Impact of Health Care Context

The Contribution of Insurance Coverage and Community Resources to Reducing Racial/Ethnic Disparities in Access to Care

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Objective. To examine the extent to which health insurance coverage and available safety net resources reduced racial and ethnic disparities in access to care.

Data Sources. Nationally representative sample of 11,692 African American, 10,325 Hispanic, and 74,397 white persons. Nonelderly persons with public or private health insurance and those who were uninsured.

Study Design. Two cross-sectional surveys of households conducted during 1996–1997 and 1998–1999.

Data Collection. Commonly used measures of access to and utilization of medical care were constructed for individuals. These measures include the following: (1) percent reporting unmet medical needs, (2) percent without a regular health care provider, and (3) no visit with a physician in the past year.

Findings. More than 6.5 percent of Hispanic and African Americans reported having unmet medical needs compared to less than 5.6 percent of white Americans. Hispanics were least likely to see the same doctor at their usual source of care (59 percent), compared to African Americans (66 percent) and whites (75 percent). Similarly, Hispanics were less likely than either African Americans or whites to have seen a doctor in the last year (65 percent compared to 76 percent or 79 percent). For Hispanics, more than 80 percent of the difference from whites was due to differences in measured characteristics (e.g., insurance coverage, income, and available safety net services). Differences in measured characteristics between African Americans and whites explained less than 80 percent of the access disparities.

Conclusion. Lack of health insurance was the single most important factor in white–Hispanic differences for all three measures and for two of the white–African American differences. Income differences were the second most important factor, with one exception. Community characteristics generally were much less important, with one exception. The positive effects of insurance coverage in reducing disparities outweigh benefits of increasing physician charity care or access to emergency rooms.

Key Words. Access, utilization, racial/ethnic disparities, health insurance, Hispanic, African American

Well-documented disparities in health exist among members of racial and ethnic groups (Brown et al. 2000). For example, death associated with heart disease, stroke, and cancer remain higher for African Americans than whites (Keppel, Pearcy, and Wagener 2002). Compared to non-Hispanic whites, diabetes-related death rates were 2.5 times higher for black persons and 1.7 times higher for Hispanics (National Center for Health Statistics 1998). Particularly troubling to policymakers are the problems with access to medical care that appear among minority groups. Two possible explanations for these problems are that (1) differences in the measured characteristics of whites and minority persons (e.g., income, insurance coverage, and need for care) lead to differences in access and/or (2) unobserved factors, such as culture, attitudes, or discrimination, differentially influence members of racial and ethnic minority groups to seek medical care. To develop policies to reduce disparities in access, it is important to ascertain the relative importance of these two sets of explanations, and to identify the characteristics most strongly associated with differences in access.

This paper extends previous efforts examining racial and ethnic disparities in health, focusing on the roles that insurance coverage, income, and community medical care resources related to the safety net play in reducing disparities in access to medical care. Proposals to expand health insurance are motivated in large part by the expectation that insurance coverage improves access to medical care. Knowing the extent to which insurance coverage reduces racial and ethnic disparities may provide additional information salient to policy making. Conversely, it is sometimes argued (Butler, Jameson, and Sullivan 2000) that the availability of safety net resources in communities compensates for the lack of insurance and reduces the likelihood that uninsured persons go without needed medical care services. Some policymakers have argued that uninsured persons do not have access problems related solely to lack of insurance coverage, rather they have access to care through community safety net resources. Empirical evidence concerning the extent to which the safety net either reduces or does not reduce

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the need for insurance coverage may serve to inform this "coverage versus care" debate.

We look separately at differences between whites, and Hispanic and African Americans. Our analysis uses a regression-based decomposition methodology (Oaxaca 1973; Acs 1995) to address four related questions. First, how much does insurance explain racial and ethnic disparities in access to care? Second, what roles do income and other characteristics play in influencing racial disparities in health? Third, to what extent does availability of community-level safety-net resources contribute to reducing racial disparities? Finally, how much of the difference in access can be attributed to "unobservable" factors, such as differences in culture, discrimination, or attitudes?

BACKGROUND

Racial and ethnic disparities in access to medical care are well known among health services researchers. Empirical studies typically include a set of dummy variables representing ethnicity in a regression model that pools whites with racial and ethnic minorities. Differential access to medical care can be examined in relation to personal characteristics (e.g., race, ethnicity, socioeconomic, or health status) as well as community characteristics (e.g., poverty areas, physician supply, or availability of hospital beds). A few studies suggest that ethnic disparities in access to medical procedures differ substantially depending on the type of insurance coverage. However, most studies focus on access differences related to either race/ethnicity or insurance.

Racial and ethnic disparities in access to primary care are not fully explained by differences in sociodemographic and health status (Shi 1999). Most studies conclude that members of minority ethnic groups are more likely to have access problems than whites. These problems persist among those covered by insurance, but are even more pronounced among those persons who lack insurance or live in areas with high levels of poverty.

Racial and ethnic differences appear among patients with varied medical conditions. For example, racial differences that persist after controlling for insurance coverage and socioeconomic status have been observed for early detection of cancer (Baker, Stevens, and Brook 1996) and for surgical management of cancer (Velanovich et al. 1999). In some areas of medical care, for example the use of emergency departments, racial and ethnic differences have been reported to disappear upon controlling for

socioeconomic status and health insurance coverage (Baker, Stevens, and Brook 1996).

The disparate use of cardiovascular procedures among racial and ethnic groups is perhaps the most widely examined topic in the growing literature on differences in medical care access and utilization, suggesting that members of ethnic minority groups are less likely than white Americans to receive interventional therapies, controlling for income and insurance status (Ford and Cooper 1995). Health insurance, either the lack of coverage or type of insurance, has an essential role in obtaining medical care for heart disease. The publicly insured have been reported to be less likely than privately insured persons to receive cardiovascular procedures (Wenneker, Weissman, and Epstein 1990; Carlisle, Leake, and Shapiro 1997). Furthermore, racial differences in use of cardiovascular procedures have been reported among publicly insured persons, but not among those with private insurance (Carlisle, Leake, and Shapiro 1997). Finally, differences between ethnic groups in terms of care for cardiac disease have been observed to narrow when persons obtain adequate insurance coverage, such as eligibility for Medicare or development of end stage renal disease (Daumit et al. 1999).

A unique contribution of research in racial and ethnic disparities examined community-level socioeconomic status along with commonly used socioeconomic measures of income and education. For example, a California study found that those persons residing in higher socioeconomic status areas were more likely than those in lower socioeconomic status areas to receive invasive cardiovascular procedures (Carlisle and Leake 1998). These effects of community-level socioeconomic status varied within several health insurance categories (e.g., Medicare, privately insured, and Medicaid).

Recently, health services researchers have employed regression-based decomposition to examine racial and ethnic disparities in availability of health insurance (Monheit and Vistnes 2000), access to mental health care (Freiman and Cunningham 1997), and access to and use of primary care (Waidmann and Rajan 2000; Weinick, Zuvekas, and Cohen 2000). These studies have compared African Americans and Hispanics to whites in an attempt to explicate those factors that contribute to differences in insurance coverage, access to care, and utilization. Differences between minority groups and whites in terms of insurance coverage are key to understanding subsequent differences in access and utilization. Access differences between Hispanics and whites are generally greater than such differences between African Americans and whites. Weinick found that disparities in having a usual source of care and using ambulatory care services would be reduced if

racial and ethnic differences in income and insurance coverage were eliminated (Weinick, Zuvekas, and Cohen 2000, p 50). Furthermore, they found that the disparities in access to care were widening over time for Hispanics. Although this study did examine the contribution of income and insurance disparities on access differences between minority persons and whites, it did not explore the effect of community characteristics (e.g., physician supply and other medical care resources) on disparities in access. Our study includes attributes of communities (e.g., availability of safety net providers) and individual characteristics (e.g., health insurance coverage, income, and ethnicity) to better understand problems with access to medical care and disparities in access among racial and ethnic groups.

DATA AND METHODS

Data Source

The primary data sources are the nationally representative 1996–1997 and 1998–1999 Community Tracking Study (CTS) household surveys (Kemper et al. 1996; Strouse et al. 1998). Data collection for the CTS surveys is focused on 60 randomly selected, nationally representative communities (Metcalf et al. 1996). Information was obtained about all adults in each randomly selected household and one randomly selected child within each family in the household. Interviews were conducted in English or Spanish. The final samples include more than 58,500 individuals from 32,000 families in each year. Response rates for families were more than 63 percent.

This study uses individual-level data for nonelderly persons of Hispanic, African American, and white racial or ethnic background ($n = 96{,}414$). Members of the U.S. military and people older than age 65 were excluded. All estimates are weighted to account for nonresponse to the survey and to represent the civilian noninstitutionalized population of the continental United States.

Conceptual Model

We use the behavioral model developed by Andersen (1968, 1975) to guide the selection of independent variables for the analysis. The model's conceptual domains include enabling, predisposing, and need factors that include demographics, personal preferences, individual health status, and economic and market characteristics, especially individuals' health insurance coverage and income, and the availability of medical care resources

(Weinick, Zuvekas, and Cohen 2000). The dependent variables are measures of access and utilization.

Dependent Variables: Measures of Access and Utilization

We compare whites to African Americans and Hispanics along three commonly used dimensions of lower access to primary care: reporting unmet needs, having no regular health care provider, and the probability of no physician visits in the last year. These measures provide information about perceived needs, continuity and access with a regular provider, and actual use of health care.

Unmet Medical Needs. Individual reports of unmet medical needs are a commonly used measure of access problems. For this study, we created a measure that indicates that individuals had no report of unmet needs. Respondents were asked, "During the past 12 months, was there any time when you didn't get the medical care you needed?" Each person who replied "no" was classified as having "unmet needs." "Yes" responses were checked using follow-up questions and recoded if they reflected personal preferences rather than an access problem related to the health care system. For example, if the only reason a person gave for having an unmet need was "laziness," the response was not classified as an unmet need. This refined measure of unmet medical needs provides a more accurate indication of access problems resulting from health care organization, financing, or delivery.

No Regular Health Provider. This variable measures whether the individual sees the same health care provider (i.e., physician, nurse practitioner, or physician's assistant) at each visit to his or her regular source of care. Persons with a regular health provider are less likely to report delays in getting medical care, more likely to visit their provider, and less likely to use emergency rooms for ambulatory care (Lambrew et al. 1996). Problems with access to care associated with lack of a regular physician persist even among those with insurance (Sox et al. 1998).

No Doctor Visit in the Past Year. The proportion of a population that has contact with a physician is a commonly used measure of access to care. Although it is possible that lower levels of use may reflect more efficient use of care (rather than lower access), and higher levels of use may reflect overutilization of services (rather than greater access), discrepancies in health services use among racial/ethnic minorities are consistent with known disparities in access among racial/ethnic minorities.

Independent Variables: Enabling, Predisposing, and Need Factors

Andersen's behavioral model posits that individual needs along with enabling and predisposing factors influence access to and use of medical care (Andersen 1968; 1975). Most of these factors are related to individuals, with some enabling factors defined as community-level resources, such as physician and hospital supply.

Enabling Conditions and Characteristics. The key individual measures of enabling factors are family income and whether the person has health insurance (either public or private). We measure income relative to the federal poverty level (FPL).

Community medical care resources comprise a broad group of enabling characteristics of the health system. We initially considered a large set of CTS site and county variables as potential measures of supply and demand influences. County data are from the Area Resource file (U.S. Department of Health and Human Services 2001). Supply measures included number of hospital beds per capita, number of teaching hospital beds per capita, number of hospital emergency departments per capita, and number of primary care physicians per capita. Using the CTS 1998–1999 Physician Survey, we constructed separate measures of the percentage of physicians in each site who were African American or Hispanic and the average number of hours physicians provide as charity care relative to the number of uninsured persons in each CTS site. Using the CTS Household Survey, we created two measures of the demand for medical care: the percent of the population in poor or fair health and the percent of adults with less than a high school education, as a measure of disadvantaged communities. We used 1995 Census Bureau data to measure the percent of each county within each CTS site that were living below the FPL (federal poverty line). Census data were also used to measure the percent of population that was African American and the percent that was Hispanic.

We used principle components analysis to eliminate redundant and highly correlated measures. We also eliminated site-level measures that were not associated with individual access to care. (More information about the selection of site-level measures is available from the authors.)

The number of primary care physicians per 100,000 persons controls for general physician availability. To represent the availability of the safety net, we included variables for the number of emergency rooms per 10,000 persons and the total number of hours physicians in each site provided as charity care (services provided at reduced or no fee) relative to the total number of uninsured persons in each CTS site.

Predisposing Factors. Predisposing factors include age, education, family composition (i.e., marital status and presence of children in the family), and attitudes about medical care and risks. We include two measures of attitudes—orientation toward risk compared to the "average person" and willingness to trade reduced choice of doctors and hospitals to lower out-of-pocket costs. An additional risk-taking predisposition is whether the individual reported cigarette smoking.

Need. We included a measure of general health status (poor, fair, good, very good, or excellent) to account for individual needs for medical care. The final models include two community-level demand measures: the percentage of persons below the FPL and the percentage who were African American or Hispanic.

Regression-Based Decomposition

We used regression-based decomposition (Oaxaca 1973) to separate observed differences in access to medical care into two parts: that due to measured personal and community characteristics (i.e., factors that we can explain), and that which cannot be explained by differences in observed characteristics. The second component can be thought of as measuring differences between whites and ethnic minorities attributable to differences in the "returns" on their characteristics, because they are based on differences in regression coefficients.

This approach requires estimating linear models using ordinary least squares regression, even though the dependent variables are binary measures. Linear models have the desirable property that the mean of the dependent variable equals the sum of the mean values of the independent variables multiplied by their respective coefficients. Even though linear probability models can yield predicted probabilities outside the 0/1 range, the parameter estimates are consistent, which is the critical property for the decomposition analysis (Acs 1995; Acs and Danziger 1993).

Using comparisons between whites and Hispanics as an example, the mean values for each access indicator (Y) for whites (w) and Hispanics (h) evaluated at the means of the independent variables can be represented by:

$$\bar{Y}_h = \bar{X}_h' \hat{\beta}_h$$

and

$$\bar{Y}_w = \bar{X}_w' \hat{\beta}_w \qquad (1)$$

Thus, differences between whites and Hispanics in the access indicator can be expressed as:

$$\bar{Y}_w - \bar{Y}_h = \bar{X}'_w\hat{\beta}_w - \bar{X}'_h\hat{\beta}_h \tag{2}$$

We add and subtract $X_w\beta_h$ to obtain:

$$\bar{Y}_w - \bar{Y}_h = (\bar{X}'\hat{\beta}_w + \bar{X}'_w\hat{\beta}_h) - (\bar{X}'_h\hat{\beta}_h - \bar{X}'_w\hat{\beta}_w) \tag{3}$$

and rearrange terms to decompose the overall differences into an explained and an unexplained component:

$$\bar{Y}_w - \bar{Y}_h = \bar{X}'_w(\hat{\beta}_w - \hat{\beta}_h) + (\bar{X}'_w - \bar{X}'_h)\hat{\beta}_h \tag{4}$$

The first term on the right hand side of equation 4 is the difference in the "returns" to personal characteristics evaluated at the white's mean characteristics. Here, for example, personal characteristics could include insurance coverage, income, education level, and health status. In effect, we simulate a model in which everyone has the characteristics of the average white person, and then analyze whether or not there would be a difference in the returns to those same characteristics for Hispanics.

This is the portion of the difference that is not explained by differences in measured characteristics. Presumably, they result from differences in unobservable characteristics such as care-seeking behavior, attitudes, or discrimination. They suggest that the behavioral effect of any observed characteristic, such as insurance coverage or income, is unequal among different ethnic or racial groups. This portion is unexplained because we have controlled for observable differences between whites and Hispanics.

The second term in equation 4 is the difference in mean personal characteristics using the Hispanic rate of return. This part is the "explained" portion in differential access to medical care. If Hispanics have lower average education, income, and so on, and we assume that these characteristics are associated with greater access problems, then it is reasonable that they would have more problems with access to medical care.

To implement this method, we first calculated mean values for each independent variable that we included in separate behavioral models for whites, African Americans, and Hispanics. Next, we estimated the same linear regression models for whites, African Americans, and Hispanics in order to obtain the vector of coefficients for each population. The linear models for each ethnic group included the same independent variables. Finally, we calculated the proportion of the differences in access to medical care that is

unexplained and the proportion that is explained. This process was repeated for comparisons between African Americans and whites.

Equation 5 specifies the form of the estimated model, where (X) is a vector of individual and family characteristics, (M) represents characteristics of the local health care market, and (T) is a dummy variable to control for secular trends. The subscript (h) indicates that separate equations were estimated for each racial or ethnic population.

$$Y_h = \alpha_h + X_h'\beta_h + M_h'\gamma + \delta T + \varepsilon_h \qquad (5)$$

β, δ, and γ represent coefficients for personal characteristics, change over time, community characteristics, and ε is a random error term.

Standard errors used in tests of statistical significance were computed using the *SUDAAN* software (Shah, Barnwell, and Bieler 1996), accounting for the complex, multistage survey design (i.e., the clustering of individuals within families among CTS sites). The *SUDAAN* software uses the Taylor series linearization procedure and handles the multistage design and joint inclusion probabilities in the CTS.

FINDINGS

Differences in Problems with Access to Medical Care

Table 1 shows the measures of access to medical care, stratified by ethnicity. For all measures, African Americans and Hispanics were significantly more likely to report worse access to care than whites. Although the percentage of Americans who reported unmet medical needs was less than 8 percent for all three ethnic groups, more African Americans and Hispanics reported unmet needs than whites. Compared to whites, Hispanic Americans were more likely not to have a regular health care provider and not to have seen a physician during the last year. African Americans were more likely than Hispanics not to have a regular provider and seen a doctor; however, their access to care was worse than whites.

Compared to whites, African Americans were 16 percent more likely to report unmet needs, 25 percent less likely to have a regular health care provider, and 9.5 percent less likely to have visited a doctor. Hispanics, compared to whites, were 22 percent more likely to report unmet needs, 39 percent less likely to have a regular health care provider, and 38.5 percent less likely to have visited a doctor.

Table 1: Access to Care among African American, Hispanic, and White Americans

	Percent Reporting (Unweighted Sample Sizes[§])		
	Unmet Medical Needs	*No Regular Doctor at Usual Source*	*Had No Doctor Visits Last Year*
White	5.59	25.17	22.18
	(64,411)	(63790)	(64,491)
African American	6.73**	33.53**	24.48*
	(10,328)	(10193)	(10,344)
Hispanic	7.16**	41.26**	36.22**
	(8,918)	(8752)	(8,939)

Source: Community Tracking Study 1996–1997 and 1998–1999 Household Surveys, nonelderly persons with either public or private insurance, excluding those in the military.

*Significantly different from whites, $p<0.05$.

**Significantly different from whites, $p<0.01$.

[§]Percentages were weighted.

Differences in Community and Individual Characteristics

Table 2 shows the difference in characteristics observed among white, African American, and Hispanic persons. Insurance coverage was higher among whites (88 percent) than either blacks (80 percent) or Hispanics (68 percent). Whites were more likely than either Hispanic or African Americans to have incomes above 400 percent of the FPL. Whites also reported higher levels of health status than minority persons.

African Americans and whites lived in communities where physicians provided more charity care for the uninsured than in communities where Hispanics lived. Both Hispanics and African Americans lived in communities with fewer emergency rooms per capita than whites. The supply of primary care physicians was similar among all three groups. African Americans were more likely than whites or Hispanics to live in communities with greater percentages of African Americans. Similarly, Hispanics were more likely than whites or African Americans to live in communities with a greater percentage of Hispanics.

Regression-Based Decomposition of Differences in Access to Care

Tables 3 and 4 show the results of the regression-based decomposition. The absolute total differences for all three measures of access to medical care are presented in the first row. For example, the percentage of Hispanics reporting unmet medical needs was 1.57 more than the percentage of whites. The next

Table 2: Means (Standard Error) for Covariates Used in Linear Models by Race/Ethnicity

	White		*African American*		*Hispanic*	
	Mean	*Standard Error*	*Mean*	*Standard Error*	*Mean*	*Standard Error*
Personal Characteristics						
Has health insurance	0.88	0.004	**0.80**	0.009	**0.68**	0.010
Family income < 100% of FPL	0.09	0.004	**0.28**	0.014	**0.28**	0.012
Family income 100–199% of FPL	0.16	0.005	**0.24**	0.008	**0.29**	0.014
Family income 200–399% of FPL	0.36	0.004	**0.29**	0.007	**0.27**	0.011
Family income ⩾400% of FPL	0.39	0.010	**0.19**	0.010	**0.16**	0.011
Female	0.50	0.002	**0.52**	0.006	**0.48**	0.007
Age in years	30.56	0.216	**27.04**	0.301	**25.85**	0.882
Age squared	1,242.74	13.178	**1,020.13**	17.736	**936.97**	56.731
<High school education (adults)	0.06	0.005	**0.17**	0.010	**0.37**	0.022
High school education (adults)	0.35	0.005	**0.43**	0.008	**0.32**	0.009
Some college (adults)	0.28	0.005	**0.25**	0.010	**0.19**	0.010
College degree (adults)	0.19	0.004	**0.11**	0.006	**0.09**	0.015
Graduate school (adults)	0.10	0.002	**0.04**	0.003	**0.04**	0.004
Single, no kids	0.18	0.004	**0.24**	0.008	0.18	0.009
Married, no kids	0.19	0.004	**0.08**	0.004	**0.10**	0.012
Married with kids	0.53	0.009	**0.32**	0.012	0.53	0.014
Single with kids	0.11	0.004	**0.36**	0.012	**0.19**	0.011
Selected child indicator	0.29	0.005	**0.36**	0.007	**0.35**	0.017

General health status	4.02	0.009	**3.73**	0.034	**3.64**	0.030
General health status squared	17.10	0.066	**15.07**	0.250	**14.56**	0.203
Current smoker (adults)	0.20	0.005	**0.17**	0.009	**0.14**	0.007
Agree more likely to take risk	0.45	0.004	**0.43**	0.011	**0.43**	0.008
Missing data: likely to take risk	0.04	0.001	0.05	0.003	**0.09**	0.004
Agree to accept limited choice	0.55	0.005	**0.70**	0.010	**0.59**	0.012
Missing data: limited choice	0.05	0.001	0.05	0.004	**0.09**	0.005
CTS round (1 = 1998–1999, 0 = 1996–1997)	0.50	0.003	0.50	0.009	**0.54**	0.011
Community Measures						
% in poverty (all ages), 1995 [a]	12.65	0.364	**14.75**	1.226	15.58	1.797
% Black population, 1998 [a]	11.58	1.124	**20.36**	2.100	11.94	1.999
% Hispanic population, 1998[a]	6.85	0.741	9.37	4.049	**25.22**	6.820
No. primary care MDs/10,000[b]	6.34	0.096	6.57	0.263	6.97	0.439
Safety Net Measures						
No. emergency rooms/10,000[b]	0.15	0.010	**0.12**	0.006	**0.09**	0.005
Hours of MD charity care/1,000 uninsured[c]	102.67	3.471	112.78	8.064	**92.17**	4.474

Source: Community Tracking Study 1996–1997 and 1998–1999 Household Surveys, nonelderly persons with either public or private insurance, excluding those in the military.

[a]U.S. Census Bureau;

[b]Area Resource File;

[c]CTS 1998–1999 physician survey estimate.

Note: Bold type for Hispanic or African American populations indicates a significant difference from whites, $p<0.05$.

Table 3: Regression-Based Decomposition of Differences in Access to Medical Care between Whites and Hispanics

	Report of Unmet Needs	*Regular Doctor at Usual Source*	*Had a Doctor Visit Last Year*
Total Difference between Whites and Hispanics	1.57	16.08	13.84
Difference due to coefficients[a]	0.04	3.01	1.65
Difference due to means[b]	1.53	13.07	12.19
Difference Due to Means for…			
Personal Characteristics	1.16	9.46	8.82
Health insurance	0.83	5.37	5.54
Income	0.60	3.05	2.43
Values and preferences[‡]	− 0.22	− 0.09	− 0.39
Other personal characteristics	− 0.05	1.13	1.23
Community Characteristics[†]	0.36	3.61	3.37
Emergency rooms and physician charity care	0.49	2.45	2.13
Other community characteristics	− 0.13	1.15	1.25

Source: HSC Community Tracking Study 1996–1997 and 1998–1999 Household Surveys, nonelderly persons with either public or private insurance, excluding those in the military.

Note: Total difference is equal to the difference due to coefficients and the difference due to means.

[a]The difference due to coefficients is based on the difference between the "counterfactual rate" based on Hispanic coefficients and mean values for whites and the actual rate for whites.

[b]The difference due to means is based on the difference between rate for Hispanics and the counterfactual rate calculated using the Hispanic coefficients and the mean values for whites.

[†]Community characteristics were included in the linear models at the CTS site level.

[‡]Attitude questions for acceptance of reduced choice and increased risk along with behavior of smoking cigarettes among adults.

two rows in the tables separate the total differences in access measures to those attributed to means (i.e., difference in characteristics) or to coefficients obtained from regression models (i.e., returns to population characteristics). Almost the entire (97 percent) unmet medical needs difference between Hispanics and whites resulted from differences in measured characteristics. In other words, only a small portion of the differences in reports of unmet needs could not be explained by the different population characteristics between Hispanics and whites, such as health insurance coverage, income, and availability of safety net resources.

The bottom half of Table 3 breaks down each access measure into differences due to means for personal characteristics or community characteristics. Each of these two classes of population characteristics is further separated into unique components (e.g., insurance, income, safety net, etc.). For example, insurance and income differences between Hispanics and whites account for 1.43 or 91 percent of the reported unmet medical needs

Table 4: Regression-Based Decomposition of Differences in Access to Medical Care between Whites and African Americans

	Report of Unmet Needs	*Regular Doctor at Usual Source*	*Had a Doctor Visit Last Year*
Total Difference between Whites and African Americans	*1.14*	*8.41*	*2.34*
Difference due to coefficients[a]	*– 0.65*	*4.45*	*0.57*
Difference due to means[b]	*1.79*	*3.95*	*1.77*
Difference Due to Means for…			
Personal Characteristics	1.88	5.62	2.07
Health insurance	0.63	1.96	1.88
Income	0.91	1.68	1.07
Values and preferences[‡]	– 0.02	0.85	– 0.10
Other personal characteristics	0.36	1.12	– 0.77
Community Characteristics[†]	– 0.09	– 1.66	– 0.31
Emergency rooms and physician charity care	0.13	– 0.44	– 0.88
Other community characteristics	– 0.21	– 1.23	0.58

Source: HSC Community Tracking Study 1996–1997 and 1998–1999 Household Surveys, nonelderly persons with either public or private insurance, excluding those in the military.

Note: Total difference is equal to the difference due to coefficients and the difference due to means.

[a]The difference due to coefficients is based on the difference between the "counterfactual rate" based on African American coefficients and mean values for whites and the actual rate for whites.

[b]The difference due to means is based on the difference between rate for African Americans and the counterfactual rate calculated using the African American coefficients and the mean values for whites.

[†]Community characteristics were included in the linear models at the CTS site level.

[‡]Attitude questions for acceptance of reduced choice and increased risk along with behavior of smoking cigarettes among adults.

gap. Furthermore, the safety net of communities (i.e., physicians providing charity care and hospital emergency departments) also accounted for a modest proportion of the differences in reports of unmet medical care needs (0.49 or 31 percent).

Whites were significantly more likely to have a regular health care provider and to have seen a physician in the last year than Hispanics (see Table 1). More than 80 percent of these differences were related to the population characteristics of the two groups. Differences in the proportion of Hispanic and whites with health insurance explained the single largest portion of the differences in having a medical provider and having a doctor visit between the two groups. One-third of the differences between Hispanics and whites in having a regular provider and two-fifths of the differences in having a doctor visit were related to insurance coverage. Income differences that explained about 20 percent of the disparities in access and the availability

of safety net providers accounted for about 15 percent of the Hispanic–white differences in having a regular provider and seeing a physician in the last year.

Table 4 shows the decomposition of differences in access to care between African Americans and whites. For all three measures, differences in population characteristics explained less of the black–white differences than the Hispanic–white differences. Unexplained differences accounted for approximately one-half of the black–white differences in having a regular health care provider and one-quarter of the differences in having a doctor visit. Insurance coverage was the primary population characteristic that explained differences between African Americans and whites in having a regular health provider and a doctor visit last year.

The total difference between African Americans and whites in terms of reporting unmet medical needs was 1.14, where – 0.65 was due to coefficients and 1.79 was due to means. If blacks had whites' characteristics, their unmet needs would be about 56 percent (1/1.79) smaller than they actually reported. However, because of the differences in coefficients, which indicate that a given factor has less impact in reducing unmet needs for blacks than for whites, the net result was that their unmet needs were 14 percent greater.

Community characteristics of African Americans and whites accounted for a small amount of the differences in having a regular provider and seeing a doctor in the past year. Availability of emergency rooms and physicians providing charity care was much less of a factor in explaining differences than that of income and insurance coverage.

DISCUSSION

This study examines differences between either African Americans or Hispanics and whites in access to care for three broad access measures: unmet medical needs, having a regular health care provider, and having seen a physician in the last year. Differences in measured characteristics explain between 81 and 97 percent of the observed differences in access to care between Hispanics and whites. Difference in characteristics explains between 47 and 97 percent of the observed differences in access to care between African Americans and whites.

Lack of health insurance is a significant access barrier, especially for Hispanics. It is the single most important factor in white–Hispanic differences for all three measures and for two of the white–African American differences (Table 5).

Table 5: Share of Total Differences between Either Hispanics or African Americans and Whites Due to Differences in Insurance, Income, Safety Net Access, and Other Factors

	Fraction of Differences Compared to Whites for Each Measure of Access		
	Report of Unmet Needs	*Regular Doctor at Usual Source*	*Had a Doctor Visit Last Year*
Whites and Hispanics			
Health insurance	54.1	33.3	40.1
Income	35.4	19.4	17.7
Safety net	19.1	1.2	7.0
All other factors	− 17.1	17.4	19.3
Coefficients[a]	8.4	28.7	15.9
Whites and African Americans			
Health insurance	54.4	23.5	80.4
Income	76.1	20.1	46.0
Safety net	− 5.7	− 2.3	− 3.9
All other factors	20.7	9.8	− 5.9
Coefficients[a]	− 45.5	48.9	− 16.6

Source: HSC Community Tracking Study 1996–1997 and 1998–1999 Household Surveys, nonelderly persons with either public or private insurance, excluding those in the military.

Income differences are the second most important factor, with one exception—reporting of unmet medical needs among African Americans. Following insurance and income, community characteristics generally were much less important, again with one exception. Safety net resources accounted for a modest proportion of the differences between Hispanics and whites in their reports of unmet medical needs. Hispanics tend to live in areas with less physician charity care and fewer emergency rooms. These two community measures of the safety net likely contribute to Hispanics reporting unmet medical needs.

Insurance coverage appears more important than supply of medical resources in minority groups' communities, including primary care physicians, charity care, and availability of hospital emergency rooms. Clearly, insurance provides links to the health care system for all, and insurance coverage would have a positive effect on Hispanics' access to care. If Hispanics were able to obtain the same levels of insurance coverage as whites, a significant portion of the disparities in access to care would be reduced.

It is noteworthy that the rate for insurance is so much lower for Hispanics. Because Hispanics are more likely than whites to be recent immigrants to the United States, incomplete knowledge of the mechanics of

the health system may be one reason for not obtaining health insurance. Wells et al. (1988) report that greater acculturation among Mexican Americans, controlling for sociodemographic and economic factors, health status, and insurance, was associated with higher probability of use of medical care. It is likely that these cultural factors account for some of the difference in insurance coverage and access to care between Hispanic and white Americans.

Availability of safety net providers, such as physicians providing charity care or emergency departments in hospitals, has a modest effect on reducing disparities in access. If Hispanics and African Americans lived in communities with levels of safety net providers similar to whites, disparities in access would diminish, holding insurance coverage and income constant.

The unexplained differences in access disparities between whites and African Americans are disturbing. Simulating the effect of providing African Americans with the population characteristics of whites, as our study does, indicates that disparities in access to care would persist even if no differences in personal and community characteristics were present. These unexplained differences could result from a variety of factors, including care-seeking behavior of patients (Lewis et al. 1991; Raczynski et al. 1993, 1994), lack of trust (Doescher et al. 2000; Peterson 2002), majority provider behavior toward minority patients (Van Ryn 2002), miscommunication between patients and providers (Balsa and McGuire 2001), or discrimination (LaVeist, Nickerson, and Bowie 2000; Lillie-Blanton et al. 2000).

Policymakers continue to propose methods for making insurance more available to all members of the U.S. population. An additional effect of these expansions would be a reduction in ethnic and racial disparities in access to medical care and health, a goal of *Healthy People 2010* (U.S. Department of Health and Human Services 2000).

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REFERENCES

Acs, G. 1995. "Explaining Trends in Health Insurance Coverage between 1988 and 1991." *Inquiry* 32 (1): 102–10.

Acs, G., and S. Danzinger. 1993. "Educational Attainment, Industrial Structure, and Male Earnings through the 1980s." *Journal of Human Resources* 26 (3): 618–48.

Andersen, R. 1968. *A Behavioral Model of Families' Use of Health Services.* Research series no. 25. Chicago: University of Chicago, Center for Health Administration Studies.

———. 1975. Introduction. In *Equity in Health Services: Empirical Analyses in Social Policy,* edited by R. Andersen, J. Kravits, and O. W. Anderson, pp. 3–8. Cambridge, MA: Ballinger.

Baker, D. W., C. D. Stevens, and R. H. Brook. 1996. "Determinants of Emergency Department Use: Are Race and Ethnicity Important?" *Annals of Emergency Medicine* 28 (6): 677–82.

Balsa, A. I., and T. McGuire. 2001. "Statistical Discrimination in Health Care." *Journal of Health Economics* 20 (6): 881–907.

Brown, E. R., V. D. Ojeda, R. Wyn, and R. Levan. 2000. *Racial and Ethnic Disparities in Access to Health Insurance and Health Care.* Los Angeles: UCLA Center for Health Policy Research.

Butler, K., W. Jameson, and S. Sullivan, eds. 2000. *The Uninsured Debate: Health Insurance vs. Health Care Access.* Berkeley: California Health Care Safety Net Institute.

Carlisle, D. M., and B. D. Leake. 1998. "Differences in the Effect of Patients' Socioeconomic Status on the Use of Invasive Cardiovascular Procedures across Health Insurance Categories." *American Journal of Public Health* 88 (7): 1089–92.

Carlisle, D. M., B. D. Leake, and M. F. Shapiro. 1997. "Racial and Ethnic Disparities in the Use of Cardiovascular Procedures: Associations with Type of Health Insurance." *American Journal of Public Health* 87 (2): 263–7.

Daumit, G. L., J. A. Hermann, J. Coresh, and N. F. Powe. 1999. "Use of Cardiovascular Procedures among Black Persons and White Persons: A 7-Year Nationwide Study in Patients with Renal Disease." *Annals of Internal Medicine* 130 (3): 173–82.

Doescher, M. P., B. G. Saver, P. Franks, and K. Fiscella. 2000. "Racial and Ethnic Disparities in Perceptions of Physician Style and Trust." *Archives of Family Medicine* 9 (10): 1156–63.

Ford, E. S., and R. S. Cooper. 1995. "Racial/Ethnic Differences in Health Care Utilization of Cardiovascular Procedures: A Review of the Literature." *Health Services Research* (1, part 2): 237–52.

Freiman, M. P. 1998. "The Demand for Healthcare among Racial/Ethnic Subpopulations." *Health Services Research* 33 (4, part 1): 867–90.

Freiman, M. P., and P. J. Cunningham. 1997. "Use of Health Care for the Treatment of Mental Problems among Racial/Ethnic Subpopulations." *Medical Care Research and Review* 54 (1): 80–100.

Fronstin, P., L. G. Goldberg, and P. K. Robins. 1997. "Differences in Private Health Insurance Coverage for Working Male Hispanics." *Inquiry* 34 (2): 171–80.

Fronstin, P., and S. C. Snider. 1996–1997. "An Examination of the Decline in Employment-Based Health Insurance between 1988 and 1993." *Inquiry* 33 (4): 317–25.

Haan, M., G. A. Kaplan, and T. Camacho. 1987. "Poverty and Health. Prospective Evidence from the Alameda County Study." *American Journal of Epidemiology* 125 (6): 989–98.

Kemper, P., D. Blumenthal, J. M. Corrigan, P. J. Cunningham, S. M. Felt, J. M. Grossman, L. T. Kohn, C. E. Metcalf, R. F. St. Peter, R. C. Strouse, and P. B. Ginsburg. 1996. "The Design of the Community Tracking Study: A Longitudinal Study of Health System Change and Its Effects on People." *Inquiry* 33 (2): 195–206.

Keppel, K. G., J. N. Pearcy, and D. K. Wagener. 2002. "Trends in Racial and Ethnic-Specific Rates for the Health Status Indicators: United States, 1990–98." *Healthy People Statistical Notes*, No. 23. Hyattsville, MD: National Center for Health Statistics.

Lambrew, J. M., G. H. DeFriese, T. S. Carey, T. C. Ricketts, and A. K. Biddle. 1996. "The Effects of Having a Regular Doctor on Access to Primary Care." *Medical Care* 34 (2): 138–51.

La Veist, T. A., K. J. Nickerson, and J. V. Bowie. 2000. "Attitudes about Racism, Medical Mistrust, and Satisfaction with Care among African American and White Cardiac Patients." *Medical Care Research and Review* 57 (1, supplement): 146–61.

Lewis, C. E., J. M. Raczynski, A. Oberman, and G. R. Cutter. 1991. "Risk Factors and the Natural History of Coronary Heart Disease in Blacks." *Cardiovascular Clinics* 21 (3): 29–45.

Lillie-Blanton, M., M. Brodie, D. Rowland, D. Altman, and M. McIntosh. 2000. "Race, Ethnicity, and the Health Care System: Public Perceptions and Experiences." *Medical Care Research and Review* 57 (1, supplement): 218–35.

Metcalf, C. E., P. Kemper, L. T. Kohn, and J. D. Pickreign. 1996. *Site Definition and Sample Design for the Community Tracking Study, Technical Publication No. 1.* Washington, DC: Center for Studying Health System Change.

Monheit, A. C., and J. P. Vistnes. 2000. "Race/Ethnicity and Health Insurance Status: 1987 and 1996." *Medical Care Research and Review* 57 (1, supplement): 11–35.

National Center for Health Statistics. 1998. *Health, United States, 1998, with Socioeconomic Status and Health Chartbook.* Hyattsville, MD: National Center for Health Statistics.

Oaxaca, R. 1973. "Male–Female Wage Differentials in Urban Labor Markets." *International Economic Review* 14 (3): 693–709.

Peterson, L. A. 2002. "Racial Differences in Trust: Reaping What We Have Sown?" *Medical Care* 40 (2): 81–4.

Raczynski, J. M., H. Taylor, G. Cutter, M. Hardin, N. Rappaport, and A. Oberman. 1993. "Rose Questionnaire Responses among Black and White Inpatients Admitted for Coronary Heart Disease: Findings from the Birmingham-BHS Project." *Ethnicity and Disease* 3 (3): 290–302.

———. 1994. "Diagnoses, Symptoms, and Attribution of Symptoms among Black and White Inpatients Admitted for Coronary Heart Disease." *American Journal of Public Health* 84 (6): 951–6.

Shah, B. V., B. G. Barnwell, and G. S. Bieler. 1996. *SUDAAN User's Manual, Release 7.0.* Research Triangle Park, NC: Research Triangle Institute.

Shi, L. 1999. "Experience of Primary Care by Racial and Ethnic Groups in the United States." *Medical Care* 37 (10): 2068–77.

Sox, C. M., K. Swartz, H. R. Burstin, and T. A. Brennan. 1998. "Insurance or a Regular Physician: Which Is the Most Powerful Predictor of Health Care?" *American Journal of Public Health* 88 (3): 364–70.

Strouse, R., J. Hall, F. Potter, B. L. Carlson, P. Cunningham, J. Pascale, and R. Stapulonis. 1998. *Report on Survey Methods for the Community Tracking Study's 1996–1997 Household Survey, MPR Reference No. 8519-940.* Princeton, NJ: Mathematica Policy Research.

U.S. Department of Health and Human Services. 2000. *Tracking Healthy People 2010.* Washington, DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services, Health Resources and Services Administration Bureau of Health Professions. 2001. *Bureau of Health Professions Area Resource File: [United States] [Computer File].* February 2001 release. Rockville, MD: U.S. Department of Health and Human Services, Office of Data Analysis and Management.

Velanovich, V., M. U. Yood, U. Bawle, S. D. Nathanson, V. F. Strand, G. B. Talpos, W. Szymanski, and F. R. Lewis. 1999. "Racial Differences in the Presentation and Surgical Management of Breast Cancer." *Surgery* 125 (4): 375–9.

Waidmann, T. A., and S. Rajan. 2000. "Race and Ethnic Disparities in Health Care Access and Utilization: An Examination of State Variation." *Medical Care Research and Review* 57 (1, supplement): 55–84.

Weinick, R. M., S. H. Zuvekas, and J. W. Cohen. 2000. "Racial and Ethnic Differences in Access to and Use of Health Care Services, 1977 to 1996." *Medical Care Research and Review* 57 (1, supplement): 36–54.

Van Ryn, M. 2002. "Research on the Provider Contribution to Race/Ethnicity Disparities in Medical Care." *Medical Care* 40 (1): I140–51.

Wells, K. B., J. M. Golding, R. L. Hough, M. A. Burnam, and M. Karno. 1989. "Acculturation and the Probability of Use of Health Services by Mexican Americans." *Health Services Research* 24 (2): 237–57.

———. 1988. "Factors Affecting the Probability of Use of General and Medical Health and Social/Community Services for Mexican Americans and non-Hispanic Whites." *Medical Care* 26 (5): 441–52.

Wenneker, M. B., J. S. Weissman, and A. M. Epstein. 1990. "The Association of Payer with Utilization of Cardiac Procedures in Massachusetts." *Journal of the American Medical Association* 264 (10): 1255–60.

Zaslavsky, A. M., J. N. Hochheimer, E. C. Schneider, P. D. Cleary, J. J. Seidman, E. A. McGlynn, J. W. Thompson, C. Sennett, and A. M. Epstein. 2000. "Impact of Sociodemographic Case Mix on the HEDIS Measures of Health Plan Quality." *Medical Care* 38 (10): 981–92.

Zuvekas, S. H., and R. M. Weinick. 1999. "Changes in Access to Care, 1977–1996: The Role of Health Insurance." *Health Services Research* 34 (1, part 2): 271–9.