**	**0.10**	**4.25**
Premature Death	**10.34**	**10.42**	**0.01**	**20.77**
Grand Total	**12.94**	**13.83**	**0.41**	**27.19**

Authors' calculations using data from the 2014 Medical Expenditure Panel Survey (MEPS); Models adjusted for age, gender, race, marital status, insurance status, education, family income, health status, health conditions and location (urban/rural status and region) and using vital statistics data from Texas Department of State Health Services Annual Vital Statistics Report: Table 24 Life Tables by Race/Ethnicity and Sex.

A.3. APPLYING MODEL RESULTS TO 2020 AND FUTURE YEARS

The detailed modeling described in the previous section produced estimates of the economic burden expressed in 2016 dollars (Table 1). Since our study uses 2020 as the current year, we adjusted the estimates to represent the 2020 Texas population and to be expressed in 2020 dollars.

We expressed these estimates in 2020 dollars using the Medical Consumer Price Index (CPI)[51] for direct medical care costs and the Gross Domestic Product (GDP) deflator from the Bureau of Economic Analysis[52] for productivity and premature death economic impacts.

We adjusted the estimates to represent the 2020 population as follows. First, we computed per capita impacts by dividing 2016 impacts by race/ethnicity (expressed in 2020 dollars) by 2016 population counts for the corresponding race/ethnicity. Total populations were used to compute per capita excess health care cost and longevity impacts and working age populations (age 18 to 64) were used to compute per capita productivity impacts. We then applied the 2016 per capita impacts, expressed in

2020 dollars, to the 2020 populations for each race/ethnicity group, using total populations for health spending and longevity impacts and working age populations for productivity impacts.

For 2030 and 2050 economic impact estimates, we followed a similar method, multiplying the 2016 per capita estimates (expressed in 2020 dollars) by projected populations for each racial or ethnic group. Note that economic impacts in 2030 and 2050 are still expressed in 2020 dollars; in other words, they do not include the effects of inflation.

A.4. COVID-19 ECONOMIC IMPACTS

We computed the excess hospitalization costs of COVID-19 through September 2020 by first estimating excess hospitalizations. While the evidence from the Texas Department of Health Services shows show higher COVID-19 case rates for Blacks and Hispanics in Texas, no data were available tracking COVID-19 hospitalizations in Texas by race and ethnicity; therefore, we used national COVID-19 hospitalization rates for Black, Hispanic, and White Americans. Nationally, COVID-19 rates for Blacks and Hispanics are about triple the White rate, at 92.9 per 100,000 people for Whites, 311.2 per 100,000 for Blacks and 278.1 for Whites. Multiplying the hospitalization rates for Blacks and Hispanics by the respective Texas populations, we estimated the number of COVID-19 hospitalizations in Texas for these groups.[53] We then computed what hospitalizations would have been if Blacks and Hispanics had been hospitalized at the White rates. The difference was 23,736 hospitalizations. We estimated the health care costs associated with these excess hospitalizations by multiplying 23,736 hospitalizations by the average cost per COVID-19 hospitalization by payer of $23,489 estimated by Avalere.[54]

We estimated excess deaths due to COVID-19 disparities by first dividing counts of COVID-19 deaths by age group and race/ethnicity for Texas reported by the CDC[55] by our estimates of the Texas population by age group and race/ethnicity in 2020 to produce death rates. Note that the CDC data showed total COVID-19 deaths in Texas as of September 26, 2020 of 15,950, very consistent with the Texas Dashboard data showing 15,895 deaths through October 2, 2020. We then applied the White death rate by age group to the Black and Hispanic populations in the corresponding age group to compute numbers of deaths if disparities in mortality were eliminated. This resulted in 11,000 deaths, compared to about 16,000 actual deaths, for an estimate of 5,000 excess deaths. We estimated life years lost associated with these 5,000 excess deaths by choosing a representative age for each age group (e.g., the midpoint), subtracting that age from an assumed life expectancy of age 75, and multiplying by the number of excess deaths for that age group. Consistent with the overall economic burden methodology, we used $50,000 per life year to put an economic value on these life years lost.

Endnotes

[1] Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved November 2020 from https://health.gov/healthypeople/objectives-and-data/social-determinants-health

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[5] These and other economic impact estimates in this report are expressed in 2020 dollars. Unless otherwise identified, estimates are based on 2020 Texas population estimates by age, sex, and race/ethnicity. Data sources and methods are provided in the Appendix.

[6] Life years lost valued at $50,000 per life year, at the low end of estimates used in cost-effectiveness analysis. See Appendix for references.

[7] While the data show higher COVID-19 case rates for Blacks and Hispanics in Texas, no data were available tracking COVID-19 hospitalizations in Texas by race and ethnicity; therefore, we used national COVID-19 hospitalization rates for Black, Hispanic, and White Americans applied to the Texas population.

[8] 2020 estimates by age group and race-ethnicity and all Texas population projections in this report are from the Texas Demographer Center, Texas Population Projections Program, 2018 Population Projections by Age, Sex, and Race/Ethnicity, 2010-2050. Downloaded from http://osd.texas.gov/Data/TPEPP/Projections/ on August 14, 2020.

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