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## Seniors' Perceptions Of Health Care Not Closely Associated With Physician Supply

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### Abstract

We conducted a national random survey of Medicare beneficiaries to better understand the association between the supply of physicians and patients' perceptions of their health care. We found that patients living in areas with more physicians per capita had perceptions of their health care that were similar to those of patients in regions with fewer physicians. In addition, there were no significant differences between the groups of patients in terms of numbers of visits to their personal physician in the previous year; amount of time spent with a physician; or access to tests or specialists. Our results suggest that simply training more physicians is unlikely to lead to improved access to care. Instead, focusing health policy on improving the quality and organization of care may be more beneficial.

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Ensuring that there will be enough physicians is of central importance in efforts to improve and reform the US health care system. Some analysts predict that the nation will face a serious physician shortage as the population ages, because aging patients make greater use of physician services.<sup>1,2</sup> Others have questioned whether the predicted shortage will materialize, given that an estimated 30 percent of health care services provided are not wanted or needed.<sup>3–6</sup>

The number of physicians per capita is one of many workforce factors that affect the type and quality of care received. Other factors include the organization of care, the specialty mix, and the extent to which clinicians provide evidence-based care in accordance with patients' preferences.<sup>7–9</sup>

Policy discussions, however, often focus narrowly on potential workforce shortages based on physician supply per se.<sup>10–13</sup> This happens despite the complexity of estimating workforce requirements<sup>14</sup> and the fact that having a large work-force does not guarantee high-quality care. Indeed, the Health Resources and Services Administration has noted: "The physician work-force is only one part of an increasingly complex health care system in which the final goal is a healthier society. The link between number and type of physicians, as well as the content of their education, and the health status of the populations they serve has yet to be completely understood."<sup>15</sup>

The well-documented regional variation in US physician supply provides an opportunity to investigate whether the size of the physician work-force alone is associated with greater perceived access to care or patient satisfaction with care. The numbers of physicians per capita are known to vary by 200–300 percent across US regions, even when adjusted for characteristics at the area and patient levels, including health status.<sup>10</sup>

Previous research has found a weak relationship between physician supply and population mortality.<sup>16</sup> It is less clear whether or not patients perceive that they have better access to care or are more satisfied with the care they receive if they live in regions with more physicians. Some studies have found that beneficiaries living in regions with high levels of Medicare spending and a large supply of physicians were not more likely to perceive better access, better communication with doctors, or better quality of care.<sup>17</sup>

Our study used a national survey of fee-for-service Medicare beneficiaries to measure the relationship between regional physician supply and elderly patients' perceptions of their own care and the care delivered in their communities. The survey findings raise questions about the value to the elderly of increasing the regional supply of physicians.

## Study Data And Methods

### STUDY POPULATION AND SURVEY

We surveyed a nationally representative sample of 4,000 elderly Medicare beneficiaries between March and October 2005 by telephone and mail (4 percent of beneficiaries selected, or 160, were deceased or living in a long-term care facility and deemed noneligible). A total of 2,515 beneficiaries responded (response rate, 65 percent), 1,384 by telephone and 1,131 by mail. The survey methods have been described in detail elsewhere.<sup>17,18</sup>

The survey included twelve questions relevant to respondents' perceptions of access and satisfaction with care (the survey questions can be found in Appendix 1).<sup>19</sup> Beneficiaries' demographic and health characteristics collected as part of the survey included age, sex, race or ethnicity, and self-reported health status.

We divided age into three categories: ages 65–74, 75–84, and 85 and older. We divided race or ethnicity into four categories: non-Hispanic black, non-Hispanic white, Hispanic, and other. Health status was reported based on a five-point scale—poor, fair, good, very good, or excellent—which we collapsed into two categories: poor or fair health versus good, very good, or excellent health. Specific responses to each survey question are tabulated in Appendix 1.<sup>19</sup> In addition, we identified the 2006 median household income for each beneficiary's residential ZIP code using data from the Dartmouth Primary Care Service Area Project.<sup>20</sup>

We used hospital service areas ( $N = 3,067$ ) as the geographic areas to study the relationship between physician supply and patients' perceptions of care because they capture where beneficiaries receive both primary and specialty care. We defined the areas by assigning ZIP code areas to primary care providers to reflect beneficiaries' travel to receive primary care.<sup>21</sup> Then we assigned these “primary care service areas” to hospital service areas based on the 1999–2000 travel patterns of Medicare patients to hospitals. The methods we used are described elsewhere.<sup>21,22</sup> The hospital service areas represented the environments in which physicians were available to beneficiaries, whom we assigned to an area based on their ZIP code of residence.

## PHYSICIAN SUPPLY

We defined *physician supply* as the number of physicians per 100,000 population within hospital service areas. We used the 2005 American Medical Association (AMA) Physician Masterfile<sup>23</sup> to identify physicians. We included residents, fellows, and postgraduate medical education physicians ages 26–65 who were practicing in one of the fifty states or the District of Columbia and who spent more than twenty hours per week in clinical practice.

Using the primary specialty codes in the AMA Masterfile, we grouped physician specialties with the Dartmouth Physician Specialties Version 5.<sup>10,24</sup> We excluded pediatric specialties, because elderly Medicare beneficiaries would not have accessed such physicians for their care. A physician's practice location was based on his or her office ZIP code or preferred mailing ZIP code in the AMA Masterfile.

We calculated three physician supply measures at the hospital service area level: primary care physicians—those in family or general practice, or in general internal medicine; other non-pediatric specialists; and the two groups combined, as the overall physician supply. Residents were assigned a weight of 0.35 full-time equivalents. We adjusted the physician supply for population age and sex, and to take account of patients who saw physicians outside their own hospital service areas.<sup>24</sup>

We categorized the areas by quintiles of physicians per capita, weighting by the number of 2005 fee-for-service beneficiaries so that each quintile was nearly equal in population size.

## STATISTICAL ANALYSIS

All analyses were conducted using the statistical analysis software SAS, version 9.2. We first examined the characteristics and perceptions of beneficiaries by quintiles of physician supply. We then used multilevel models to analyze the relationship between physician supply and beneficiaries' perceptions of health care, using the individual respondent as the unit of analysis.

We employed the GENMOD procedure in SAS version 9.2 to generate Poisson regression models that explored the associations between the variables of physician supply and the perceptions of the population. The models included variables that adjusted for age, sex, race or ethnicity, self-reported health status, and ZIP code median household income. The models also adjusted for clustering effects at the level of the hospital service area, to account for any correlation among survey respondents within one area.

Our first model examined the associations between total physician supply and perceptions of care. Next, we developed models that included variables for both primary care supply and specialist supply simultaneously, to adjust for the effects of each subgroup. We also performed a linear test for trend to evaluate any effect across levels of physician supply. This tests for a stepwise relationship between supply and patient perceptions. All statistical tests were two-sided, with statistical significance defined as  $p < 0.05$ .

In sensitivity analyses, we used two other types of Medicare utilization-defined areas: primary care service areas ( $N = 6, 542$ ); and Hospital Referral Regions, or regions of tertiary care ( $N = 316$ ).<sup>22</sup>

This study was approved by the Dartmouth College Committee for the Protection of Human Subjects.

## LIMITATIONS

Our study has several limitations. The cross-sectional analyses preclude direct inferences about whether changes in the physician supply would lead to better or worse perceptions of care. The study also does not account for the relative supply of other health care professionals, such as nurses, nurse practitioners, and physician assistants. These clinicians may modify the relationship between physician supply and elderly patients' perceptions of health care.

**SIZE OF REGION**—Variation in patients' perceptions was measured at the hospital service area level, so the data do not capture the potential variation of supply or of individual patients' experiences within areas.<sup>25</sup> We chose the hospital service area as the area of analysis because it is small enough to link beneficiaries to areas that reflect the availability of physicians for their ambulatory and hospital care. Larger areas could obscure local differences in physician supply.

We also analyzed the data using primary care service areas, which are smaller, and Hospital Referral Regions, which are larger, but we did not find substantial differences in the results. It should be noted that our findings cannot be generalized to areas that are underserved by medical professionals, such as those designated by the federal government as Health Professional Shortage Areas.<sup>26</sup> These areas have fewer physicians per capita than the lowest quintile of supply in our study.

**SIZE OF SAMPLE**—The survey consisted of a random sample of fee-for-service Medicare beneficiaries but did not include the 4 percent of the elderly population who are not eligible for Medicare. Generally, the sample size was large enough to detect meaningful effects from the perspective of workforce policy. For a few of the responses (for example, unmet desire for tests or treatment), the relative rate (that is, the responses for areas in the low, medium, high, and very high quintiles of supply compared to responses for areas in the lowest quintile of supply) was much lower or higher than 1, with a wide confidence interval (see Appendices 3 and 4).<sup>19</sup> These responses need to be viewed with caution.

**DIFFERENCES AMONG PHYSICIANS**—The physicians in our sample probably varied in the average number of hours they worked, depending on their age, sex, and training. The study did not take account of these differences. In addition, we did not examine whether patients' perceptions of care varied according to the number of physician services provided to beneficiaries. Although these questions are of interest, neither is directly relevant to the national workforce policy issues discussed in this paper.

## Study Results

### PHYSICIANS' AND SURVEY RESPONDENTS' CHARACTERISTICS

Physician supply varied greatly among the 3,067 hospital service areas in 2005 (Exhibit 1). The median supply of all physicians ranged from 146 per 100,000 population in the lowest quintile to 245 in the highest quintile—a difference of almost 70 percent. The median supply of primary care physicians ranged from 44 to 82 per 100,000 population, and of specialists from 96 to 171 per 100,000 population (see Appendix 2 for respondents' characteristics by quintiles of primary care and specialist supply).<sup>19</sup>

Compared with respondents in areas with a very low supply of all physicians, beneficiaries in areas with a very high supply were older and more likely to be non-Hispanic black. There were no statistically significant differences in the percentage of beneficiaries who were female, Hispanic, or in poor health across quintiles of physician supply.

## UNADJUSTED RESULTS

In unadjusted results comparing areas with very high physician supply to those with very low supply, we found no significant differences between beneficiaries' perceptions about their own access to care or their ratings of the overall quality of care (Exhibit 2). However, we did find differences in respondents' perceptions of the care delivered in their communities. Beneficiaries in areas with the highest supply were more likely than those in areas with the lowest supply to perceive that their communities received more and better care than average.

Although the difference was not statistically significant, more respondents in very high compared to very low supply areas reported that their individual care was better than average.

## ADJUSTED RESULTS FOR OVERALL PHYSICIAN SUPPLY

After adjusting for individual age, sex, race or ethnicity, and health status and area median household income, we found little association between overall physician supply and perceptions of access (Exhibit 3). Compared with beneficiaries in areas with a very low supply of physicians overall, beneficiaries in areas with a very high supply were no more likely to have a primary care physician as their personal doctor. Nor were beneficiaries in areas with very high supply significantly less likely to report being unable to have tests or treatments, or to not have seen the right number of specialists. Appendix 3 presents confidence intervals for all questions.<sup>19</sup>

In their reported satisfaction with care, beneficiaries in areas with a very high supply of physicians overall were no more likely than those in areas with very low supply to give a high rating of their care in general, or to report that their health care was better than average or that physicians spent enough time with them (Exhibit 4). Appendix 4 presents confidence intervals for these questions.<sup>19</sup>

Respondents' perceptions about care in their communities did differ, however: Beneficiaries in areas with very high supply were more likely than those in areas with very low supply to perceive that their communities received more care. However, perceptions that their community received better care were not statistically different between regions.

## ADJUSTED RESULTS FOR PRIMARY CARE AND SPECIALIST PHYSICIAN SUPPLY

There was no association between the supply of primary care and specialist physicians and beneficiaries' perceptions of care, with a few notable exceptions. The relative rates for the specific quintiles of low, medium, high, and very high supply did not differ significantly compared to the very low quintile. However, the linear tests for trend indicate that respondents in areas with a higher supply of primary care physicians generally were more likely to have a primary care doctor as their personal physician than those in areas with a higher supply of specialists (Exhibit 3).

Interestingly, beneficiaries in areas of high primary care supply—the fourth quintile—were significantly less likely than those in areas of very low primary care supply—the first quintile—to have been unable to see a specialist. However, there was not a statistically significant trend across quintiles of supply (see Appendix 3).<sup>19</sup>

Regarding perceptions of care in their communities, respondents in areas with a high or a very high supply of specialists were more likely than those in areas with a very low supply to report that their communities received more care than average (Exhibit 4). Respondents in areas with a high supply of primary care physicians were less likely than those in areas with

a very low supply to report that their community received more care, but there was not a significant trend across quintiles.

Our results were similar when we used the smaller primary care service areas or the larger Hospital Referral Regions (data not shown).

## Discussion

The supply of the physician workforce varies greatly across areas of the United States where Medicare beneficiaries seek and receive care. Yet a markedly higher supply of physicians—primary care physicians, specialists, or both—appears to have strikingly little bearing on beneficiaries' perceptions of their access to care or their satisfaction with the care they receive.

In areas with the highest supply of specialists, beneficiaries believe that their communities receive more care than average, but this is not the case in areas with the highest supply of primary care physicians. Beneficiaries in areas with the highest supply of physicians overall were no more or less likely than those in the lowest-supply areas to have a personal physician, to feel that they had visited the right number of specialists, or to say that they wanted tests or treatments they had not received.

In any case, the effect of a larger supply of physicians is modest, if it exists at all. This casts doubt on the idea that increasing the supply would be the wisest investment of resources, if the goals are to improve patients' access to care and increase their satisfaction with it. It might be possible to meet these goals by less costly means, such as encouraging physicians to practice in better integrated delivery systems or, at a more local level, streamlining office procedures to make it easier for a patient to schedule an appointment.

## PREVIOUS FINDINGS

Our findings are consistent with previous research that examined whether patients' access to and satisfaction with care are worse in areas with lower physician supply. James Reschovsky and Andrea Staiti found that with the exception of longer travel times to physician offices, there were no differences in perceived access to primary care between rural and urban residents, although physician supply is often lower in rural areas.<sup>27</sup> Using data from the Medicare Current Beneficiary Survey, a 2001 Medicare Payment Advisory Commission report found no differences in satisfaction with the availability of care across urban and rural Metropolitan Statistical Areas, despite wide differences in physician supply.<sup>28</sup> And Kevin Grumbach and colleagues found that demographic characteristics and health insurance status were associated with perceived access, but not with local physician supply.<sup>29</sup>

## POLICY IMPLICATIONS: PHYSICIAN SUPPLY

Given that Medicare beneficiaries have more encounters with the health care system than patients connected with any other payer, these findings are germane to the ongoing discussion about expanding the size of the physician work-force. Professional organizations and state medical societies have called for increases in physician supply to meet the anticipated growth in the US population and in rates of health services use. Half a dozen years ago, the Council on Graduate Medical Education recommended producing 10 percent more residents by 2020,<sup>2</sup> and the Association of American Medical Colleges recommended a 30 percent boost in medical school enrollment by 2015 (or, in the parlance of academic medicine, “undergraduate” medical school enrollment), with a concomitant expansion of graduate medical education (house officer and fellowship training of doctors who have graduated from medical school) through additional public funding.<sup>1</sup>

However, evidence is lacking that training more physicians will address the problems that are associated with a physician shortage: difficulty in accessing and receiving high-quality care. Recent studies indicate that physicians prefer to practice not in regions with the greatest need but in areas where the physician supply is already high.<sup>10,30,31</sup> Regional per capita supply of cardiologists, for example, is not associated with the incidence of acute myocardial infarction; likewise, the supply of neonatologists is unrelated to the incidence of babies with low birth-weight.<sup>32,33</sup>

Moreover, there is no consistent evidence that higher physician supply is associated with better health outcomes or improved technical quality of care.<sup>4,34,35</sup> Our findings add to the evidence that patients in areas with a high physician supply do not perceive that they have better access or quality of care.

## CONCLUSION

Our study's results suggest that for elderly patients, training more physicians overall, by itself, is unlikely to lead to improved access to care, higher satisfaction, or greater assurance of having a personal physician who spends enough time with the patient. Rather, it may be more beneficial to focus health care workforce policy on increasing the supply of primary care clinicians, including physicians, advanced practice nurses, and physician assistants. We found that Medicare beneficiaries in areas with more primary care physicians (compared to those in areas with fewer primary care physicians) were more likely to have a primary care physician as a personal physician.

Graduates of US medical schools are becoming less likely, over time, to pursue residencies in primary care.<sup>36,37</sup> Our results suggest that policies directed toward reversing that trend, while encouraging primary care physicians to practice in regions with a lower supply of such providers, may be a wise investment. But simply training more primary care physicians without improving local and national practice environments for primary care is unlikely to stem the losses of those physicians to specialist roles. In particular, reducing the disparity in reimbursement between providing primary care services and performing surgical and procedural services would narrow compensation differences and increase the retention of primary care physicians.

Most important, we are not likely to improve patients' perception of access and quality without changing the actual quality of care delivered, and without changing the organization of physician care within the larger health care system. Providing the right care, at the right time, guided by patients' preferences, is always likely to be more important than the number of clinicians providing the care.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## Acknowledgments

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## Biographies



**David J. Nyweide** is a social science research analyst at the Centers for Medicare and Medicaid Services.

In this issue of *Health Affairs*, David Nyweide, Denise Anthony, Chiang-Hua Chang, and David Goodman explore what they see as the weak influence of physician supply on the elderly's perception of their health care and their use of health services.

Lead author Nyweide is a social science research analyst in the Office of Research, Development, and Information at the Centers for Medicare and Medicaid Services. He and

his fellow researchers have an ongoing interest in the physician workforce, and especially in the relationship between physician supply and patient-level outcomes.

Although there has been a steady push to increase physician training based on the perception that access and quality are related to the supply of physicians, this report helps show that this is not necessarily the case, Nyweide says. Because a growing body of research shows that “the number of clinically active physicians alone does not improve the well-being of patients,” he and his coauthors argue that policy makers seeking to address access issues should instead focus more attention on what physicians do and how care is organized.

The authors were particularly surprised that in areas with more doctors, Medicare beneficiaries sensed that community utilization levels were high but did not necessarily believe that better care was provided. “The policy assumption that patients think more care is always better may not always be true,” Nyweide says.

Nyweide received his doctorate in health policy and clinical practice from Dartmouth, where his coauthors also have affiliations.



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Anthony is an associate professor in and chair of Dartmouth’s Department of Sociology. She also is research director for the college’s Institute for Security, Technology, and Society. She earned her doctorate in sociology from the University of Connecticut.



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Goodman is the director of the Center for Health Policy Research at the Dartmouth Institute, as well as a professor of pediatrics and health policy at Dartmouth Medical School. He serves on several editorial boards, including that of the *Dartmouth Atlas of Health Care*. He received his medical degree from the State University of New York's Upstate Medical Center and his master's degree in epidemiology and biostatistics from Dartmouth.

## EXHIBIT 1

## Responding Medicare Beneficiaries' Characteristics, By Physician Supply Quintile, 2005

Characteristic	Physician supply quintile, all physicians				
	Very low	Low	Medium	High	Very high
<b>GENERAL RESPONSES</b>					
Median supply, per 100,000 population	146	166	184	205	245
Household income	\$46,461	\$46,830	\$46,523	\$51,740	\$55,654
Number of respondents	517	501	482	507	508
Percent of respondents	21%	20%	19%	20%	20%
<b>AGE (YEARS)</b>					
65-74	54%	50%	45%	48%	45%
75-84	38	40	43	43	44
85 or older	8	10	12	9	11
<b>SEX</b>					
Female	56%	55%	58%	59%	61%
Male	44	45	42	41	39
<b>RACE OR ETHNICITY</b>					
Non-Hispanic white	83%	89%	84%	88%	81%
Non-Hispanic black	5	6	6	5	10
Hispanic	7	2	5	4	5
Other	5	3	5	3	4
<b>HEALTH STATUS</b>					
Good	69%	70%	72%	75%	74%
Poor	31	30	28	25	26

**SOURCES** (1) National survey of Medicare beneficiaries age 65 and older in 2005. (2) Physician supply data are from the 2005 American Medical Association Physician Masterfile (see Note 23 in text). (3) Population estimates and household income are from the authors' analysis of 2006 Claritas and US census data. (4) Dartmouth atlas of health care [Internet]. Lebanon (NH): Dartmouth Institute for Health Policy and Clinical Practice; [cited 2011 Jan 14]. Available from <http://www.dartmouthatlas.org/Tools/Downloads.aspx?tab=37>.

**NOTES** Quintiles represent population-weighted physician supply for hospital service areas. "All physicians" means both primary care physicians and specialists, excluding pediatric specialists. *Primary care* is defined as family and general practice, and general internal medicine. Supply was adjusted for age and sex in the population of the hospital service area. Good health included good, very good, and excellent health. Poor health included poor and fair health. Household income was the average of the median household income per household of hospital service areas.

## EXHIBIT 2

Responding Medicare Beneficiaries' Perceptions Of Access To And Satisfaction With Care, Overall And By Physician Supply Quintile, 2005

Perception	Number of respondents	Percent responding yes			p value <sup>a</sup>
		Overall	Lowest quintile	Highest quintile	
<b>ACCESS TO CARE</b>					
Have a personal physician	2,489	94.8	94.5	95.0	0.727
Have seen a personal physician in the past year	2,268	97.4	97.8	97.0	0.399
Have a primary care doctor as personal physician	2,293	89.8	89.3	88.7	0.763
Wanted but failed to see a specialist	2,488	7.1	7.8	7.2	0.711
Have seen the right number of specialists	2,015	93.1	92.2	92.6	0.802
Wanted but failed to have tests or treatments	2,482	5.2	6.5	4.8	0.250
Had too few tests for heart disease	2,203	13.6	17.1	12.5	0.052
<b>SATISFACTION WITH CARE</b>					
Overall rating of care 9 or 10 out of 10	2,439	56.8	58.8	56.5	0.462
Physicians always or usually spent enough time with respondent	2,278	86.6	85.0	88.4	0.123
Individual health care better than average	2,382	32.5	30.2	35.9	0.060
Community received more care than average	2,463	22.6	19.6	30.5	< 0.001
Community's care better than average	2,465	27.8	25.0	37.1	< 0.001

**SOURCES** (1) National survey of Medicare beneficiaries age 65 and older in 2005. (2) Physician supply data are from 2005 American Medical Association Masterfile (see Note 23 in text).

**NOTE** Quintiles represent population-weighted physician supply for hospital service areas.

<sup>a</sup>Denotes comparison of lowest and highest quintiles with a chi-square test.

**EXHIBIT 3**

Relationship Between Physician Supply Quintile And Medicare Beneficiaries' Perceptions Of Access To Care, 2005

	Adjusted relative rates					Test for trend
	Very low	Low	Medium	High	Very high	
<b>MEDIAN SUPPLY OF PHYSICIANS PER 100,000 POPULATION</b>						
All physicians	146	166	184	205	245	
Primary care physicians	44	52	58	66	82	
Specialists	96	112	125	142	171	
<b>RESPONDENTS' PERCEPTIONS OF ACCESS TO CARE</b>						
Have seen a personal physician in the past year						
All physicians	[R]	1.00	0.99	0.99	0.99	0.023
Primary care physicians	[R]	1.01	1.00	0.98	1.00	> 0.05
Specialists	[R]	0.98	1.00	1.00	0.98	> 0.05
Have a primary care doctor as personal physician						
All physicians	[R]	1.00	1.04	1.01	1.01	> 0.05
Primary care physicians	[R]	1.05	1.08	1.07	1.12	0.018
Specialists	[R]	1.01	0.97	0.97	0.92	0.039
Have seen the right number of specialists						
All physicians	[R]	1.02	0.99	1.02	1.00	> 0.05
Primary care physicians	[R]	1.00	1.01	1.01	1.00	> 0.05
Specialists	[R]	1.00	0.97	1.00	0.99	> 0.05
Wanted but failed to have tests or treatments						
All physicians	[R]	0.70	0.89	0.67	0.63	> 0.05
Primary care physicians	[R]	0.81	0.88	0.95	1.03	> 0.05
Specialists	[R]	1.08	1.05	0.79	0.68	> 0.05

**SOURCES** (1) National survey of Medicare beneficiaries age 65 and older in 2005. (2) Physician supply data are from 2005 American Medical Association Physician Masterfile (see Note 23 in text).

**NOTES** Results were adjusted for individual age, sex, race or ethnicity, health status, and ZIP code median household income. Primary care physician supply and specialist supply variables were included in "all physicians." None of the relative rates is statistically significant. Test for trend indicates whether there was a stepwise effect observed across increasing quintiles of supply. Primary care and specialist physician supplies do not add to totals because they represent median hospital service area supplies per quintile. [R] denotes referent.

**EXHIBIT 4**

Relationship Between Physician Supply Quintile And Medicare Beneficiaries' Satisfaction With Care, 2005

	Adjusted relative rates					Test for trend
	Very low	Low	Medium	High	Very high	
<b>MEDIAN SUPPLY OF PHYSICIANS PER 100,000 POPULATION</b>						
All physicians	146	166	184	205	245	
Primary care physicians	44	52	58	66	82	
Specialists	96	112	125	142	171	
<b>RESPONDENTS' SATISFACTION WITH CARE</b>						
Overall rating of care 9 or 10 out of 10						
All physicians	[R]	0.91	0.98	0.98	0.97	> 0.05
Primary care physicians	[R]	0.97	1.00	0.97	0.96	> 0.05
Specialists	[R]	0.90	1.02	1.00	1.00	> 0.05
Physicians always or usually spent enough time with respondent						
All physicians	[R]	1.03	1.02	1.01	1.05	> 0.05
Primary care physicians	[R]	1.01	1.03	1.01	1.04	> 0.05
Specialists	[R]	1.04	1.00	1.00	1.03	> 0.05
Individual health care better than average						
All physicians	[R]	0.98	1.02	1.17	1.10	> 0.05
Primary care physicians	[R]	1.07	1.21	1.10	1.07	> 0.05
Specialists	[R]	0.87	0.97	0.99	1.06	> 0.05
Community received more care than average						
All physicians	[R]	0.91	1.07	1.17	1.32**	0.038
Primary care physicians	[R]	0.78	0.82	0.65***	0.77	> 0.05
Specialists	[R]	0.92	1.14	1.42**	1.60***	0.018
Community's care better than average						
All physicians	[R]	0.90	0.98	1.11	1.20	> 0.05
Primary care physicians	[R]	0.91	1.09	0.91	1.17	> 0.05
Specialists	[R]	1.00	0.93	1.10	1.09	> 0.05

**SOURCES** (1) National survey of Medicare beneficiaries age 65 and older in 2005. (2) Physician supply data are from the 2005 American Medical Association Physician Masterfile (see Note 23 in text).

**NOTES** Results were adjusted for individual age, sex, race or ethnicity, health status, and ZIP code median household income. Primary care physician supply and specialist supply variables were included in “all physicians.” Relative rates were not significant except when indicated. Test for trend indicates whether there was a stepwise effect observed across increasing quintiles of supply. [R] denotes referent.

\*\*  $p < 0.05$

\*\*\*  $p < 0.01$