Estimating the Cost of Racial and Ethnic Health Disparities

Timothy Waidmann
The Urban Institute

September 2009

About the Author: Timothy Waidmann, Ph.D., is a senior research associate in the Health Policy Center of the Urban Institute. His research focuses on the economics and demography of health, disability, and retirement. He is interested in differences in health and the use of health care along lines of ethnicity, race, and immigration status, and in the potential cost impacts of primary disease prevention. He is also interested in the roles of Medicare and Social Security Disability Insurance in supporting elderly and near-elderly with chronic health problems. He has studied trends in disability among the elderly and their implication for public financing of health care and is involved in several projects examining the impact of individual health changes on the retirement decisions of older adults.

Estimating the Cost of Racial & Ethnic Health Disparities

Summary

The reduction or elimination of racial and ethnic disparities in health has long been a goal of policymakers concerned with equity. An often overlooked point, however, is that excess rates of disease impose cost burdens on public programs as well as individuals and other purchasers of private health insurance. The analysis presented in this policy brief estimates the magnitude of current cost burdens both nationally and for several large states for a select set of preventable diseases. We estimate that in 2009, disparities among African Americans, Hispanics, and non-Hispanic whites will cost the health care system $23.9 billion dollars. Medicare alone will spend an extra $15.6 billion while private insurers will incur $5.1 billion in additional costs due to elevated rates of chronic illness among African Americans and Hispanics. Over the 10-year period from 2009 through 2018, we estimate that the total cost of these disparities is approximately $337 billion, including $220 billion for Medicare. We also estimate the impact on these costs of the dramatic changes in the demographic profiles of African Americans and Hispanics that have been projected over the coming decades. We find that even without taking into any account projected growth in per capita spending, these annual costs will more than double to $50 billion by 2050 as the representation of Latinos and African Americans among the elderly increases.

Background

The problem of disparities in health between racial and ethnic groups in the United States is well known. (Mead et al. 2008; Agency for Healthcare Research and Quality 2008; Halle, Lewis and Seshamani 2009) A goal of federal health policy is to reduce those disparities, and federal and state offices of minority health guide those efforts. While the moral case for these policies is straightforward, it is also likely that excess disease burden imposes economic costs, which is an important element in making the "business case" for reducing disparities. (Leatherman et al. 2003; Bovbjerg, Hatry and Morley 2009) The goal of this analysis is to quantify this cost burden to the health care system as a whole and to the Medicare and Medicaid programs in particular. As Congress and the administration make decisions about budgets and national health reform legislation that affect disparity reduction efforts, knowledge of the potential economic benefits of those programs is crucial.

Tabulations of disease prevalence based on the 2003–5 waves of the Medical Expenditure Panel Survey (MEPS), shown in figures 1 and 2, demonstrate the nature of disparities in several chronic diseases. For example, diabetes prevalence increases with age for all race/ethnicity groups, but it does so much more rapidly for African Americans and Hispanics than it does for whites. For those 65–74, the prevalence among whites is approximately half that of the other two groups. High blood pressure prevalence also increases more rapidly for the two non-white groups, but the differences are not as dramatic, and the disparity between Hispanics and non-Hispanic whites does not become apparent until very old ages. The disparity pattern for heart disease is quite different, with the prevalence among whites growing more rapidly than for the other two groups, most dramatically relative to Hispanics. The remaining two conditions related to high blood pressure and diabetes—renal disease and stroke—are relatively rare in the sample

population, so they are combined in our analysis. Both are very costly as well. The disparity

pattern for these conditions is similar to that of high blood pressure in that Hispanics tend to look

more similar to whites, while African Americans have generally higher prevalence throughout

the age distribution. Figure 2 shows patterns of disparity for three other conditions, all of which

have higher prevalence among whites than among the other two groups. These findings from the

MEPS are similar to those in the larger National Health Interview Survey. (Pleis and Lucas

2009)

Because the focus of national policy on disease disparities is to reduce the prevalence

among minorities when they exceed that of non-Hispanic whites, we focus our analysis in this

paper only on such conditions: diabetes, hypertension, stroke and renal disease. Along with heart

disease, these conditions are thought to be among the most amenable to reductions in prevalence

through disease prevention and management. (Aldana et al. 2006; Levi, Segal and Juliano 2008)

To capture health disparities not specifically defined by these conditions, we also include a

commonly used self-reported measure of general health status, and measure disparities in the

fraction of respondents rating their health as either fair or poor on a scale from poor to excellent.

This measure has been shown to be predictive of not only higher medical care spending but

future mortality. (Idler and Benyamini 1997)

Data and Methods

The primary source of data used in this analysis is the Medical Expenditure Panel Survey

(MEPS). MEPS is a nationally representative survey of the noninstitutional population of the

United States that collects detailed information on health care utilization and spending.

Respondents are followed for two years, and interviewed at regular intervals to obtain data on

contacts with medical care providers, the reasons for those contacts, costs and sources of payment.

We first estimate regression models of spending as a function of disease prevalence by age. We estimate separate models of spending by Medicare, Medicaid, private insurance, and out-of-pocket spending by individuals. Each model includes controls for age, sex, insurance coverage, education, and income, and is estimated at the national level. Because of the very different age distributions of the three racial/ethnic groups seen in figure 3, we use the age-specific cost estimates for each disease to calculate the total cost effect of prevalence differences in those diseases between African Americans and non-Hispanic whites, and between Hispanics and non-Hispanic whites.

Using the coefficient estimates from these regression models, we then calculate the percentage change in per capita spending (by payer) for African Americans and Hispanics of changing age-specific prevalence rates for diabetes, hypertension, stroke, renal disease, and fair/poor health to those of non-Hispanic whites. To calculate the fraction of total spending for each payer that is attributable to disparities, these per capita percentage changes are multiplied by the share of total spending accounted for by each ethnic group as estimated from the MEPS data.

To protect confidentiality, the MEPS does not identify state of residence for its respondents. To estimate state-level costs, we employ a propensity score reweighting technique based on the Current Population Survey (that does identify state of residence) from the same period to identify the demographic and economic characteristics of individuals residing in the 10 largest states. For each state studied, we then adjust the weights of MEPS sample members residing in the same geographic region to create samples that mimic the demographic and

economic profile of the state. (Ormond et al. 2009) Using these reweighted data, we compute cost estimates for the observed disparities in each "state."

Finally, since the MEPS is known to undercount health spending nationally, (Sing et al. 2006) we use the MEPS to calculate only the share of total costs by program and race/ethnicity that is associated with excess disease prevalence. As a baseline for national estimates we use the National Health Expenditure (NHE) projections for 2009. (Centers for Medicare and Medicaid Services 2009) Specifically, we use estimates for personal health expenditures after subtracting nursing home expenditures. We do this because the MEPS sample includes only non-institutionalized persons. We do not attempt to estimate the magnitude of nursing facility expenditures attributable to the diseases we include in our analysis. For state estimates, the most recent NHE estimates are for 2004. We inflate these to 2009 assuming that each state's expenditures grow at the national average between 2004 and 2009 as estimated and projected by the NHE. We assign a separate growth rate assumption for each payer. These are 60 percent for Medicare, 29 percent for Medicaid, 41 percent for private insurers, and 28 percent for individuals' out-of-pocket expenditures.

To calculate 5 and 10 year estimates of costs, we apply the same proportional adjustments used for 2009 calculations to the NHE estimates (by payer) for 2010–2018. To calculate projected costs in 2050, we reweighted observations in the 2003–5 MEPS by race/ethnicity and five-year age intervals so that they match the Census bureau projections for 2050. (U.S. Bureau of the Census 2008)

National Results
Table 1 presents cost estimates for the selected disease disparities by payer. In the first panel, restricting our analysis to Medicare, we estimate that disparities in diabetes, hypertension, stroke

and renal disease among both African American and Hispanic beneficiaries will result in excess costs to the Medicare program. If we also include the excess costs associated with disparities in general health status, health disparities for the two groups cost the Medicare program more than $15 billion in 2009.

Among Medicaid beneficiaries, the results are less dramatic. Largely this is a result of smaller absolute disparities at younger ages combined with dramatically higher per capita spending among older Medicare beneficiaries, and the secondary payer status of Medicaid for dual-eligible beneficiaries. Nonetheless, we estimate that black/white health disparities result in excess costs of over $2 billion to Medicaid programs nationally. The Hispanic/white disparity patterns among Medicaid beneficiaries are such that making Hispanic beneficiaries more like white beneficiaries would result in increased rather than decreased costs for the program.

Taken together, however, the two largest public sector health insurers, Medicare and Medicaid, do experience excess costs for both African Americans—more than $12 billion annually in combined costs—and Hispanics—nearly $5 billion—as a result of the health disparities studied here.

We also estimate costs for private insurers and to individuals as out-of-pocket expenditures. Here we estimate that black/white disparities result in substantial excess costs for private insurers ($4.9 billion annually), but that the same is not true for the disparities between Hispanics and whites (only $233 million). Finally, considering payments made to providers directly by individuals, we estimate that excess disease prevalence among African Americans results in more than $2 billion per year in out-of-pocket costs. For Hispanics, there are no excess out-of-pocket costs, but rather a small reduction caused by disparities. Once again, age plays a

large role in cost estimates as older persons with (Medicare) insurance coverage and higher per capita spending are also those with the largest disease disparities.

To facilitate comparison with the costs of health reform and other federal budget items, table 2 summarizes the estimates over 5-year (2009–2013) and 10-year (2009–2018) windows based on National Health Expenditure projections, assuming no change in the makeup of the population or in disease prevalence over that period. (Centers for Medicare and Medicaid Services 2009) Over 10 years, the combined cost to all four sources of payment analyzed is estimated at $337 billion. The cost to the Medicare program of the two groups' disparities is approximately $220 billion. The state and federal cost to the Medicaid programs is a more modest $27 billion, while private insurers and individuals are estimated to pay more than $90 billion over the period because of disparities in these conditions.

Results for Selected States

Table 3 presents results of the analysis of the 10 largest states. Because the public-release version of the MEPS does not identify the state of residence, we estimate the percent of total costs that are due to disparities for a population that matches the demographic profile of each state. As a result, the accuracy of our estimates depends on how well the racial and ethnic groups' spending patterns in each state fit with national patterns for those groups. We then apply those estimates to state spending baselines estimated by CMS actuaries in the NHE. Here we report only the sum of four disease/health conditions reported in table 1.

As in the national estimates, the costs of disparities across states are largest for the Medicare program. Variations in state Medicaid baselines and smaller health disparities in the non-elderly population result in smaller and considerably more variable estimates of excess costs for Medicaid programs. Similar to the national results, the estimates are most consistent for the

African American population, but for all but two states, the combined effect on public sector health insurers is that disparities for both African Americans and Hispanics result in excess costs in each of the 10 largest states. In Georgia and North Carolina, demographic and disparity patterns for Hispanics suggest that they do not impose an excess cost on public programs. Among the largest states, the concentration and demographic profile of Hispanics in California, Texas, New York, and Florida result in the largest excess costs associated with Hispanic/white disparities. These states have been traditional destinations of Hispanic immigrants, and as a result have larger numbers of Hispanic Medicare beneficiaries.

Private insurers and individuals bear excess costs of black/white disparities in each of these states, but disparities between Hispanics and non-Hispanic whites result in excess private costs only in California, New York, and Pennsylvania.

Effects of Future Demographic Changes

Finally, the estimates presented so far are valid for the demographic makeup of the population today. The Census bureau predicts significant growth and significant aging of the nonwhite populations over the coming decades. (U.S. Bureau of the Census 2008) To illustrate what effect these demographic shifts might have on the costs of health disparities, in table 4 we apply our findings to the population in 2050 as predicted by the Census. If we assume that there is no improvement in health disparities, even with no growth in the per capita cost of health care, there will still be a dramatic growth in the cost of disparities between Hispanics and non-Hispanic whites. As the Hispanic population ages, the effect of health differences among the elderly on Medicare costs will be magnified the most, growing from $5.5 billion in 2009 (table 1) to nearly $16 billion (in 2009 dollars) by 2050. Medicaid costs will begin to appear for Hispanics as well as African Americans, and private payers will also bear an increased burden of disparities.

Overall, the total cost of disparities would more than double (from $23.8 billion this year to over $50 billion in 2050.)

Discussion

The analysis presented suggests that racial and ethnic disparities in several chronic diseases, especially when they occur among older individuals, can result in substantial costs. Because both medical spending due to chronic illness and the magnitude of the disparities tend to increase as people age, the bulk of these costs are borne by the Medicare program. However, private insurers, Medicaid, and individuals do bear some of the burden, especially for disparities between African Americans and whites.

According to Census Bureau projections, as the whole population ages over the coming decades, racial and ethnic minorities will constitute an ever larger share of the Medicare-age population. Currently Hispanics make up approximately 7 percent of the population over 65, but by 2050, they will account for just under 20 percent, nearly tripling their share of the elderly. The share of nonelderly who are Hispanic is not likely to increase quite as rapidly, but it is projected to nearly double by 2050. (U.S. Bureau of the Census 2008) If current health disparities persist, the overall prevalence of disease will likely increase as the share of the group with poorer health grows, (Boyle et al. 2001) and, as a consequence, the cost of the disparities in these diseases will increase.

Finally, two caveats seem warranted in interpreting these results. By the construction of the MEPS data, the estimates of costs and reports of disease are based not on underlying prevalence of disease, but on rates of utilization. Costs for those with undiagnosed disease will not appear in our estimates, and some research suggests these costs are substantial. (Zhang et al. 2009) Other research suggests that those without insurance more likely to have cases of

undiagnosed disease. (Ayanian et al. 2003) Thus, we may understate disparities and thus the costs of those disparities for groups with higher rates of uninsurance. This is likely to be an important issue for Hispanics, who have substantially higher rates of uninsurance than whites.

Second, the state estimates should be interpreted with caution. Using restricted data, it is possible to identify the state of residence for respondents, and any conclusions based on state-level estimates would be more reliable if such data were used. The estimates provided here are only intended to show how states with different demographic compositions are likely to be affected by disparities.

Table 1. National Estimates of the Cost of Selected Health Disparities, 2009

	Estimated cost of racial and ethnic disparities in prevalence of selected chronic illnesses: 2009 ($millions)[a]		
	African Americans	Hispanics	Both Groups Combined
Medicare			
Diabetes	1,917	1,246	3,162
Hypertension	505	145	650
Stroke or Renal Disease	2,538	902	3,440
Poor General Health	5,087	3,228	8,315
Total	10,047	5,520	*15,567*
Medicaid			
Diabetes	766	25	791
Hypertension	(130)	(76)	(206)
Stroke or Renal Disease	1,604	63	1,667
Poor General Health	43	(823)	(779)
Total	2,283	(810)	*1,473*
Private Insurers			
Diabetes	615	280	895
Hypertension	1,999	(862)	1,137
Stroke or Renal Disease	(26)	(722)	(748)
Poor General Health	2,307	1,538	3,844
Total	4,895	233	*5,128*
Individuals (Out of Pocket)			
Diabetes	566	142	707
Hypertension	409	(991)	(582)
Stroke or Renal Disease	220	(106)	114
Poor General Health	912	566	1,478
Total	2,106	(389)	*1,717*
Total [b]	***19,331***	***4,554***	***23,884***

[a]Estimated change in expenditures if group's age-specific prevalence rates were the same as that of non-Hispanic whites

[b]Total of Medicare, Medicaid, private insurers and individuals. Excludes any other source of payment (e.g., Veterans Administration)

Source: Author's tabulation based on analysis of 2003-5 MEPS and CMS National Health Expenditure projection for 2009.

Table 2. Costs of Selected Health Disparities over 5- and 10-Year Windows

Estimated cost of racial and ethnic disparities in prevalence of selected chronic illnesses ($millions)[a]

	2009-2013	2009-2018
African Americans		
Medicare	58,032	141,964
Medicaid	16,615	42,488
Private Insurance	27,143	62,755
Individual (Out-of-Pocket)	12,918	29,774
Total[b]	*114,707*	*276,981*
Hispanics		
Medicare	31,885	78,000
Medicaid	(5,895)	(15,075)
Private Insurance	1,292	2,987
Individual (Out-of-Pocket)	(2,388)	(5,504)
Total[b]	*24,894*	*60,408*
Both Groups Combined		
Medicare	89,916	219,965
Medicaid	10,720	27,413
Private Insurance	28,435	65,742
Individual (Out-of-Pocket)	10,530	24,270
Total[b]	*139,601*	*337,389*

[a]Estimated change in expenditures if group's age-specific prevalence rates were the same as that of non-Hispanic whites. We assume no change in age-specific disease prevalence rates over the period and no change in demographic characteristics (e.g., age & race)of the population.

[b]Total of Medicare, Medicaid, private insurers and individuals. Excludes any other source of payment (e.g., Veterans Administration) *Source:* Author's tabulation based on analysis of 2003-5 MEPS and CMS National Health Expenditure projection for 2009.

Table 3. Costs of Selected Health Disparities, by State and Payer

Estimated cost of racial and ethnic disparities in prevalence of selected chronic illnesses: 2009 ($millions)[a]

| State[c] | African Americans | | | | | Hispanics | | | | | Both Groups Combined |
	Medicare	Medicaid	Private Insurers	Individuals	Total[b]	Medicare	Medicaid	Private Insurers	Individuals	Total[b]	Total[b]
California	1,330	181	831	152	2,495	2,591	(267)	1,120	84	3,527	6,022
Texas	616	14	268	99	997	1,251	(196)	(467)	(123)	465	1,462
New York	1,013	777	230	309	2,329	541	168	294	52	1,055	3,384
Florida	745	29	331	73	1,177	858	(143)	(251)	(81)	383	1,560
Illinois	657	349	344	108	1,457	91	130	(39)	(52)	130	1,587
Pennsylvania	306	172	110	112	700	74	2	116	11	203	903
Ohio	444	192	286	79	1,001	9	(7)	2	(8)	(4)	997
Michigan	590	260	312	83	1,245	20	15	(9)	(7)	18	1,263
Georgia	463	(67)	237	87	720	32	(47)	(33)	(21)	(69)	651
North Carolina	384	28	39	52	501	14	(63)	(41)	(22)	(111)	390

[a]Estimated change in expenditures if group's age-specific prevalence rates were the same as that of non-Hispanic whites
[b]Total of Medicare, Medicaid, private insurers and individuals. Excludes any other source of payment (e.g., Veterans Administration)
[c]Estimates for states based on simulation on observations from the MEPS sample matching the demographic profile of each state.
Source: Author's tabulation based on analysis of 2003-5 MEPS and CMS National Health Expenditure estimates for 2004 and projections for 2009.

**Table 4. National Projections of the Cost of Selected Health Disparities, 2050**

	Estimated cost of racial and ethnic disparities in prevalence of selected chronic illnesses: 2050 ($millions 2009)[a]		
	African Americans	Hispanics	Both Groups Combined
Medicare			
Diabetes	2,787	3,959	6,746
Hypertension	541	411	952
Stroke or Renal Disease	2,316	1,905	4,220
Poor General Health	6,351	9,486	15,837
Total	11,994	15,760	*27,755*
Medicaid			
Diabetes	1,624	1,036	2,660
Hypertension	(14)	(25)	(38)
Stroke or Renal Disease	1,775	197	1,973
Poor General Health	1,184	765	1,949
Total	4,569	1,974	*6,543*
Private Insurers			
Diabetes	1,211	946	2,157
Hypertension	2,578	(1,734)	844
Stroke or Renal Disease	248	(1,208)	(960)
Poor General Health	4,286	5,464	9,750
Total	8,324	3,467	*11,792*
Individuals (Out of Pocket)			
Diabetes	937	768	1,705
Hypertension	770	(1,605)	(835)
Stroke or Renal Disease	301	(140)	162
Poor General Health	1,238	1,745	2,983
Total	3,246	768	*4,014*
Total [b]	***28,134***	***21,969***	***50,104***

[a]Estimated change in expenditures if group's age-specific prevalence rates were the same as that of non-Hispanic whites. We assume no change in age-specific disease prevalence rates and no change in real per capita medical spending.
[b]Total of Medicare, Medicaid, private insurers and individuals. Excludes any other source of payment (e.g., Veterans Administration)
*Source:* Author's tabulation based on analysis of 2003-5 MEPS, CMS National Health Expenditure projection for 2009, Census Bureau projection of population by age, sex, race and ethnicity for 2050.

**Figure 1. Age Patterns of Disparities in Disease Prevalence: Diabetes and Related Conditions**
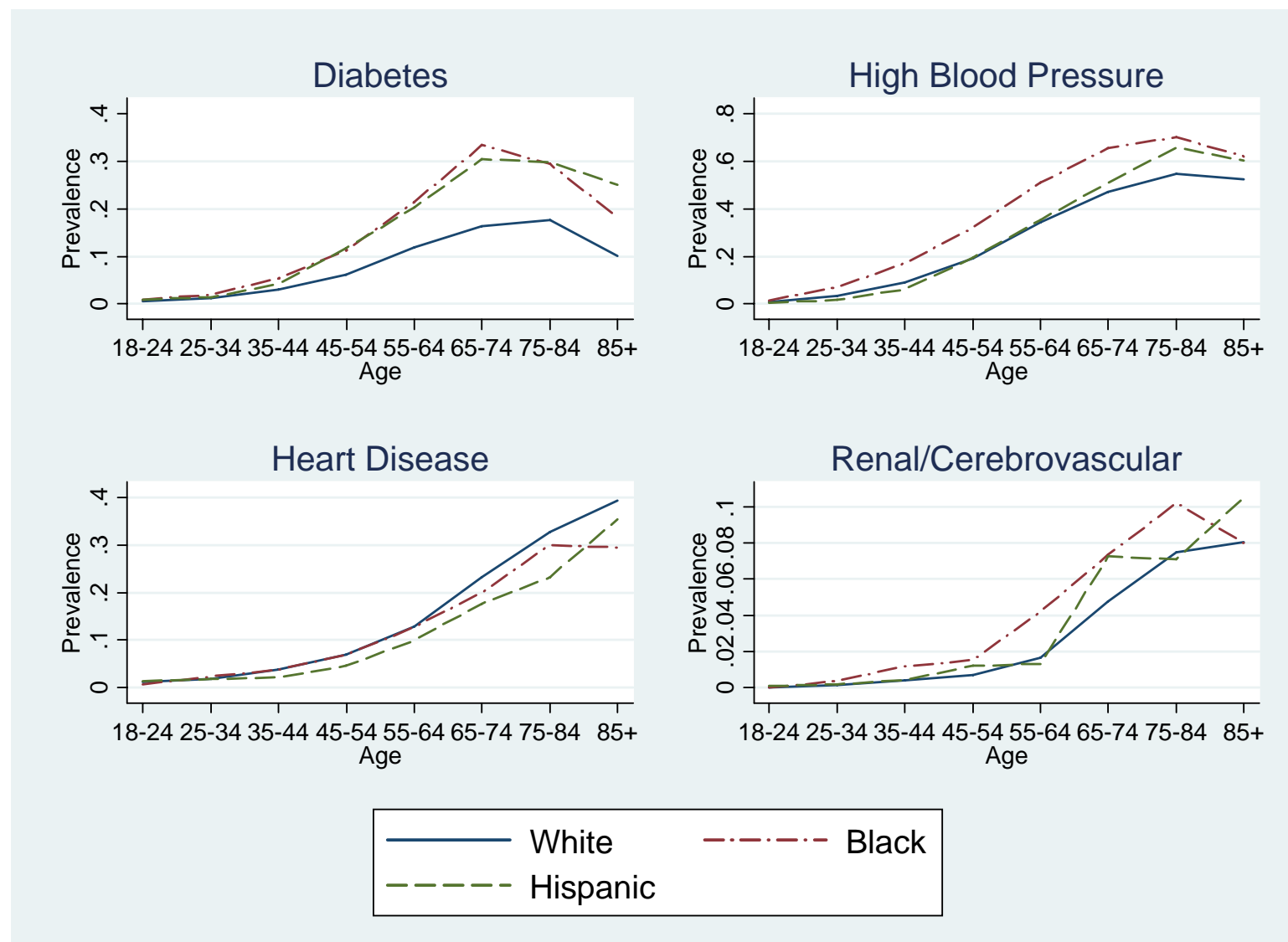
The Urban Institute

Figure 2. Age Patterns of Disparities in Disease Prevalence: Other Conditions
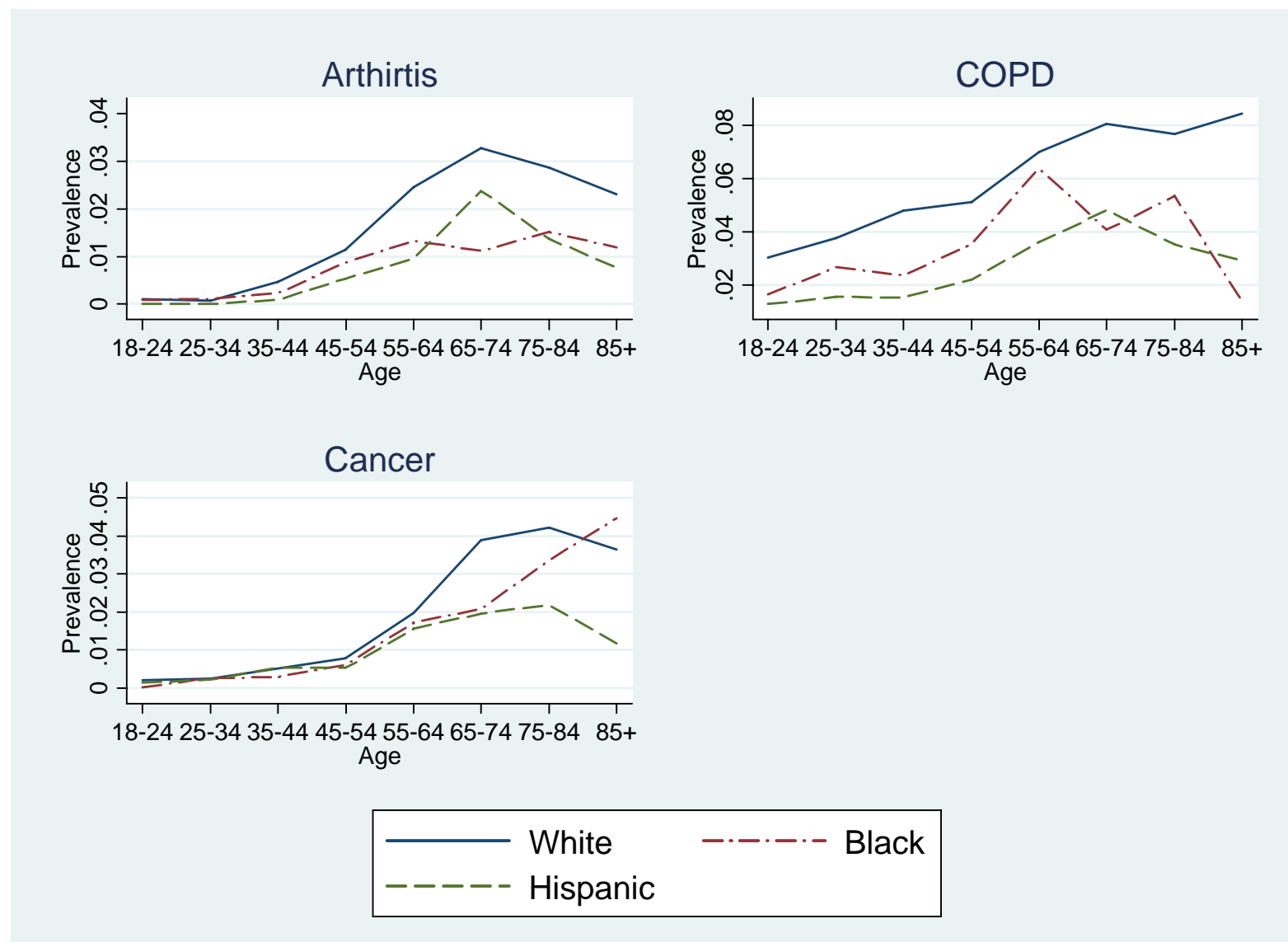
Source: Author's calculations based on the 2002–2005 Medical Expenditure Panel Survey.

The Urban Institute

Figure 3. Age Distribution of Adult (>18) Population, by Race/Ethnicity, 2003–2005
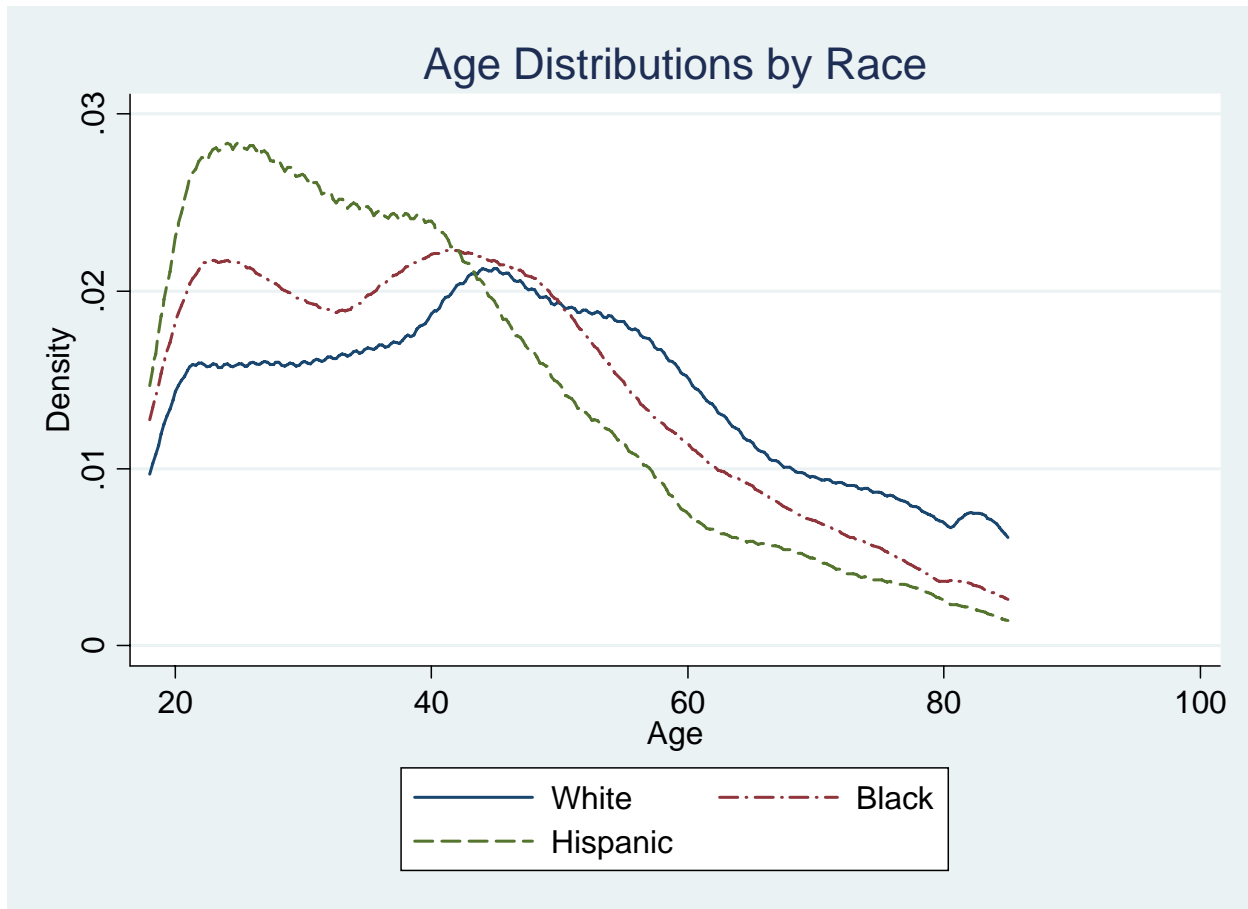
Source: Author's calculations based on the 2002–2005 Medical Expenditure Panel Survey.

REFERENCES CITED

Agency for Healthcare Research and Quality. 2008. *National Healthcare Disparities Report, 2007.* Rockville, MD: Agency for Healthcare Research and Quality.

.Aldana, Steven G., Roger L. Greenlaw, Hans A. Diehl, Audrey Salberg, Ray M. Merrill, Seiga Ohmine, and Camille Thomas. 2006. The Behavioral and Clinical Effects of Therapeutic Lifestyle Change on Middle-Aged Adults. *Preventing Chronic Disease* 3, no. 1, Jan: A05.

.Ayanian, John Z., Alan M. Zaslavsky, Joel S. Weissman, Eric C. Schneider, and Jack A. Ginsburg. 2003. Undiagnosed Hypertension and Hypercholesterolemia Among Uninsured and Insured Adults in the Third National Health and Nutrition Examination Survey. *American Journal of Public Health* 93, no. 12: 2051-54.

.Bovbjerg, Randall R., Harry P. Hatry, and Elaine Morley. 26 June 2009. "Making a Business Case for Reducing Racial and Ethnic Disparities in Health Care: Key Issues and Observations." The Urban Institute.

.Boyle, J. P., A. A. Honeycutt, K. M. Narayan, T. J. Hoerger, L. S. Geiss, H. Chen, and T. J. Thompson. 2001. Projection of diabetes burden through 2050: Impact of Changing Demography and Disease Prevalence in the U.S. *Diabetes Care* 24, no. 11: 1936-40.

.Centers for Medicare and Medicaid Services. 2009. National Health Expenditures. http://www.cms.hhs.gov/NationalHealthExpendData/01_Overview.asp.

.Halle, Michael, Caya B. Lewis, and Meena Seshamani. 12 June 2009. "Health Disparities: A Case for Closing the Gap." http://www.healthreform.gov/reports/healthdisparities/disparities_final.pdf.

.Idler, Ellen L., and Yael Benyamini. 1997. Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies. *Journal of Health and Social Behavior* 38, no. 1, March: 21-37.

.Leatherman, Sheila, Donald Berwick, Debra Iles, Lawrence S. Lewin, Frank Davidoff, Thomas Nolan, and Maureen Bisognano. 2003. The business case for quality: Case studies and an analysis. *Health Affairs* 22, no. 2: 17-30.

.Levi, Jeffrey, Laura M. Segal, and Chrissie Juliano. 2008. *Prevention for a Healthier America: Investments in Disease Prevention Yield Significant Savings, Stronger Communities*, Trust for America's Health. Washington, DC: Trust for America's Health.

.Mead, Holly, Lara Cartwright-Smith, Karen Jones, Christal Ramos, Kristy Woods, and Bruce Siegel. 2008. *Racial and Ethnic Disparities in U.S. Health Care: A Chartbook.* Commonwealth Fund Chartbook, vol. 27. New York: The Commonwealth Fund.

.Ormond, Barbara A., Brenda C. Spillman, Timothy A. Waidmann, Kyle Caswell, and Bogdan Tereschenko. 2009. Potential State-level Savings from Primary Prevention, July.

.Pleis, John R., and Jacqueline W. Lucas. 2009. Summary health statistics for U.S. adults: National Health Interview Survey, 2007. *Vital and Health Statistics 10*, May: 1-159.

.Sing, Merrile, Jessica S. Banthin, Thomas M. Selden, Cathy A. Cowan, and Sean P. Keehan. 2006. Reconciling medical expenditure estimates from the MEPS and NHEA, 2002. *Health Care Financing Review* 28, no. 1, Fall: 25-40.

.U.S. Bureau of the Census. 14 August 2008. *2008 National Population Projections.* U.S. Bureau of the Census. http://www.census.gov/population/www/projections/2008projections.html.

.Zhang, Yiduo, Timothy M. Dall, Sarah E. Mann, Yaozhu Chen, Jaana Martin, Victoria Moore, Alan Baldwin, Viviana A. Reidel, and William W. Quick. 2009. The economic Costs of Undiagnosed Diabetes. *Population Health Management* 12, no. 2, Apr: 95-101.

.