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Characteristics of Office-Based Physicians and Their Practices: United States, 2003–04

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Contents

Abstract 1
Introduction 1
Data Highlights 1
Methods 2
Results 3
Physician Characteristics 3
Physician Supply and Utilization 3
Practice Characteristics 4
Revenues and Access 5
Patient Encounters 6
Discussion 7
References 9
Appendix I 21
Technical Notes 21
Appendix II 29
Definition of Terms 29
Appendix III 31
Excerpts from the 2004 Physician Induction Interview form 31

Figures

1. Percent distribution of sample physicians by in-scope status: National Ambulatory Medical Care Survey, 2003–04 2
2. Percent of office-based physicians who are female, by age: United States, 2003–04 3
3. Percent of office-based physicians who are graduates of a foreign medical school, by age: United States, 2003–04 4
4. Average annual number of visits per physician, by location of physician: United States, 2001–02 and 2003–04 4
5. Percent of office-based physicians in practice-based research networks, by practice size: United States, 2003–04 5
6. Percent of office-based physicians using electronic medical records, by specialty: United States, 2003–04 5
7. Percent of office-based physicians not accepting new patients, by payment method: United States, 2003–04 6
8. Percent distribution of hospital visits made by office-based physicians, according to specialty: United States, 2003–04 . . 7
9. Number of managed care contracts as a function of mean weekly office volume and mean visit duration: United States, 2003–04 7

Detailed Tables

1. Number and percent distribution of office-based physicians with corresponding standard errors, by selected characteristics: United States, 2003–04 11
2. Percentage with corresponding standard error of office-based physicians who are female or graduates of a foreign medical school, by age, specialty type, and physician specialty: United States, 2003–04 12
3. Number of office-based physicians with corresponding standard errors, by specialty type and geographic characteristics: United States, 2003–04 13
4. Number of physicians per 100,000 population with corresponding standard errors, by physician specialty and geographic characteristics of physicians: United States, 2003–04 14

5. Number, standard error, percent distribution, and mean percent of office-based physicians by selected practice characteristics, according to specialty type: United States, 2003–04 . . . 15
6. Percentage with corresponding standard error of office-based physicians by specialty type and physician accessibility: United States, 2003–04 . . . 17
7. Mean number, percentage, and standad errors of patient encounters during the last full week of practice, by physician's specialty and type of patient encounter: United States, 2003–04 . . . 18
8. Average number of weekly consultations per physician during last full week of practice with corresponding standard errors, by type of encounter and practice characteristics: United States, 2003–04 . . . 19
9. Average number of weekly consultations per physician during last full week of practice with corresponding standard errors, by type of encounter and physician specialty: United States, 2003–04 . . . 20

Appendix Tables

I. Average number of physicians in the universe, total sample, sample response categories, for the Physician Induction Interview, and unweighted response rate by physician stratum: National Ambulatory Medical Care Survey, 2003–04 . . . 21
II. Reasons sampled physicians were out of scope for the 2003–04 National Ambulatory Medical Care Survey . . . 22
III. Characteristics of the 2003–04 National Ambulatory Medical Care Survey, physician respondents and nonrespondents to the Physician Induction Interview . . . 24
IV. Weighted item nonresponse rates for report variables . . . 25
V. Reclassification of Physician Specialty Strata based on the American Medical Association specialty designations for use in the National Ambulatory Medical Care Survey . . . 26
VI. Reclassification of physician specialty into specialty type for use in the National Ambulatory Medical Medical Care Survey . . . 28

Abstract

Objective

This report presents demographic and practice characteristics of nonfederal physicians who were primarily engaged in office-based patient care in the United States during 2003–04.

Methods

The data in this report were collected during the physician induction interview for the 2003 and 2004 National Ambulatory Medical Care Surveys (NAMCS). NAMCS includes a national probability sample of nonfederal office-based physicians who saw patients in an office setting. It excludes physicians in the specialties of anesthesiology, radiology, and pathology, as well as physicians practicing in hospitals, institutions, and occupational settings. Sample data were weighted to produce national estimates of the number of physicians and characteristics of their practices.

Results

During 2003–04, an average annual of 311,200 office-based physicians provided patient care in the United States, an overall rate of 108.4 physicians per 100,000 persons. Approximately three-fourths of office-based physicians owned or were part owner of their practice, two-thirds of physicians worked in group practices with two or more physicians, and one-half of office-based physicians were primary care specialists. Physicians with 10 or more managed care contracts spent less time per patient visit, but had more weekly visits compared with physicians with fewer than three managed care contracts. The average total weekly number of encounters (consults or visits) and the average number of office visits per physician were greater among primary care specialists compared with other specialty types. About one-fourth of physicians (25.5 percent), reported that they did not accept new Medicaid patients and 13.9 percent did not accept new Medicare patients—similar to previous years.

Keywords: ambulatory care • work force • physician supply

Characteristics of Office-Based Physicians and Their Practices: United States, 2003–04

by Esther Hing, M.P.H., and Catharine W. Burt, Ed.D., Division of Health Care Statistics

Introduction

Physician offices are the settings most frequently used for health care, including the delivery of primary and specialty care (1). Describing the characteristics of physicians providing this care and factors influencing the care provided is integral to monitoring the health of the U.S. population and planning for future health care delivery needs. The National Ambulatory Medical Care Survey (NAMCS), which began in 1973, collects data on the utilization of ambulatory medical care services provided by nonfederal office-based physicians. It was conducted annually until 1981, again in 1985, and resumed an annual schedule in 1989.

This report presents estimates of physician practice and encounter characteristics based on data collected during the physician induction interviews of the 2003–04 NAMCS. The information complements data on utilization of ambulatory medical care services provided by office-based physicians (2,3) by describing characteristics of the physicians providing care. The physician practice characteristics described in this report include size of practice, ownership, revenue sources, use of information technology, weekly workload, and willingness to accept new patients. This is the first of a series of reports on characteristics of office-based physicians that will permit tracking of physician practice characteristics in more detail than previously reported (4–6). It should be noted that due to the scope of NAMCS, physicians studied in this report represent a subset of all physicians (See Appendix I for details).

Data Highlights

- Since 2001–02, the ratio of office-based physicians to population has not changed. The annual volume of visits per physician, however, decreased by 6%. Most of the decrease occurred in the Northeast (15%) and in metropolitan statistical areas (MSAs) (7%).
- Approximately three-fourths of office-based physicians owned or were part owner of their practice (74.9 percent).
- Two-thirds of physicians worked in group practices with two or more physicians.
- In 2003–04, 35.8 percent of physicians were in solo practices, 43.1 percent were in single-specialty group practices, and 21.1 percent were in multi-specialty group practices.
- Physicians with 11 or more managed care contracts had 26 percent more weekly office visits, but spent 18 percent less time on average with each patient compared with physicians with 1-2 managed care contracts.
- In 2003–04, 25.5 percent of office-based physicians did not accept new Medicaid patients, and 13.9 percent did not accept new Medicare patients.
- In 2003–04, office-based physicians reported an average of 73.7 office visits, 12.7 hospital visits, and 11.1

telephone consultations during their last full week of practice.

- About one out of five physicians (19.0 percent) reported using electronic medical records (EMRs).

Methods

NAMCS is an annual national probability sample survey of visits to the offices of physicians classified by the American Medical Association (AMA) and American Osteopathic Association (AOA) as primarily engaged in "office-based patient care." Federally employed physicians; those who specialize in anesthesiology, radiology, or pathology; and physicians who do not see patients in an office, such as the majority of emergency medicine physicians, are excluded. NAMCS physician estimates are roughly two-thirds the average number of physicians (486,427) found in the 2003 (483,025) and 2004 (489,829) combined AMA and AOA master files of nonfederal office-based physicians primarily engaged in patient care (7,8), which is used as the sampling frame for NAMCS. When contacted, one-third of sampled physicians were found to be ineligible because they were out of scope as listed above (11.3 percent), retired or deceased (9.5 percent), practiced in a nonoffice setting such as an institution or occupational setting (4.7 percent), not practicing (4.4 percent), or were otherwise ineligible (3.9 percent) (Figure 1).

NAMCS utilizes a multistage probability sample design involving samples of 112 geographic primary sampling units (PSUs), physicians stratified by specialty within PSUs, and patient visits within physician practices. PSUs are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships for some PSUs in New England.

Of 6,000 physicians sampled in 2003–04, 3,968 (66.1 percent) were found to be eligible for the survey (2,3). Data presented in this report are based on physician responses to the Physician Induction Interview (PII) questionnaire (see Appendix III for excerpts of the PII). Two years of data were analyzed to improve the precision of the estimates. During 2003–04, 2,235 of the eligible physicians responded to the PII, for an unweighted response rate of 56.3 percent. Sampling weights, reflecting the multistage sample of physicians, and nonresponse adjustments were used to make average annual national estimates of physicians. Because the sampling frame is frozen at the time of sample selection, the estimator includes a calibration ratio that adjusts the physician count in the frame to match final AMA and AOA counts for the survey year. See Appendix I for more information on estimation, response rates, and survey definitions.

The PII questionnaire included questions used to determine physician eligibility for the survey as well as to gather information about the practice such as size, ownership, and revenue source (see Appendix II for definitions of selected variables). Some characteristics of physicians were taken from the master files of the AMA and AOA. These include age, sex, race and ethnicity, foreign medical school graduate, and specialty.

Many of the tables present estimates by physician specialty. Two methods of categorizing physician specialty are provided. The first method was 13 major specialties, and the second used three broad types of specialty (primary care, surgical, and medical specialties). See Appendix I for definitions. Both methods are based on the specific physician self-designated subspecialty codes provided by the AMA and AOA on the sampling frame and updated by the physician during the NAMCS induction interview.

Because estimates presented in this report are based on sample surveys rather than the universe of office-based physicians, they are subject to sampling variability. Appendix I includes an explanation of the sampling errors with guidelines for judging the precision of the estimates and information on physician and item nonresponse. The standard errors were calculated using Taylor series approximations in SUDAAN, which take into account the complex sample design of NAMCS (9). In this report, estimates are not presented if they are based on fewer than 20 physicians in the sample data; only an asterisk (*) appears in the tables. Estimates based on 30 or more physicians but with a standard error that is more than 30 percent of the estimate have an asterisk to indicate that they do not meet the reliability standard set by NCHS; estimates based on 20–29 physicians are also considered unreliable and are presented with asterisks. In this report, percentages based on categorical responses were computed with missing data ("unknown" or "blank") in the denominator so that responses represent all physicians. This method, however, may understate percentages if the distribution among unknowns is similar to the distribution among responses (see

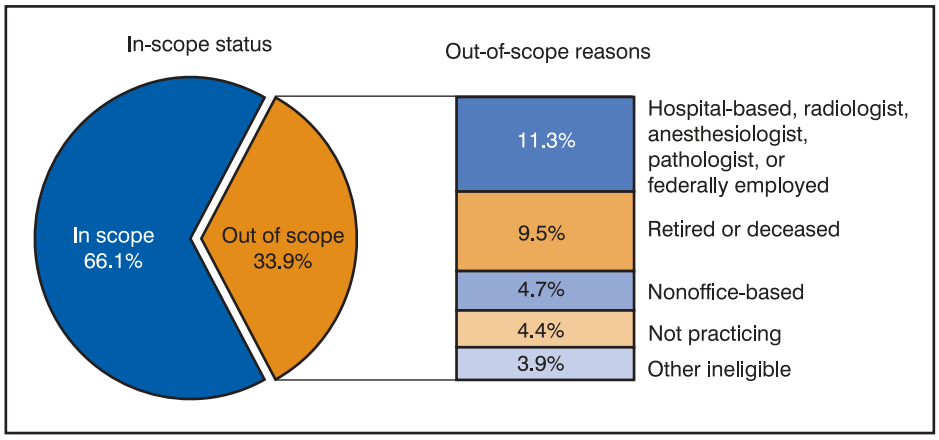


Figure 1. Percent distribution of sample physicians by in-scope status: National Ambulatory Medical Care Survey, 2003–04

Appendix I for information on missing data for characteristics presented in the report).

Chi-square tests using SUDAAN were performed to detect significant associations between provider characteristics. All other tests of statistical significance between two estimates are based on the two-tailed *t*-test at the 0.05 level of significance, unless otherwise noted. Terms relating to differences such as "greater than" or "less than" indicate that the difference is statistically significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant.

The U.S. Census Bureau is the data collection agent for NAMCS, and the data are centrally processed by Constella Group, Inc. There was 100 percent independent keying of the 2003–04 induction forms, with a quality control error rate of 0.1 percent. More information about the data collection procedures and survey background may be found elsewhere (2,3).

Several tables in this report present rates of physicians per population. The population figures used in calculating these rates are based on Census Bureau monthly postcensal estimates of the civilian noninstitutional population of the United States as of July 1, 2003, and July 1, 2004. These population estimates are available from the U.S. Census Bureau. See Appendix I for more information.

Table 3 presents the annual number of office visits per physician. The numerator is the weighted number of office visits estimated from NAMCS. Each participating physician was asked to provide information for a systematic sample of office encounters during a randomly selected 1-week reporting period. Data from these encounters were weighted to reflect national annual estimates.

Results

Physician characteristics

During 2003–04, 311,200 office-based physicians, on average, were in practice on any given week in the United States. Table 1 provides national estimates of office-based physicians by characteristics available from the sampling frame. One-third of physicians (34.1 percent) were 45–54 years of age at the time of the survey; the mean age was 50.3 years. The distribution of physicians by race and ethnicity is presented in Table 1. These data should be viewed with caution, however, because item nonresponse for physician race or ethnicity was 29 percent.

About one-half of physicians practiced in primary care specialties (49.5 percent). About 27.8 percent of physicians were in medical specialties, and 22.7 percent were in surgical specialties. Specialties with the most physicians include general and family practice (17.6 percent), internal medicine (15.6 percent), pediatrics (9.0 percent), and obstetrics and gynecology (7.8 percent).

About one in five office-based physicians (22.2 percent) were female (Table 1). The percentage of physicians that were female decreased with physician age (Figure 2). Nearly one-half of office-based physicians under 35 years of age were female (47.8 percent) (Table 2). Females made up a larger proportion of physicians in pediatrics (50.3 percent) than in the other specialties.

During 2003–04, 21.9 percent of office-based physicians were graduates of medical schools outside the United States (Table 2). The percentage of physicians that graduated from foreign medical schools increased with age among physicians under 65 years (Figure 3). Graduates of foreign medical schools made up a larger proportion of physicians in primary care specialties (23.7 percent) and medical specialties (24.8 percent) than in surgical specialties (14.5 percent).

Physician Supply and Utilization

During 2003–04, the supply of nonfederal office-based physicians per population was 108.4 per 100,000 persons (Table 3). The overall ratio of physicians per 100,000 population and primary care specialists per 100,000 population were each greater in the Northeast than in the South and West regions. The overall visit load (annual visits per provider), however, was higher in the South (3,300 visits per physician) than in the other regions of the country (2,699–2,742 visits per physician). A similar pattern occurred among primary care specialists; the visit load for these physicians was higher in the South (3,976 per physician) than in the other regions (3,045–3,321 per physician).

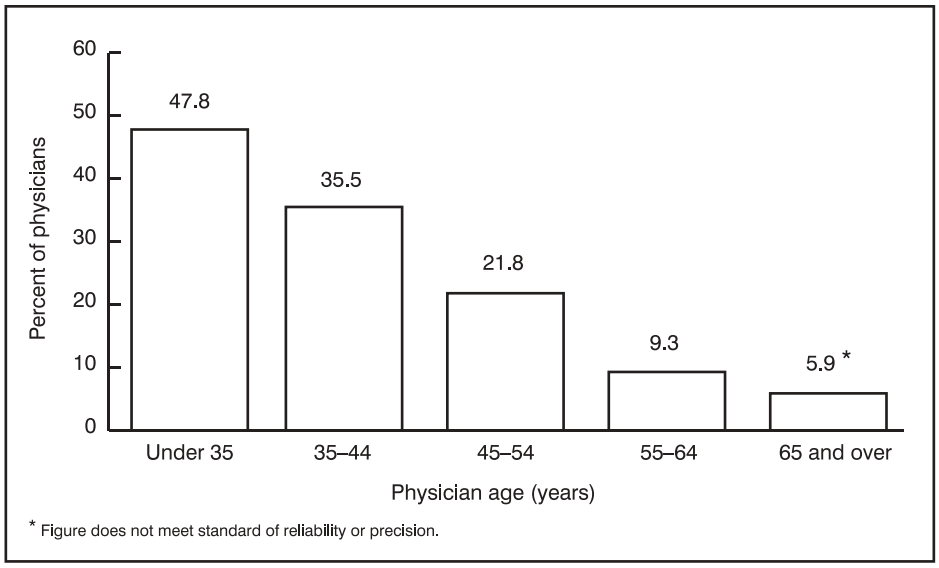


Figure 2. Percentage of office-based physicians who are female, by age: United States, 2003–04

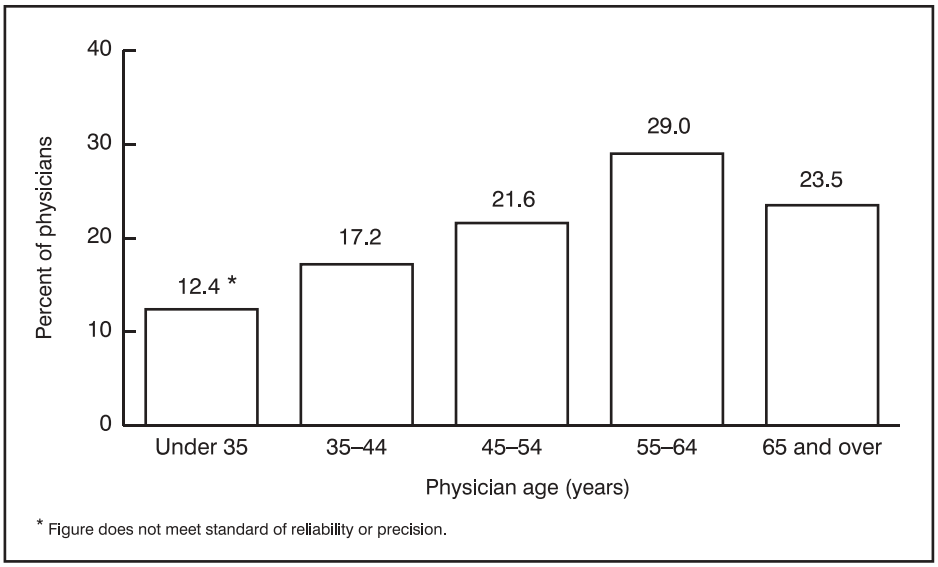


Figure 3. Percentage of office-based physicians who are graduates of a foreign medical school, by age: United States, 2003–04

During 2003–04, there were more nonfederal office-based physicians per population in MSAs (114.2 per 100,000 persons) than in non-MSAs (78.4 per 100,000 persons). Although physicians in primary care specialties were equally distributed per population in MSAs (54.9 per 100,000 persons) and non-MSAs (47.0 per 100,000 persons), the rate of medical specialists in non-MSAs (12.4 per 100,000 persons) was less than one-half the rate in MSAs (33.6 physicians per 100,000 persons). The visit load was equivalent for physicians in MSAs and non-MSAs regardless of whether the physician was engaged in primary care, surgical specialties, or medical specialties.

Table 4 shows physician-to-population ratios by physician specialty and location of the physician. With the exception of the "All other" specialties category, the physician-to-population ratio was greater among general and family practice physicians (19.1 per 100,000 persons) and internal medicine physicians (16.9 per 100,000 persons) than among the remaining specialties (2.1–9.8 per 100,000 persons).

Between 2001–02 and 2003–04, the ratio of nonfederal office-based physicians to population remained constant (between 105.4 and 108.4 physicians per 100,000 persons). The visit load per physician decreased by 6% (Figure 4), from 3,102 visits per physician in 2001–02 to 2,919 visits per physician in 2003–04. Most of the decreased visit volume per physician occurred in the Northeast (down by 15%), specifically among primary care specialties in this region (down by 18%, data not shown). Between 2001–02 and 2003–04, the visit volume per physician decreased in MSAs (down by 7%); most of this decrease occurred among medical specialists within MSAs (down by 13%, data not shown).

Practice Characteristics

About one-third of the physicians were in solo practices (35.8 percent), about one-half were in practices with 2 to 10 physicians (53.5 percent), and 10.7 percent were in practices with 11 or more physicians (Table 5). About two-fifths of physicians (43.1 percent) were in single-specialty group practices with two or more physicians, and 21.1 percent were in multispecialty group practices. The majority of physicians were the owners or part owners of their practices (74.9 percent). Primary care specialists (28.1 percent) were employees more frequently than medical (17.2 percent) or surgical specialists (14.7 percent) (Table 5).

Another practice characteristic collected in the NAMCS induction interview was whether the physician participated in a practice-based research network (PBRN), a consortium of primary care physicians or providers joining together for research purposes (10). Providers join these networks to investigate questions related to community-based practice and to improve the delivery and quality of primary care. In 2004, there were more

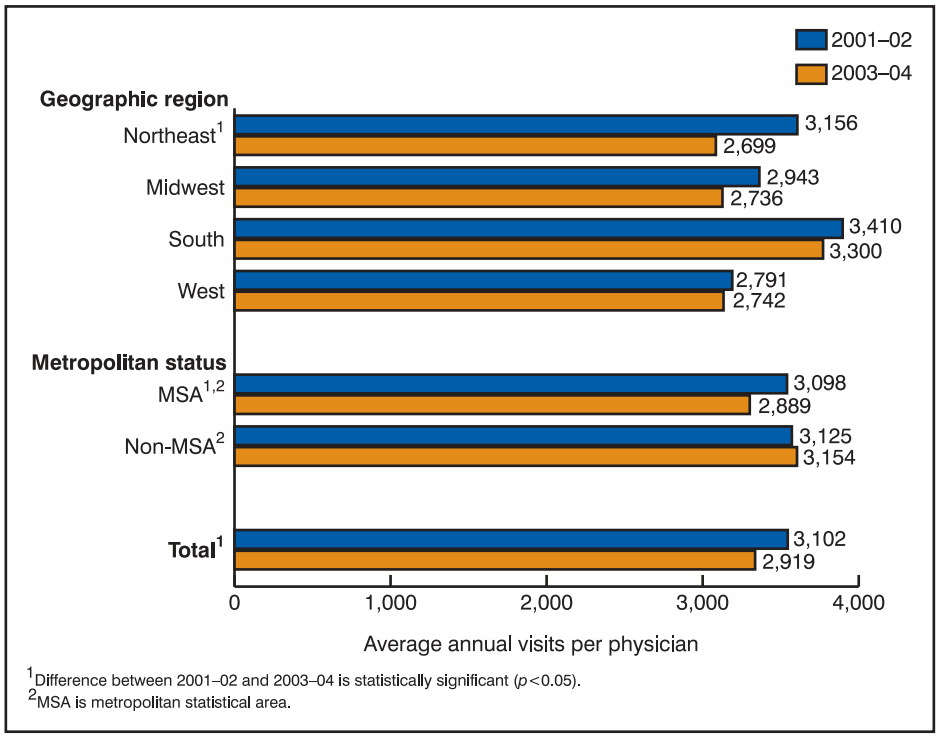


Figure 4. Average annual number of visits per physician, by location of physician: United States, 2001–02 and 2003–04

than 110 PBRNs in the United States, some of which have been in existence for more than 20 years (10). In 2003–04, 6.0 percent of physicians participated in PBRNs. Although the percentage participating did not vary by specialty type, the likelihood of physician participation increased with practice size (Figure 5).

The NAMCS induction interview also asked about types of information technology used by physicians. In 2003–04, the most frequent technology used by office-based physicians was electronic billing records (74.2 percent), followed by electronic medical records (19.0 percent) and a computerized prescription order entry (CPOE) system to fill prescriptions (9.2 percent). Although the 2003–04 percentage of physicians using electronic medical records appears to have increased slightly since 2001–02 (17.7 percent), the difference was not statistically significant ($p = 0.76$). Figure 6 presents use of electronic medical records by physician specialty in 2003–04. Use was greater among primary care specialties (11.8 percent) than among surgical (6.4 percent) or medical specialties (7.0 percent). Physicians in practices using CPOE reported 80.4 percent of prescriptions were written using this technology.

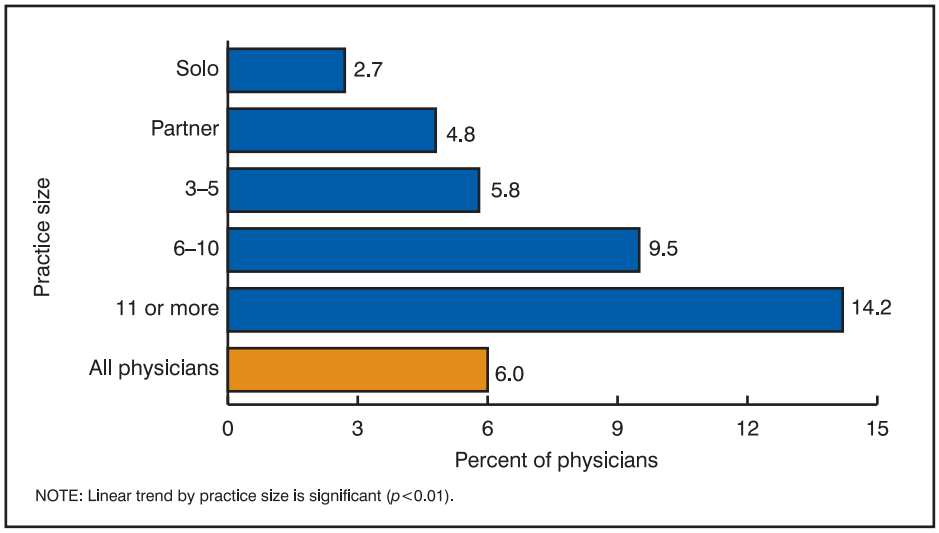


Figure 5. Percentage of office-based physicians in practice-based research networks, by practice size: United States, 2003–04

Revenues and Access

During 2003–04, 86.3 percent of physicians reported having at least one managed care contract and 9.8 percent reported having none. This information was missing for 3.9 percent of physicians (Table 5). About 40 percent of physicians reported having between 3 and 10 managed care contracts, and 36.1 percent reported 10 or more contracts. Of practices reporting at least one managed care contract, the mean percentage of revenue from these contracts was 44.7 percent. The mean percentage of revenue from managed care contracts was higher among primary care specialists (50.8 percent) than among surgical (38.6 percent) or medical (39.1 percent) specialists.

The NAMCS physician induction interview included questions about the percentage of practice revenue from various payment sources (Table 5). Among physicians reporting this information, private insurance accounted for about one-half of office revenue (on average, 46.7 percent) and Medicare accounted for an average of 31.1 percent of revenue. Primary care specialists reported a higher mean percentage of revenue from private insurance (51.1 percent) and Medicaid (16.3 percent) than surgical or medical specialists (Table 5). The mean percentage of Medicare revenues, however, was higher among surgical (39.0 percent) and medical (36.0 percent) specialists than among primary care specialists (24.7 percent).

When physicians were asked if they were currently accepting "new" patients into their practice, 96 percent responded positively (Table 6). Responses varied, however, when physicians were asked which payment sources they accepted from new patients (47.7–91.0 percent). Figure 7 presents the percentage of physicians who reported what payment sources they would not accept from new patients. Approximately 40.3 percent of

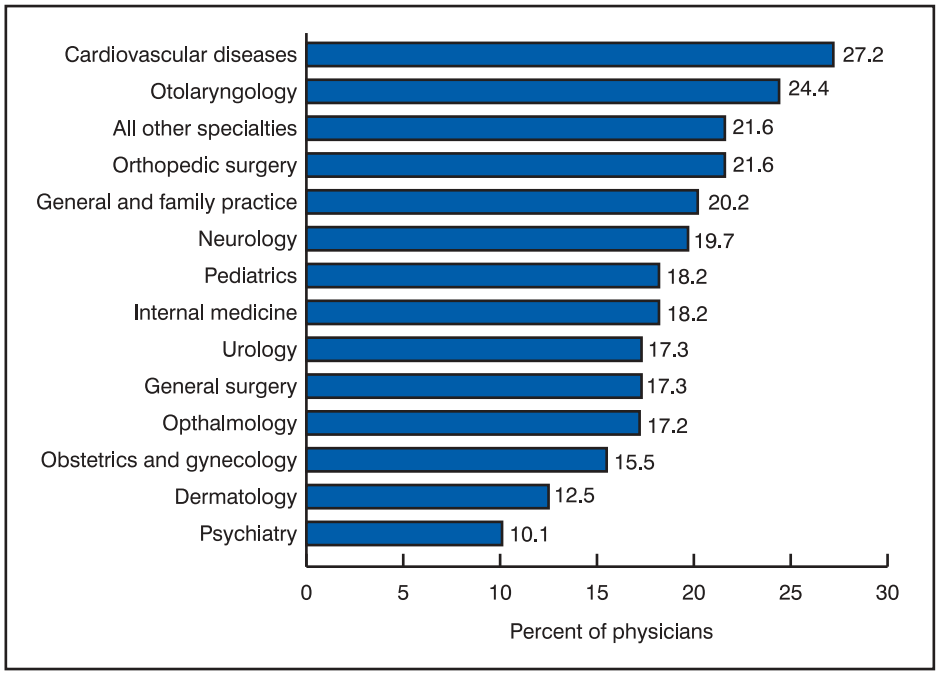


Figure 6. Percentage of office-based physicians using electronic medical records, by specialty: United States, 2003–04

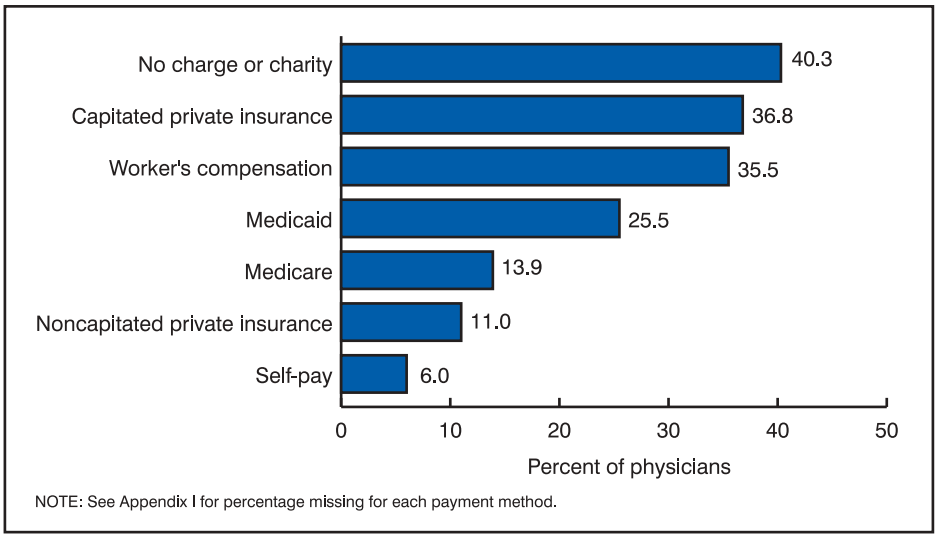


Figure 7. Percentage of office-based physicians not accepting new patients, by payment method: United States, 2003–04

office-based physicians did not accept new charity cases (as defined by no charge or charity), 25.5 percent did not accept new Medicaid cases, and 13.9 percent did not accept new Medicare cases. Primary care specialists were more likely not to accept new Medicare cases (20.3 percent) compared with either surgical specialists (3.7 percent) or medical specialists (10.8 percent). They were also less likely to accept new Medicaid cases (29.3 percent) than surgical specialists (17.0 percent) (data not shown). For this analysis, physicians who reported not accepting any new patients, had responses for each of the expected payment sources edited to "no." "No" responses may be understated if the amount of missing data is large because each percentage includes unknowns in the denominator. The percentage with missing data for these items ranged from 3.0 for self-pay to 12.0 percent for no charge or charity (see Appendix I for further information).

Physicians also reported on difficulty they had referring certain types of patients for specialty care (Table 6). Physicians had the least difficulty referring Medicare and privately insured patients. About one-third had difficulty referring Medicaid and uninsured patients.

Patient Encounters

Another practice characteristic collected in the Physician Induction Interview is the number of encounters physicians had during their last full week of practice prior to the interview (Table 7). During 2003–04, the average number of office visits reported was 73.8 visits per week, representing an 8% decline since 2001 (3).

Other types of physician patient encounters reported during the last full week of practice included: hospital visits, telephone consults, home visits, and Internet e-mail consultations. During 2003–04, 69.7 percent of physicians reported making at least one hospital visit, 58.5 percent had at least one telephone consultation, 10.6 percent made one or more house visits (including visits to nursing homes), and 5.5 percent reported having an e-mail or Internet consultation during the week. These recent estimates indicate declines since 2001; the percentage of physicians reporting hospital visits declined by 10%, telephone consultations declined by 21%, and home visits declined by 40% (4).

During 2003–04, surgical specialists were more likely to make a hospital visit in their last full week of work (78.5 percent) compared with other types of specialties. However, the mean number of visits for physicians who did make hospital visits was about one-half as much among surgical specialists (16.3 visits) as among medical specialists (30.9 visits).

Some physicians may have provided care in an emergency department (ED) during their hospital visit. The Emergency Medical Treatment and Labor Act (EMTALA) of 1986 requires hospitals accepting Medicare funding to screen all patients presenting to the ED for care and to stabilize emergency medical conditions before transferring or discharging patients from the ED (11). In 2003–04, such care was provided by 22.8 percent of physicians during their last full week of practice; at that time, they provided, on average, 10.6 hours of care (Table 7). Surgical specialists were more likely to have provided EMTALA care during the week (34.3 percent) than were primary care (22.3 percent) or medical care specialists (14.5 percent). Office-based physicians provided a total of 649,000 EMTALA hours per week in local hospitals.

Table 8 shows the average weekly number of consultations for all physicians during their last full week of practice, as well as those that occurred during office visits, hospital visits, and telephone consultations across practice characteristics. To approximate total volume of patient consultations made by office-based physicians during their last full week of practice, all types of consultations—those conducted by telephone, e-mail, or during any patient visit occurring inside and outside of the office (house or hospital visit)—were summed, including those with no encounters (Table 8). This is in contrast to the data in Table 7, which excludes doctors who reported no encounters.

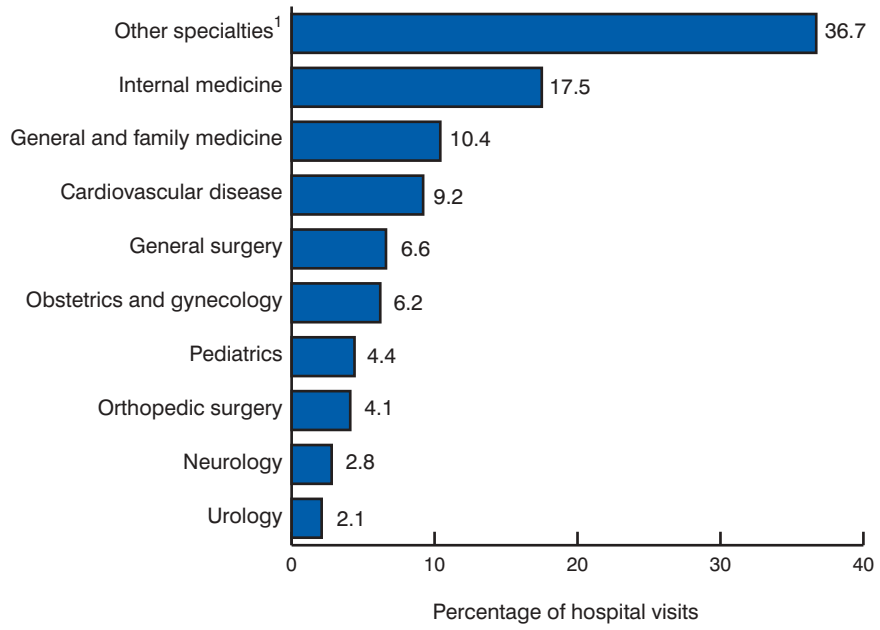
In 2003–04, office-based physicians had an average of 101.6 patient encounters during their last full week of work. This includes an average of 73.7 office visits, 12.7 hospital visits, 11.1 telephone consultations, 0.7 home visits, and 0.5 e-mail consultations (last two estimates not shown). The total volume

of consultations was greater for primary care specialists (114.7 encounters) than for surgical and medical specialists (85.6–90.4 encounters). However, hospital visits were higher for medical specialists (18.8 visits) than for primary care and surgical specialists (9.4–12.8 visits). Office volume and total volume increased with the number of managed care contracts that physicians reported (Table 8), driven by the positive associations between office visit volume and the number of contracts among primary care and medical specialists (data not shown).

Table 9 presents the average weekly encounter volume by physician specialty. Although dermatologists had the highest average volume of office visits, they had the lowest average volume of hospital visits.

Figure 8 shows the percent distribution of the estimated total annual volume of hospital visits made by office-based physicians (see Appendix I for details). Although pediatricians accounted for 11.6 percent of all office visits, they made only 4.4 percent of hospital visits. General and family practice physicians accounted for 23.7 percent of office visits, but only 10.4 percent of hospital visits. The largest share of hospital visits was made by office-based physicians who are not categorized among the leading 14 specialty groups used in NAMCS. The high volume of hospital calls in the residual "all other" specialty category is driven by high volumes among physicians specializing in gastroenterology, nephrology, physical medicine and rehabilitation, vascular surgery, medical oncology, and infectious diseases.

High office visit volume is associated with shorter average visit duration. Figure 9 shows the association among office volume, visit duration (as measured by the mean face-to-face duration of their sampled patient visits), and the number of managed care contracts. As a group, physicians with 10 or more contracts had the highest volume and shortest average duration, whereas physicians with less than three contracts had less volume, but higher average duration.



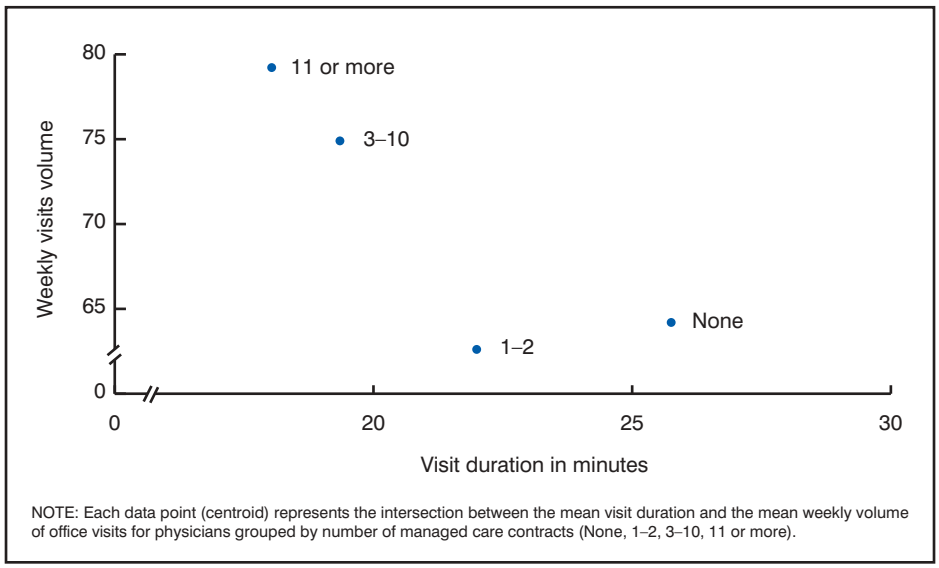
[1]About four-fifths of hospital visits in this category were made by physicians specializing in either gastroenterology, nephrology, physical medicine and rehabilitation, vascular surgery, medical oncology, or infectious diseases.
NOTE: Based on a total estimated 142,312,000 visits made annually to patients in hospitals.

Figure 8. Percent distribution of hospital visits made by office-based physicians, according to specialty: United States, 2003–04

Discussion

This report presents nationally representative estimates of office-based physicians who saw patients during 2003–04, as well as characteristics of their practices.

Although selected physician estimates have been published previously (4–6), the focus of those reports was patient visits rather than the characteristics of office-based physicians. This report is the first to use NAMCS to focus on physicians and the characteristics of their practices. These data can be used



NOTE: Each data point (centroid) represents the intersection between the mean visit duration and the mean weekly volume of office visits for physicians grouped by number of managed care contracts (None, 1–2, 3–10, 11 or more).

Figure 9. Number of managed care contracts as a function of mean weekly volume of office visits and mean visit duration: United States, 2003–04

to track trends on supply of office-based physicians who actually see patients in an office setting, patterns of care provided, and organizational factors affecting care.

One use of these data is the tracking aspects of the quality of patient care. The federal government, health insurers, accrediting organizations, and consumer groups have advocated increased adoption of electronic medical record (EMR) systems by physicians to reduce medical errors and to improve patient care (12). This study found that in 2003–04, EMR use by physicians (19.0 percent) was not widespread. However, recent estimates from the survey indicate EMR use by office-based physicians increased to 23.9 percent in 2005 (13). EMR adoption could improve patient care by reducing prescription errors due to transcription errors, providing prevention reminders to the physicians, and providing the latest information on evidence-based care for chronic conditions (14) and on the quality of their own clinical performance. A recent study found that only one-third of physicians had access to data to monitor the quality of their clinical performance (15). The current study also documented physician participation (6 percent) in practice-based research networks (PBRN). Physicians join these networks to understand and improve primary care within a research environment. Recent PBRN research supports quality improvements and adoption of evidence-based culture in primary care practice (10).

As measured by the ratio of physicians to population, the report found no change in the overall supply of office-based physicians between 2001–02 and 2003–04, although the regional variation noted in previous studies (6,16,17) persisted in 2003–04. The stability in the overall supply of physicians may be partly due to international medical graduates who emmigrated to the United States. According to the AMA, international medical graduates accounted for 29% of the increase in office-based physicians between 1980 and 2004 (18). This study found that foreign medical school graduates accounted for 21.9 percent of office-based physicians in 2003–04. The overall supply of physicians could have also been affected by the availability of mid-level providers (physician assistants, nurse practitioners, nurse midwives, and clinical nurse specialists) in physician practices who may be potential caregivers. The proportion of physicians in noninstitutional practice settings employing mid-level providers increased from 40 percent in 1997 to 48 percent in 2001 (19).

As discussed earlier, because NAMCS physician estimates are lower than AMA and AOA physician estimates, physician-to-population ratios presented in this report are also lower than ratios derived using AMA (18) and AOA physician estimates. NAMCS estimates are lower because one-third of the sampled physicians were found to be out of scope for NAMCS during the induction interview (see Appendix I for more details). Of physicians found to be out of scope, one-half were ineligible because the physician was in a hospital-based specialty or was classified as a radiologist, anesthesiologist, or pathologist, was federally employed, or worked in a nonoffice based setting (Table II). The remaining physicians were ineligible because they were not practicing medicine; they were retired, deceased, worked as an administrator, moved, couldn't be located, or were otherwise not seeing patients.

Although the overall ratio of physicians to population did not change between 2001–02 and 2003–04, the annual visit volume per physician decreased by 6%. Between 2001–02 and 2003–04, decreases in annual volume of visits per physician occurred in the Northeast (down by 15%), principally among primary care specialists in this region (down by 18%). Since 2001–02, the visit volume per physician also decreased among physicians located in MSAs (down by 7%), principally among medical specialists in this region (down by 13%). In contrast to the decline in visit volume per physician, the volume of hospital emergency department (ED) visits per operating ED increased by 78% between 1995 and 2003 (20), while the visit volume to hospital outpatient department clinics per operating OPD remained constant since 1999 (data not shown).

In addition to a decline in annual volume of visits per physician since 2001–02, the report found that physicians had fewer patient encounters during their last complete week of practice. Between 2001 and 2003–04, the average number of office visits per physician declined by 8%, the percentage of physicians reporting hospital visits declined by 10%, the percentage reporting telephone consultations declined by 21%, and the percentage making home visits declined by 40% (4). These data support previous research indicating that physicians may be reducing the number of hours they work (21,22).

Two factors may be related to physicians working fewer hours. First, the pool of physicians is aging. In 2003–04, the median age of office-based physicians was 50.3 years. With one-half of office-based physicians 50 years of age and over, some physicians may work fewer hours because they are nearing retirement age. Second, the proportion of female physicians is increasing. According to the Association of American Medical Colleges, the percentage of female medical school students increased by 77% between 1980–81 (26.5 percent) and 2002–03 (46.8 percent) (23). Female physicians increased the most during that period in office-based practices (up by 567%) (18). Previous research found female physicians generally work fewer hours than male physicians (17,22,24). This may partially explain the decrease in total hours worked by physicians. Another study concluded that an observed trend of more pediatricians working part-time (11% in 1993 compared with 15% in 2000) was likely to continue because of the increasing proportion of females in this specialty (25). In 2003–04, half of all office-based pediatricians were women (Table 2).

The report found that the number of patient visits made to physicians was associated with the number of managed care contracts the physician had. In 2003–04, physicians with 10 or more managed care contracts spent less time per patient visit, but had more weekly

visits than physicians with fewer than three managed care contracts. In contrast, physicians with fewer than three managed care contracts spent more time with their patients and had fewer weekly visits. This finding is consistent with previous research, which found that a majority of physicians in managed-care systems (75 percent) felt pressure to see more patients per day (26). In 2003–04, a higher percentage of primary care specialists' revenue (50.8 percent) came from managed care contracts than from surgical (38.6 percent) and medical specialists (39.1 percent). Although it is unclear whether a shorter visit duration results in lower quality of care or less patient satisfaction, the previous study found that physicians with managed care incentives tied to productivity believed that pressure to see more patients per day compromised care (26). It is also possible that shorter visits associated with physicians with many managed care contracts may have occurred because substitution of mid-level providers and use of disease management programs are more frequent among physicians with managed care contracts. Unpublished visit data from NAMCS indicates that use of physician assistants and nurse practitioners increases with the number of managed care contracts physicians had (data not shown).

Finally, although physicians reported seeing fewer patients per week in 2003–04 compared with 2001, time spent by physicians in nonpatient care activities may be increasing. A previous study found that nearly one-half of a primary care physician's work day was spent on followup and documentation of patient care occurring outside of time spent in the face-to-face patient encounter (27). Although new technologies such as electronic medical records and computerized physician order entry systems have the potential to make physicians more productive by reducing time spent documenting care (28), they may also increase the time spent by physicians during the initial implementation phase (29).

As the previous discussion illustrates, data presented in this report can be used to track multiple issues affecting the supply and practice characteristics of office-based physicians. The NAMCS physician interview data can also be used to examine patient care decisions made by medical practices, such as adoption of evidence-based guidelines or use of electronic medical records, based on derived medical practice estimates (30). The data also provide estimates of terrorism training and preparedness for office-based physicians and their staff (physician assistants, nurse practitioners and nurses) (31).

Additional information about office-based physicians is available from the NCHS Ambulatory Health Care website at http://www.cdc.gov/nchs/about/major/ahcd/ahcd1.htm. Data from the 2003–04 NAMCS PII are available through the NCHS Research Data Center. Queries regarding NAMCS data may be sent to NCHS at nchsquery@cdc.gov.

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Table 1. Number and percent distribution of office-based physicians with corresponding standard errors, by selected characteristics: United States, 2003–04

Selected characteristics[1]	Number of physicians[2]	Standard error	Percent distribution	Standard error
Total	311,200	8,000	100.0	. . .
Age				
Under 35 years	14,300	1,900	4.6	0.6
35–44 years	86,000	4,300	27.6	1.3
45–54 years	106,200	4,700	34.1	1.3
55–64 years	75,300	4,500	24.2	1.2
65 years and over	29,400	2,600	9.4	0.8
Sex				
Male	242,000	7,400	77.8	1.1
Female	69,200	1,900	22.2	1.1
Race and ethnicity				
White, not Hispanic	176,900	6,800	56.9	1.4
Asian or Pacific Islander	28,100	3,000	9.0	0.9
Black, not Hispanic	8,000	1,300	2.6	0.4
Hispanic	7,800	1,600	2.5	0.5
Other or unknown	90,300	4,300	29.0	1.2
Graduate of foreign medical school				
No	225,200	7,600	72.4	1.3
Yes	68,300	4,200	21.9	1.3
Unknown	17,700	1,400	5.7	0.5
Specialty type[3]				
Primary care	153,900	4,600	49.5	1.1
Medical	86,600	4,400	27.8	1.1
Surgical	70,600	3,400	22.7	0.9
Physician specialty[4]				
General and family practice	54,800	2,500	17.6	0.8
Internal medicine	48,400	2,800	15.6	0.8
Pediatrics	28,100	1,700	9.0	0.5
Obstetrics and gynecology	24,200	1,700	7.8	0.5
Psychiatry	18,000	1,000	5.8	0.3
Orthopedic surgery	15,400	1,300	4.9	0.4
Cardiovascular diseases	14,000	1,000	4.5	0.3
Ophthalmology	12,700	900	4.1	0.3
General surgery	12,300	800	3.9	0.3
Urology	6,800	400	2.2	0.1
Dermatology	6,800	300	2.2	0.1
Otolaryngology	6,300	400	2.0	0.1
Neurology	6,200	400	2.0	0.1
All other specialties	57,200	3,800	18.4	1.0

. . . Not applicable.

[1]Characteristic information is from the master files of the American Medical Association and the American Osteopathic Association.

[2]Average number of nonfederal office-based physicians during 2003–04, excluding the specialties of radiology, pathology, and anesthesiology. Estimates were rounded to the nearest hundred.

[3]Specialty type is defined in Table VI.

[4]Physician specialty is defined in Table V.

NOTE: Numbers may not add to totals because of rounding. Figures are annual averages.

Table 2. Percentage with corresponding standard error of office-based physicians who are female or graduates of a foreign medical school, by age, specialty type, and physician specialty: United States, 2003–04

Selected characteristics[1]	Female		Graduate of foreign medical school	
	Percent	Standard error	Percent	Standard error
Total	22.2	1.1	21.9	1.3
Age				
Under 35 years	47.8	6.5	*12.4	4.1
35–44 years	35.5	2.5	17.2	2.1
45–54 years	21.8	2.0	21.6	2.3
55–64 years	9.3	1.5	29.0	2.7
65 years and over	*5.9	2.0	23.5	3.5
Specialty type[2]				
Primary care	32.3	1.9	23.7	1.9
Medical	17.6	2.0	24.8	2.3
Surgical	6.0	1.1	14.5	1.6
Physician specialty[3]				
Pediatrics	50.3	3.9	23.1	3.4
Obstetrics and gynecology	39.1	4.7	11.9	3.4
Psychiatry	27.7	3.8	19.6	3.4
Internal medicine	27.5	4.0	35.5	4.3
Dermatology	25.6	4.5	9.8	2.8
General and family practice	23.8	2.3	17.7	2.4
Neurology	22.1	4.0	30.0	4.1
Ophthalmology	11.8	3.3	*7.8	2.5
Cardiovascular diseases	*9.6	3.3	28.4	4.3
Otolaryngology	*6.5	2.3	12.6	2.8
General surgery	*6.0	2.3	17.2	3.0
Orthopedic surgery	*2.4	1.4	11.9	2.8
Urology	*1.0	0.7	25.1	3.7
All other specialties	11.7	2.5	25.4	3.2

* Figure does not meet standard of reliabiity or precision.

[1]Characteristic information is from the master files of the American Medical Association and the American Osteopathic Association.

[2]Specialty type is defined in Table VI.

[3]Physician specialty is defined in Table V.

Table 3. Number of office-based physicians with corresponding standard errors, by specialty type and geographic characteristics: United States, 2003–04

Geographic characteristic	Specialty type[1]							
	All specialties	Primary care	Surgical	Medical	All specialties	Primary care	Surgical	Medical
	Number of physicians				Standard error			
Total	311,200	153,900	70,600	86,600	8,000	4,600	3,400	4,400
Geographic region								
Northeast	66,600	33,500	14,900	18,100	4,000	1,900	1,500	1,700
Midwest	69,400	35,200	15,800	18,300	3,300	2,800	1,900	1,700
South	105,000	50,200	24,400	30,400	5,600	3,000	1,900	3,100
West	70,200	34,900	15,500	19,800	2,300	1,600	1,200	1,700
Metropolitan status								
MSA[2]	275,000	132,200	61,900	80,900	7,600	4,000	3,000	4,400
Non-MSA[2]	36,200	21,700	8,800	5,700	5,100	3,000	1,900	1,300
	Number of physicians per 100,000 persons[3]							
Total	108.4	53.6	24.6	30.2	2.8	1.6	1.2	1.5
Geographic region								
Northeast	124.0	62.4	27.8	33.7	7.4	3.6	2.7	3.2
Midwest	107.5	54.6	24.5	28.4	5.2	4.3	2.9	2.6
South	102.0	48.8	23.7	29.5	5.5	2.9	1.9	3.1
West	106.7	53.0	23.5	30.1	3.5	2.5	1.8	2.6
Metropolitan status								
MSA[2]	114.2	54.9	25.7	33.6	3.2	1.7	1.3	1.8
Non-MSA[2]	78.4	47.0	19.0	12.4	11.1	6.4	4.0	2.8
	Number of physicians per county[4]							
Total	99.0	48.9	22.5	27.6	2.6	1.5	1.1	1.4
Metropolitan status								
MSA[2]	253.0	121.6	56.9	74.4	7.0	3.7	2.8	4.0
Non-MSA[2]	17.6	10.6	4.3	2.8	2.5	1.4	0.9	0.6
	Number of annual office visits per physician[5]							
Total	2,919	3,465	2,542	2,258	55	75	89	98
Geographic region								
Northeast	2,699	3,045	2,378	2,324	109	149	158	219
Midwest	2,736	3,279	2,415	1,967	111	145	164	168
South	3,300	3,976	2,807	2,577	110	144	188	200
West	2,742	3,321	2,414	1,978	88	155	145	147
Metropolitan status								
MSA[2]	2,889	3,436	2,582	2,229	58	82	99	100
Non-MSA[2]	3,154	3,641	2,260	2,674	141	213	142	422

[1]Specialty type is defined in Table VI.

[2]MSA is metropolitan statistical area.

[3]Regional population estimates are based on U.S. Census Bureau estimates of the civilian noninstitutionalized population of the United States as of July 1, 2003, and July 1, 2004. Metropolitan area estimates are from the National Health Interview Survey with adjustments to match the 2003–04 population estimates obtained from the U.S. Census Bureau.

[4]Based on 3,144 counties: 1,087 MSA counties and 2,057 non-MSA counties.

[5]Rate is the 2003–04 annual average number of office visits divided by the 2003–04 average number of physicians.

NOTE: Numbers may not add to totals because of rounding. Figures are annual averages.

Table 4. Number of physicians per 100,000 population with corresponding standard errors, by physican specialty and geographic characteristics of physicians: United States. 2003–04

Physican specialty[1]	Total	Geographic region				Metropolitan status	
		Northeast	Midwest	South	West	MSA[2]	Not MSA[2]
		Number of physicians per 100,000 population[3]					
All specialties	108.4	124.0	107.5	102.0	106.7	114.2	78.4
General and family practice	19.1	15.9	22.8	17.5	20.6	18.5	22.0
Internal medicine	16.9	23.5	15.8	15.2	15.2	16.9	16.6
Pediatrics	9.8	13.3	8.4	8.7	10.1	11.0	*
Obstetrics and gynecology	8.4	9.5	8.0	8.8	7.5	9.2	*
Psychiatry	6.3	8.3	5.2	5.7	6.5	6.8	*
Orthopedic surgery	5.4	5.8	5.4	5.0	5.6	5.3	5.8
Cardiovascular diseases	4.9	5.7	4.3	5.1	4.4	5.6	*
Ophthalmology	4.4	5.3	4.1	4.1	4.6	4.8	*
General surgery	4.3	4.5	4.8	4.2	3.6	4.0	5.5
Dermatology	2.4	3.0	2.2	2.0	2.5	2.6	*
Urology	2.4	2.7	2.4	2.4	2.0	2.5	*
Otolaryngology	2.2	2.2	2.2	2.2	2.2	2.4	*
Neurology	2.1	2.5	2.0	2.1	2.0	2.4	*
All other specialties	19.9	21.8	19.8	19.1	19.8	22.1	8.8
		Standard error					
All specialties	2.8	7.4	5.2	5.5	3.5	3.2	11.1
General and family practice	0.9	1.7	2.6	1.4	1.5	1.0	3.1
Internal medicine	1.0	2.1	2.0	1.6	2.3	1.0	3.5
Pediatrics	0.6	1.2	1.0	1.1	1.4	0.6	*
Obstetrics and gynecology	0.6	1.6	1.0	1.1	1.2	0.7	*
Psychiatry	0.4	1.4	0.4	0.4	0.7	0.4	*
Orthopedic surgery	0.5	0.8	1.3	0.7	0.8	0.5	1.5
Cardiovascular diseases	0.4	0.8	0.8	0.5	0.9	0.4	*
Ophthalmology	0.3	0.6	0.6	0.7	0.6	0.4	*
General surgery	0.3	0.7	0.5	0.6	0.5	0.3	1.1
Dermatology	0.1	0.3	0.2	0.2	0.3	0.1	*
Urology	0.1	0.3	0.3	0.3	0.2	0.2	*
Otolaryngology	0.1	0.3	0.3	0.2	0.2	0.1	*
Neurology	0.1	0.3	0.4	0.2	0.2	0.2	*
All other specialties	1.3	2.0	2.5	2.8	2.1	1.5	2.9

* Figure does not meet standard of reliability or precision.

[1]Physician specialty is defined in Table V.

[2]MSA is metropolitan statistical area.

[3]Regional population estimates are based on U.S. Census Bureau estimates of the civilian noninstitutionalized population of the United States as of July 1, 2003, and July 1, 2004. Metropolitan area estimates are from the National Health Interview Survey with adjustments to match the 2003–04 population estimates obtained from the U.S. Census Bureau.

Table 5. Number, standard error, percent distribution, and mean percent of office-based physicians by selected practice characteristics, according to specialty type: United States, 2003–04

Practice characteristics	Specialty type[1]							
	All specialties	Primary care	Surgical	Medical	All specialties	Primary care	Surgical	Medical
	Average number of physicians				Standard error			
All office-based physicians	311,200	153,900	70,600	86,600	8,000	4,600	3,400	4,400
	Percent distribution							
All office-based physicians	100.0	100.0	100.0	100.0	...	...	...	...
Number of in-scope office locations								
1	85.6	91.1	78.6	81.6	1.0	1.3	2.0	1.8
2 or more	14.4	8.9	21.4	18.4	1.0	1.3	2.0	1.8
Practice size[2]								
Solo	35.8	33.4	34.0	41.6	1.4	2.1	2.4	2.2
Partner	11.8	12.9	11.7	10.0	0.9	1.5	1.5	1.4
3–5	26.9	28.5	29.3	21.9	1.4	2.0	2.2	2.2
6–10	14.8	14.9	14.0	15.3	0.9	1.5	1.7	1.9
11 or more	10.7	10.3	11.0	11.1	0.9	1.4	1.6	1.5
Solo and group practice								
Solo	35.8	33.4	34.0	41.6	1.4	2.1	2.4	2.2
Group practice:								
Single-specialty practice	43.1	41.8	48.5	40.9	1.7	2.3	2.6	2.8
Multispecialty practice	21.1	24.8	17.5	17.5	1.3	1.9	1.9	2.0
Employment status								
Owner	74.9	69.0	82.8	78.9	1.3	2.1	1.6	1.8
Employee	22.0	28.1	14.7	17.2	1.3	2.1	1.6	1.7
Contractor	3.0	2.8	*	3.9	0.5	0.7	*	1.0
Ownership								
Physician or group	85.7	80.2	93.2	89.5	1.2	1.9	1.2	1.5
Health maintenance organization	2.0	2.9	1.1	1.2	0.4	0.8	0.4	0.4
Other	12.3	16.9	5.7	9.4	1.1	1.7	1.1	1.4
Participates in practice-based research network								
Yes	6.0	5.9	5.0	7.1	1.0	1.2	1.3	1.6
No	81.9	80.6	84.8	81.8	1.3	1.8	1.9	1.9
Unknown	12.1	13.5	10.2	11.1	0.9	1.4	1.4	1.6
Information technology[3]								
Electronic billing records	74.2	76.0	76.0	68.1	1.2	1.9	2.0	2.1
Electronic medical records	19.0	18.4	19.7	19.5	1.3	1.8	2.3	2.2
CPOE[4]	9.2	11.8	6.4	7.0	1.0	1.5	1.3	1.2
	Mean percent[5]							
Percent of prescriptions written using CPOE[4]	80.4	82.9	80.3	73.7	2.7	3.4	4.5	6.0
Number of managed care contracts	Percent distribution							
Total	100.0	100.0	100.0	100.0	...	...	...	...
None	9.8	8.7	7.8	13.4	0.9	1.3	1.4	1.4
1–2	11.2	11.6	10.0	11.3	1.0	1.5	1.4	1.3
3–10	39.1	40.4	38.9	36.8	1.7	2.3	2.4	2.6
More than 10	36.1	35.6	39.5	34.0	1.8	2.4	2.6	2.5
Unknown	3.9	3.6	3.7	4.6	0.7	0.8	1.0	1.1

See footnotes at end of table.

Table 5. Number, standard error, percent distribution, and mean percent of office-based physicians by selected practice characteristics, according to specialty type: United States, 2003–04—Con.

Practice characteristics	Specialty type[1]							
	All specialties	Primary care	Surgical	Medical	All specialties	Primary care	Surgical	Medical
	Mean percent[6]							
Percent of revenue from managed care contracts	44.7	50.8	38.6	39.1	1.2	1.7	1.5	1.5
Percent of revenue from selected sources[7]	Mean percent				Standard error			
Private insurance	46.7	51.1	41.4	43.3	0.8	1.2	1.2	1.2
Medicare	31.1	24.7	39.0	36.0	0.7	0.9	1.1	1.3
Medicaid	13.2	16.3	9.6	10.7	0.5	0.9	0.6	0.8
Other sources	9.4	8.3	10.1	10.8	0.6	0.7	1.0	1.3

. . . Data not applicable.

* Figure does not meet standards of reliability or precision.

[1]Specialty type is defined in Table VI.

[2]Practice size is number of physicians in practice.

[3]The level of missing data was 8 percent for electronic billing records, 1 percent for electronic medical records, and 2 percent for CPOE.

[4]CPOE is computerized prescription order entry system.

[5]Mean percent of prescriptions written by physicians using CPOE. Information on prescriptions written was missing for 11 percent of physicians using CPOE.

[6]Mean percent among physicians with any managed care revenue. Information on managed care revenue was missing for 21 percent of physicians with any managed care contract.

[7]Mean percent of revenue among physicians. Sum will approximate a percent distribution, but responses were provided as a percentage for each source of revenue. Cases with missing data were excluded (6–15 percent depending on type of payment source).

Table 6. Percentage with corresponding standard error of office-based physicians by specialty type and physician accessibility: United States, 2003–04

Physician accessibility	Specialty type[1]				Specialty type[1]			
	All specialties	Primary care	Surgical	Medical	All specialties	Primary care	Surgical	Medical
Percent of physicians accepting new patients by payment source[2]	Percent of physicians				Standard error			
Any new patients	95.8	94.2	98.6	96.5	0.6	1.1	0.4	0.8
Self-pay	91.0	89.4	93.8	91.5	0.8	1.4	1.0	1.2
Medicare	83.0	75.6	94.1	86.9	1.0	1.7	1.2	1.5
Noncapitated private insurance	79.1	79.5	82.9	75.1	1.2	1.7	1.8	2.0
Medicaid	70.4	66.4	79.6	69.9	1.3	2.1	2.0	2.2
Worker's compensation	57.9	50.8	80.6	52.2	1.6	2.1	1.9	2.9
Capitated private insurance	52.8	58.8	47.4	46.4	1.7	2.4	2.8	2.7
No charge or charity	47.7	44.5	53.6	48.5	1.8	2.5	2.9	2.6
Percent with difficulty referring certain types of patients for specialty consultation[3]								
Medicaid	32.0	37.6	26.2	26.8	1.5	2.2	2.2	2.1
Medicare	10.4	11.7	6.5	11.1	0.9	1.5	1.1	1.6
Private insurance	14.2	15.3	10.9	14.8	1.1	1.6	1.4	2.0
Uninsured	32.2	33.5	29.0	32.4	1.4	1.9	2.3	2.4

[1]Specialty type is defined in Table VI.

[2]Information on accepting any new patients was missing for 0.7 percent of cases. The level of missing data for each type of new patient accepted ranged from 3–12 percent depending on type of payment source.

[3]Difficulty refers to the practice experiencing some or a lot of difficulty in referring patients with various types of health insurance for specialty consultation in the last 12 months. The level of missing data for each type of patient ranged from 13–22 percent depending on payment source.

Table 7. Mean number, percentage, and standard errors of patient encounters during the last full week of practice, by physician's specialty and type of patient encounter: United States, 2003–04

Type of patient encounter	Specialty type[1]				Specialty type[1]			
	All specialties	Primary care	Surgical	Medical	All specialties	Primary care	Surgical	Medical
	Mean number in week[2]				Standard error			
Volume of office visits last full week	73.8	84.9	66.9	59.6	1.3	1.8	2.3	2.6
Type of consultation[3]	Percent of physicians[4]							
Hospital visits	69.7	68.5	78.5	64.7	1.3	2.1	1.9	2.1
Telephone consultation	58.5	66.7	47.0	52.9	1.8	2.3	2.7	3.1
Home visits	10.6	15.8	4.9	5.8	0.9	1.6	1.1	1.2
E-mail or Internet consultation	5.5	6.3	4.7	4.9	1.0	1.2	1.5	1.3
EMTALA-mandated care[5]	22.8	22.3	34.3	14.5	1.3	2.2	2.3	1.6
Volume of consultations or visits[3]	Mean number in week[6]							
Telephone consultation	19.0	22.5	11.0	16.7	1.0	1.5	0.7	1.5
Hospital visits	18.7	13.8	16.3	30.9	0.9	0.8	1.3	2.8
Home visits	7.0	7.6	4.1	6.0	0.8	1.0	1.0	1.9
E-mail or Internet consultations	5.7	6.3	3.8	5.9	1.0	1.6	0.8	1.2
Hours of EMTALA-mandated care[5]	10.6	11.6	10.6	8.1	1.1	1.9	1.2	1.0

[1]Specialty type is defined in Table VI.
[2]Mean number of office visits during last full week of practice among physicians with any visits.
[3]Information on type of consultations was missing from 10–14 percent of cases, depending on type of consultation.
[4]Percent of physicians reporting any consultations during last full week of practice with any of that type of consultation.
[5]EMTALA is Emergency Medical Treatment and Labor Act of 1986.
[6]Mean number of consultations during last full week of practice for physicians reporting any of that type of consultation.

Table 8. Average number of weekly consultations per physician during last full week of practice with corresponding standard errors, by type of encounter and practice characteristics: United States, 2003–04

Practice characteristic	Total consultations[1]	Office visits	Hospital visits	Telephone consultations	Total consultations[1]	Office visits	Hospital visits	Telephone consultations
	Average number of consultations reported[2]				Standard error			
All office-based physicians	101.6	73.7	12.7	11.1	2.1	1.3	0.6	0.7
Specialty type[3]								
Primary care	114.7	84.8	9.4	15.0	2.9	1.8	0.7	1.1
Surgical	85.6	66.7	12.8	5.2	2.8	2.3	1.0	0.4
Medical	90.4	59.5	18.8	8.8	3.7	2.6	1.5	1.0
Practice size								
Solo	100.0	72.1	11.2	11.7	3.8	2.6	1.0	1.1
Partner	108.7	80.8	11.9	10.4	5.3	3.7	1.7	1.4
3–5	105.4	77.9	14.3	11.3	3.5	2.3	1.4	1.3
6–10	98.6	70.5	13.5	11.5	3.7	2.9	1.4	1.3
11 or more	93.7	64.5	14.1	8.7	4.8	2.6	1.5	2.0
Number of managed care contracts								
None	83.6	64.2	8.3	6.5	6.2	4.6	1.5	0.9
1–2	81.4	62.6	10.0	9.7	4.1	3.0	1.6	1.3
3–10	103.2	74.9	13.5	10.3	3.6	2.3	1.0	1.1
More than 10	111.8	79.2	13.9	13.4	3.3	2.3	1.0	1.3
Ownership								
Physician or group	102.6	74.2	13.2	11.1	2.3	1.5	0.7	0.8
Health maintenance organization	94.6	70.7	6.8	12.9	5.9	6.1	2.0	2.7
Other	96.3	70.5	10.5	11.0	4.7	2.8	1.6	1.6
Geographic region								
Northeast	101.6	67.7	11.5	15.9	5.9	2.8	1.3	2.0
Midwest	99.5	74.8	13.9	9.0	3.6	2.8	1.4	0.9
South	111.9	81.8	15.5	9.9	3.7	2.6	1.2	1.1
West	88.8	65.9	8.4	10.4	3.3	2.1	0.8	1.4
Metropolitan status								
MSA[4]	100.1	72.8	12.7	11.1	2.1	1.4	0.7	0.8
Non-MSA[4]	114.8	80.4	12.7	11.5	7.4	3.7	1.7	1.5

[1]Total consultations include patient encounters in the office, at the hospital, at home, over the telephone, and over the Internet.
[2]Estimates include means across all office-based physicians including those who report zero encounters for any of these types.
[3]Specialty type is defined in Table VI.
[4]MSA is metropolitan statistical area.

Table 9. Average number of weekly consultations per physician during last full week of practice with corresponding standard errors, by type of encounter and physician specialty: United States, 2003–04

Physician specialty[1]	Total consultations[2]	Office visits	Hospital visits	Telephone consultations	Total consultations[2]	Office visits	Hospital visits	Telephone consultations
	Average number of counsultations reported[3]				Standard error			
All office-based physicians	101.6	73.7	12.7	11.1	2.1	1.3	0.6	0.7
Dermatology	135.7	124.3	*1.4	8.0	6.4	6.0	0.7	1.9
Pediatrics	123.0	97.2	6.4	15.4	8.5	6.6	0.9	2.0
General and family practice	116.6	91.4	6.7	13.9	3.4	2.6	0.7	1.3
Internal medicine	113.1	74.8	14.1	16.1	6.2	3.2	1.8	2.6
Otolaryngology	105.1	86.8	6.5	10.6	6.1	4.6	0.8	2.0
Obstetrics and gynecology	103.9	76.5	10.2	13.9	6.4	3.9	1.2	2.7
Ophthalmology	103.7	98.1	1.9	5.0	7.1	6.2	0.5	0.9
Orthopedic surgery	100.9	84.9	12.4	6.0	4.7	3.8	1.1	1.1
Urology	99.0	73.6	12.7	8.9	5.3	3.6	1.3	1.4
Neurology	87.9	58.2	18.6	10.0	5.3	4.1	2.1	1.8
Cardiovascular disease	84.7	45.4	28.0	10.7	4.4	2.4	2.1	1.7
General surgery	65.6	40.2	21.4	3.6	3.8	2.7	2.8	0.5
Psychiatry	55.1	42.2	5.3	6.3	3.8	2.4	1.1	1.1
Other specialties	88.4	52.5	23.2	7.5	5.5	3.3	2.6	1.5

* Figure does not meet standard of reliability or precision.

[1]Physician specialty is defined in Table V.

[2]Total consultations include patient encounters in the office, at the hospital, at home, over the telephone, and over the Internet.

[3]Estimates include means across all office-based physicians including those who report zero encounters for any of these types.

Appendix I

Technical Notes

Data collection

The NAMCS data collection is authorized under Section 308d of the Public Health Service Act (Title 42 United States Code, Section 306[242k]). Participation is voluntary. NAMCS utilizes a multistage probability sample design involving samples of 112 geographic primary sampling units (PSUs), physicians within PSUs, and patient visits within physician practices. PSUs are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships for some PSUs in New England. For the 2003–04 NAMCS, 6,000 physicians were selected from the master files of the American Medical Association (AMA) and American Osteopathic Association (AOA). Of these physicians, 3,968 of them were in scope (eligible to participate in the survey). Sampled physicians were screened at the time of the survey using the Physician Induction Interview (PII) form before selecting a sample of patient visits from a randomly selected week. During the 2003 and 2004 rounds of the survey, 2,235 physicians completed the PII and provided visit encounter data, for an unweighted physician response rate of 56.3 percent. The average physician universe for 2003–04, sample size, and unweighted response rates by physician specialty are shown in Table I. Physicians not seeing patients in an office during their sampled week often did not complete the practice information requested on the PII. For this report, they were considered as nonrespondents, and sampling weights were adjusted to account for them.

The scope of NAMCS is visits to the offices of nonfederally employed physicians classified by the AMA or AOA as ‘‘office-based, patient care.’’ Physicians working in private, nonhospital-based clinics and health maintenance organizations (HMOs) were within the scope of the survey. Physicians in the specialties of anesthesiology, pathology, and radiology were excluded. Physicians practicing in federal and nonfederal hospitals, including hospital-based outpatient clinics, and other institutional settings (for example, nursing homes) were also excluded.

Among sampled physicians, 66.1 percent were in scope at the time of the survey and 33.9 percent were out of scope. As shown in Figure 1, sampled physicians were out of scope if their practice was hospital-based; they were federally employed; in the specialties of anesthesiology, pathology, or radiology; or nonoffice-based (institutional, occupational) (16.0 percent); retired or deceased (9.5 percent); or nonpracticing because their job was nonclinical or they were temporarily not practicing (e.g., on sabbatical or on military detail) (4.4 percent). Table II presents the reasons physicians were out of scope in more detail. Changes in work status for sampled physicians could occur because the time between creating the AMA and AOA sample and the interview could range from 3 to 18 months. Additionally, only one-fourth of the AMA master file is surveyed each year to obtain updated information, and response to this survey is low (32). As a result, information on the master file tends to be outdated.

The U.S. Census Bureau, acting as the data collection agent for the survey, provided training to field representatives (FRs) throughout the Nation. These FRs oversaw data collection at the physician's office. They contacted physicians for induction into the survey after an advance letter was mailed by NCHS notifying the physicians of their

Table I. Average number of physicians in the universe, total sample, sample response categories for the Physician Induction Interview, and unweighted response rate by physician stratum: National Ambulatory Medical Care Survey, 2003–04

Physician stratum	Universe[1]	2-year sample					
		Total	Out of scope[2]	In scope	Nonrespondents	Respondents	Response rate (unweighted)[3]
Total	486,427	6,000	2,032	3,968	1,733	2,235	56.3
General and family practice	71,354	634	230	404	151	253	62.6
Osteopathy	27,706	460	165	295	135	160	54.2
Internal medicine	74,044	342	118	224	94	130	58.0
Pediatrics	48,863	394	166	228	75	153	67.1
General surgery	20,070	398	145	253	88	165	65.2
Obstetrics and gynecology	33,236	314	95	219	111	108	49.3
Orthopedic surgery	18,389	274	59	215	104	111	51.6
Cardiovascular diseases	17,094	416	104	312	165	147	47.1
Dermatology	8,472	234	49	185	69	116	62.7
Urology	8,691	306	70	236	93	143	60.6
Psychiatry	30,252	562	245	317	149	168	53.0
Neurology	9,386	504	185	319	158	161	50.5
Ophthalmology	16,095	252	59	193	80	113	58.5
Otolaryngology	8,038	294	71	223	91	132	59.2
All other specialties	94,741	616	271	345	170	175	50.7

[1]Data were derived from the American Medical Association and the American Osteopathic Association and represent the average number of physicians who were eligible for the 2003 and 2004 NAMCS.
[2]See Table II for reasons physicians were out of scope.
[3]Response rate is the number of respondents divided by number of in-scope physicians.

Table II. Reasons sampled physicians were out of scope for the 2003–04 National Ambulatory Medical Care Survey

Reason	Sample size	Percent of physicians
All out-of-scope physicians	2,032	100.0
Works in hospital ED or OPD[1]	592	29.1
Retired	521	25.6
Works in institutional setting	139	6.8
Unable to locate	100	4.9
Works in industrial setting	91	4.5
Temporarily not practicing	89	4.4
Federally employed	74	3.6
Not licensed	65	3.2
Sees no ambulatory patients	61	3.0
Nonoffice-based practice	54	2.7
Administrator	51	2.5
Deceased	48	2.4
Moved out of United States	41	2.0
Moved out of primary sampling unit	14	0.7
Radiologist, anesthesiologist, or pathologist	11	0.5
Other ineligible	81	4.0

[1]ED is emergency department and OPD is outpatient department.

selection in the survey. During the induction interview, the visit sampling rate is established, and the final disposition of the interview is recorded. The induction interview is also used to obtain basic information about the practice such as the physician's employment status, ownership of the practice, practice size, and office type. Sample physicians are asked to complete Patient Record forms (PRFs) for a systematic sample of about 30 visits occurring during a randomly assigned 1-week period. In most cases, physicians or their staff completed the information requested from patient medical records. Confidentiality of the data collected in the survey is protected under the Privacy Act, Public Health Service Act, Title 42 of the United States Code, Section 242m (d), and Title V of the E-Government Act of 2002. The NAMCS protocol with a waiver of patient authorization was approved by the NCHS Research Ethics Review Board in accordance with the Privacy Rule of the Health Insurance Portability and Accountability Act (HIPAA) of 2003.

Estimation

In this report, estimates are based on two different sampling weights: one for nonfederal office-based physicians and one for office visits to these physicians. Estimates of physicians who see patients in office settings and annual office visits are unbiased estimates based on a complex sampling design with multistage estimation. Physician weights were used to estimate national numbers and characteristics of office-based physicians including characteristics about the physician (e.g., sex, age, specialty) and the practice (e.g., number of physicians in the practice, single or multispecialty practice, type and number of patient encounters in last full week of practice). The visit weight was used to estimate the numerator (annual volume of office visits) for the rate of annual office visits per physician (Table 3).

A distinction should be made between estimates of patient volume obtained by asking the physician a question and by counting the number of encounters and weighting them. Information about encounters from the last full week of work is based on the respondent's memory rather than on records (see question 19a in Appendix III). Information about the number of visits that occur during the randomly assigned reporting week is based on counts from records maintained by the office. Characteristics about the office visits such as face-to-face duration are obtained via medical record abstraction on a sample of encounters during the randomly assigned week.

Both the NAMCS physician and office visit estimation procedures have three basic components: 1) inflation by reciprocals of the sampling selection probabilities, 2) adjustment for physician nonresponse, and 3) a calibration ratio adjustment between the number of physicians in the sample frame between the time the sample was selected and the time that the NAMCS data were collected. For each physician, the sampling selection probability reflects the probability of PSU selection and selection of physicians within each PSU. The physician nonresponse adjustment factor is the sample weight for responding physicians augmented by a factor accounting for the amount of nonresponse by similar physicians. Similar physicians were judged to be physicians having the same specialty designation and practicing in the same PSU, region, or MSA status. The calibration ratio adjusts the number of physicians based on the sample frame within specialty stratum and region cells to reflect universe counts provided by AMA and AOA just prior to the NAMCS weights being finalized. For example, the 2003 estimated number of physicians increased from 280,500 to 312,400 after calibration ratios were applied. Similarly, the 2004 estimated number of physicians increased from 282,100 to 309,900 after application of the calibration ratios.

The sample weights for office visits include the same physician nonresponse adjustment and calibration ratio components utilized in the physician weight. The major difference between the physician and visit weight is in the sampling probabilities for visits. That is, the visit sample selection probabilities reflect selection of PSUs, selection of physicians within each PSU, and selection of visits within physician practices. In addition, the visit weights go through a smoothing process so that excessively large visit weights are truncated and a ratio adjustment is performed. This technique preserves the total estimated visit count within each specialty by shifting the excess from visits with the largest weights to visits with smaller weights. More details on the NAMCS sampling design and estimation process have been published (7,8).

To describe the distribution of hospital encounters (seeing patients in a hospital setting rather than in the office) by physician specialty (Figure 8), arithmetic modifications were made to the total number of hospital encounters reportedly made in the last full week of practice by specialty to approximate an annual number of hospital encounters. The underlying assumption is that the ratio of reported last full week of office encounters to the annual NAMCS visit estimates of office visits is the same as would be found for hospital encounters if NCHS were to actually sample the hospital encounters made by office-based physicians during a randomly assigned week. For example, the ratio of the weighted volume of office visits for all physicians (908,440,000) divided by the weighted number of office visits during the last full week of practice (22,509,800) was 40.4. Thus, the weighted weekly number of hospital visits (3,526,300 visits) multiplied by 40.4 yielded an estimated 142 million annual hospital visits. To present this estimate by physician specialty, these calculations were performed separately for each specialty and then summed for the total number of annual hospital patient encounters made by office-based physicians.

Coverage quality

Two internal evaluations of the NAMCS sampling frame have been conducted. The completeness of the AMA frame was evaluated by comparing physicians from two states (California and Georgia) from the AMA sampling frame with the American Medical Information (AMI) Physician and Surgeons database. The study found that the AMI had more current information on physicians than found on the AMA frame. However, the AMA was more complete (33) (e.g., had more physicians in the frame who in fact saw patients in an office-setting). Complement surveys conducted in the 1997–1999 NAMCS included 500 additional physicians that were not designated as ''office-based'' in each survey year to determine how many office visits were missed by limiting the survey to ''office-based'' physicians. The study found that 17 percent of nonoffice-based physicians saw patients in an office. The majority of these physicians were hospital-based physicians who occasionally saw patients in an office. Visits to nonoffice-based physicians represent 11 percent of all visits (34). Thus, NAMCS estimates of physicians who see patients in an office and the number of office visits may be slightly under-estimated.

Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The standard error does not measure any systematic biases in the data. The standard errors presented in the tables and used in tests of significance for this report were estimated using SUDAAN software. SUDAAN computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (9). The relative standard error (RSE) of an estimate is obtained by dividing the standard error by the estimate itself. The result is then expressed as a percentage of the estimate.

Nonsampling errors

As in any survey, results are subject to both sampling and nonsampling errors. Nonsampling errors include reporting and processing errors as well as biases due to nonresponse and incomplete response. The magnitude of the nonsampling errors cannot be computed. However, these errors were kept to a minimum by procedures built into the operation of the survey. To eliminate ambiguities and encourage uniform reporting, attention was given to the phrasing of items, terms, and definitions. Also, pretesting of most data items and survey procedures was performed. Quality control procedures, consistency, and edit checks reduced errors in data coding and processing. Coding error rates ranged from 0.1 to 1.1 for various data items.

Adjustments for survey nonresponse—The weighted response rate for physicians who provided visit data for their sampled week in the 2003–04 NAMCS Physician Induction Interview (PII) form was 56.8 percent. Table III presents weighted characteristics of NAMCS respondents and nonrespondents, along with weighted response rates. Distributions were similar, with the exception of annual visit volume; practices with low annual visit volume were more likely to cooperate.

Additionally information on practice size and ownership was obtained from two-thirds of survey nonrespondents. A comparison between respondents and nonrespondents on these characteristics found that response was slightly greater for physicians in large practices compared with solo and partner practices. Resulting estimates of nonresponse bias on items related to practice size, such as EMR use, were found to be negligible (i.e., less than 20% of the standard error for the national estimate) (data not shown).

Adjustments for item nonresponse—Item nonresponse rates in the NAMCS PII varied considerably in the survey. Most nonresponse occurs when the needed information is unknown or unavailable to the respondent or the respondent refuses to answer the item. Nonresponse can also result when the information is available, but survey procedures are not followed and the item is left blank (i.e., interview did not follow the correct skip pattern). In this report, the majority of estimates presented include a combined entry of ''unknown'' or ''blank'' to display missing data. Estimates based on categorical responses will generally include the missing cases in the denominator. Table IV presents information on item nonresponse for variables presented in this report. Estimates based on numeric entries, such as volume of encounters during the last full week of practice, were an exception to this rule because computed

Table III. Characteristics of the 2003–04 National Ambulatory Medical Care Survey, physician respondents and nonrespondents to the Physician Induction Interview

Physician characteristic[1]	Number of sampled in-scope physicians[2]	Total sample percent distribution[3] (weighted)	Responding physician distribution[4] (weighted)	Nonresponding physician distribution[5] (weighted)	Weighted response rate[6]
All office-based physicians	3,968	100.0	100.0	100.0	0.568
Age					
Under 35 years	128	4.1	5.0	3.0	0.688
35–44 years	1,039	27.6	28.0	27.1	0.576
45–54 years	1,429	36.2	34.3	38.8	0.538
55–64 years	975	23.1	23.9	22.1	0.587
65 years and over	397	8.9	8.8	9.0	0.564
Sex					
Male	740	21.8	22.3	21.1	0.582
Female	3,228	78.2	77.7	78.9	0.564
Region					
Northeast	907	21.4	20.5	22.6	0.544
Midwest	888	22.3	22.9	21.6	0.582
South	1,272	33.7	35.4	31.6	0.595
West	901	22.6	21.3	24.2	0.536
Metropolitan status					
MSA[7]	3,540	88.2	86.6	90.2	0.558
Not MSA[7]	428	11.8	13.4	9.8	0.642
Physician specialty[8]					
General or family practice	554	17.6	18.9	15.7	0.613
Internal medicine	243	15.5	15.7	15.3	0.574
Pediatrics	231	9.0	10.6	7.0	0.665
General surgery	240	3.9	4.4	3.3	0.633
Obstetrics and gynecology	234	7.7	6.8	8.9	0.500
Orthopedic surgery	235	5.0	4.6	5.6	0.516
Cardiovascular diseases	323	4.6	3.7	5.7	0.462
Dermatology	188	2.2	2.4	1.9	0.618
Urology	237	2.2	2.3	1.9	0.614
Psychiatry	327	5.7	5.5	6.1	0.541
Neurology	320	2.0	1.8	2.3	0.507
Opthalmology	198	4.0	4.2	3.8	0.593
Otolaryngology	228	2.1	2.1	2.0	0.588
All other specialties	410	18.5	17.0	20.4	0.523
Specialty type[8]					
Primary care	1,238	49.0	51.4	45.8	0.596
Surgical	1,268	23.0	22.9	23.0	0.567
Medical	1,462	28.1	25.7	31.2	0.520
Practice type[9]					
Solo	1,240	29.4	28.3	30.9	0.547
Two physicans	277	6.5	7.1	5.8	0.618
Group or HMO[10]	1,389	34.3	34.6	33.8	0.574
Medical school or government	101	2.3	2.6	1.9	0.646
Other	65	1.7	1.8	1.7	0.582
Unclassified	896	25.8	25.6	26.0	0.564

See footnotes at end of table.

Table III. Characteristics of the 2003–04 National Ambulatory Medical Care Survey, physician respondents and nonrespondents to the Physician Induction Interview—Con.

Physician characteristic[1]	Number of sampled in-scope physicians[2]	Total sample percent distribution[3] (weighted)	Responding physician distribution[4] (weighted)	Nonresponding physician distribution[5] (weighted)	Weighted response rate[6]
Annual visit volume[9,11]					
Low	1,334	32.2	34.2	29.6	0.603
Medium	1,327	33.2	30.5	36.7	0.522
High	1,307	34.6	35.3	33.7	0.580

[1]Characteristic information is from the master files of the American Medical Association and the American Osteopathic Association.
[2]In-scope physicians are those who verified that they were nonfederal and involved in direct patient care in an office-based setting, excluding the specialties of radiology, pathology, and anesthesiology.
[3]Total physicians are those who were selected from the master files of the American Medical Association and the American Osteopathic Association.
[4]Responding physicians are those who were in scope and responded to the NAMCS Physician Induction Interview (PII) form.
[5]Nonresponding physicians are those who were in scope and refused to respond to the NAMCS PII form.
[6]Numerator is the number of in-scope physicians who responded to the NAMCS PII form. Denominator is all in-scope sampled physicians.
[7]MSA is metropolitan statistical area.
[8]Physician specialty and specialty type is defined in "Physician specialty groups" section of "Technical Notes."
[9]Chi-square test of association is significant at $p < 0.05$.
[10]HMO is health maintenance organization.
[11]Low is the lowest third of annual visit volume, medium is the middle third, and high is the highest third.

estimates exclude cases with missing data. If nonresponse is random, the observed distribution for the reported item (i.e., excluding cases for which the information is unknown) would be close to the true distribution. However, if nonresponse is not random, the observed distribution could vary significantly from the actual distribution. Researchers need to decide how best to treat items with high levels of missing responses. For items with a nonresponse greater than 50 percent, data are not presented.

Table IV. Weighted item nonresponse rates for report variables

Variable	Weighted item nonresponse
Race and ethnicity	29.0
Graduate of foreign medical school	5.7
Practice-based research network	12.1
Electronic medical record	1.1
Computerized prescription order entry (CPOE)	1.8
Percent of prescriptions written using CPOE	9.1
Electronic billing records	8.1
Number of managed care contracts	3.9
Percent revenue from managed care contracts	20.9
Percent revenue from private insurance	8.0
Percent revenue from Medicare	7.4
Percent revenue from Medicaid	8.7
Percent revenue from other sources	16.1
Any new patients	0.7
New self-pay patients accepted	3.0
New Medicare patients accepted	3.2
New noncapitated private insurance patients accepted	9.9
New Medicaid patients accepted	4.1
New Worker's compensation patients accepted	6.5
New capitated private insurance patients accepted	10.5
New no charge or charity patients accepted	12.0
Difficulty referring Medicaid patients	21.1
Difficulty referring Medicare patients	19.8
Difficulty referring private insurance patients	13.4
Difficulty referring uninsured patients	22.1
Volume of office visits during last full week of practice	1.8
Weekly hospital visits	10.8
Weekly telephone consultations	12.4
Weekly home visits	10.1
Weekly e-mail or Internet consultations	12.7
Hours of EMTALA-mandated care per week[1]	14.1

[1]EMTALA is the Emergency Medical Treatment and Labor Act of 1986.

Tests of significance and rounding

In this report, the determination of statistical inference is based on a two-tailed *t*-test. The Bonferroni inequality was used to establish the critical value for statistically significant differences (0.05 level of significance) based on the number of possible comparisons within a particular variable (or combination of variables) of interest. Terms relating to differences such as "greater than" or "less than" indicate that the difference is statistically significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant.

A weighted least-squares regression analysis was used to determine the significance of trends by age. For the weighted least-squares test, the null hypothesis is that the slope, β, of the regression line between the two variables of interest does not significantly differ from zero, and the alternative hypothesis is that it does differ from zero (i.e., $H_0 : \beta = 0$, and $H_A : \beta \neq 0$). In this modified least-square regression, each estimate is weighted by the inverse of the standard error (35).

Published and flagged estimates

Estimates are not presented unless a reasonable assumption regarding their probability distributions is possible on the basis of the Central Limit Theorem. This theorem states that given a sufficiently large sample size, the sample estimate approximates the population estimate and, upon repeated sampling, its distribution would be approximately normal.

In this report, estimates are not presented if they are based on fewer than 20 cases in the sample data; only an asterisk (*) appears in the tables. Estimates based on 20–29 cases are presented with asterisks regardless of the RSE level. Estimates based on 30 or more cases include an asterisk only if the RSE of the estimate exceeds 30 percent.

In the tables, estimates of office-based physicians have been rounded to the nearest hundred. Consequently, estimates will not always add to totals. Rates and percentages were calculated from original unrounded figures and do not necessarily agree with figures calculated from rounded data.

Physician specialty groups

In this report, physician specialty is defined in two ways: ''physician specialty'' and ''specialty type.'' Physician specialty is based on the 15 strata of physician specialties used for sampling purposes in the NAMCS survey design. One stratum, doctors of osteopathy, was based on information from the AOA. The ''physician specialty'' classification presented in this report include the same physician specialty strata used for sampling purposes with the exception of the doctors of osteopathy stratum, which is combined with doctors of medicine in the following 14 categories: general and family practice, internal medicine, pediatrics, general surgery, obstetrics and gynecology, orthopedic surgery, cardiovascular diseases, dermatology, urology, psychiatry, neurology, ophthalmology, otolaryngology, and a residual category of other specialties. Table V defines the 14 ''physician

Table V. Reclassification of physician specialty based on American Medical Association subspecialty designations for use in the National Ambulatory Medical Care Survey

Physician specialty	Subspecialty designation
General practice	FP - Family practice
	FPG - Family practice, geriatric medicine
	FSM - Sports medicine (family practice)
	GP - General practice
Internal medicine	IM - Internal medicine
Pediatrics	ADL - Adolescent medicine
	CCP - Critical care pediatrics
	DBP - Developmental-behavioral pediatrics
	MPD - Internal medicine (pediatrics)
	NDN - Neurodevelopmental disabilities
	NPM - Neonatal-perinatal medicine
	PD - Pediatrics
	PDA - Pediatric allergy
	PDC - Pediatric cardiology
	PDE - Pediatric endocrinology
	PDI– Pediatric infectious diseases
	PDP - Pediatric pulmonology
	PDT - Medical toxicology (pediatrics)
	PEM - Pediatric emergency medicine
	PG - Pediatric gastroenterology
	PHO - Pediatric hematology or oncology
	PN - Pediatric nephrology
	PPR - Pediatric rheumatology
	PSM - Sports medicine (pediatrics)
General surgery	GS - General surgery
Obstetrics and gynecology	GO - Gynecological oncology
	GYN - Gynecology
	MFM - Maternal and fetal medicine
	OBG - Obstetrics and gynecology
	OBS - Obstetrics
	OCC -Critical care medicine (obstetrics and gynecology)
	REN - Reproductive endocrinology
Orthopedic surgery	OAR - Adult reconstructive orthopedics
	OFA - Foot and ankle orthopedics
	OMO - Musculoskeletal oncology
	OP - Pediatric orthopedics
	ORS - Orthopedic surgery
	OSM - Sports medicine (orthopedic surgery)
	OSS - Orthopedic surgery of the spine
	OTR - Orthopedic trauma
Cardiovascular diseases	CD - Cardiovascular diseases
Dermatology	D - Dermatology
Urology	U - Urology
	UP - Pediatric urology
Psychiatry	ADP - Addiction psychiatry
	CHP - Child psychiatry
	NUP - Neuropsychiatry
	P - Psychiatry
	PFP - Forensic psychiatry
	PYA - Psychoanalysis
	PYG - Geriatric psychiatry
Neurology	CHN - Child neurology
	CN - Clinical neurophysiology
	ESN - Endovascular surgical neuroradiology
	N - Neurology
	NRN - Neurology (diagnostic radiology)
Ophthalmology	OPH - Ophthalmology
	PO - Pediatric ophthalmology
Otolaryngology	NO - Otology-neurotology
	OTO - Otolaryngology
	PDO - Pediatric otolaryngology

Table V. Reclassification of physician specialty based on American Medical Association subspecialty designations for use in the National Ambulatory Medical Care Survey—Con.

Physician specialty	Subspecialty designation
All other	A - Allergy
	ADM - Addiction medicine
	AI - Allergy and immunology
	ALI - Allergy and immunology or diagnostic laboratory immunology
	AM - Aerospace medicine
	AMI - Adolescent medicine (internal medicine)
	AS - Abdominal surgery
	CBG - Clinical biochemical genetics
	CCG - Clinical cytogenetics
	CCM - Critical care medicine
	CCS - Critical care surgery
	CFS - Craniofacial surgery
	CG - Clinical genetics
	CMG - Clinical molecular genetics
	CRS - Colon and rectal surgery
	CS - Cosmetic surgery
	DDL - Dermatological immunology or diagnostic laboratory immunology
	DIA - Diabetes
	DS - Dermatologic surgery
	EM - Emergency medicine
	END - Endocrinology
	EP - Epidemiology
	ESM - Sports medicine (emergency medicine)
	ETX - Medical toxicology (emergency medicine)
	FPS - Facial plastic surgery
	GE - Gastroenterology
	GPM - General preventive medicine
	HEM - Hematology
	HEP - Hepatology
	HNS - Head and neck surgery
	HO - Hematology or oncology
	HS - Hand surgery
	HSP - Hand surgery (plastic surgery)
	HSS - Hand surgery (surgery)
	IC - Interventional cardiology
	ICE - Cardiac electrophysiology
	ID - Infectious diseases
	IG - Immunology
	ILI - Internal medicine or diagnostic laboratory immunology
	IMG - Geriatric medicine (internal medicine)
	ISM - Sports medicine (internal medicine)
	LM - Legal medicine
	MDM - Medical management
	MG - Medical genetics
	NEP - Nephrology
	NS - Neurological surgery
	NSP - Pediatric surgery (neurology)
	NTR - Nutrition
	OM - Occupational medicine
	OMF - Oral and maxillofacial surgery
	OMM - Osteopathic manipulative medicine
	ON - Medical oncology
	PA - Clinical pharmacology
	PCC - Pulmonary critical care medicine
	PCS - Pediatric cardiothoracic surgery
	PDS - Pediatric surgery
	PE - Pediatric emergency medicine (emergency medicine)
	PHM - Pharmaceutical medicine
	PHP - Public health or general preventive medicine
	PLI - Pediatric diagnostic laboratory immunology
	PLM - Palliative medicine
	PM - Physical medicine and rehabilitation
	PMD - Pain medicine
	PMM - Sports medicine (physical medicine and rehabilitation)
	PRM - Pediatric rehabilitation medicine

specialty" categories in terms of self-designated subspecialty provided by the AMA. The "physician specialty" classification is updated with information provided by sampled physicians at the time of the survey. In this classification, for example, a pediatric cardiologist is grouped with other pediatricians.

The second "specialty type" classification divides AMA self-designated subspecialties into three major categories: primary care, surgical specialties, and medical specialties (Table VI) and puts more emphasis on specialization type. For example, pediatric cardiologist is classified as a medical specialty in this classification.

It should be noted that although emergency medicine physicians made up 2.5 percent of sampled physicians in 2003–04 and are included in the physician specialty category "all other specialties," few of these physicians are included in NAMCS because they rarely see patients in an office setting and thus are often outside the scope of the survey.

Population figures and rate calculation

The denominators used in calculating 2003–04 physician-to-population rates by geographic region are census 2000-based postcensal estimates of the civilian noninstitutional population of the United States. The population estimates are special tabulations developed by the Population Division, U.S. Census Bureau from the July 1, 2003, and July 1, 2004, sets of state population estimates by region. Population estimates by MSA status are based on data from the 2003–04 National Health Interview Survey (NHIS), National Center for Health Statistics (NCHS), adjusted to U.S. Census Bureau definition of core-based statistical areas as of December 2003 and December 2004. See http://www.census.gov/population/www/estimates/metrodef.html for more about MSA definitions.

Estimates of visit rates for MSAs and non-MSAs in 2003–04 may differ somewhat from those reported in 2002 and previous years because of methodological differences in how the

Table V. Reclassification of physician specialty based on American Medical Association subspecialty designations for use in the National Ambulatory Medical Care Survey—Con.

Physician specialty	Subspecialty designation
All other—Con	PRO - Proctology
	PS - Plastic surgery
	PSH - Plastic surgery within the head and neck
	PTX - Medical toxicology (preventive medicine)
	PUD - Pulmonary diseases
	RHU - Rheumatology
	SCI - Spinal cord injury
	SM - Sleep medicine
	SO - Surgical oncology
	TRS - Traumatic surgery
	TS - Thoracic surgery
	TTS - Transplant surgery
	UCM - Urgent care medicine
	UM - Undersea medicine
	VM - Vascular medicine
	VS - Vascular surgery
	OS - Other specialty
	US - Unspecified

Table VI. Reclassification of physician specialty into specialty type for use in the National Ambulatory Medical Care Survey

Specialty type	Physician subspecialty
Primary care specialties	Family practice, geriatric medicine (family practice), sports medicine (family practice), general practice, internal medicine, internal medicine (pediatrics), adolescent medicine (internal medicine), geriatric medicine (internal medicine), adolescent medicine, pediatrics, pediatric sports medicine, gynecology, maternal and fetal medicine, obstetrics and gynecology, obstetrics
Surgical specialties	General surgery, gynecological oncology, critical care medicine (obstetrics and gynecology), hand surgery (orthopedic surgery), adult reconstructive orthopedics, foot and ankle orthopedics, musculoskeletal oncology, pediatric orthopedics, orthopedic surgery, sports medicine (orthopedic surgery), orthopedic surgery of the spine, orthopedic trauma, urology, pediatric urology, ophthalmology, pediatric ophthalmology, otology-neurotology, otology, otolaryngology, pediatric otolaryngology, abdominal surgery, cardiovascular surgery, colon and rectal surgery, cardiothoracic surgery, craniofacial surgery, critical care surgery, dermatologic surgery, facial plastic surgery, head and neck surgery, hand surgery (plastic surgery), hand surgery (surgery), critical care (neurological surgery), neurological surgery, pediatric surgery (neurology), pediatric cardiothoracic surgery, pediatric surgery, plastic surgery, surgical oncology thoracic surgery, transplant surgery, traumatic surgery, vascular surgery, proctology
Medical specialties	Critical care pediatrics, developmental-behavioral pediatrics, neurodevelopmental disabilities, neonatal-perinatal medicine, pediatric allergy, pediatric cardiology, pediatric endocrinology, pediatric infectious diseases, pediatric pulmonology, medical toxicology (pediatrics), pediatric emergency medicine, pediatric gastroenterology, pediatric hematology/oncology, pediatric nephrology, pediatric rehabilitation medicine, pediatric rheumatology, reproductive endocrinology, cardiovascular diseases, dermatology, psychiatry, addiction psychiatry, child psychiatry, forensic psychiatry, psychoanalysis, geriatric psychiatry, neurology, child neurology, clinical neurophysiology, neurology (diagnostic radiology), addiction medicine, aerospace medicine, allergy, allergy and immunology/diagnostic laboratory immunology, cardiac electrophysiology, clinical genetics, clinical biochemical genetics, clinical cytogenetics, clinical molecular genetics, critical care medicine, dermatological immunology/diagnostic laboratory immunology, diabetes, emergency medicine, epidemiology, endocrinology, gastroenterology, general preventive medicine, hematology, hepatology, hematology/oncology, infectious diseases, internal medicine/diagnostic laboratory immunology, interventional cardiology, legal medicine, medical management, medical genetics, medical toxicology (emergency medicine), medical toxicology (preventive medicine), medical oncology, nephrology, nutrition, occupational medicine, osteopathic manipulative medicine, pain medicine, palliative medicine, pediatric emergency medicine (emergency medicine), pediatric/diagnostic laboratory immunology, pharmaceutical medicine, public health, public health and general preventive medicine, clinical pharmacology, physical medicine and rehabilitation, pulmonary critical care medicine, pulmonary diseases, sports medicine (emergency medicine), sports medicine (physical medicine and rehabilitation), rheumatology, spinal cord injury, sleep medicine, undersea medicine, vascular medicine

denominators were calculated. In survey years 1992–2002, NHIS used a 1992 definition of MSAs and non-MSAs. NHIS also used 1990-based census estimates as controls for calculating population estimates through 2002. Because NAMCS used 2000-based estimates beginning in 2001, adjustments needed to be made to the MSA figures obtained from NHIS in 2001 and 2002. For 2003–04, special tabulations were obtained from the Office of Analysis and Epidemiology, NCHS, where 2003 and 2004 NHIS data were matched to the December 2003 and December 2004 U.S. Census Bureau definition of core-based statistical areas. The estimates were further adjusted based on the 2003–04 population estimates obtained from the Census Bureau.

Appendix II

Definition of terms

Geographic region—The 50 states and the District of Columbia are grouped for statistical purposes by the U.S. Census Bureau into the following four geographic regions:

Region	*States included*
Northeast	Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont
Midwest	Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
South	Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia
West	Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming, Alaska, Hawaii

In-scope physician—An in-scope physician is a duly licensed doctor of medicine (M.D.) or doctor of osteopathy (D.O.) who is currently in office-based practice and who spends some time caring for ambulatory patients. Excluded from NAMCS are physicians who are hospital-based; who specialize in anesthesiology, pathology, or radiology; who are federally employed; who treat only institutionalized patients; or who are employed full time by an institution and spend no time seeing ambulatory patients.

Managed care contracts—Managed care includes any type of group health plan using financial incentives or specific controls to encourage utilization of specific providers associated with the plan. When a physician contracts with a managed care plan, the plan may pay the physician at a negotiated rate per capita, a flat retainer, or on a negotiated fee-for-service basis for patients covered by the plan. Under the contract, the physician may also serve as the primary care physician (PCP) for patients under the plan. The PCP oversees care for these patients as well as provides referrals to specialists when needed.

Metropolitan status—Providers are classified by their location in a metropolitan statistical area or nonmetropolitan statistical area as follows:

- *Metropolitan statistical area (MSA)*—As defined by the U.S. Office of Management and Budget, the definition of an individual MSA involves two considerations: first, a city or cities of specified population that constitute the central city and identify the county in which it is located as the central county; second, economic and social relationships with "contiguous" counties that are metropolitan in character so that the periphery of the specific metropolitan area may be determined. MSAs may cross state lines. In New England, MSAs consist of cities and towns rather than counties.
- *Non-MSA*—Non-MSA areas are those not defined as MSAs, including rural and micropolitan areas.

Office—An office is the space identified by physicians as a location for their ambulatory practice. Offices customarily include consultation, examination, or treatment spaces that patients associate with the particular physician.

Patient—A patient is an individual seeking personal health care services and who is not currently admitted to any health care institution on the premises.

Practice size—Practice size was defined by the number of physicians in the practice. Physicians could report a maximum of four locations where they saw patients. For this report, practice size was usually the number of physicians at the first listed location (see question 17b. in Appendix III). Practice size may be underestimated for physicians working in large practices with multiple sites.

Primary care specialist—A primary care specialist has designated a primary care specialty of general or family practice, internal medicine, pediatrics, etc. Primary care specialists are grouped and presented in Table V. The terms "primary care specialties" and "primary care specialists" are used interchangeably throughout this report and refer to the self-designated classification by physicians in the AMA and AOA masterfiles.

Patient payment source—Payment sources used by patients to pay for charges incurred during visits are categorized as follows:

- *Self-pay*—Charges billed directly to the patient that will not be reimbursed by a third party. Does not include prepaid plans for which a copayment is charged.
- *Medicare*—Charges paid in part or in full by a Medicare plan, including payments made directly to the physician as well as payments to the patient.
- *Medicaid/SCHIP*—Charges paid in part or in full by a Medicaid or State Children's Health Insurance Plan (SCHIP), including payments made directly to the physician as well as payments to the patient. SCHIP, enacted as part of the Balanced Budget Act of 1997, gave states the opportunity to provide free or low-cost insurance coverage to low-income children not otherwise eligible to be covered by Medicaid. States began enrolling children in 1998 using Medicaid, state-specific programs separate from Medicaid, or both. By 2000, all states had implemented their SCHIP programs.
- *Private insurance*—Charges paid in part or in full by a private insurance company, health maintenance organization (HMO), or other prepayment plan This includes independent practice associations (IPAs) and preferred provider organizations (PPOs).
- *No charge or charity*—Visits for which no fee is charged (not including visits paid for as part of a

total care package (e.g., postoperative visits included in a surgical fee, pregnancy visits for which a flat fee was charged, and HMO and prepaid systems).

- *Other sources*—All other sources of payment not in the preceding categories. Charges paid under any other local, state, or federal health care program such as worker's compensation programs and CHAMPUS.
- *Unknown*—Cases where none of the previous sources of payment categories was checked.

Three questions on the PII refer to payment sources used by patients to pay for charges incurred during a visit: 1) whether physicians accept new patients into their practices with selected types of payment, 2) difficulty in referring patients with selected types of health insurance for specialty consultation, and 3) percent of revenues from specific types of payment. See ''Patient Payment Source'' for defininitions.

Appendix III

Excerpts from the 2004 Physician Induction Interview form

Section II – INDUCTION INTERVIEW – Continued

Ask item 16a ONCE to obtain total for ALL in-scope locations.

16a. During the week of Monday, _____ through Sunday, _____ How many days do you expect to see any ambulatory patients? *(Only include days at in-scope locations.)*

Note: If physician is unavailable or refuses to participate, enter number of days in a normal week.

Edit **Estimated Number of Days** →

Enter street name or town of in-scope location(s).
NOTE: *Keep the location numbers the same as the office numbers in item 15a.*

_____ _____ _____ _____

	Office location No.			
	#1	#2	#3	#4
b. During that week, approximately how many ambulatory patient visits do you expect to have at each office location? Number of visits	____	____	____	____

Note: If physician is unavailable or refuses to participate, enter number of visits in a normal week.

Edit **Estimated Number of Total Visits** →

	Office Location	#1	#2	#3	#4
Now, I'm going to ask about your practice at *(in-scope location).* **17a. Do you have a solo practice, or are you associated with other physicians in a partnership, in a group practice, or in some other way** (at this/that in-scope location)**?**	Solo	1 □	1 □	1 □	1 □
	Nonsolo	2 □	2 □	2 □	2 □
If Solo, SKIP to item 17d.					
b. How many other physicians are associated with you (at this/that in-scope location)?	How many →	____	____	____	____
c. Is this a single- or multi-specialty group practice (at this/that in-scope location)?	Multi	1 □	1 □	1 □	1 □
	Single	2 □	2 □	2 □	2 □
d. Are you a full- or part-owner, employee, or an independent contractor (at this/that in-scope location**?** *If "Owner" is marked then automatically mark "Physician or physician group" in item 17e.*	Owner	1 □	1 □	1 □	1 □
	Employee	2 □	2 □	2 □	2 □
	Contractor	3 □	3 □	3 □	3 □
e. Who owns the practice (at this/that in-scope location)**?**	Physician or physician group	1 □	1 □	1 □	1 □
	HMO	2 □	2 □	2 □	2 □
	Medical/ Academic health center	3 □	3 □	3 □	3 □
	Other hospital	4 □	4 □	4 □	4 □
	Other health care corp	5 □	5 □	5 □	5 □
	Other – *Specify for*	6 □	6 □	6 □	6 □
	Location #1 → _____				
	Location #2 → _____				
	Location #3 → _____				
	Location #4 →				
18. Is any laboratory testing performed in the office (at this/that in-scope location) **?**	Yes	1 □	1 □	1 □	1 □
	No	2 □	2 □	2 □	2 □

RETURN TO ITEM 17a FOR NEXT IN-SCOPE LOCATION

Section II – INDUCTION INTERVIEW – Continued

19a. During your last complete week of practice, about how many encounters of the following type did you make with patients:	Number of encounters per week ↙
(1) Office visits	_____
(2) Home visits (including nursing homes)	_____
(3) Hospital visits	_____
(4) Telephone consults	_____
(5) Internet/e-mail consults	_____
The following question is concerned with the Emergency Medical Treatment and Labor Act of 1986 (EMTALA).	
b. In a typical week, how many hours do you spend providing EMTALA mandated care?	Number of hours ↙
PROBE – We are interested in all hours spent screening and stabilizing patients, regardless of whether you were compensated for them.	_____
20. Are you a member of a practice-based research network (PBRN)?	1 □ Yes 2 □ No 3 □ Don't know
21a. For the medication prescriptions written in your practice, do you use a computerized prescription order entry (CPOE) system? **FR NOTE** – CPOE refers to a computer-based system for ordering medications that helps to reduce errors by automating the medication ordering process.	1 □ Yes – *Continue with item 21b* 2 □ No } *SKIP to item 22a* 3 □ Don't know } *SKIP to item 22a*
b. Approximately, for what percent of medication prescriptions written do you use the CPOE?	Percent of prescriptions using CPOE ↙ _____ %
22a. Does your practice use electronic MEDICAL RECORDS (not including billing records)?	1 □ Yes 2 □ No 3 □ Don't know
b. Does your practice submit claims electronically? (Electronic billing)	1 □ Yes 2 □ No 3 □ Don't know

Section II – INDUCTION INTERVIEW – Continued

Ask items 23 and 24 ONCE for ALL in-scope locations.

23. I would like to ask a few questions about your practice revenue and contracts with managed care plans.

a. Roughly, what percent of your practice revenue from patient care comes from –

Percent of practice revenue

(1) Medicare? ..... _____ %

(2) Medicaid? ..... _____ %

(3) Private insurance? ..... _____ %

(4) Other? –*(including charity, research, CHAMPUS, VA, etc.)* _____ %

FR NOTE – Categories should sum close to 100%.

b. Roughly, how many managed care contracts does this practice have such as HMOs, PPOs, IPAs, and point-of-service plans?

If necessary read: **Managed care includes any type of group health plan using financial incentives or specific controls to encourage utilization of specific providers associated with the plan.**

FR NOTE – Include Medicare managed care and Medicaid managed care, but not traditional Medicare and Medicaid. Include any private insurance managed care plans. Be sure the response is about contracts and not patients.

Include all the different plans an insurance provider may have and for which the physician has a contract. For example, the physician may have a contract for each of the plans Aetna may offer: a PPO, IPA, and point-of-service plan. This would equal 3 contracts, not 1 contract. It may be necessary to obtain information from the billing office of the practice.

1 ☐ None – *SKIP to item 24a on page 12.*
2 ☐ Less than 3
3 ☐ 3 to 10
4 ☐ More than 10

c. Roughly, what percentage of the patient care revenue received by this practice comes from (these) managed care contracts?

Percent of revenue from managed care

_____ %

Edit

NOTES

Section II – INDUCTION INTERVIEW – Continued

24a. Are you currently accepting "new" patients into your practice(s) (at in-scope locations)**?**

1 ☐ Yes
2 ☐ No – *SKIP to item 25*
3 ☐ Don't know – *SKIP to item 25*

b. From those "new" patients, which of the following types of payment do you accept (at in-scope locations)**?**

(1) Private insurance –			
(a) Capitated?	1 ☐ Yes	2 ☐ No	3 ☐ Don't know
(b) Non-capitated?	1 ☐ Yes	2 ☐ No	3 ☐ Don't know
(2) Medicare?	1 ☐ Yes	2 ☐ No	3 ☐ Don't know
(3) Medicaid?	1 ☐ Yes	2 ☐ No	3 ☐ Don't know
(4) Workers compensation?	1 ☐ Yes	2 ☐ No	3 ☐ Don't know
(5) Self-pay?	1 ☐ Yes	2 ☐ No	3 ☐ Don't know
(6) No charge?	1 ☐ Yes	2 ☐ No	3 ☐ Don't know

25. On a 4-point scale from a lot of difficulty, some, little, or no difficulty, in the last 12 months, has your practice experienced any difficulty in referring patients with the following types of health insurance for specialty consultations?

	A lot of difficulty	Some difficulty	Little difficulty	No difficulty	Don't know
(a) Medicaid	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
(b) Medicare	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
(c) Private insurance	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
(d) Uninsured	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

NOTES

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Information Dissemination Staff
National Center for Health Statistics
Centers for Disease Control and Prevention
3311 Toledo Road, Room 5412
Hyattsville, MD 20782

1-866-441-6247
E-mail: nchsquery@cdc.gov
Internet: www.cdc.gov/nchs

U.S. DEPARTMENT OF
HEALTH & HUMAN SERVICES

Centers for Disease Control and Prevention
National Center for Health Statistics
3311 Toledo Road
Hyattsville, MD 20782

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