

# Separate And Unequal: Racial Segregation And Disparities In Quality Across U.S. Nursing Homes

Residential segregation in U.S. cities disproportionately places blacks in poorer-performing nursing homes.

by **David Barton Smith, Zhanlian Feng, Mary L. Fennel, Jacqueline S. Zinn, and Vincent Mor**

**ABSTRACT:** We describe the racial segregation in U.S. nursing homes and its relationship to racial disparities in the quality of care. Nursing homes remain relatively segregated, roughly mirroring the residential segregation within metropolitan areas. As a result, blacks are much more likely than whites to be located in nursing homes that have serious deficiencies, lower staffing ratios, and greater financial vulnerability. Changing health care providers' behavior will not be sufficient to eliminate disparities in medical treatment in nursing homes. Persistent segregation among homes poses a substantial barrier to progress. [*Health Affairs* 26, no. 5 (2007): 1448-1458; 10.1377/hlthaff.26.5.1448]

**T**HE EFFECT OF RACIAL SEGREGATION on disparities in medical treatment has only recently received attention from researchers. This research has shown that blacks are more likely than whites to seek care from hospitals that have fewer resources in terms of up-to-date technology.<sup>1</sup> They are also more likely to receive care at hospitals with higher surgical mortality rates, undergo cardiovascular procedures at lower-volume hospitals, and receive maternity services at hospitals that have higher risk-adjusted neonatal mortality rates for both black and white infants.<sup>2</sup> Blacks are also more likely to receive their primary care from physicians who tend to be less well trained than from physicians who primarily treat whites; have less access than whites to important clinical resources

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*David Barton Smith (dbsmith@temple.edu) is emeritus professor in the Department of Risk, Insurance, and Healthcare Management, Fox School of Business and Management, at Temple University, in Philadelphia, Pennsylvania. Zhanlian Feng is assistant professor (research) in the Center for Gerontology and Health Care Research at Brown University, in Providence, Rhode Island. Mary Fennel is professor and chair, Department of Sociology, at Brown University. Jacqueline Zinn is a professor in Temple University's Department of Risk, Insurance, and Healthcare Management. Vincent Mor is professor and chair, Department of Community Health, at Brown.*

such as high-quality subspecialists, diagnostic imaging, and nonemergency admissions to hospitals; and report less control over their work, more time pressure, and higher rates of burnout than their white peers.<sup>3</sup> These differences in primary care are reflected in missed opportunities among blacks for higher rates of early intervention with breast and prostate cancer treatment.<sup>4</sup> A tiered system of nursing home care that concentrates blacks in marginal-quality nursing homes also appears to exist.<sup>5</sup>

■ **Historical background.** Historically, segregation and discrimination in access to higher-quality nursing homes in the United States have never been systematically addressed. Before Medicare and Medicaid were implemented in 1966, nursing homes in the South were totally segregated by Jim Crow laws and in the North almost as much by patterns of use and admission practices. Racial segregation also took place within homes through separate floors and wings; it has persisted in some homes through similar segregation by payer status. In the past, blacks have had far more limited access to nursing home care than whites have had. In 1963, nursing home use by nonwhites over age sixty-five was 39 percent that of whites.<sup>6</sup> A decade later, well after the implementation of Medicare and Medicaid, use of nursing homes by elderly blacks was still only 47 percent that of elderly whites.<sup>7</sup>

■ **Early noncompliance with the law.** Title VI of the 1964 Civil Rights Act prohibits segregation and other forms of discrimination in any organization receiving federal funds. In spite of their reliance on such funding, nursing homes never became a focus of federal Title VI compliance as hospitals did when Medicare was implemented. Participation of nursing homes in the Medicare program began six months after hospital participation, in January 1967. In a conscious decision reflecting the growing Civil Rights backlash and the waning popularity of the Johnson administration, plans to use certification for Medicare funds as a vehicle to desegregate facilities were scrapped. All that nursing homes were required to do to qualify for Medicare was to post signs and certify that they did not discriminate.<sup>8</sup> No information on admission practices or the racial and ethnic composition of the facility's residents was requested, and no federal civil rights inspections were performed.

■ **Lack of documentation and legal challenges.** Since that time, except for a few administrative reviews in response to the filing of complaints, no information on minorities' access to high-quality nursing home care has been reported. Only one class-action suit, *Linton v. Commissioner*, mounted a successful Title VI challenge to state policies by demonstrating that allowing nursing homes the discretion to spot-certify fewer than all of their beds for Medicaid patients resulted in a disparate impact on blacks' access.<sup>9</sup>

A recurring theme over the past forty years has been the lack of data to document the extent of the problem. A 1971 Civil Rights Commission report on civil rights enforcement noted the impression that many facilities continue to serve patients exclusively of one race.<sup>10</sup> A decade later, an Institute of Medicine (IOM) review of civil rights in health care noted that published studies, anecdotal evi-

dence, and the inadequacy of alternative explanations strongly suggested the presence of discrimination in nursing home admission practices, although there was little systematic evidence on how widespread such practices were.<sup>11</sup> In 2002, twenty-one years later, the IOM's review of unequal treatment expressed a similar concern.<sup>12</sup> Indeed, for more than four decades, in spite of the Title VI obligations that accompany Medicare and Medicaid, no one has known the extent to which nursing homes continue to remain segregated or segregation's impact on disparities in the quality of care.

This paper addresses two questions: (1) What degree of racial segregation persists among U.S. nursing homes? (2) Does racial segregation result in blacks' and whites' having access to nursing homes of differing levels of quality?

## Study Data And Methods

■ **Data sources and study sample.** We used calendar year 2000 information from (1) the Centers for Medicare and Medicaid Services (CMS) Online Survey Certification and Reporting System (OSCAR) to measure the quality of nursing homes; and (2) the nursing home Minimum Data Set (MDS) to describe homes' racial composition. Except for a few nonparticipating, exclusively private-pay facilities, all U.S. licensed nursing homes are included in the OSCAR and MDS databases. Nursing homes that are operated as units of acute care hospitals tend to operate differently than freestanding ones and were excluded from our analysis. Thus, we measured nursing home segregation based on the 14,374 freestanding nursing homes in 2000 and the 1,466,471 residents they served, which accounted for 88 percent of all U.S. nursing home facilities and 89 percent of nursing home residents in that year.

■ **Measures of segregation and disparities in quality.** To measure segregation and racial disparities in quality, we used the Dissimilarity Index, the most commonly used measure of segregation.<sup>13</sup> In essence, the index represents the combined percentage of residents of both races that would need to be relocated for there to be the same proportion of black and white residents in every nursing home. The index may range from 0.00 (indicating proportional representation by blacks and whites) to 1.00 (indicating total segregation, with care provided only to white or black residents). Actual segregation-induced disparities in quality will be a function of how separate the facilities used by blacks and whites are (the Dissimilarity Index) and how unequal they are in terms of a range of structural indicators. Disparities that take place within facilities (rather than between them) are not measured by our indicators of quality. To adjust for state and regional variations, we created dichotomous indicators of quality from OSCAR describing the relative position of a facility in a metropolitan statistical area (MSA) as defined by the U.S. census.<sup>14</sup>

The nine adjusted dichotomous indicators organized under three categories are as follows.

*Inspection deficiencies.* "Most deficiencies" comprises facilities in the upper quartile of scope/severity-weighted deficiencies in an MSA; "G+ deficiencies" covers fa-

cilities that have been cited as having deficiencies that have caused actual harm or that pose an immediate risk to residents; and “terminated facilities” refers to facilities that have involuntarily or “voluntarily” been terminated from Medicare and Medicaid within four years of inspection.

*Staffing.* “Highest total direct-care staffing” is the designation given to facilities in the upper quartile of direct-care staff-to-residents ratios within an MSA; “highest RN/nurse staff ratio” refers to facilities in the upper quartile of ratios of registered nurses (RNs) to total nursing staff in an MSA; and “substantially understaffed” refers to facilities whose average Nursing Case-Mix Index (NCMI) score is above the MSA median but whose total ratio of direct-care staff to residents is at least two quartiles below the MSA median.

*Financial viability.* “Highest percentage of private-pay residents” refers to facilities in the upper quartile of percentage of private-pay residents in an MSA; “highest occupancy rates” refers to facilities in the upper quartile of occupancy rates in an MSA; and “highest percentage of Medicaid residents” again refers to facilities in the upper quartile of an MSA.

■ **Analytic methods.** We calculated the percentage of residents, separately for blacks and whites, who are located in facilities with each of these nine attributes of quality. We examined racial disparity on each quality indicator using the black/white odds ratio of the percentages, both nationally and by region.

Our measures of quality are relative to the MSA. To ensure reasonably stable indicators, we limited the analysis of these quality measures to 147 MSAs with at least a 5 percent black residential population, four or more freestanding nursing homes, and 100 or more black nursing home residents in 2000. As a result, our analytic sample included 7,196 freestanding (non-hospital-based) nursing homes and their 837,810 residents, or about 50 percent of all freestanding U.S. nursing homes and 57 percent of their residents.

For these selected 147 MSAs, we developed a composite measure of the relative degree of segregation-related disparities in care, combining all nine indicators even though they are not substantially correlated. Since the raw indicators or black/white odds ratios for MSAs could be distorted by relatively small numbers, we controlled for this by converting them to decile rankings. For each indicator, MSAs were ranked, distributed into ten equal groups, and assigned a score from 1 to 10. A 10 indicated that the MSA had a black/white odds ratio in the top decile of MSAs. These scores on each of the nine measures were then added to produce a combined score. An MSA in the top 10 percent of MSAs on all nine indicators would receive a composite score of 90, and one in the lowest 10 percent of MSAs on all nine indicators, a score of 9.<sup>15</sup>

## Study Results

■ **Segregation.** We found that in 2000, blacks were concentrated in a small percentage of nursing homes, with more than 50 percent of black residents in for-profit

homes concentrated in less than 10 percent of for-profit facilities and more than 70 percent of those in nonprofit homes concentrated in just under 10 percent of non-profit facilities (Exhibit 1).

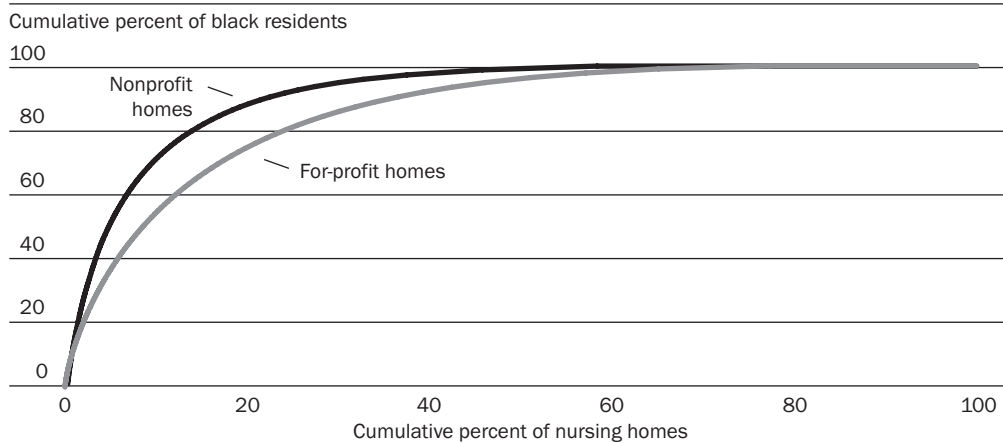
Nationally, the dissimilarity index in 2000 was 0.65, with not-for-profit homes more segregated than for-profit ones (Exhibit 2). Regionally, nursing homes were most segregated in the Midwest and least segregated in the South. The degree of nursing home segregation in MSAs ranged from 0.77 (Cleveland, Ohio) to 0.16 (Columbus, Georgia). Midwestern and Northeastern MSAs predominated among the top ten most segregated nursing home service areas. Nursing home segregation in these MSAs was highly correlated with residential segregation.

■ **Segregation-related disparities in care.** *Nursing home deficiencies.* Black nursing home residents were 1.31 times as likely as white residents to be in a facility in an MSA in the highest quartile of homes in terms of total severity-weighted deficiencies, 1.41 times as likely to be in a facility cited with a deficiency causing actual harm or immediate jeopardy to residents, and 1.70 times as likely to be in a nursing home that was subsequently terminated from Medicare and Medicaid participation (Exhibit 3).

*Staffing levels.* Black nursing home residents were only 0.81 times as likely as whites to be in nursing homes in an MSA with the highest staffing level of direct-care providers, 0.77 times as likely to be in facilities with the highest ratio of RNs to all nursing staff in their MSA, but more (1.12 times) likely to be in a facility that was greatly understaffed relative to the acuity profile of the residents (Exhibit 3).

*Financial viability.* Blacks were only 0.32 times as likely as whites to be located in facilities with a high proportion of private-pay residents in an MSA, 0.78 times as likely to be in a facility with high occupancy rates, and 2.64 times as likely to be in

**EXHIBIT 1**  
**Cumulative Distribution Of Black Nursing Home Residents Versus Nursing Homes In The United States, By Ownership Status, 2000**



**SOURCE:** Centers for Medicare and Medicaid Services, Minimum Data Set (MDS), 2000.

**EXHIBIT 2**  
**Degree Of Segregation (Dissimilarity Index) Among Black And White U.S. Nursing Home Residents, 2000**

U.S. total	0.65
By ownership	
Not-for-profit	0.71
For-profit	0.62
By region	
Northeast	0.66
Midwest	0.73
South	0.53
West	0.65
Ten most nursing home-segregated MSAs (in rank order)	
Cleveland-Lorain-Elyria, OH PMSA	0.77
Gary, IN PMSA	0.75
Milwaukee-Waukesha, WI PMSA	0.74
Detroit, MI PMSA	0.74
Indianapolis, IN PMSA	0.72
Chicago, IL PMSA	0.71
St. Louis, MO-IL PMSA	0.70
Harrisburg-Lebanon-Carlisle, PA MSA	0.70
Toledo, OH MSA	0.69
Cincinnati, OH-KY-IN PMSA	0.69
Summary of 147 MSAs	
Mean	0.48
Median	0.49
Least segregated (Columbus, GA MSA)	0.16

**SOURCE:** Centers for Medicare and Medicaid Services Nursing Home Minimum Data Set (MDS), 2000.

**NOTES:** MSA is metropolitan statistical area. PMSA is primary MSA.

a facility housing predominantly Medicaid residents (Exhibit 3).

■ **Racial disparities, by MSA.** The Midwest, the most segregated region, was also the region with the greatest racial disparities in nursing home quality (Exhibit 4). Among the ten MSAs with the greatest composite measure of racial disparities in quality, seven ranked in the upper quartile of nursing home segregation, with the remaining three in the third quartile; five of them are among the ten most segregated MSAs listed in Exhibit 2 (Exhibit 5). The correlation between this composite indicator of disparity and nursing home segregation in the selected 147 MSAs was 0.62.

**The Dynamics Of Racial Disparities In Health Care**

The data on race from the nursing homes used in this analysis only recently became available; they offer a unique window onto the dynamics of racial disparities in treatment. It is the only source of data available in the United States that includes information by race on essentially all of the providers in a health services subsector and all of the users of their services.

We found that nursing home care was relatively segregated in 2000, with two-thirds of all black residents living in just 10 percent of all facilities. Furthermore,

**EXHIBIT 3**  
**Black/White Ratios Of Nursing Home Segregation-Induced Disparities In 147 Metropolitan Statistical Areas (MSAs), 2000**

	<b>Black (%) (N = 110,047)</b>	<b>White (%) (N = 689,554)</b>	<b>Black/white ratio</b>
<b>Inspection deficiencies</b>			
Most deficiencies	33.6	25.7	1.31
G+ deficiencies	6.5	4.6	1.41
Terminated	5.6	3.3	1.7
<b>Staffing</b>			
Highest total direct-care staffing	20.6	25.5	0.81
Highest RN/nursing staff ratio	19.5	25.2	0.77
Substantially understaffed	17.1	15.3	1.12
<b>Financial viability</b>			
Highest percent private pay	8.7	27.0	0.32
Highest occupancy rate	20.8	26.5	0.78
Highest percent Medicaid	43.1	16.3	2.64

**SOURCE:** Centers for Medicare and Medicaid Services Nursing Home Minimum Data Set (MDS), and Online Survey Certification and Reporting System (OSCAR), 2000.

within most MSAs, blacks were significantly more likely to be served by facilities in the bottom quartile of many structural and performance measures of quality.

■ **Nursing home versus residential segregation.** We observed a relatively high correlation between nursing home and residential segregation, which deserves further discussion. Nursing homes may merely reflect the racial composition of their

**EXHIBIT 4**  
**Regional Black/White Ratios Of Nursing Home Segregation-Induced Disparities In Care, 2000**

	<b>Northeast</b>	<b>Midwest</b>	<b>South</b>	<b>West</b>
Segregation (Dissimilarity Index)	0.66	0.73	0.53	0.65
<b>Black/white ratio of nursing home disparities inspection deficiencies</b>				
Most deficiencies	1.15	1.63	1.31	1.18
G+ deficiencies	1.21	1.34	1.34	1.22
Terminated	1.63	2.48	1.51	1.44
<b>Staffing</b>				
Highest total direct-care staffing	1.02	0.65	0.8	0.85
Highest RN/nursing staff ratio	0.75	0.54	0.92	1.02
Substantially understaffed	1.09	1.25	1.05	1.17
<b>Financial viability</b>				
Highest percent private pay	0.38	0.25	0.35	0.39
Highest occupancy rate	0.89	0.7	0.72	0.85
Highest percent Medicaid	2.16	3.56	2.16	2.11

**SOURCE:** Centers for Medicare and Medicaid Services Nursing Home Minimum Data Set (MDS), and Online Survey Certification and Reporting System (OSCAR), 2000.

**EXHIBIT 5**  
**The Ten Metropolitan Statistical Areas (MSAs) With The Greatest Black/White Disparity On A Composite Measure Of Nursing Home Quality Deficiencies, 2000**

Inspection deficiencies	Most deficiencies	(Rank score)	G+ deficiencies	(Rank score)	Terminated	(Rank score)
Milwaukee-Waukesha, WI PMSA	2.20	(10)	-	-	3.38	(9)
St. Louis, MO-IL MSA	2.30	(10)	4.46	(10)	3.47	(10)
Baltimore, MD PMSA	1.56	(7)	2.81	(9)	3.47	(10)
Detroit, MI PMSA	1.77	(8)	1.30	(6)	6.65	(10)
Indianapolis, IN MSA	1.92	(9)	2.21	(8)	3.11	(9)
South Bend, IN MSA	2.10	(10)	-	-	1.43	(5)
Harrisburg-Lebanon-Carlisle, PA MSA	2.39	(10)	3.72	(10)	2.58	(8)
Hartford, CT MSA	0.80	(2)	5.84	(10)	2.67	(8)
Houston, TX PMSA	1.51	(7)	0.83	(4)	2.99	(9)
West Palm Beach-Boca Raton, FL MSA	1.39	(6)	1.78	(7)	81.61	(10)

Staffing	Highest staffing level	(Rank score)	Highest RN/nurse ratio	(Rank score)	Substantially understaffed	(Rank score)
Milwaukee-Waukesha, WI PMSA	0.27	(10)	0.14	(10)	2.96	(10)
St. Louis, MO-IL MSA	0.82	(5)	0.61	(7)	1.31	(6)
Baltimore, MD PMSA	0.47	(9)	0.84	(5)	1.52	(7)
Detroit, MI PMSA	0.48	(9)	0.38	(9)	0.72	(3)
Indianapolis, IN MSA	0.94	(4)	0.61	(7)	1.58	(7)
South Bend, IN MSA	0.44	(9)	0.49	(8)	2.42	(10)
Harrisburg-Lebanon-Carlisle, PA MSA	1.71	(1)	0.37	(9)	1.38	(6)
Hartford, CT MSA	0.80	(5)	0.68	(6)	1.93	(9)
Houston, TX PMSA	0.28	(10)	0.61	(7)	1.23	(5)
West Palm Beach-Boca Raton, FL MSA	0.37	(9)	1.70	(1)	1.16	(5)

Financial viability	Highest % private-pay residents	(Rank score)	Highest occupancy rate	(Rank score)	Highest % Medicaid residents	(Rank score)	Total rank score
Milwaukee-Waukesha, WI PMSA	0.09	(10)	0.10	(10)	3.33	(9)	78
St. Louis, MO-IL MSA	0.08	(10)	0.46	(8)	5.78	(10)	76
Baltimore, MD PMSA	0.17	(9)	0.77	(5)	5.58	(10)	71
Detroit, MI PMSA	0.16	(9)	0.58	(7)	7.37	(10)	71
Indianapolis, IN MSA	0.20	(8)	0.36	(9)	3.53	(9)	70
South Bend, IN MSA	0.28	(6)	0.23	(10)	3.25	(9)	67
Harrisburg-Lebanon-Carlisle, PA MSA	0.23	(7)	0.54	(7)	2.69	(7)	65
Hartford, CT MSA	0.20	(8)	0.19	(10)	2.47	(6)	64
Houston, TX PMSA	0.24	(7)	0.48	(8)	2.61	(7)	64
West Palm Beach-Boca Raton, FL MSA	0.07	(10)	0.59	(7)	3.86	(9)	64

**SOURCE:** Centers for Medicare and Medicaid Services Nursing Home Minimum Data Set (MDS), and Online Survey Certification and Reporting System (OSCAR), 2000.

**NOTES:** Because the percentages of whites located in homes with G+ deficiencies in the Milwaukee and South Bend MSAs were zero, the black/white odds ratios could not be defined, so these MSAs were not ranked on this indicator, thus not contributing to its total rank score. PMSA is primary MSA.

communities. Indeed, in the rare instances where complaints about nursing home admission practices triggered investigations by the Office for Civil Rights, these usually required collecting data to compare the racial composition of a facility's service area with that of residents. The strong association between residential and nursing home segregation supports the argument that segregation is a root cause of health care disparities that must be considered if disparities are to be reduced.<sup>16</sup>

■ **Not-for-profit versus for-profit nursing homes.** The higher degree of segregation in not-for-profit as opposed to for-profit nursing homes also deserves discus-



sion. In some MSAs, the difference in the degree of segregation of the not-for-profit and for-profit sectors was even greater than what we observed. Historically, not-for-profit and for-profit nursing homes had different origins. For-profit homes evolved from boarding homes that circumvented the restrictions imposed by the Social Security law that prohibited payment of Supplemental Security Income to people in “institutions.” These boarding homes expanded in the 1940s and 1950s to absorb municipal and county facility residents as local governments shifted the poor out of government facilities to reduce costs.<sup>17</sup> Not-for-profit facilities were set up by churches and fraternal orders to care for their elderly members. They have always tended to give preference to their members and continued to do so after implementation of the Medicare and Medicaid programs. This has never been legally challenged. As a result, not-for-profit homes are generally more racially and ethnically homogeneous and tend to have a higher proportion of private-pay residents than do for-profit homes.

■ **A Gordian knot of disparities.** The story told by the nine measures of disparities in aspects of quality presented in this paper describe a Gordian knot that needs to be cut to eliminate their effect on the differences in care received by race. Residential segregation in MSAs disproportionately places blacks in poorer-performing nursing homes. Disparities in payment between Medicaid and private payers make the financial viability of a nursing home dependent on the proportion of private-pay patients it is able to attract. Homes unable to attract sufficient private-pay patients will tend to have lower nurse staffing levels and more-serious inspection deficiencies.<sup>18</sup> This will result in lower occupancy levels and, if the operators of a home are unable to take effective corrective action, a “death spiral,” forcing the eventual closure of the home. One might expect that in response to these pressures, operators would tend to “redline” black neighborhoods and expand operations in predominantly white, affluent areas. Nursing home operators might also try to control admissions to their facilities, limiting the number of first-day-eligible Medicaid admissions and expanding as much as possible admissions of those with sufficient resources that are unlikely to spend down and become eligible for Medicaid. As has been demonstrated with housing and employment, discrimination may play a role in shaping these admission decisions to the higher-quality homes.<sup>19</sup> It might also play a role in shaping the decisions of white private-pay nursing home patients and their families about where to get care, including whether to opt for non-nursing home alternatives altogether. Some nursing home operators might be sensitive to this and the possibilities of “white flight,” particularly in transitional neighborhoods. All of these factors may contribute to the segregation-related disparities we report here.

■ **Policy recommendations.** What can be done to cut this knot? A multiprong effort in four areas could help: (1) disproportionate-share payment adjustments to nursing homes with a higher proportion of Medicaid residents; (2) equalization of Medicaid and private-pay payments; (3) certificate-of-need and broader regional planning responsive to racial-disparity concerns; and (4) ongoing monitoring and

*“It is not sufficient to simply educate nursing homes to treat everyone fairly and to provide culturally competent care.”*

more rigorous enforcement of Title VI in admission practices. Indeed, some of the MSA variations on these measures of disparities may reflect variations in effort in these areas. These findings are not very different for the nursing home sector than for other parts of the health system in terms of the characteristics of this knot or in the possible approaches to cutting it.

■ **Caveats.** The results presented here, not surprisingly, raise more questions than answers. We have used secondary data sources that might be of uneven quality, and the measures of facility quality are relatively crude. Certainly the list of the “top ten” MSAs with the largest racial disparities in quality of care should be interpreted with caution. Particular MSAs may have unique circumstances that make it unfair to put pejorative labels on them on the basis of a single year’s data. Just as with any audit process, a more detailed review is required.

In addition, the nine measures of quality disparities are not tightly related to each other, and one could question the appropriateness of computing a composite summary measure. For example, disparities in the highest percentage of Medicaid residents are only significantly correlated with one other measure, highest RN/nurse staff ratio, which suggests that it might not be possible to address quality disparities with just a simple resource adjustment. Most measures of quality are not highly correlated with one another, which makes it difficult to come up with a valid composite measure.<sup>20</sup>

Medical care quality is complex. Measuring racial disparities in quality adds more complexity. Yet even in this area, the two basic rules of measurement apply: (1) Only by measuring things do they become important, and (2) only when they become important does the measurement become more precise and useful.

**O**UR FINDINGS IMPLY THAT IT IS NOT SUFFICIENT to simply educate nursing homes and other providers to treat everyone fairly and to provide culturally competent care. The message of this paper is that disparities in treatment will persist even in the absence of any disparities of treatment within nursing homes because of the differences in the homes providing care to blacks and whites. We contend that the same basic message holds, in part, for the health system as a whole.

*This research was supported by the Commonwealth Fund, Grant no. 20050318, to Vincent Mor (principal investigator).*

## NOTES

1. See P.W. Groeneveld, S.B. Laufer, and A.M. Garber, "Technology Diffusion, Hospital Variation, and Racial Disparities among Elderly Medicare Beneficiaries, 1989–2000," *Medical Care* 43, no. 4 (2005): 320–329; E.B. Schelbert et al., "Treatment Variation in Older Black and White Patients Undergoing Aortic Valve Replacement," *Circulation* 112, no. 15 (2005): 2347–2353; and J. Skinner et al., "Racial, Ethnic, and Geographical Disparities in Rates of Knee Arthroplasty among Medicare Patients," *New England Journal of Medicine* 349, no. 14 (2003): 1350–1359.
2. See F.L. Lucas et al., "Race and Surgical Mortality in the United States," *Annals of Surgery* 243, no. 2 (2006): 281–286; A.N. Trivedi, T.D. Sequist, and J.Z. Ayanian, "Impact of Hospital Volume on Racial Disparities in Cardiovascular Procedure Mortality," *Journal of the American College of Cardiology* 47, no. 2 (2006): 417–424; and L.S. Morales et al., "Mortality among Very Low-Birthweight Infants in Hospitals Serving Minority Populations," *American Journal of Public Health* 95, no. 12 (2005): 2206–2212.
3. See P.B. Bach et al., "Primary Care Physicians Who Treat Blacks and Whites," *New England Journal of Medicine* 351, no. 6 (2004): 575–584; and A. Varkey et al., "Separate but Unequal: Where Minority and Non-Minority Patients Receive Primary Care" (Presentation at the Society for General Internal Medicine Twenty-ninth Annual Meeting, Los Angeles, California, 27 April 2006).
4. See N.A. Bickell et al., "Missed Opportunities: Racial Disparities in Adjuvant Breast Cancer Treatment," *Journal of Clinical Oncology* 24, no. 9 (2006): 1357–1362; and N. Peters and K. Armstrong, "Racial Differences in Prostate Cancer Treatment Outcomes: A Systematic Review," *Cancer Nursing* 28, no. 2 (2005): 108–118.
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9. *Linton v. Commissioner of Health and Environment, Tennessee*, 779 F. Supp., page 925 (M.D. Tenn. 1990).
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13. J. Iceland, D. H. Weinberg, and E. Steinmetz, *Racial and Ethnic Residential Segregation in the United States: 1980–2000* (Washington: U.S. Bureau of the Census, 2002), 119–23.
14. J. Angelelli et al., "Oversight of Nursing Homes: Pruning the Tree or Just Spotting Bad Apples?" *Gerontologist* 43, spec. no. 2 (2003): 67–75.
15. A supplemental document containing a more detailed description of the data, differences between sample frame and analytic sample, measures, and computational formulas used in this study is available online at <http://content.healthaffairs.org/cgi/content/full/26/5/1448/DC1>.
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