

# Nonemergency Visits to Hospital Emergency Rooms: A Comparison of Blacks and Whites

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**T**HE EMERGENCY ROOM WAS INITIALLY ENVISIONED as a source of treatment for trauma and acute health conditions. Over time it has expanded its role to become a substitute for the physician, outpatient facility, and clinic (Torrens and Yedwab 1970). For an increasing number of patients, the emergency room now provides the only door of access to the mainstream health care system and has supplanted the traditional role of the physician's office. Thus, these patients consider the emergency room as their usual source of care (Aday, Fleming, and Andersen 1984) and it has become the so-called "community physician" (Satin and Duhl 1972).

While the emergency room generally has been considered an unattractive source of care due to factors such as long waiting times and discontinuity of care, several features of the emergency room make it an attractive source of primary health care for certain populations. In contrast to the outpatient facility, use of the emergency room is not contingent on affiliation with a particular doctor. Unlike the physician's office, no appointment is needed to receive care. In contrast to the local health clinic, the emergency room provides immediate access to sophisticated medical technology, if needed. Finally, the emergency room has "office hours" that continue beyond the normal closing hours

of other health care providers, and health insurance policies generally provide unlimited access to its services.

Although the extent of emergency room use is well documented, sociodemographic determinants of its use remain unclear, particularly for nonemergency conditions. Descriptive data suggest that race, socioeconomic status, and the type of insurance coverage are each distinguishing features of emergency room users. These data show that blacks use the emergency room more frequently than whites (Ullman, Block, and Stratmann 1975; Dutton 1979; Aday, Fleming, and Andersen 1984) and that emergency room users are more often of low socioeconomic status (Bohland 1984). Finally, O'Grady et al. (1985) have shown that use of the emergency room declines if the insurance policy requires patients to make out-of-pocket payments that represent a high percentage of the cost of emergency room care.

Few studies use a multivariate framework to examine the determinants of emergency room use. Gold (1984) examined per capita emergency room visits and found them positively and significantly related to the price of hospital inpatient services, health insurance coverage, and the percentage of specialty physicians residing in the local area. Per capita visits were negatively related to per capita income and the percentage of nonwhite populations in the area. Stratmann and Ullman (1975) found that emergency room use is more likely for those with Medicaid and those in poor health. Examining a national sample of black adults, Neighbors (1986) found that emergency room visits are greater for the elderly, low-income respondents, and the unemployed. While informative, these studies make no distinction between emergency and nonemergency visits to the emergency room. As a result, it is unclear why the emergency room is utilized when less costly, yet equivalent, quality alternative health services are available.

As suggested by Neighbors (1986), and in research by Miners et al. (1978) on ambulatory medical visits, the determinants of emergency room use are best examined by separately assessing use by blacks and whites. Miners et al. (1978) found that socioeconomic factors have different effects on the utilization decisions of blacks and whites. For example, while traditional economic factors, such as the price of medical services and income, were significant determinants of ambulatory medical service use by whites, these factors did not influence use among blacks.

Recent changes in health policy make the question of the deter-

minants of emergency room use an increasingly important issue. Recent health policy has led to the closing of many hospitals and emergency rooms. It remains unclear, however, how these cost-cutting maneuvers will affect access to health services for those people for whom the emergency room remains a vital source of medical care. Before we can address the implications of these policies, it is important to gain a better understanding of why and under what circumstances groups use the emergency room rather than other types of facilities when nonemergency conditions arise.

The analyses in this article make two primary contributions to the literature on health services utilization. We examine the determinants of emergency room use, given nonemergency medical conditions. In the analysis, the emergency room is considered one of several alternative facilities available for care of nonemergency medical conditions. Some patients always use this facility for medical care; others are infrequent users. In this article we examine these differences in use of the emergency room and thus assess its role as an alternate care facility. The second contribution of this research is that we make a distinction between the determinants of the use of nonemergency medical services in general and use of the emergency room as an alternate care facility. These are not simultaneous decisions, especially among blacks (Neighbors and Howard 1987). The decision to seek some kind of medical care precedes and influences the decision to choose a particular facility. Thus, their determinants should be evaluated separately as a two-stage decision-making process.

The analysis framework for this research is based on the widely used Aday and Andersen (1974) model. According to their model, use of services is determined by predisposing conditions (e.g., age, marital status, and education), enabling conditions (e.g., insurance and income) and health needs (perceptions of health and health conditions). The model will be applied in the current analysis to black and white patients separately to provide a clearer interpretation of the influence of socioeconomic factors on emergency room use.

## Data and Sample

The data source used in this research is the National Medical Care Utilization and Expenditure Survey (NMCUES) (National Center for Health Statistics 1983). It is a national sample of the noninstitu-

tionalized, civilian United States population, cosponsored by the National Center for Health Statistics and the Health Care Financing Administration. The total sample included 17,123 individuals interviewed 5 times during 14 months of 1980–1981. In addition to information on medical service utilization and expenditures, this data provides a unique source of information on health insurance and health conditions.

From the above data set, initially all adult blacks and whites that reported a health condition in 1980 were selected. The health conditions considered were based on a comprehensive listing of diseases from the World Health Organization's *International Classification of Diseases* (see appendix note 1). All major disease categories were examined in the present analysis.

Since this article examines the decision to choose medical care in the emergency room from an array of other options, all emergency medical visits are excluded from the analysis (see appendix note 2). The final sample includes all adult blacks and whites who reported health conditions and did not need emergency medical care; non-emergency care was received in physicians' offices, outpatient clinics, other health clinics, the patient's home, and/or the hospital emergency room.

The sample used in the analysis of use of medical facilities included 770 blacks and 7,612 whites. Only 85 and 87 percent of these blacks and whites, respectively, were actual medical-service users and were included in the analysis of the second stage of decision making (i.e., facilities chosen).

## Analysis Framework

The following analysis is developed to assess the role of selected sociodemographic factors in influencing use of the emergency room as one of several treatment sources. As previously introduced, the choice of sociodemographic factors for the analysis is informed by the general medical utilization model developed by Aday and Andersen (1974). The second objective of our analysis is to assess differences in use of the emergency room by blacks and whites.

In this analysis we assume that: (1) the emergency room is one of many health facilities available for care of nonemergency health care

problems and (2) prior to choosing the emergency room, one must first decide to seek care for a medical condition. Each level of decision making represents a dichotomous choice: seek treatment at a medical facility or not and include or exclude the emergency room as a treatment alternative. This framework of choice implies that regression analysis must be developed using a limited dependent variable-regression procedure. Our analysis uses logistic regression analysis.

The immediate concern of this analysis is the second stage of decision making: choice of the emergency room among medical service users. Analysis of the first stage of decision making (seek medical treatment or not), however, is also necessary. To analyze the second stage of decision making without accounting for the first creates the potential for biased regression estimates (selectivity bias) (see appendix note 3). Thus, the regression model of the second stage includes an independent variable that accounts for the first stage: the probability of use of any facility. This means that two logistic regression equations are estimated. First, the model of utilization or not is estimated and reported in table 1. The sample for this analysis includes all adult blacks and whites who reported health conditions and includes both nonusers and nonemergency uses of medical facilities. An independent variable (incorporating the information of this regression) is constructed and used in the second-stage regression model (use of the emergency room among nonemergency patients) (see appendix note 4).

For whites, the probability of use of any facility is greater for females, those less than 65 years of age, married, with small families, and at least a high school education. Furthermore, the probability of medical service use by whites is higher if the emergency room is not the usual source of care, the person has health insurance, high income, and works less than full-time. Digestive, impairment, circulatory, and arthritis conditions increase the probability of use by whites. The probability of use by blacks is similarly affected by sex, health insurance, and health conditions. In contrast to whites, the probability of use is greater in rural areas and if self-perceptions of health are not poor.

Many of the factors found significant in influencing the probability of visits by whites were insignificant factors for blacks. Because of these different determinants of medical facility use for blacks and whites, two distinct independent variables are used in the second-

**TABLE 1**  
**Logit Analysis of Factors Influencing Medical Utilization**  
**by Blacks and Whites**

Variables	Utilization <sup>a</sup> estimates for blacks ( <i>t</i> statistic)	Utilization <sup>b</sup> estimates for whites ( <i>t</i> statistic)
<b>Predisposing</b>		
Household head	-0.040 (-1.40)	0.135 (1.19)
Marital status		
= 1 if widowed	0.084 (0.18)	-0.462 (-2.70)***
= 1 if separated or divorced	-0.074 (-0.20)	-0.110 (-0.71)
= 1 if single	-0.467 (-1.33)	-0.241 (-2.03)**
Family size		
= 1 if 2 person HH	-0.034 (-0.08)	-0.214 (-1.35)
= 1 if ≥ 3 person HH	-0.579 (-1.41)	-0.491 (-3.07)***
Sex		
= 1 if male	-0.840 (-3.15)***	-0.629 (-5.99)****
Age		
= 1 if 18-34	0.786 (1.52)	0.813 (5.35)****
= 1 if 35-54	0.180 (0.37)	0.243 (1.66)*
= 1 if 55-64	-0.255 (-0.54)	0.343 (2.32)**
Education		
= 1 if < high school	0.116 (0.26)	-0.285 (-2.21)**
= 1 if high school grad	0.128 (0.28)	-0.182 (-1.58)
= 1 if some college	0.099 (0.21)	-0.147 (-1.12)
<b>Enabling</b>		
Emergency room as usual source	-0.207 (-0.37)	-0.752 (-2.44)**
Insurance		
= 1 if Medicaid	1.13 (2.60)***	0.789 (4.03)****
= 1 if Medicare/private	0.705 (2.04)**	0.618 (5.07)****
Income		
= 1 if \$5,000 - \$9,999	-0.565 (-1.19)	0.172 (0.95)

TABLE 1 (Cont'd)

Variables	Utilization <sup>a</sup> estimates for blacks ( <i>t</i> statistic)	Utilization <sup>b</sup> estimates for whites ( <i>t</i> statistic)
= 1 if \$10,000 - \$14,999	-0.840 (-1.71)*	0.244 (1.33)
= 1 if \$15,000 - \$24,999	-0.274 (-0.54)	0.556 (3.02)***
= 1 if \$25,000 and above	-0.327 (-0.63)	0.631 (3.36)****
<b>Employment status</b>		
= 1 if full time	-0.217 (-0.80)	-0.261 (-2.93)***
<b>SMSA</b>		
= 1 if SMSA (central city)	-0.320 (-1.30)	-0.126 (-1.43)
= 1 if rural	1.44 (2.21)**	-0.109 (-1.12)
<b>Region</b>		
= 1 if Northeast	-0.359 (-0.81)	0.029 (0.25)
= 1 if North central	0.122 (0.26)	0.138 (1.27)
= 1 if South	-0.094 (-0.23)	-0.011 (-0.10)
<b>Need</b>		
<b>Health perception</b>		
= 1 if good or fair	-0.341 (-1.34)	0.080 (1.00)
= 1 if poor	-1.14 (-2.24)**	0.029 (0.14)
<b>Conditions</b>		
= 1 if digestive	1.16 (4.08)****	1.168 (12.98)****
= 1 if impairment	0.955 (3.27)***	1.506 (15.21)****
= 1 if circulatory	0.854 (2.76)***	0.984 (8.56)****
= 1 if respiratory	0.290 (1.22)	0.082 (1.09)
= 1 if arthritis	0.888 (2.79)***	0.904 (9.42)****

Note: The excluded categories corresponding with the above variables are: married, one-person household, female, 65 and older, college graduate, no insurance, income < \$5,000, part-time/unemployed/out of the labor force, non-SMSA (urban)/SMSA (noncentral city), West, excellent health, and all other diseases/conditions.

<sup>a</sup> Visit model (blacks):  $X^2 = 113.96$ , d.f. = 33,  $p < .001$ ;  $R^2 = 0.273$

<sup>b</sup> Visit model (whites):  $X^2 = 914.28$ , d.f. = 33,  $p < .001$ ;  $R^2 = 0.376$

\*  $p < .10$

\*\*  $p < .05$

\*\*\*  $p < .01$

\*\*\*\*  $p < .001$

stage regressions (use of the emergency room), where blacks and whites are assessed separately.

Two approaches were used to examine the question of whether the probability of emergency room use by blacks and whites is differentially determined by predisposing and enabling conditions as well as health needs. First, a chi-square test of differences in intercepts and slopes was performed. This test assesses whether every independent variable of the regression model has a different effect on black and white utilization patterns. Second, separate regression equations were estimated for the black and white samples. The  $t$  statistics from these regressions facilitate the assessment of the impact of particular independent variables on use of facilities by blacks and whites (see appendix note 5).

## Results

The results for the emergency-room-visit regression model are reported in table 2. The chi-square test indicates that there is not a statistically significant difference in the emergency-room regression models for blacks and whites (see appendix note 6). Thus, we were unable to support the hypothesis that every factor examined in the model had a different effect on black and white emergency-room-visit decisions. The  $t$  test indicates that there are significant within-group differences among those factors affecting visits to the emergency room by blacks and whites. These differences are indicated by significant  $t$  statistics. Moreover, the emergency-room regression model is a better predictor of visit patterns for whites, as indicated by the higher regression  $R^2$ .

The predisposing conditions affecting emergency room visits by blacks and whites include household status, marital status, sex, age, and education. Age is the only predisposing condition that has similar effects on emergency room visits by whites and blacks. For both groups, the young (18–34) are more likely to visit the emergency room than those 65 years and older. Whites aged 35 to 54 are also more likely to visit the emergency room than those 65 years and older. For whites only, household heads and males have a higher probability of nonemergency use of the emergency room. While educational status (college graduation) is a significant deterrent to emergency room visits by whites, it is an insignificant factor in visit



decisions by blacks. For blacks only, widows are significantly less likely to visit the emergency room than those who are married.

The emergency room as a usual source of care is the only enabling condition affecting visits to the emergency room by blacks, while visits by whites is additionally affected by insurance coverage through Medicaid, region of residence, and employment. The emergency room as a usual source of care increases the probability of emergency room visits for both groups. Whites with Medicaid are more likely to visit the emergency room than the uninsured. Residing in the Northeast rather than the South and full-time employment increases the probability that the emergency room will be one of the facilities used to care for a nonemergency medical condition.

Health needs also affect both groups. For both digestive and impairment conditions increase the probability the emergency room will be used for nonemergency conditions. Additionally, the probability of emergency room visits by whites is increased if arthritic conditions exist.

## Discussion

In the present analysis we use a traditional model (Aday and Andersen 1974) to examine medical service use and emergency room use. According to Aday and Andersen, use of medical services is determined by personal characteristics predisposing one to prefer a medical visit, family and community economic resources enabling medical visits, and health conditions creating the need to visit. Our analysis indicates that many of these factors significantly influence medical service use and nonemergency use of the emergency room and that these factors differ for blacks and whites. A general summary of our regression results can be found in table 3.

While specific predisposing, enabling, and need conditions are found as determinants of medical utilization by whites, use of services by blacks is predominantly determined by enabling and need factors. Sex is the only predisposing condition that is significant in the utilization decision by blacks. As supported by the relatively lower regression  $R^2$  for blacks, the model may exclude factors relevant to the utilization decision of blacks, particularly predisposing conditions.

Similar to the results for the medical-use analysis, the emergency room visit results indicate that the model is not a good predictor of

TABLE 2  
Logit Analysis of Factors Influencing Visits to the Emergency Room by  
Blacks and Whites

Variables	ER visit <sup>a</sup> estimates for blacks ( <i>t</i> statistic)	ER visit <sup>b</sup> estimates for whites ( <i>t</i> statistic)
<b>Predisposing</b>		
Household head	0.4260 (1.40)	0.222 (1.93)
<b>Marital status</b>		
= 1 if widowed	-1.34 (-2.12)**	0.196 (1.00)
= 1 if separated or divorced	-0.186 (-0.47)	0.239 (1.60)
= 1 if single	-0.104 (-0.30)	0.152 (1.27)
<b>Family size</b>		
= 1 if 2 person HH	-0.332 (-0.71)	-0.222 (-1.41)
= 1 if $\geq 3$ person HH	-0.252 (-0.58)	-0.053 (-0.34)
<b>Sex</b>		
= 1 if male	-0.298 (-0.76)	0.404 (3.42)***
<b>Age</b>		
= 1 if 18-34	1.01 (1.91)*	1.514 (8.23)****
= 1 if 35-54	0.212 (0.43)	0.764 (4.39)****
= 1 if 55-64	-0.969 (-1.58)	0.162 (0.91)**
<b>Education</b>		
= 1 if < high school	0.845 (1.44)	0.321 (2.24)**
= 1 if high school grad	0.583 (1.03)	0.245 (1.98)**
= 1 if some college	0.392 (0.66)	0.042 (0.30)
<b>Enabling</b>		
Emergency room as usual source	2.00 (3.59)***	1.501 (4.80)***
<b>Insurance</b>		
= 1 if Medicaid	0.928 (1.46)	0.484 (2.23)**

TABLE 2 (Cont'd)

Variables	ER visit <sup>a</sup> estimates for blacks ( <i>t</i> statistic)	ER visit <sup>b</sup> estimates for whites ( <i>t</i> statistic)
= 1 if Medicare/private	0.408 (0.74)	0.173 (1.02)
<b>Income</b>		
= 1 if \$5,000 - \$9,999	-0.038 (-0.08)	0.208 (1.03)
= 1 if \$10,000 - \$14,999	0.111 (0.20)	0.258 (1.26)
= 1 if \$15,000 - \$24,999	0.713 1.44)	0.191 (0.91)
= 1 if \$25,000 and above	0.787 (1.51)	0.167 (0.77)
<b>Employment status</b>		
= 1 if full time	-0.217 (-0.71)	-0.209 (-2.18)**
<b>SMSA</b>	0.217 (0.74)	-0.097 (-1.02)
= 1 if SMSA (central city)	0.881 (1.59)	-0.138 (-1.25)
= 1 if rural		
<b>Region</b>	0.378 (0.77)	0.325 (2.69)**
= 1 if Northeast	0.032 (0.06)	0.051 (0.43)
= 1 if North central	-0.089 (-0.19)	0.077 (0.64)
= 1 if South		
<b>Need</b>		
<b>Health perception</b>		
= 1 if good or fair	-0.006 (-0.02)	0.115 (1.35)
= 1 if poor	0.187 (0.31)	0.203 (1.05)
<b>Conditions</b>		
= 1 if digestive	1.04 (2.58)***	0.583 (5.16)****
= 1 if impairment	0.894 (2.56)**	0.62 (4.88)****
= 1 if circulatory	0.345 (0.92)***	-0.083 (-0.65)
= 1 if respiratory	-0.162 (-0.64)	0.037 (0.47)

TABLE 2 (Cont'd)

Variables	ER visit <sup>a</sup> estimates for blacks ( <i>t</i> statistic)	ER visit <sup>b</sup> estimates for whites ( <i>t</i> statistic)
= 1 if arthritis	0.432 (1.23)	0.337 (3.27)***
Visit probability	-2.38 (-1.26)	0.076 (0.11)

Note: The excluded categories corresponding with the above variables are: married, one-person household, female, 65 and older, college graduate, no insurance, income < \$5,000, part-time/unemployed/out of the labor force, non-SMSA (urban)/SMSA (noncentral city), West, excellent health, and all other diseases/conditions.

<sup>a</sup> ER use model (blacks):  $X^2 = 76.68$ , d.f. = 34,  $p < .001$ ;  $R^2 = 0.126$

<sup>b</sup> ER use model (whites):  $X^2 = 416.03$ , d.f. = 34,  $p < .001$ ;  $R^2 = 0.264$

\*  $p < .10$

\*\*  $p < .05$

\*\*\*  $p < .01$

\*\*\*\*  $p < .001$

emergency room choice by blacks. However, for blacks few factors within the three factor groupings are significant determinants of emergency room use. Indeed, among family and community economic enabling conditions, the only significant determinants of emergency room visits by blacks is the emergency room as the usual source of care. While the model used to examine emergency room visits by whites is identical to the model used for blacks, the corresponding regression coefficients of determination are .264 and .126.

Most of our knowledge of the determinants of emergency room visits is generated from analyses that neither distinguishes between emergency and nonemergency visits nor accounts for a two-stage decision-making process in use of medical facilities. Thus, the interpretation of the results from the previous analyses is unclear. For example, the factors identified in the literature as significant determinants of emergency room use depict the characteristics of those most likely to visit this facility due to medical emergencies as well as the factors influencing nonemergency visits to the emergency room. Because emergency and nonemergency visits are not analyzed separately in those analyses, we do not know the specific relation between the significant determinants of emergency room use and the two types of uses of this facility.

Previous researchers characterize emergency room users as predom-

inantly black and in poor health, of low income, possessing Medicaid insurance, and unemployed. Our analysis indicates that black medical service users were only slightly more likely to visit the emergency room than white medical-service users (15 percent vs. 13 percent). We do not find consistent support, however, for the other hypotheses of the determinants of emergency room visits. In particular, health perception insignificantly influences the emergency room visitation decisions of blacks and whites, and income is not a significant determinant of emergency room use. Only among whites are the unemployed and Medicaid insured more likely to consider the emergency room as one of their medical facility options.

Every typical characteristic of emergency room users identified in the literature was an insignificant determinant of emergency room use by blacks. Thus, by examining utilization patterns of blacks and whites separately, we have been able to distinguish between mean characteristics of emergency room users and factors predicting use of the emergency room by blacks and whites. Because whites are usually more heavily represented in survey samples, regression analyses that do not examine blacks and whites in separate models will generate results describing the behavior of whites, as verified in our analysis.

Traditional economic enabling factors—i.e., income, health insurance, and employment status—have little influence on emergency room utilization decisions by blacks. These results are consistent with those found by Miners et al. (1978). Having insurance is often believed to lead the patient to perceive the price of medical services to be lower than the price charged for services, and thus increases use of services. Insurance affects the emergency room use decisions of whites in a manner consistent with this interpretation of its role; insurance coverage increases the probability that whites will use the emergency room. In contrast, insurance affects only the medical utilization decision of blacks and has an insignificant effect on emergency room use by blacks.

Similarly, full-time employment affects both levels of decisions only among whites, decreasing the probability of medical visits and the probability of emergency room choice. Thus, for whites differences in the time available for use of services may function as a resource constraint, while time constraints have no role in use decisions by blacks.

Additional research is needed to understand the role of regional residence in influencing emergency room visits. For whites, residence

TABLE 3  
 Significant Factors Influencing Use of Health Facilities and the Emergency Room (ER)  
 among Blacks and Whites (sign of coefficient)

Blacks		Whites	
Utilization	ER	Utilization	ER
<b>Predisposing conditions</b>			
Males (-)	Age 18-34 (+)	Males (-)	Males (+)
		Age 18-34 (+)	Age 18-34 (+)
		Age 35-54 (+)	Age 35-54 (+)
		Age 55-64 (+)	
		Single (-)	
	Widowed (-)	Widowed (-)	
		Three or more person household	
		(-)	
		Less than high school education	
		(-)	
		Less than high school education (+); high school graduate (+)	
		Head of household (+)	

<b>Enabling conditions</b>	ER is usual source of care (+)	ER is usual source of care (-)	ER is usual source of care (+)
Medicaid (+); Medicare/private insurance (+)	Medicaid (+); Medicare/private insurance (+)		Medicaid (+)
Income (\$10,000-\$14,999) (-)	Income (\$15,000-\$24,999) (+); 25,000 or above (+)		
Rural residence (+)	Full-time job (-)		Full-time job (-)
			Residence in Northeast (+)
<b>Need</b>			
Health is perceived poor (-)			
Conditions	Conditions	Conditions	Conditions
Digestive (+)	Digestive (+)	Digestive (+)	Digestive (+)
Impairments (+)	Impairments (+)	Impairments (+)	Impairments (+)
Circulatory (+)	Circulatory (+)		
Arthritis (+)	Arthritis (+)		Arthritis (+)
$R^2 = .273$	$R^2 = .376$	$R^2 = .126$	$R^2 = .264$

in the Northeast increases the probability of emergency room visits. On the other hand, region of residence is an insignificant determinant of visits by blacks. Region of residence has been identified by many health researchers (e.g., Newhouse and Phelps 1976) as a factor reflecting differences in nominal prices. This again indicates a general lack of response to economic factors among blacks.

The results for income, insurance, job status, or region of residence could be used to suggest that decision making using economic criteria is not practiced by blacks when they choose medical facilities. Alternatively, these results may indicate that our model does not include those economic factors significant in determining choice among facilities by blacks. For example, the total cost of medical services includes the out-of-pocket price, expenditures on travel between the home and needed facilities, and the cost of time spent traveling (Acton 1975). Measures of these costs were not available for the current analysis. Further study is needed to determine the role of these factors in decisions by blacks.

The somewhat curious, insignificant role of economic factors in emergency room choice by blacks may, in part, be explained in differences across groups in perceptions of choices among available medical facilities. White communities may have better access to all types of medical facilities (Kleinman, Gold, and Makuc 1981; Schwartz 1978) and thus the emergency room can be used as a substitute for other types of facilities. In black communities, the emergency room may be perceived as the only health care provider. Given a perception that alternative facilities are not available, economic factors (e.g., the availability of health insurance that reduces the relative prices of medical services) may not affect decision making (Miners et al. 1978).

Some factors found in our analysis as significant determinants of emergency room use were not found by previous researchers. These factors include age, marital status, regional residence, and particular health conditions. The effect of youth on emergency room visits is independent of race. The young (18–34) of both races are more likely to visit the emergency room. The younger age group may lack sophisticated knowledge of facilities available to them and so choose the most obvious source, the hospital and its emergency facility. The difference in choice sets between this group and the elderly deserves additional attention.



Marital status has an unusual role. While single and widowed whites are significantly less likely than are those who are married to use medical services, marital status is an insignificant determinant of medical use by blacks. This contrast is even more striking when we examine the results for emergency room use. Widowhood, as compared to those married, is an insignificant determinant of emergency room use by whites and lowers the probability of emergency room use by blacks. These results suggest that the role of family structure in influencing medical utilization decisions and facility choice is different across racial groups.

Whites with a high school education or less are more likely to visit the emergency room than whites with a post-high school education. This relationship is not found among blacks. For blacks, education is not a significant factor in emergency room choice. This result is consistent with other research that found blacks at all levels of education were more likely to use the emergency room than were whites (e.g., Broman 1987). It may be that blacks perceive limited access to alternate medical facilities. Emergency room use by whites with less education may indicate a lack of knowledge of options available. This relation between education and use of the emergency room needs to be examined in greater detail.

The insignificant role of education in emergency room choice by blacks provides further support for the hypothesis of differences in perceived access. If blacks at all educational levels perceive limited access to facilities, then differences in knowledge about alternative facilities should insignificantly affect the facility chosen.

Health conditions have the same effect on blacks and whites. Digestive and impairment conditions increase the likelihood that blacks and whites will use the emergency room. While some have questioned whether the appropriate conditions are being cared for in the emergency room, these results indicate that this question can be addressed independent of considerations of racial utilization patterns.

## Implications

The results of this analysis indicate that traditional sociodemographic factors affecting medical utilization patterns do not provide much information about emergency room utilization by blacks. Indeed, enabling conditions (economic factors) were generally insignificant in

explaining the use of this facility by blacks while being highly significant for whites. Thus, the traditional utilization model seems to exclude factors relevant to the decision making by blacks. It is unclear whether these excluded factors are related to cultural preferences of blacks or characteristics of the communities in which black consumers receive medical services.

Identifying all components of the price of medical services would greatly aid the economic analysis of health care choices by blacks. Data on prices paid for services, health insurance coverage, and employment hours have been generally incorporated as a standard component of surveys on medical services utilization. Data are seldom collected, however, on other dimensions of the price of medical care. There are data on the distance between home and usual source of care and on the time spent waiting for the services of usual sources. These data provide information on the money and time cost of the chosen facility but do not help in facilitating an evaluation of relative money and time cost affecting the choice of facilities.

Research is needed that conceptualizes consumer perceptions of available medical facility alternatives within a community. Whites are found to have better access to traditional medical facilities than blacks (Kleinman, Gold, and Makuc 1981; Schwartz 1978). On the other hand, black and other ethnic minority communities continue to have a viable cultural medicine tradition, one not found in white communities. This is a provider choice that is excluded from our analysis. While there are some studies of folk medicine among Hispanic populations, there are few studies of the cultural medicine tradition in the black community (e.g., Harwood 1981). We do not know the role of these alternate service providers in affecting use of private and public medical facilities. This area deserves further attention. If there are significant differences in consumer perceptions of medical markets, sample stratification in future research should reflect this diversity.

There is need to distinguish cultural/ethnic factors from effects of racial discrimination; controlling for socioeconomic status does not do this. Are blacks' utilization patterns influenced by cultural phenomenon and/or by a realistic assessment of the assistance available to them, which may be restricted by institutionalized and systematic forms of discrimination? The focus on race rules out issues of trust in physicians, perceptions of the quality of care, and attitudes toward

the use of organized health care delivery systems (Wilkinson and King 1987).

As now established, the predisposing conditions in the Aday and Andersen (1974) model may not capture cultural differences in attitudes and perceptions about health care options. To clarify this issue will require that we obtain measures of culture not typically used in research on health care utilization. There is need of measures that examine more directly particular aspects of culture—such as values, traditions, attitudes, roles, etc.—that may influence the process of choosing medical care.

Examining culture more directly will highlight subgroup variations. In using race as a primary conceptual tool to examine behavior, we assume that there is no cultural variation within racial groups. Within each of the racial categories, however, there lie any number of cultural subgroups—such as West Indians, Africans, and northern versus southern residents among blacks, and English, Polish, and Irish among whites. Differences between blacks and whites may, in fact, be attributed only to certain subgroups of whites (e.g., Thornton, White-Means, and Choi 1988).

Given recent hospital closings, our analysis identifies those most likely to face changes in access to primary medical care services. These are individuals who choose the emergency room for treatment of non-emergency conditions. Our limited understanding of emergency room utilization patterns among blacks suggests that we need to look more extensively at unique factors and encounters by blacks. To avoid the inadvertent exclusion of blacks from mainstream health care, policy makers need to focus on community programs. Information is needed on emergency room alternatives that communities perceive as equally convenient and suitable (Bohland 1984). This would assure equitable and sufficient access to medical care across communities.

## Appendix Notes

1. From this comprehensive listing of diseases, we classified diseases into six groups—digestive, impairments, circulatory, respiratory, arthritis, and all other conditions. Digestive conditions include diseases of the digestive, blood, and nervous systems. Impairments include

disorders of the eye and ear, as well as fractures and sprains. Hypertension, heart diseases, and other conditions of the circulatory system are classified as circulatory. All diseases of the respiratory system are included in respiratory. Finally, the arthritis classification includes diseases of the musculoskeletal system and connecting tissues.

2. An emergency medical visit is defined by emergency care needed within an hour or a few hours of a visit to an emergency room. Need is defined according to whether there is a threat to life or health at the time of the emergency room visit. Specifically, survey respondents were asked two questions: "At the time you went to the emergency room for your condition, was there a threat to life if you did not receive treatment within an hour?" and "At the time, did you need care within a few hours to prevent your condition from becoming serious?" Affirmative answers to either question implied the visit to the emergency room was for a "true" emergency health condition.

3. Selectivity bias implies that missing data exists within a model in a systematic way (Maddala 1985). The second stage of decision making examines the choice of including or excluding the emergency room as a treatment source among medical-service users. Thus, data are systematically missing on the use of the emergency room and/or use of any medical facility for all persons receiving no treatment for a medical condition.

4. An explicit correction for selectivity bias is needed. To examine the rationale, consider the role of the independent variables in a model of emergency room utilization that excludes the correction. For example, insurance coverage may affect the choice of the emergency room. Yet, insurance coverage may also be a determinant of medical visits. The addition of an independent variable that corrects for selectivity bias implies accounting for the dual role of each independent variable: (a) determinants of the probability of being in the final sample, and (b) determinants of the use of alternative facilities. Thus, the reported coefficients for the independent variables of the emergency room regression are purged of their role as determinants of use or restraint from use of facilities. The independent variable that corrects for the bias is mathematically defined as  $1/[1 + \exp(-\sum \beta X_i)]$  where  $\beta$  represents the vector of regression coefficients from the first stage regression and  $X_i$  represents statistically significant predisposing, enabling, and need conditions from the first-stage regression.

5. The chi-square test is the most rigorous of the two tests. If it

identifies significant differences, a race interaction term on every variable in the regression model would be necessary in a pooled sample regression of blacks and whites. If the chi-square test identifies insignificant differences, yet  $t$  statistics from separate regression equations indicate that particular factors differentially explain decisions of blacks and whites, then a pooled sample regression would have interaction terms on a subset of the model's variables.

The chi-square test uses the entire sample of black and a reduced sample of white medical-service users. This sample-size adjustment is required due to the discrepancy in sample sizes for blacks and whites; the sample of white medical facility users is approximately ten times that of blacks. To perform the test of differences without adjusting for sample-size differences would muddle the information provided by the test. A regression performed on a large sample will identify a larger number of significant factors as compared to a small sample regression. Thus, a chi-square test performed on two samples of equivalent size purges the statistic of sample size bias. In the following analysis, the chi-square test assesses differences in decisions on the use of medical facilities by a representative, 20 percent sample of white medical service users ( $n = 1354$ ) and the sample of black medical service users.

6. The test statistic is defined by the difference in  $-2 * \log$ -likelihood ratio for a logistic regression that pools the black and reduced white sample (assuming the two groups are the same) and a regression that assumes the intercepts and slopes for the two groups are different (Maddala 1977, 132–36; Johnston 1984, 207–25). The test statistic has a chi-square distribution. The critical value of the test statistic for our model is 44.9. We obtained a value of 40.53.

Furthermore, the significant factors in the regression of the 20 percent sample of white medical-service users were widowed, sex, age (18–34 and 35–54), education (some college), region (north central and South). The overall model statistics were:  $X^2 = 118.62$ , d.f. = 34,  $p < .001$ ;  $R^2 = 0.223$ .

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