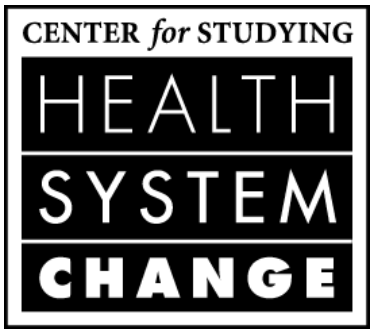
Report on Survey Methods for the Community Tracking Study's 1998-1999 Round Two Physician Survey

Final Report (Public Use File)



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Technical Publication No.

32

November 2001

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I. OVERVIEW

A. OBJECTIVES OF THE COMMUNITY TRACKING STUDY

The Community Tracking Study (CTS), which is funded by the Robert Wood Johnson Foundation (RWJF), is designed to provide a sound information base for decision making by health care leaders. It does so by collecting information on how the health system is evolving in 60 nationally representative communities across the United States and on the effects of those changes on people. The CTS, which has been under way since 1996, is a longitudinal project that relies on periodic site visits and surveys of households, physicians, and employers. Although many studies have examined markets in California and Minnesota, and many have analyzed local or selected data, no study has systematically examined change in a broad, nationally representative cross-section of U.S. markets. Moreover, none has analyzed the effects of changes on service delivery, cost, and quality. The CTS addresses two broad questions that are important to public and private health decision makers:

1. ***How is the health system changing?*** How are hospitals, health plans, physicians, safety net providers, and other provider groups restructuring, and what key forces are driving organizational change?

2. ***How do these changes affect people?*** How are insurance coverage, access to care, use of services, health care costs, and perceived quality of health care changing over time?

Focusing on markets is central to the design of the CTS. Understanding market changes requires a study of local markets, including the markets' culture, history, and public policies relating to health care. To track change across the United States, we randomly selected 60

nationally representative communities stratified by region, community size, and type (metropolitan or nonmetropolitan).[1]

The CTS examines 12 of the 60 communities in depth by conducting site visits and using survey samples large enough to draw conclusions about change in each community. The 12 communities comprise a randomly selected subset of sites that are metropolitan areas with more than 200,000 people (as of July 1992). We refer to them as *high-intensity sites*.

B. ANALYTIC COMPONENTS OF THE COMMUNITY TRACKING STUDY

The CTS has qualitative and quantitative components. The qualitative component consists of case studies in the 12 high-intensity sites. The first round of comprehensive case studies of the health system was conducted in 1996 and 1997; the second round was conducted in 1998 and 1999. Survey data from the 12 high-intensity sites and from 48 additional sites, listed in Table I.1, complement this information.

The CTS also includes independent surveys of households, physicians, and employers in all 60 sites, thereby enabling researchers to explore relationships among purchasers, providers, and consumers of health care.[2] We also conduct a Followback Survey, which is linked to the Household Survey. In the Followback Survey, the privately financed health insurance policies covering respondents to the survey of households are "followed back" to the organization that administers the policy. The purpose of the Followback Survey is to obtain information about the

[1]The CTS covers the contiguous 48 states and the District of Columbia. Alaska and Hawaii were not part of the study.

[2]The RAND Corporation, in collaboration with the Center for Studying Health System Change (HSC), conducted the Employer Survey; other surveys were conducted under HSC's direction.

TABLE I.1

SITES SELECTED FOR THE COMMUNITY TRACKING STUDY

High-Intensity Sites	Low-Intensity Sites		
Metropolitan Areas >200,000 Population[a]	Metropolitan Areas >200,000 Population[a]	Metropolitan Areas <200,000 Population[a]	Nonmetropolitan Areas
01-Boston (MA)	13-Atlanta (GA)	49-Dothan (AL)	52-West Central Alabama
02-Cleveland (OH)	14-Augusta (GA/SC)	50-Terre Haute (IN)	53-Central Arkansas
03-Greenville (SC)	15-Baltimore (MD)	51-Wilmington (NC)	54-Northern Georgia
04-Indianapolis (IN)	16-Bridgeport (CT)		55-Northeastern Illinois
05-Lansing (MI)	17-Chicago (IL)		56-Northeastern Indiana
06-Little Rock (AR)	18-Columbus (OH)		57-Eastern Maine
07-Miami (FL)	19-Denver (CO)		58-Eastern North Carolina
08-Newark (NJ)	20-Detroit (MI)		59-Northern Utah
09-Orange County (CA)	21-Greensboro (NC)		60-Northwestern Washington
10-Phoenix (AZ)	22-Houston (TX)		
11-Seattle (WA)	23-Huntington (WV/KY/OH)		
12-Syracuse (NY)	24-Killeen (TX)		
	25-Knoxville (TN)		
	26-Las Vegas (NV/AZ)		
	27-Los Angeles (CA)		
	28-Middlesex (NJ)		
	29-Milwaukee (WI)		
	30-Minneapolis (MN/WI)		
	31-Modesto (CA)		
	32-Nassau (NY)		
	33-New York City (NY)		
	34-Philadelphia (PA/NJ)		
	35-Pittsburgh (PA)		
	36-Portland (OR/WA)		
	37-Riverside (CA)		
	38-Rochester (NY)		
	39-San Antonio (TX)		
	40-San Francisco (CA)		
	41-Santa Rosa (CA)		
	42-Shreveport (LA)		
	43-St. Louis (MO/IL)		
	44-Tampa (FL)		
	45-Tulsa (OK)		
	46-Washington (DC/MD/VA)		
	47-West Palm Beach (FL)		
	48-Worcester (MA)		

NOTE: Numbers correspond to coding of the site identification variable in the survey.

[a]Based on 1995 Census estimates.

private policies that is more detailed and more accurate than Household Survey respondents are able to provide.

Data are collected on a two-year cycle, to enable researchers to track changes in the health care system over time. The Round One surveys and case studies of households and physicians, completed during 1996 and 1997, and the Followback Survey, completed in 1997 and 1998, are the baseline. Data collection for the Round Two surveys of households and physicians began in 1998 and was completed in 1999. Round Two Followback Survey data collection was conducted during 1999 and 2000. Round Two case studies were completed in 1998 and 1999. Documentation of CTS data collection activities is available at www.hschange.org.

C. THE PHYSICIAN SURVEY

The CTS Physician Survey was conducted under the direction of HSC. The Gallup Organization was the primary data collection contractor. Mathematica Policy Research, Inc. (MPR) managed the Gallup subcontract for HSC and was responsible for the sample design, weighting, variance estimation, and tracking of physicians who could not be located. Project Hope and CODA, Inc. assisted in developing the Round One instrument, including cognitive testing. Social and Scientific Systems, Inc. (SSS) was instrumental in converting the raw survey data into a data file suitable for analysis.

The CTS Physician Survey instrument collected information on physician supply and specialty distribution, practice arrangements and physician ownership, physicians' time allocation, sources of practice revenue, level and determinants of physician compensation, provision of charity care, physicians' perceptions about their ability to deliver care and about career satisfaction, effects of care management strategies, and various aspects of physicians' practice of medicine. The instrument also contained vignettes for primary care physicians (PCPs) that provided clinical presentations for which no prescribed method of treatment exists.

The PCPs were asked to state the percentage of patients for whom they would recommend the course of action specified in each particular vignette. Except for minor changes (discussed in Chapter III), the same survey instrument was used in Round One and Round Two of the Physician Survey.

The survey was completed by telephone, using computer-assisted telephone interviewing (CATI) technology. The sample frame was developed by combining lists of physicians from the American Medical Association (AMA) and the American Osteopathic Association (AOA). A total of 12,528 physicians were included in the Round One data file, and 12,304 in the Round Two data file.

The design of the Round One Physician Survey is described in the "Community Tracking Study Physician Survey, Survey Methodology Report—Technical Publication #9" (www.hschange.com). That report also discusses the data collection methods used in Round One.

In this report, we discuss the design of the Round Two sample (Chapter II), survey design and preparation (Chapter III), data collection (Chapter IV), and sample weighting (Chapter V). The appendices present the survey instrument and advance materials (Appendix A) and provide additional detail on the equations used to compute the weights (Appendix B), and an explanation of the conceptual framework for computing survey estimates combined across the site and supplemental samples (Appendix D).

Tables displaying site-level data and an analysis of nonresponse (Appendix C) are excluded from this version of the report to protect the confidentiality of the data. These tables and appendix are included in the full report that is available to Restricted Use File users.

II. SAMPLE DESIGN

For both the first and second rounds of the CTS Physician Survey, interviews were conducted with a sample of physicians in the 60 CTS sites and with an independent national sample of physicians. The survey has the following three-tiered sample design, which makes it possible to develop estimates at the national and community (site) levels:

- ***The first tier is a sample of 12 communities from which a large number of physicians in each community was surveyed.*** The sample in each of these "high-intensity" sites is large enough to support estimates in each site.

- ***The second tier is a sample of 48 communities from which a smaller sample of physicians in each community was surveyed.*** This sample of "low-intensity" sites permits findings to be generalized to the nation. The first and second tiers comprise the *site sample*.

- ***The third tier is a smaller, independent national sample.*** This *supplemental sample* augments the site sample and substantially increases the precision of national estimates with a relatively modest increase in the total sample size.

We sampled PCPs at a higher rate than specialists in both rounds of the survey. Because the CTS Physician Survey is longitudinal, survey precision is affected by the amount of overlap between the first and second rounds. Therefore, a key design decision for Round Two was the amount of overlap between rounds. In addition, there were differences between sample frame and interviewer classifications of physicians as PCPs or specialists and between the two classifications of physicians' practice location. Procedures were developed for identifying and adjusting for errors in specialty assignment and geographic misclassification.

In the following sections, we describe site selection; the target population; our approach to the overlap, specialty assignment, and geographic misclassification issues; stratification; and sample selection procedures.

A. SITE SELECTION

The primary goal of the CTS is to track health system change and its effects on people at the local level. Determining which communities (sites) to study was therefore the first step in designing the CTS sample. Site selection involved three activities: (1) defining sites, (2) determining how many would be studied, and (3) selecting the sites.

1. Definition of Sites

The sites were intended to encompass the range of existing local health care markets. Although these markets have no set boundaries, the intent was to define areas such that residents predominately used health care providers located in the same area, and providers mostly served area residents. To this end, we generally defined sites to be Metropolitan Statistical Areas (MSAs) as defined by the Office of Management and Budget or, in the case of nonmetropolitan sites, to be Bureau of Economic Analysis economic areas (BEAEAs). For additional detail on the definition of CTS sites, refer to Metcalf et al. (1996).

2. Number of Sites

The next step in creating the site sample was to determine the number of high-intensity sites. We considered the trade-offs between data collection costs (the cost of conducting case studies and surveys) and the research benefits of a large sample of sites. The research benefits include a greater ability to empirically examine the relationship between system change and its effect on care delivery and consumers and increased "generalizability" of the study findings to the nation as a whole.

Despite the cost advantages of conducting intensive case studies in fewer sites, focusing on a smaller number of communities would have made it more difficult to distinguish between changes of general importance and changes or characteristics unique to a community. Solving

this problem by increasing the number of case study sites would have increased the cost of data collection and analysis prohibitively. We therefore chose 12 sites for intensive study and added to this sample 48 sites that would be studied less intensively. The 60 high-intensity and low-intensity sites are primary sampling units (PSUs) and form the *site sample* (see Table I.1 in Chapter I).

Although we had no formal scientific basis for choosing 12 high-intensity sites, the number reflects a balance between the benefits of studying a range of different communities and the costs of that study. The addition of 48 low-intensity sites solved the problem of limited generalizability associated with only 12 sites and provided a benchmark for interpreting the representativeness of the high-intensity sites.

3. Site Selection

After the number of sites for the site sample was determined, the next step was to select the actual sites. The 60 sites were chosen for the first stage of sampling. Sites were sampled by stratifying them geographically by region and then selecting them randomly, with probability proportional to their July 1992 population. The CTS sites (or PSUs) were selected independently in three strata. The three strata were:

1. MSAs with 200,000 or more people (large MSAs)[1]
2. MSAs with fewer than 200,000 people (small MSAs)
3. Nonmetropolitan areas

[1]Some sites were defined as primary metropolitan statistical areas (PMSAs) or consolidated metropolitan statistical areas (CMSAs).

In each of these strata, CTS sites were selected with probability proportional to the size of the civilian population (as of July 1992). For eight sites in the large MSA stratum, the population was sufficiently large that the site was selected with certainty. These eight sites were Boston (MA portion); Philadelphia, PA-NJ PMSA; Washington/Hagerstown PMSA; New York City; Detroit, MI PMSA; Chicago/Kenosha/Kankakee PMSAs; Houston-Galveston-Brazoria, TX CMSA; and Los Angeles-Long Beach, CA PMSA. A ninth site (Baltimore, MD PMSA) was selected with certainty in the sample to complete coverage of the major cities of the Northeast Corridor.

In addition to the nine certainty selections, 39 sites were selected with probability proportional to this allocation, using a sequential selection algorithm with selection control imposed on the basis of geographic region. This allocation ensured that (1) all MSAs had a chance to be selected, (2) larger MSAs had a greater chance than smaller MSAs of being selected, and (3) the site sample would have an approximately proportional allocation across geographic regions.

For the small MSAs, three sites were selected with probability proportional to size, again using a sequential selection algorithm with ordering by geographic region. For the nonmetropolitan areas, the first stage of selection was the state.[2] The states were also selected with probability proportional to the size of their nonmetropolitan population using the sequential selection algorithm (ordered again by geographic region); nine states were selected. Based on county groups used by the BEA, one county group was selected within each state with probability proportional to the population in these county groups.

[2]Washington, DC, and New Jersey were excluded because they do not have any nonmetropolitan areas. Alaska and Hawaii were excluded by the CTS study design.

Of the 60 sites in the CTS sample, 48 were selected in large MSAs, 3 in small MSAs, and 9 in nonmetropolitan areas. The 12 high-intensity sites were selected randomly from the 48 large MSA sites.

Together, the high-intensity and low-intensity sites account for about 90 percent of all survey respondents. (The remaining 10 percent were selected from the supplemental sample, discussed below.) The site sample can be used to make national estimates and also may be used to make site-specific estimates for the high-intensity sites. Users should be aware that site-specific estimates for the low-intensity sites will be less precise because of the small sample size from these sites.

4. Additional Samples for Better National Estimates

Although the site sample by itself would have yielded national estimates, the estimates would have been less precise than if we had sampled more communities, or if we had used a simple random sample of the entire U.S. population of physicians. We therefore added the *supplemental sample*—the third tier in the design of the CTS Physician Survey sample—to increase the precision of national estimates with only a relatively small incremental increase in survey cost.

The supplemental sample is a relatively small, nationally representative sample of physicians randomly selected from the 48 states in the continental United States and the District of Columbia. It is stratified by 10 geographic regions (based on the groups used by the AMA Socio-economic Monitoring System [SMS] Survey) crossed with physician specialty groupings (PCP and specialist), but it essentially uses simple random sampling techniques within strata. The site sample and the supplemental sample comprise the *combined sample*.

In addition to increasing the precision of national estimates based on the site sample, the supplemental sample slightly improves site-specific estimates derived from the site sample.

Because approximately half of all U.S. physicians are located in the 60 site-sample communities, approximately half the supplemental sample also falls within those communities. When making site-specific estimates, we can therefore augment observations from the individual site samples with observations from the supplemental sample. These are known as the *augmented site samples*.

B. TARGET POPULATION

The target population was based on information provided on the AMA Masterfile (which includes both AMA members and nonmembers) and on the AOA membership file.[3] To meet the initial eligibility criteria for sampling, physicians in the frame had to have completed their medical training, practice in a state within the continental United States, and provide direct patient care for at least 20 hours per week. Residents, interns, and fellows were considered to be still in training and were excluded from the sample. The direct patient care criterion resulted in the exclusion of inactive physicians and physicians who were not office- or hospital-based (such as teachers, administrators, and researchers). The following types of physicians were designated as ineligible for this survey and were removed from the frame:

- Specialists in fields that do not focus primarily on direct patient care[4]
- Federal employees

[3]The AMA Masterfile includes licensed allopathic physicians and osteopathic physicians who obtained graduate training in allopathic medical schools or were identified on state licensing boards. The AOA membership file includes graduates of osteopathic medical schools. In addition, the AOA file often has current addresses for osteopathic physicians that may not be on the AMA Masterfile.

[4]Tables II.1 and II.2 list the specialties excluded from the frame.

TABLE II.1

SPECIALTIES EXCLUDED FROM THE AMA FILES

Aerospace Medicine

Allergy and Immunology/Diagnostic Laboratory

Anatomic Pathology

Anesthesiology

Bloodbanking/ Transfusion Medicine

Clinical and Laboratory Dermatological Immunology

Clinical Pharmacology

Dermatology

Dermatopathology

Diagnostic Radiology

Forensic Pathology

Forensic Psychiatry

Hematology/Pathology

Legal Medicine

Medical Management

Medical Microbiology

Medical Toxicology (Emergency Medicine)

Medical Toxicology (Pediatrics)

Medical Toxicology (Preventive Medicine)

Neuropathology

Neuroradiology

Nuclear Medicine

Nuclear Radiology

Other Specialty

Pain Management

Pain Medicine

Palliative Medicine

Pathology–Anatomic/Clinical

Pathology–Chemical

Pathology–Cytopathology

Pathology–Immunopathology

Pediatric Pathology

Pediatric Radiology

Public Health and General Preventive Medicine

Radiation Oncology

Radioisotopic Pathology

Radiological Physics

Radiology

Selective Pathology

Sleep Medicine

Undersea Medicine

Unspecified Specialty

Vascular and Interventional Radiology

TABLE II.2

SPECIALTIES EXCLUDED FROM THE AOA FILES

Allergy/Diagnostic Lab Immunology

Anatomic Pathology

Anatomic/Clinical Pathology

Anesthesiology

Anesthesiology/Pain Management

Angiography and Interventional Radiology

Bloodbanking/ Transfusion Medicine

Cardiothoracic Anesthesiology

Chemical Pathology

Clinical Pathology

Clinical Pharmacology

Cytopathology

Dermatopathology

Diagnostic Radiology

Epidemiology

Forensic Pathology

Forensic Psychiatry

Hematology Pathology

Immunopathology

Internship

Intraoperative Regional Anesthesiology

Legal Medicine

Medical Microbiology

Neuropathology

Neuroradiology

Nuclear Cardiology

Nuclear Medicine

Nuclear Pathology

Nuclear Radiology

Obstetrical Anesthesia

Other Specialty

Pain Management Rehabilitation Medicine

Pediatric Anesthesiology

Pediatric Pathology

Pediatric Radiology

Preventive Medicine—Aerospace Medicine

Preventive Medicine, Epidemiology or Public Health

Preventive—Occupational—Environmental Medicine

Psychosomatic Medicine

Radiation Oncology

Radioisotopic Pathology

Radiology

Radiological Physics

Retired

Toxicology

Transitional Year

Undersea Medicine

Unknown Specialty

- Graduates of foreign medical schools who are licensed only temporarily to practice in the United States

Eligible physicians were then classified as either PCPs or specialists. PCPs were defined as physicians with a primary specialty of family practice, general practice, general internal medicine, internal medicine/pediatrics, or general pediatrics. All others with survey-eligible specialties were classified as specialists.

The interviewer also verified physician eligibility before continuing with the survey. The attributes that were verified during the interview included whether the physician was a federal employee, whether he or she was a resident or fellow, and whether he or she provides patient care for 20 hours a week or more. Physicians who were eligible based on the AMA or AOA Masterfile data, but were ineligible at the time of the interview, were excluded from the survey as ineligible.

C. DESIGN ISSUES

The precision requirements for cross-sectional site and national estimates, shown in Table II.3, were the same for Round One and Round Two. However, because this study is longitudinal, survey precision is influenced by the amount of overlap between the two rounds. In this section, we explain how we chose the amount of overlap between surveys.

Physician specialty and practice location could be defined differently in the sample frame (AMA and AOA files) and in the interview. This section also discusses procedures for identifying and adjusting for errors in specialty assignment and geographic misclassification in the sample design.

1. Sample Overlap

A common feature of longitudinal surveys is the selection of sampling units in one round of a survey for participation in the next round. In this case, physicians are the sampling unit.

TABLE II.3

SURVEY PRECISION REQUIREMENTS

Survey	Estimation Category	Effective Sample Sizes			Sampling Error for $P = 0.5$		
		PCP	Specialist	Combined	PCP	Specialist	Combined
Site	High-intensity site	400	200	433	0.025	0.035	0.024
Site	Low-intensity site	100	50	114	0.050	0.071	0.047
Site[a]	National	3,579	4,760	8,339	0.008	0.007	0.005
Supplement	National	515	685	1,200	0.022	0.019	0.014

PCP = primary care physician.

[a]No specified constraint for national-level estimates from the site sample.

Including a portion of the physicians who responded to Round One in the Round Two sample may increase precision substantially for change estimates and, to a lesser extent, for cross-sectional estimates. At the same time, to ensure complete population coverage in Round Two and to minimize respondent burden and conditioning (because repeated contacts may influence survey responses), some proportion of the Round One sample should be replaced to represent physicians who had no chance of selection in prior rounds.

We considered several factors when determining the optimum level of sample replacement, including coverage bias, the precision of cross-sectional and change estimates, and possible correlations between Round One and Round Two survey estimates. Our analysis supported a reinterview rate of 45 percent. Based on an expected eligibility rate for reinterviewed physicians of 89 percent and a response rate of 75 percent, we set the initial sample overlap at 67 percent. In the next section, we discuss the benefits and drawbacks of increasing the degree of overlap between rounds and show how we arrived at the optimum level of overlap.

a. Benefits and Drawbacks of Increasing Overlap

Increasing the degree of sample overlap between rounds also increases the precision of change estimates. The optimal overlap (for estimates of change) for any variables with positive correlations between rounds is 100 percent; however, the potential for gains in precision depends on the degree of correlation between rounds. Increasing the overlap too much can lead to coverage bias. If the overlap portion of the sample includes all the sample from the previous survey, the new round will have less opportunity to represent physicians who had no chance of selection in the previous round.

A high degree of overlap also can be less than optimal for certain cross-sectional estimators. That is, the degree of overlap can affect the precision of cross-sectional estimates if it increases

the design effect due to unequal weighting. As the overlap is increased, the weights of new sample members become relatively larger.

b. Optimum Overlap

The key question for Round Two was the optimal overlap between rounds. Because no information was available about the level of correlation between rounds for key study variables, we reviewed the sensitivity of optimum overlap at different levels of correlation. Figure II.1 shows that 40 to 50 percent overlap is desirable for a range of the most likely levels of correlation.

For change estimates between rounds, the optimum level of overlap is 100 percent. For regression-type estimates of Round Two statistics, the optimum level depends on the amount of correlation between observations obtained for both rounds. The form of the regression estimates for Round Two being considered here is:

(1) $\bar{y}' = \phi_2 \bar{y}'_{2u} + (1 - \phi_2)\bar{y}'_{2m}$,

where:

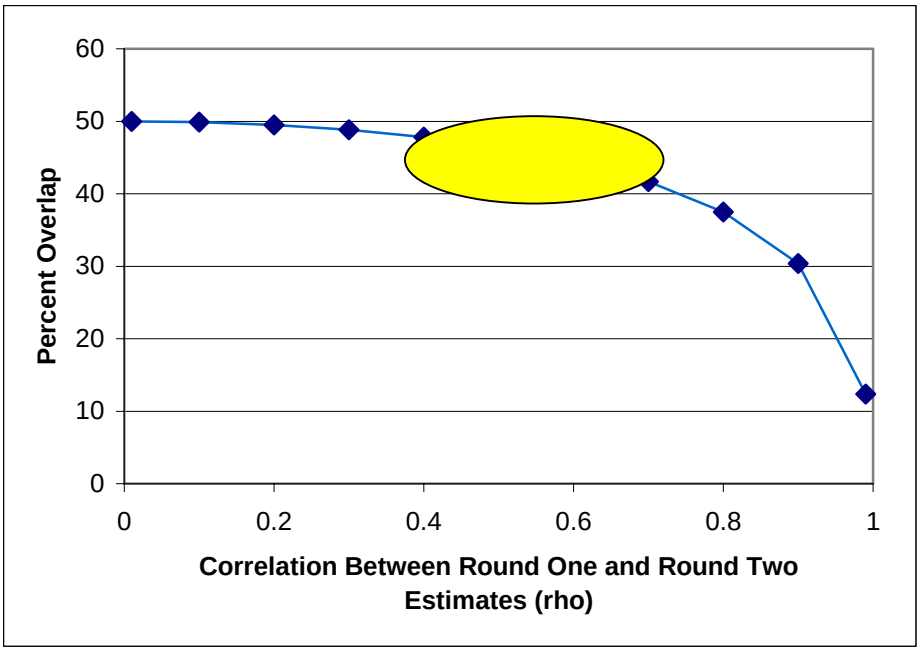
ϕ_2 = a function of reciprocal variances
$\bar{y}'_{2u} = \bar{y}_{2u}$
$\bar{y}'_{2m} = \bar{y}_{2m} + b(\bar{y}_1 - \bar{y}_{1n})$,

and b is a constant (for example = 1) or is estimated from data.

In this form, the means without the prime are the simple means for the matched and unmatched portions of the sample. The primed means, estimated from regression-type equations, are then combined using a parameter (ϕ) involving ratios of reciprocal variances (Cochran 1965).

FIGURE II.1

OPTIMUM ROUND TWO SAMPLE OVERLAP FOR DIFFERENT LEVELS OF CORRELATION BETWEEN ROUND ONE AND ROUND TWO SURVEY ESTIMATES



From Figure II.1, we note that the maximum optimum overlap for these estimators does not exceed 50 percent and, for most typical correlations, is in the range of 40 to 50 percent. The target overlap for completed interviews used for Round Two was 46 percent.

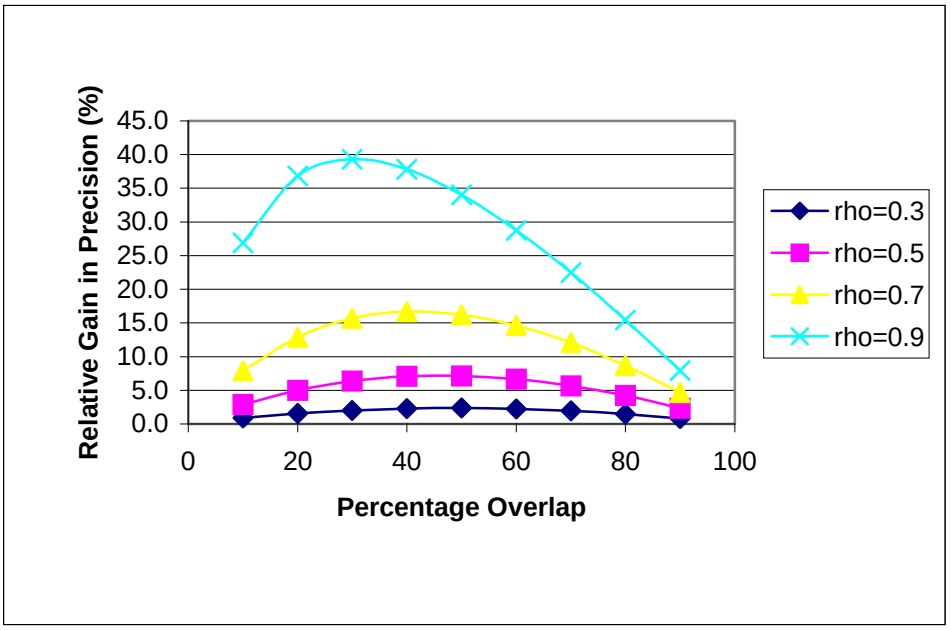
Next, we examined the relative efficiency for different levels of overlap (Figure II.2). We are interested in optimum levels of overlap and loss of potential gain as we move away from that optimum. Four values for the between-round correlation coefficient (rho) are presented. Clearly, little is gained from these estimators for values of rho of less than 0.5. We can also see that, as rho increases, the optimum percentage overlap decreases. Finally, except for very large correlations, fairly large departures from optimum overlap do not seriously reduce the gain in precision.

2. Errors in Specialty Assignment

In preparing the sample frame, physicians were classified as PCPs or specialists, based on the primary specialty in the AMA and AOA files (as defined in Section B). During the interview, physicians were asked to verify their primary specialties. In some cases, they cited a specialty other than the one listed in the AMA or AOA file, necessitating a change in classification. These physicians, whom we describe as *switchers,* were reclassified for some analyses, but their selection probabilities remained unchanged. Some unequal weighting resulted from the reclassification, but the number of switchers was relatively small. In Round One, nine percent of physicians classified in the sample frames as PCPs responded as specialists, and four percent classified in the sample frames as specialists responded as PCPs. Because PCPs and specialists comprised separate strata with sample size targets, we had to predict switching in the sample allocation to maintain the desired precision.

FIGURE II.2

RELATIVE EFFICIENCY FOR DIFFERENT LEVELS OF OVERLAP



3. Geographic Misclassification

A goal of the sample design was to assign physicians to a site based on the location of their main practice. Operationally, physicians listed in the AMA or AOA sample frame were classified by the county of their "preferred mailing address," as that address was the most current one on the files. However, AMA staff indicated that many of these addresses are home addresses, rather than main practice locations. In other cases, physicians' practices had moved since the last file update. Nevertheless, even if the actual current practice location did not match the preferred mailing address on the AMA or AOA file, the two addresses usually were within the same site (MSA).

Some physicians gave a different address when asked in the survey about practice location. As a result, they moved from one survey site to another. Others were classified as being outside

the boundaries of any of the 60 sites. These cases are known as *movers,* even though many of the preferred mailing addresses simply may have been home addresses located in a site other than the main practice site.

For sampling purposes, physicians remained in the site that was originally assigned (that is, physicians in the Round One sample who had a practice address outside the 60 sites for the survey were kept in the sampling frame for Round Two). Maintaining the original site assignment enhanced the survey's coverage of physicians in the 48 contiguous states and the District of Columbia. If we had not retained these physicians, we would have progressively lost cases with each round of the survey.

For site-level estimates, physicians for the site sample were linked to the site in which they practiced, rather than to the site from which they originally were sampled. Some physicians therefore were selected from a site that did not contain their practice. If the practice was outside the 60 sites, they were not used in site-level estimates. They also were not used in some national estimates that used site-level independent variables. However, if they were selected from a site other than the one in which they practiced, they were included in the site sample for site-level estimates and for all national estimates. A mover was considered to be a member of the site sample for site-level estimates and some national estimates only if both the original address (based on the preferred mailing address) and the interview location were in the site sample. The probability that both locations would be in the site sample is referred to as the *joint inclusion probability*. Joint inclusion can result in large sampling variances that subsequently must be subjected to weight trimming (discussed in Chapter V).

Because some preferred mailing addresses were the same as the home addresses, suburban sites tended to lose more physicians and the more urbanized areas tended to gain them. The

sample sizes for individual sites were adjusted for the Round Two allocation to account for anticipated gains or losses caused by these movers.[5]

D. IMPLEMENTATION

1. Sampling Frame

As in Round One, the sampling frame was developed from physician records maintained by the AMA and AOA. These files contained the most recent information available from the two organizations as of April 1998, the date used to select the Round Two sample. The data fields for the full file included names, telephone numbers, addresses, dates of birth, specialties, and other information useful for sampling and data collection. We also used selected information from the Round One frame and survey results in the frame development.

The five key steps used to construct the frame were:

1. Specifying file content and format for ordering the files
2. Verifying file content after receiving the AMA and AOA files
3. Matching the 1998 AMA and AOA files against each other and the Round One sample to identify physicians added to the sample frames since Round One
4. Excluding ineligible physicians
5. Classifying records by primary design strata and site and by the specialty and Round One outcome secondary strata

The complete list of physicians for the Round Two sampling frame was obtained from the AMA and AOA. The records were then assigned to primary and secondary design strata, and the sample was allocated on the basis of these stratum counts. (Section D.2 discusses primary and secondary design strata.)

[5]Table II.4, showing experience with movers, is included in a separate report available to users of the Restricted Use File (RUF).

After reviewing frequency counts for key items to ensure file accuracy and completeness, we performed a series of processing steps. The AMA and AOA files were matched to identify physicians in each file, after which the combined AMA/AOA file was matched to the Round One sample. A computer match by name, address, and other characteristics was performed to determine which physicians in the Round Two sample had been selected in the Round One sample.[6]

Each physician was then linked to an appropriate site or stratum. For sampling purposes, the site designation and geographic stratum were based on the physician's preferred mailing address on the AMA and AOA files.

Because physicians are added to the AMA and AOA files on an ongoing basis, we had to identify physicians in the Round Two frame who were not in the Round One frame. The Round One sample was selected in the spring of 1996, so we considered physicians added to the AMA and AOA files after June 1996 as new entries. We obtained a file of these physicians from the AMA and AOA and sampled this group as a separate substratum.

Finally, each physician was classified as a PCP or specialist. This classification was based on the Round One survey response (if available) or on the AMA or AOA specialty code.

2. Sampling Units and Stratification

Stratification is a feature of most large-scale surveys that performs several important functions. Using strata containing populations that are expected to have similar responses may increase survey precision. Another key function of stratification is to ensure an adequate sample size for important study populations. Stratification also is a useful tool for optimum allocation in

[6]For Round One, AMA staff selected the sample based on specifications provided by MPR and HSC staff. Consequently, we had information on the Round One sample, but not on the entire Round One population.

surveys in which some groups exhibit more variability in responses or are more costly to survey. The design for Round Two used stratification to improve precision and to ensure adequate representation by site, geographic region, population density, and physicians who were new to the frame. Stratification also was used to control precision for survey estimates of PCPs and specialists.[7]

In the following sections, we describe procedures for selecting the site and supplemental samples (see Table II.5).

a. Site Sample

The site sample was stratified geographically by region and population size and was selected with probability proportional to size (estimated population for July 1992). Within each site, the sample was stratified by PCPs and specialists (primary strata) and by the following four frame strata (secondary strata):

1. Physicians who completed interviews in Round One
2. Physicians who were selected for Round One but who did not complete interviews
3. Physicians who were in the AMA/AOA sample frames for Round One but who were not sampled
4. Physicians who were not in the AMA/AOA sample frames for Round One but who were new to the frame for Round Two

[7]We expect that some groups sampled for Round Two, such as physicians who could not be located or who refused in Round One, will be more costly to survey or will have lower response rates. We did not have sufficient data on interviewing costs or response rates to vary sampling rates for different groups of Round One respondents for Round Two. However, we plan to use Round Two data on costs and response rates for these subgroups to optimize our Round Three sample allocation.

TABLE II.5

STRATIFICATION AND SAMPLING ASSUMPTIONS AND SPECIFICATIONS FOR THE COMMUNITY TRACKING STUDY PHYSICIAN SURVEY

Sample	Primary Strata	Site Definition	Site Selection Classification[a]	Selection Assumptions	Primary Unit	Within-Site Stratification	Secondary Unit
Site Sample	1. MSAs with >200,000 population (1992)	MSAs	Certainty sites (9)	Equal probability with replacement sampling within sites	CTS site	PCP/specialist (2) with frame "strata" (4)[b]	Physician
			Noncertainty sites (39)	PPS without replacement sampling of sites and equal probability with replacement sampling within sites	CTS site	PCP/specialist (2) with frame "strata" (4)[b]	Physician
	2. MSAs with <200,000 population (1992)	MSAs	Noncertainty sites (3)	PPS without replacement sampling of sites and equal probability with replacement sampling within sites	CTS site	PCP/specialist (2) with frame "strata" (4)[b]	Physician
	3. Nonmetropolitan areas	BEA county group	Noncertainty sites (9)	PPS without replacement sampling of sites and equal probability with replacement sampling within sites	CTS site	PCP/specialist (2) with frame "strata" (4)[b]	Physician
Supplemental Sample	Geographic regions (10),[c] PCP/specialist (2), and frame "strata" (4)[b]	n.a.	n.a.	Equal probability with replacement within strata	Physician	n.a.	n.a.

[a]Of the 48 MSAs with population >200,000, 9 were selected with certainty. Site selection procedures differed for these sites. (See Section II.A.3.)

[b]The four secondary frame "strata" are (1) Round One completes; (2) Round One noninterviews (including nonrespondents, ineligible respondents, and unlocatable physicians); (3) Round One physicians in the Round One AMA or AOA frames who were not sampled for Round One; and (4) physicians who were not in the Round One AMA or AOA frames but who were new to the frames for Round Two.

[c]Strata States (Federal Information Processing System)

Strata	States (Federal Information Processing System)
1	09, 23, 25, 33, 44, 50
2	36
3	10, 34, 42, 54
4	11, 13,. 24, 37, 45, 51
5	01, 12, 21, 28, 47
6	05, 22, 29, 40, 48
7	18, 26, 39
8	17, 19, 27, 55
9	04, 08, 16, 20, 30, 31, 32, 35, 38, 41, 46, 49, 53, 56
10	06

n.a. = not applicable.

The number of physicians available in each site and stratum varied substantially among the sites. However, the CTS design specifies a larger effective sample in Lansing or Little Rock (which are high-intensity sites) than in New York, Los Angeles, and Chicago combined (each of which is a low-intensity site). The smaller pool of physicians and larger effective sample size for some of the high-intensity sites required the use of the finite population correction in the computation of the nominal sample size. The sample allocation process also had to account for stratification and geographic and specialty misclassification.

The sample size and allocation were based on the precision requirements, the frame counts, and the stratification. Table II.3 specifies the precision requirement (in terms of effective sample size) for each site for PCPs and specialists. The effective sample sizes were adjusted to compensate for design effects (especially the finite correction); switching among patient care classifications; geographic misclassification; and expected nonresponse from unlocatable, ineligible, or nonresponding physicians. For all sites, a constant design effect (deff) was used in addition to the site-specific finite population correction factor. The sample sizes were then adjusted for physicians who may have been geographically misclassified by practice location and for physicians who may have been incorrectly classified as PCPs or specialists.

The sample sizes also were adjusted for expected errors in specialty assignment (switchers) and geographic misclassification (movers), based on Round One experience. The adjustment factor was calculated as:

(2) $F = S/(S - L + G)$,

where the denominator is equal to the starting number *(S)* minus the loss *(L)* plus the gain *(G)*.

For movers, we made site-specific adjustments. For switchers, site-specific adjustments were made for the high-intensity sites and overall average adjustments were made for low-

intensity sites (1.06918 for PCP and 0.90294 for specialists).[8] The sample sizes were then adjusted to accommodate sample losses resulting from ineligibility nonresponse, and inability to locate some physicians (see Chapter IV for the final sample allocation). These numbers, which are referred to as the *base sample*, were allocated to the secondary frame strata. The projected response rates for each frame stratum were used to check that the allocation met the target values in each cell.

The allocation rule was to assign to the frame cells 67.6 percent of the Round One completes, 67.6 percent of the Round One noninterviews (but with physicians who were deceased, retired, or out of the country excluded), and a proportional number of new cases (physicians new to the frame in 1998). We wanted to proportionally allocate as much sample as possible to control the variation in weights. To obtain a minimum of five interviews in each frame stratum, we permitted some departures from this ideal.

The expected results were obtained by adjusting for an anticipated completion rate (that is, the number of Round One completed interviews divided by the number fielded in each site, where the fielded sample included completes, nonrespondents, ineligible respondents, and unlocated physicians). The Round One site-specific completion rates averaged 55.1 percent for PCPs and 59.5 percent for specialists and were used to select samples from the pool of physicians in the Round One frames who were part of the Round One sample and from the pool of physicians who were new to the frame since Round One. For all sites, the projected completion rate was 67.6 percent for the Round One completes and was 41.8 percent for the Round One noninterviews.

[8]Adjusted sample sizes by site are included in Table II.6, which is available to RUF users.

To control for possible changes in response and eligibility, we selected an *augmented sample*. To select the augmented sample, we initially increased the sampling rate by 25 percent for the strata of Round One completes and noninterviews and by 50 percent for the other strata. A substantial proportion of the augmented sample was ultimately fielded in order to approach the target nominal sample sizes.

b. Supplemental Sample

The supplemental sample was a stratified simple random sample of physicians. The population counts and the nominal sample (or expected number of completed interviews) by region and by eight substrata are shown in Table II.7. As with the site sample, the eight secondary strata were PCPs and specialists for each of the four frame categories: (1) physicians who completed interviews in Round One; (2) physicians who were sampled for Round One but who did not complete interviews (that is, refusals, ineligibles, unlocatables, and so on); (3) physicians in the sample frame for Round One who were not selected; and (4) physicians who were new to the sample frame in 1998.

The basic allocation of the four frame categories again assigned a sample of 67.6 percent of the Round One completes and noninterviews (except for deceased, retired, and foreign practice) to the two strata for the Round Two sample. A proportional number was then assigned to the stratum of physicians who were new to the Round Two frame; the intent was to include physicians new to the Round One frame at approximately the same rate as those included from the Round Two frame. Finally, in order to reach the target total, part of the sample was assigned to the stratum of physicians who were in the Round One frame but who were not selected in Round One. Some exceptions had to be made when the frame counts would not permit this

TABLE II.7

FRAME AND SAMPLE COUNTS FOR THE SUPPLEMENTAL SAMPLE

	Round Two Frame Counts										
	Round One Response/ PCP Status					Round One Frame not Sampled		New Frame (1998)		Nominal Sample	
National Regions	Round One Sample	Comp PCP	Comp Specialist	Nint PCP	Nint Specialist	PCP	Specialist	PCP	Specialist	PCP	Specialist
1	96	25	35	15	21	9,374	14,643	1,725	3,295	32	48
2	181	48	52	45	36	12,667	19,775	2,943	5,877	44	68
3	196	49	46	53	48	15,336	22,276	2,861	4,440	51	69
4	202	61	66	42	33	16,675	26,245	3,262	5,190	58	85
5	208	57	61	52	38	16,998	25,425	2,810	4,268	56	79
6	210	64	61	51	34	17,060	24,804	3,215	4,412	59	78
7	179	40	58	44	37	15,338	20,689	2,654	3,747	51	66
8	163	40	64	24	35	14,782	18,246	2,493	3,436	50	59
9	194	53	75	38	28	17,464	23,362	2,830	3,811	58	75
10	229	57	63	57	52	19,152	27,837	2,881	4,198	62	84
Total	**1,858**	**494**	**581**	**421**	**362**	**154,846**	**223,302**	**27,674**	**42,674**	**530**[a]	**704**[a]

[a]The target nominal samples by national region do not sum to the totals because of expected switching between PCPs and specialists and to rounding error in computing nominal sample sizes from secondary strata.

Comp = Round One completed interview; Nint = Round One noninterview (including nonrespondents, ineligible respondents, and unlocatable physicians).

allocation. This occurred when fewer physicians were available in a stratum than had been allocated to the stratum and when the allocation would have resulted in fewer than five interviews without adjustments.

We began with the target effective sample and then, to determine the nominal sample size, adjusted that sample on the basis of the Round One design effect. The nominal sample size was then adjusted to account for geographic and specialty misclassification and other attrition. The misclassification factor was calculated as:

(3) $F = S/(S - L + G)$,

where the denominator is equal to the starting number *(S)* minus the loss *(L)* plus the gain *(G)*.

The misclassification counts were apportioned by region and stochastically rounded. No adjustment had to be made in the supplemental sample for geographic misclassification (movers).

These region-specific samples were then allocated to the four frame strata according to two rules: (1) the regional sample was to include 67.6 percent of the Round One completes and 67.6 percent of the Round One noninterviews, and (2) the remaining sample size was proportionally assigned to the physicians who were *new* to the frame and (if necessary) to physicians in the Round One frame who were not selected for the Round One sample.

Using projected completion rates of 67.6, 41.8, 53.6, and 53.6 percent for the four strata, respectively, and the proportional adjustments made to the counts, we checked whether the allocation would satisfy the target nominal sample sizes.[9] If it would, the numbers were stochastically rounded to obtain the final base sample. As with the site sample, these numbers

[9]The completion rate is the number of completed eligible interviews divided by the total sample.

were increased to obtain an augmented sample that allowed for approximately a 50 percent reserve sample in each stratum.

III. SURVEY DESIGN AND PREPARATION

In this chapter, we describe the survey schedule and activities that preceded interviewing. The activities included making changes to the survey instrument for Round Two, pretesting, mailing advance letters and publications to physicians prior to contacting them, selecting and training interviewers, and preparing the sample.

A. SCHEDULE

Survey preparation and data collection for the Physician Survey were conducted from April 1998 through December 1999 (Table III.1). Survey preparation, including questionnaire changes, pilot testing, and revision of training materials, was conducted from April through July 1998. Interviewing began on August 27, 1998, and continued through November 15, 1999. A final data file was delivered on December 20, 1999. The dates for key study activities are listed here:

TABLE III.1

ROUND TWO PHYSICIAN SURVEY SCHEDULE

Dates	Activities
3/25/96-7/17/98	Questionnaire revisions
4/8/98-6/4/98	Renew study endorsements for Round Two
5/8/98	Advance letter approval
6/19/98-6/30/98	Pilot test
7/1/98-8/17/98	Prepare sample for field
7/20/98-7/28/98	Interviewer training materials development
7/29/98	Interviewer training
8/20/98-11/15/99	Mailing of advance letters and interviewing
11/18/98	First data delivery
3/16/99	Second data delivery
12/20/99	Final data delivery

B. INSTRUMENT DEVELOPMENT

A major objective of the CTS is to monitor change over time, so few changes were made in the instrument for Round Two. Changes to the instrument are described in Table III.2, and a copy of the instrument is in Appendix A.

C. PRETEST

Because minimal changes were made to the instrument, the purpose of the pretest was limited to assessing the few changes in skip patterns and wording, verifying that the CATI program did not contain any errors, and evaluating the time required to administer the interview. The pretest sample target was 50 completed interviews. The sample was drawn from the AMA Masterfile, but both allopathic and osteopathic physicians were included. The sample was divided equally between PCPs and specialists. Forty of the pretest interviews were conducted with physicians who had been interviewed for Round One, and 10 with physicians who had not participated in Round One. Eight executive interviewers completed the 50 physician interviews during a seven-day period, averaging 19.1 minutes per interview, virtually the same as the Round One average completion time of 19.4 minutes.

D. ADVANCE LETTER PREPARATION

As in Round One, an advance letter was prepared and mailed to sampled respondents one week prior to interviewing. Because endorsement by medical societies generally increases response rates, we asked societies that endorsed Round One to do so again for Round Two. All of them agreed to do so.[1]

[1]Medical societies endorsing the study included the American Medical Association, American Osteopathic Association, American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians—American Society of Internal Medicine, American Psychiatric Association, and American College of Surgeons.

TABLE III.2

CHANGES TO THE ROUND TWO PHYSICIAN SURVEY

Question Number	Item	Purpose
Added Questions		
A5b	Zip code of practice	To permit small area analysis
C2a-c	Group practice type	If practicing in a multispecialty group, asks PCPs whether the practice includes specialists and asks specialists whether the practice includes PCPs
C6	Ownership of practice	Expands list of organizations that could own the practice to other physicians within the practice; another physician group; a hospital or hospital group; or an insurance company, health plan, or health maintenance organization
H11-12	Race/ethnicity	Information not available from other sources; used same formulation as on Household Survey[a]
A3a-c	Eligibility for survey in Round One	Determined Round One eligibility for physicians sampled for the first time in Round Two
A11a, A13a, A15, A16	Board certification	Verified rather than asked for board certification for physicians who were reinterviewed
Deleted Question		
B7	Time spent in main practice	Asked only of about 10 percent of physicians and had little analytic value

[a]The CTS Household Survey questions on ethnicity were developed before the Census Bureau adopted its current version permitting respondents to select more than one category. To maintain tracking, we have not changed our questions.

Advance letters were mailed one week prior to each sample release. (The sample was released in several waves.) In addition to the letter describing the survey and asking for the physician's participation, initial mailings included a copy of a brochure describing HSC. Two versions of the advance letter were used during Round Two. The first was similar to the Round One letter and was mailed to physicians who were not sampled or had not been reached during the first round. The second version was sent to physicians who participated in the Round One survey.

A second copy of the advance letter was sent to various respondents at different times throughout the field period. For example, refusal cases were permitted to "age" for some time and then were assigned to refusal specialists for attempted conversion. One week prior to assignment of refusal cases, a second copy of the advance letter was sent.

In March and June of 1999, additional materials were mailed to nonresponding physicians. In addition to a revised cover letter, the March mailing included two HSC Issue Briefs: (1) *Managed Care Cost Pressures Threaten Access for the Uninsured* (#19), and (2) *How Physician Organizations Are Responding to Managed Care* (#20).[2] The June mailings included articles from the *New York Times* and *Wall Street Journal* highlighting findings from the Round One survey on the impact of managed care competition on academic research funding and physician-provided charity care. Copies of the advance materials used for Round Two are included in Appendix A.

[2]HSC Issue Briefs are available at the web site (http://www.hschange.com); Issue Briefs #19 and #20 are included in Appendix A.

E. CATI SYSTEM AND TELEPHONE MANAGEMENT SYSTEM

The CATI instrument was programmed on the SURVENT system. SURVENT interfaces with Gallup's Telephone Management System (TMS), an automated sample server that distributes telephone numbers to each interviewer according to the sample design. To support reporting, it maintains call histories on every released case, including call statistics and interviewer productivity figures.

F. INTERVIEWER SELECTION

The CTS Physician Survey was an executive ownership study, meaning that executive interviewers at Gallup who specialize in interviewing physicians, other health professionals, and business executives conducted the survey. Executive ownership also means that the interviewers "owned" their cases. Interviewers were responsible for setting and keeping their own callback appointments. They therefore had ample opportunity to establish rapport with office workers, as well as with the physicians themselves.

Gallup's executive interviewers had from 3 to more than 15 years of experience. The members of the executive interviewing team for Round Two were among the top-producing interviewers who worked on Round One. Ten full-time and 14 part-time interviewers worked on the Round Two survey.

Some physicians, especially those in the Miami site, could not be contacted initially because the practice receptionist or other "gatekeeper" spoke only Spanish. A bilingual interviewer was added to the project team halfway through the field period, primarily to communicate with Spanish-speaking receptionists. Thus, a total of 25 interviewers worked on the Physician Survey during the second round.

G. INTERVIEWER TRAINING

Although content was updated for Round Two to reflect new information and feedback from pretest interviews, the documents provided at the interviewer training session remained the same as in Round One. Interviewers received the following documents, which they were encouraged to keep in their carrels when making Physician Survey calls:

1. Physician specialty lists
2. Definition of key terms
3. Copy of the RWJF advance letter
4. Copy of the brochure describing HSC
5. Interviewer's manual

Interviewer training was conducted jointly by Gallup and MPR staff on July 29, 1998. Because few changes had been made to the survey instrument, and the entire Round Two interviewing team had participated in the first round, only a half-day of training was required. Sessions were designed to provide background information on the study, summarize the sample and sample release procedures, review the instrument, and highlight issues that had been discovered during the pretest.

After receiving the Round Two instrument, interviewers conducted paired practice interviews. They took turns conducting mock interviews by going through the actual CATI program in "test" mode. After a final debriefing and discussion at the end of the training session, interviewers conducted additional mock interviews until they were comfortable with the instrument and the information provided during training.

H. PREPARING SAMPLE FOR THE FIELD

After receiving the complete replicated sample file from MPR, Gallup reviewed it to identify any duplicates between the site and supplemental samples, and to identify cases without telephone numbers. (Procedures for tracing missing telephone numbers are described in Chapter IV.) Only physicians with telephone numbers were released for interviewing.

IV. DATA COLLECTION

In this chapter, we describe data collection activities, including staffing, monitoring procedures, tracing activities to locate physicians, efforts to increase response rates, response rate calculations, and data preparation tasks. Overall, we completed 12,304 interviews[1]; the unweighted response rate was 60.9 percent, and the weighted response rate was 61.1 percent.

A. TELEPHONE CENTER STAFF

In addition to the 25 executive interviewers, Gallup's telephone center staff assigned to the CTS Physician Survey included four supervisors (including the head supervisor of the telephone center) and support staff. The supervisors monitored interviews, reviewed and resolved problem cases, produced reports, and communicated interviewing problems to HSC and MPR staff.

B. INTERVIEWER MONITORING

A total of 15 percent of the interviewers' work was monitored by supervisors who listened to a sample of interview attempts, refusal conversion calls, and full interviews. For full interviews, the supervisor scored interviewers on each of the following behaviors, using a standard evaluation form developed by Gallup: explaining the survey, reading questions verbatim, recording responses accurately, using objective probing techniques, courtesy, voice quality, and diction. An abbreviated scoring system was used to evaluate interview attempts and refusal conversion attempts. Interviewers with a perfect evaluation score received 50 points. All interviewers were expected to maintain a score of at least 48.

[1]Twenty-four physicians were selected for both the site and supplemental samples, even though they were interviewed only once. Thus, there are 12,304 physician records on the Round Two data file, even though 12,280 were interviewed.

The supervisors also provided feedback to improve performance. Full-time interviewers were reviewed twice per month; part-time interviewers were reviewed once per month.

C. LENGTH OF INTERVIEW

The average length of the Round Two interview was 19.1 minutes. The average length for PCPs was 21.2 minutes; the average length for specialists was 17.2 minutes. The interview was longer for PCPs than for specialists because the former were asked to respond to a series of questions on clinical descriptions of patient histories; specialists were not asked these questions. (The questions are included in Section E of the survey instrument, which is shown in Appendix A.)

D. SPANISH-SPEAKING PHYSICIANS

Interviewers in sites with sizable Hispanic populations occasionally had to set up appointments with Spanish-speaking office workers. A bilingual interviewer helped make the appointments in these sites. However, the actual interviews were conducted in English.

E. TRACING

Two types of tracing activities were conducted. In the first phase of tracing, cases with missing telephone numbers were sent to a vendor, who used directory assistance and telephone matching software to obtain new numbers. Of the 4,801 cases sent to the vendor, new telephone numbers were obtained for 2,104 physicians. Some of these telephone numbers were incorrect, as were some numbers obtained for physicians sampled for Round One. In the second phase of tracing, a more intensive effort was undertaken to obtain telephone numbers to replace the incorrect numbers, as well as to obtain current numbers of physicians who had changed practices. Intensive tracing was transferred to MPR, which was able to provide additional tracing resources. For Round Two, 4,336 physicians (16.9 percent of the total sample) were

transferred to MPR for intensive tracing. Telephone numbers were obtained for 2,198 telephone numbers out of the 4,336 that were traced (50.7 percent).

The level of tracing in Round Two was substantially greater than expected. We had anticipated a relatively low level of effort because we had Round One telephone numbers for most of the sample.[2] However, in contrast to our experience in Round One, a large fraction of the new sample was missing telephone numbers. Our experience was corroborated by AMA staff, who reported that the number of accurate telephone numbers drawn for the SMS Survey in 1998-1999 also had declined significantly (Thran 2000). The decline was partly due to a policy of purging home telephone numbers from the Masterfile. Thran also speculated that business numbers may have begun to turn over more frequently in the medical practice environment of the past few years, which has seen practice consolidation.

Tracing staff relied on a broad range of primarily Internet-based sources to trace physicians' addresses and telephone numbers. Business numbers were preferred, but home numbers were obtained when business numbers were not available.

In an attempt to locate physicians with missing telephone numbers, the tracing team followed a six-step procedure:

1. We attempted to obtain the social security numbers of physicians in the tracing sample, as these numbers permit links to otherwise unavailable databases. Under our agreement with the AMA, we obtained social security numbers only for the purpose of locating physicians for the CTS Physician Survey. We did not access any credit information. If a social security number was obtained, MPR ran a search, using the DTEC tracing service, to determine the most recent personal address. DTEC is a subscription service that accesses the Equifax database, and that provides address updates (and, sometimes, telephone numbers) as people apply for credit.

[2]Of the 25,627 physicians released for the Round Two sample, 9,396 were new sample and 2,522 were physicians who had not been located for the Round One survey. We had Round One telephone numbers for the remaining 13,709 physicians.

2. If we did not have a social security number, we searched the GTE *Yellow Pages*, under "Physicians & Surgeons," by entering the physician's name and state. If necessary, we resubmitted the search using adjacent states, supplemented with Internet map sites.

3. We then searched an online telephone white pages database, using the "People Search" option, by entering first initial, last name, and state (and adjacent states as needed). This source was particularly effective for locating physicians with unusual names.

4. The tracing staff then checked the AMA's online database (www.docfinder.org) and the following state licensing boards:

Arizona	Arizona Board of Medical Examiners
California	Medical Board of California California Board of Podiatric Medicine
Colorado	Colorado State Board of Medical Examiners
Iowa	Iowa Board of Medical Examiners
Kansas	Kansas State Board of Healing Arts
Maine	State of Maine Board of Licensure in Medicine State of Maine Board of Osteopathic Licensure
Maryland	Maryland Board of Physician Quality Assurance
Massachusetts	Massachusetts Board of Registration in Medicine
Minnesota	Minnesota Board of Medical Practice
North Carolina	North Carolina Medical Board
Ohio	The State of Ohio Medical Board
Oklahoma	Oklahoma Board of Osteopathic Examiners
Rhode Island	Rhode Island Board of Medical Licensure and Discipline
Texas	Texas Board of Medical Examiners
Vermont	State of Vermont Board of Medical Practice

If the physician was not listed in one of these states, we defaulted to the state professional licensing databases. The following states had such a database at the time of the survey:

Connecticut	Connecticut Health Care Professional's License Status
Florida	Florida Health Licensee Search
Georgia	Georgia's Medical Board Physician Database
Missouri	Missouri Board of Registration
Nebraska	Nebraska License Information System
New York	New York State Professional Licensing
Oregon	Oregon Board of Medical Examiners
South Carolina	South Carolina Medical Board
Tennessee	Tennessee Health Care Professions
Virginia	Virginia Department of Health Professions

5. If these sources were unsuccessful, we performed additional internet searches, using www.certifieddoctor.com or one of the following specialties' sites: American Board of Medical Specialties, American College of Obstetricians and Gynecologists, American Board of Internal Medicine, American Psychiatric Association, Society for Neuroscience, American College of Rheumatology, and the American Psychoanalytic Association.
6. Finally, we used some insurance provider databases; the most useful was the Blue Cross site.

After a physician was traced through one of these sources, tracing staff verified that the telephone number was valid by calling it. She or he asked to speak to the physician or another person who could verify the physician's full name and primary specialty. In some cases, we were able to confirm reasons for ineligibility (such as deceased, retired and not practicing, federal employee, or resident).

F. REFUSAL CONVERSION

Due to their demanding schedules, it is often difficult to schedule and conduct interviews with physicians. Because efforts to convince reluctant physicians to participate in surveys can reduce nonresponse and the risk of nonresponse bias, interviewers were trained to persuade reluctant respondents (*soft refusals*) to reconsider and participate in the survey. A physician who was too busy to do the interview at the time of the initial call or a receptionist who said that the physician does not participate in surveys was coded as a soft refusal. Soft refusals usually were coded by the interviewers as callbacks, rather than refusals, and were retained by the original interviewer who owned the case. In addition, a team of highly skilled "refusal converters" contacted physicians who had been coded as *hard refusals* or had two soft refusals. A call was coded as a hard refusal when the physician or office worker became hostile, and the interviewer believed that a refusal conversion specialist might be more successful. A second refusal also was assigned to a refusal converter after two soft refusals were coded.

If the physician told the interviewer during the initial call that he or she was too busy, the interviewer would emphasize that a rescheduled interview would be conducted at the physician's convenience. If the physician persisted in saying he or she did not have time, the interviewer would put the case aside for at least a few weeks and then try again. Postponing the call to a more convenient time often was sufficient to convince the physician to complete the interview. If a receptionist or other staff member acted as a gatekeeper, the interviewer would try to call again, when that staff person was likely to be out of the office. In those cases, a different office worker might answer and transmit the call to the physician or the physician might answer and could be persuaded to complete the interview.

The Gallup refusal conversion team assigned hard refusals and second soft refusals for Round Two consisted of 11 executive interviewers who were particularly skilled in convincing receptionists and other gatekeepers to transfer calls to physicians and in fluently addressing physicians' concerns about survey participation, such as burden, sponsorship, study purpose, or data confidentiality.

For Round Two, a total of 2,928 cases, representing 12.1 percent of all released cases, were sent to the refusal conversion team. The refusal conversion team converted 359 (12.3 percent) of these original refusals to completed interviews.

Often, receptionists or other gatekeepers refuse for physicians, so the physician may not have been aware of the call. In other cases, the physician may have refused because he or she was extremely busy at the time of the call. Thus, the refusal was allowed to age for three to four months. The refusal conversion specialist would then prepare for the interview by reviewing notes about prior interactions, which the original interviewer had recorded in the CATI system. The notes enabled the specialist to prepare responses to previously expressed concerns. To

prepare for the refusal converter's approach, we sent the physician another copy of the introductory letter but did not acknowledge the previous refusal.

Rules were developed during the last few months of the survey to determine an appropriate level of effort for refusal conversion attempts. Our goal was to maintain a balance between efforts to reduce nonresponse and the need to complete the survey during a reasonable time period and to avoid harassing physicians who clearly did not wish to participate. Although no limit was placed on call attempts, we agreed that a case given to the refusal conversion team (in other words, a case that had received one hard or two soft refusals) would result in a disposition of a final refusal after one additional physician refusal or two additional gatekeeper refusals.

G. RESPONDENT INCENTIVES

The Round Two incentive plan initially consisted of mailing a check for $25 to each physician after he or she completed an interview. The advance letter offered the $25 honorarium and explained that it would be paid on interview completion.

Some physicians requested that their honoraria be forwarded to nonprofit organizations. We responded to these requests by adding two donation options on June 11, 1999. Physicians contacted after that date were informed in the advance letter and at the beginning of the survey that they could select a $25 honorarium that would be forwarded, in their name, to either Project Hope or Doctors Without Borders.

To minimize pressure on a physician to select the donation option, the charity option was not mentioned during the interview closing. Instead, the interviewer confirmed the physician's address and then asked if that was the address to which he or she would like the $25 honorarium check mailed. If the physician agreed, the check was mailed directly to him or her at that address. Alternatively, if the physician expressed a preference for one of the donation options, the interviewer recorded the choice in the CATI system.

The check, accompanied by a letter explaining the donation and listing the name of the donating physician, was sent to the selected charity. (Appendix A includes copies of the letter.) Between June 11, 1999, and November 15, 1999, 524 physicians (15.6 percent of the 3,352 physicians who completed interviews during this period) elected to donate their $25 honoraria to Project Hope (143 physicians) or Doctors Without Borders (381).

H. PHYSICIAN RECRUITERS

During Round One, a physician recruiter evaluated the efficiency of employing physicians to help recruit respondents. The physician recruiter was assigned 99 cases, including 53 hard-refusal cases and 46 cases that had been attempted more than 10 times without reaching the respondent. After significant effort, the physician recruiter obtained verbal agreements to complete the interview from 11 of the 53 hard-refusal cases (21 percent), and from 17 of the 46 hard-to-reach cases (37 percent).

After the physician recruiter obtained verbal agreement, the case was sent back to the original interviewer, who contacted the respondent and attempted to complete the interview. Interviewers were able to complete only three interviews with the hard-refusal cases and eight interviews with the hard-to-reach cases. Given the relatively few interviews converted with the help of a physician and the high cost and operational complexity of the effort, we abandoned it for Round Two.

I. DISPOSITION OF THE ROUND TWO SAMPLE

Table IV.1 shows the final disposition of all cases for Round Two of the CTS Physician Survey. The table also displays comparable figures from Round One. The first two columns of the table show the outcomes for the first round of the study—the number of physicians with each

TABLE IV.1

FINAL DISPOSITION OF THE SAMPLE, BY ROUND

Disposition	Round One Results		Round Two Results	
	Frequency	Percent	Frequency	Percent
Complete	**12,528[a]**	**52.7**	**12,304[b]**	**48.0**
Ineligible				
Deceased	102	0.4	135	0.5
<20 hours	847	3.6	993	3.9
Other ineligible (federal employee, resident or fellow, excluded specialty)	400	1.7	469	1.8
Retired	913	3.8	1,423	5.6
Total Ineligible	**2,262**	**9.5**	**3,020**	**11.8**
Located Nonrespondent				
AMA refusal[c]	525	2.2	308	1.2
Study refusal[d]	4,166	17.5	4,455	17.4
Illness, language barrier	43	0.2	53	0.2
No contact[e]	n.a.		1,450	5.7
Respondent unavailable during field period	170	0.7	148	0.6
End of study[f]	1,310	5.5	1,216	4.7
Other[g]	9	0.0	535	2.1
Total Nonrespondents[h]	**6,223**	**26.2**	**8,164**	**31.9**
Final Tracing/Unlocatable[h]	**2,751**	**11.6**	**2,138**	**8.3**
Total	**23,764**	**100.0**	**25,627**	**100.0**

[a]For Round One, 143 physicians completing interviews were selected for both the site and supplemental samples, even though they were interviewed only once. There are 12,528 physician records on the Round One data file, even though only 12,385 physicians were interviewed. These physicians have different weights depending on whether they are included in the site or supplemental samples.

[b]For Round Two, 24 physicians completing interviews were selected for both the site and supplemental samples, even though they were interviewed only once. There are 12,304 physician records on the Round Two data file, even though only 12,280 physicians were interviewed. These physicians have different weights depending on whether they are included in the site or supplemental samples. Tables in this report are based on the weighted data files including 12,304 completed interviews.

[c]Physicians who were designated as "do not contact" on the AMA Masterfile, so no interview attempt was made; however, they were included in response rate and sample weights calculations.

[d]Physicians who refused during calls made during data collection.

[e]Primarily physicians located at home addresses, where no contact was made by the end of the field period; this status code was not used in Round One. The final disposition codes were (1) no answer, (2) answering machine, or (3) other noncontact.

[f]Physicians who had been contacted but had neither completed an interview nor refused to be interviewed by the end of the field period. Includes one physician who was coded as a completed interview but was later deleted from the analysis file.

[g]Located physicians who were terminated before the end of the study for reasons other than refusal.

[h]Eligibility unknown.

n.a. = not applicable.

final disposition code and the percentage of the total sample with that disposition. The next two columns show the corresponding figures from the second round.

The main differences between the two rounds were (1) an increase in the percentage of ineligible physicians, and (2) an increase in the percentage of physicians who could not be contacted. The increase in the percentage of ineligible physicians (from 9.5 to 11.8 percent of the total sample) resulted from more intensive tracing, which identified additional physicians as retired. For Round One, 11.6 percent of physicians could not be located; as a result of more intensive tracing efforts, this fraction declined in Round Two to 8.3 percent. However, these efforts also produced more home telephone numbers, which often resulted in final dispositions of no contact. Because the percentage of business numbers available from the AMA Masterfile is declining, we anticipate that this problem may increase in subsequent rounds. Consequently, additional resources will be allocated in those rounds to conduct interviews during evening and weekend shifts.

Table IV.2 provides additional detail on the disposition of the Round Two sample, by sample type and response status. There are several key findings from this table:

1. More than three-fourths (77 percent) of sampled physicians who completed interviews for Round One did so for Round Two, as either eligible or ineligible physicians. Only 3.2 percent could not be located.
2. Similarly, approximately three-fourths of physicians who were ineligible for Round One responded in Round Two; most (57 percent) were ineligible again. Fewer than 10 percent could not be located.
3. Physicians who did not respond in Round One typically did not respond in Round Two. Only 35 percent in Round Two completed interviews or were ineligible; 53 percent failed to respond again, and 12 percent could not be located.

   Completion rates for physicians sampled for the first time were very low. Only 41 percent of the new sample completed interviews, a rate that is much lower than the 53

TABLE IV.2

DISPOSITION OF ROUND TWO SAMPLE, BY SAMPLE TYPE AND ROUND TWO RESPONSE STATUS

		Round Two Response Status							
		Complete		Ineligible		Located Nonresponse		Not Located	
Sample Type and Source	Released	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Total Sample									
From Round One Sample	16,231	8,426	51.9	1,757	10.8	4,981	30.7	1,067	6.6
Completed interviews	10,080	7,092	70.4	667	6.6	1,999	19.8	322	3.2
Nonresponse	5,389	1,196	22.2	677	12.6	2,850	52.9	666	12.4
Ineligible	1,292	233	17.3	733	56.7	217	16.8	119	9.2
New Sample	9,396	3,878	41.3	1,263	13.4	3,184	33.9	1,071	11.4
Total	**25,627**	**12,304**	**48.0**	**3,020**	**11.8**	**8,165**	**31.9**	**2,138**	**8.3**
Site Sample									
From Round One Sample	14,975	7,791	52.0	1,622	10.8	4,577	30.6	985	6.6
Completed interviews	9,353	6,569	70.2	620	6.6	1,869	20.0	295	3.2
Nonresponse	4,926	1,096	22.2	628	12.7	2,585	52.5	617	12.5
Ineligible	1,182	203	17.2	665	56.3	204	17.3	110	9.3
New Sample	8,413	3,425	40.7	1,148	13.6	2,866	34.1	974	11.6
Total	**23,338**	**11,216**	**48.0**	**2,770**	**11.8**	**7,443**	**31.8**	**1,959**	**8.4**
Supplemental Sample									
From Round One Sample	1,256	635	50.6	135	10.7	404	32.2	82	6.5
Completed interviews	727	523	71.9	47	6.5	130	17.9	27	3.7
Nonresponse	463	100	21.6	49	10.6	265	57.2	49	10.6
Ineligible	110	20	18.2	68	61.9	13	11.8	12	10.9
New Sample	983	453	46.1	115	11.7	318	32.3	97	9.9
Total	**2,239**	**1,088**	**48.6**	**250**	**11.2**	**722**	**32.2**	**179**	**8.0**

percent of Round One physicians completing interviews. (Round Two new sample are shown in Table IV.2; Round One new sample are shown in Round One results in Table IV.1.) The percentage of Round Two sample that was ineligible (13.4 percent) was higher than in Round One (9.5 percent); the percentage that could not be located was comparable (11.6 percent in Round One compared with 11.4 percent in Round Two). The key change was the increase in nonresponse by located physicians, from 26.2 percent in Round One to 33.9 percent in Round Two.

These results, which are consistent for the site sample and the supplemental sample, indicate that both physicians sampled for the first time and those who did not participate in the prior round were increasingly reluctant to participate in the survey. physicians who participated in round one demonstrated a high degree of willingness to be interviewed again.

J. RESPONSE RATE CALCULATIONS

For Round Two, we estimated an unweighted response rate of 60.9 percent, and a weighted response rate of 61.1 percent (see Table IV.4). For PCPs, the unweighted and weighted response rates were 59.1 and 58.7 percent, respectively. The corresponding response rates for specialists were 64.3 and 62.7 percent. This section describes the calculation of the response rate.

The response rate is generally defined as the proportion of eligible cases providing completed interviews. Determining the response rate thus required an estimate of the total number of physicians in the sample who actually were eligible for the study. An estimate was

TABLE IV.4

RESPONSE RATE CALCULATIONS FOR ROUND TWO

		Total Sample				Primary Care Physicians				Specialists			
Classification for Weighting	Call Outcome	Cases Attempted	Percent	Initial Weighted Count	Percent	Cases Attempted	Percent	Initial Weighted Count	Percent	Cases Attempted	Percent	Initial Weighted Count	Percent
1. Eligible Complete	**Complete**	12,304	48.0	211,096	48.7	7,632	45.4	80,519	45.0	4,672	53.1	130,577	51.2
2. Ineligible	Deceased	135	0.5	2,077	0.5	104	0.6	1,174	0.7	31	0.4	903	0.4
	<20 hours	993	3.9	15,891	3.7	705	4.2	7,537	4.2	288	3.3	8,354	3.3
	Other ineligible	469	1.8	7965	1.8	333	2.0	3424	1.9	136	1.5	4543	1.8
	Retired	1,423	5.6	23,420	5.4	992	5.9	10,545	5.9	431	4.9	12,876	5.0
	Total ineligible	3,020	11.8	49,353	11.4	2,134	12.7	22,680	12.7	886	10.1	26,676	10.5
	Eligibility rate		80.3		81.1		78.2		78.0		84.1		83.0
3. Located Nonrespondent	AMA refusal	308	1.2	3,782	0.9	253	1.5	2,451	1.4	55	0.6	1,330	
	End of study	1,216	4.7	20,904	4.8	794	4.7	8,196	4.6	422	4.8	12,709	5.0
	Final, other	535	2.1	9,649	2.2	341	2.0	3,771	2.1	194	2.2	5,878	2.3
	Illness, language	53	0.2	782	0.2	38	0.2	373	0.2	15	0.2	408	0.2
	No contact	1,450	5.7	23,468	5.4	988	5.9	10,210	5.7	462	5.3	13,258	5.2
	Unavailable	148	0.6	2,440	0.6	107	0.6	1,119	0.6	41	0.5	1,321	0.5
	Refusal	4,455	17.4	78,670	18.1	3,004	17.9	33,880	18.9	1,451	16.5	44,790	17.6
	Total nonrespondents	8,165	31.9	139,695	32.2	5,525	32.8	60,000	33.6	2,640	30.0	79,694	31.2
4. Unlocatable	**Final tracing**	2,138	8.3	33,713	7.8	1,538	9.1	15,627	8.7	600	6.8	18,086	7.1
	Round One estimated eligibility rate for unlocatables		62.9		62.9		62.9		62.9		62.9		62.9
Total	**All attempted**	**25,627**	**100.0**	**433,857**	**100.0**	**16,829**	**100.0**	**178,826**	**100.0**	**8,798**	**100.0**	**255,033**	**100.0**
Unweighted Response Rate (Percent)		60.90				59.09				64.28			
Weighted Response Rate (Percent)		61.09				58.70				62.74			

necessary because we could not ascertain eligibility for 10,302 physicians who could not be located or who were located but not interviewed. When a sample contains cases with unknown eligibility, the total number of eligible sample cases typically is estimated based on the eligibility rate of the cases whose eligibility was determined. For Round Two, 12,304 of the 15,324 sample cases whose eligibility was determined were eligible for the study, implying an overall eligibility rate of 80.3 percent.

In Round One, however, a small study was carried out to investigate the eligibility of cases who could not be found during the field period. It seemed likely that physicians who could not be located were less likely to be practicing than were physicians who could be located. To test this hypothesis, we carried out in-depth tracing of 400 sample cases who were not located through the usual procedures. The results of the tracing study suggested that, as expected, the eligibility rate among the unlocatable physicians was considerably lower (at 62.9 percent) than in the sample as a whole.

Our strategy for estimating the total number of eligible physicians in the sample was to add to the number of sample physicians known to be eligible (that is, the 12,304 physicians who were screened and who completed the main interview) the estimated number of eligible physicians among those who could not be located and the estimated number of eligible physicians among those who were located but did not respond. We used the eligibility rate from the Round One study of unlocated physicians to estimate the number of eligible physicians among the Round Two unlocated ones (that is, 62.9 percent of 2,138) and used the overall Round Two eligibility rate to estimate the number of eligible physicians among located nonrespondents (80.3 percent of 8,165 nonrespondents). Altogether, then, our estimate of the total number of eligible physicians was 20,205 (that is, 12,304 + 1,345 + 6,556), and our estimate of the unweighted response rate

was 60.9 percent (12,304/20,205). Similar calculations were applied to PCPs and specialists. Weighted response rates also were computed.

K. DATA PREPARATION

Most of the data coding and cleaning was accomplished by the CATI system. As the interviewers entered response option codes selected by the respondents, these numbers were written to a data file. The CATI system was programmed to conduct range and consistency checks, and to prompt the interviewer when an impossible or unlikely response was entered. The interviewer could then correct the data entry or could ask the respondent to clarify his or her answer.

1. Range Checks

The ranges of most closed-ended items in a CATI survey are determined by codes for the available responses. For example, a "Yes/No" variable offers the following codes:

1 = Yes

2 = No

8 = Don't know

9 = Refused

If the interviewer mistakenly attempts to enter a code of "3," the CATI system will notify the interviewer that this is an unacceptable code. The interviewer can then enter the correct code.

Some items, such as dates, number of hours worked, or percentages of revenue, do not have a set of preassigned response codes. Ranges are bounded by what is possible. For example, question B1 in the Physician Survey asks the respondent how many weeks he or she practiced

medicine during 1997. Because there are 52 weeks in a year, the acceptable range for responses was 00 to 52. Higher numbers were not accepted by the system.

2. Consistency Checks

Consistency or logic checks examine the relationships between two or more variables to be sure that the responses do not conflict with one another. A few logic checks were contained in the CATI program. For example, question B2 asks the physician how many hours he or she spent in all medically related activities in the last week. Question B3 then asks how many hours were spent in direct patient care that week. If the responses to these two questions are equal, a verification question is asked to ascertain that all the physician's time was spent in direct patient care. Alternatively, if the physician indicated that he or she spent more hours in direct patient care than in all medically related activities (a logical impossibility), the physician was prompted to revise one or both of the answers to questions B2 and B3.

Section G of the questionnaire also contains several consistency checks, which resulted in interviewer prompts. The checks are summarized here; any of the following conditions resulted in an error message to the interviewer:

- The combined practice revenue from Medicare and Medicaid is greater than 100 percent.
- The percentage of practice revenue from all managed care contracts is less than the percentage received on a capitated basis.
- All the practice's managed care revenue is paid on a prepaid basis.
- The percentage of revenue from the practice's largest managed care contract is greater than the total revenue from all managed care contracts.
- The practice has more than one managed care contract, but the revenue from the largest managed care contract equals the total revenue from all managed care contracts.
- The physician says that his/her practice has more than 20 managed care contracts.

3. Data Cleaning

Although most data cleaning for a CATI survey is done online, a few data cleaning steps must be completed after the survey leaves the field. Frequencies are examined and cross-tabulations are run to check for additional consistency checks that were not built into the survey. On the basis of these tabulations, data may be changed or flagged for further checking. CATI adjustments for Round Two included some state and specialty exclusions. As a result of these adjustments, the number of problem cases with state or specialty exclusions dropped from five in Round One to two in Round Two. The two cases were removed from the Round Two data set.

4. Coding

As in the first round, only an extremely limited amount of postinterview coding was conducted for Round Two. Five questions in Section C (questions C2, C3b, C3c, C6, and C6a) permitted entry of "other" responses for which the interviewer was to type in any answer that was not provided as a coded response option. Open-ended responses obtained for these questions were examined to determine whether the responses fit any of the categories provided in the question. If they did not, no change was made. If they did, the "other" response entered by the interviewer was recoded to the correct response category. A few response categories were added to permit coding of most of the "other" responses.

5. Location Coding Review

Physicians in the site sample were sampled as part of the population of a particular site, and each site was defined as containing a particular set of Federal Information Processing System (FIPS) codes. During the interview, every respondent was asked to confirm the county and state where his or her primary practice was located. Respondents whose practices were not located in

the county and state shown in the sample record were asked to provide their current county and state.

County and state names were matched against a list containing all the FIPS codes in the country to determine the FIPS code of each physician's current location. These NEWFIPS codes were then compared with the FIPS codes in the sample record to determine whether the physician's site had changed since sampling. The following variables were provided in a separate file to document the site locations of physicians who moved between the time of sampling and the time of the interview:

OLDSITE — The site where sampled. It was "0" for all supplemental sample cases and "1-60" for the site sample cases.

NEWSITE — The site where the physician was located when interviewed. To determine the NEWSITE, the verbatim county and state information was converted to FIPS codes (NEWFIPS). These FIPS codes were then matched against a file that identified whether the code fell into one of the 60 sites, or whether it was outside the 60 sites. If outside the 60 sites, it was coded as site 61. "0" was used to indicate the supplemental sample and not in the site area. Codes 98 and 99 were added to indicate, respectively, DK/Refused on the county question (A5a) and no match found on state/county when compared with the database.

OLDFIPS — The FIPS code provided by the AMA or AOA Masterfiles at the time of sampling

NEWFIPS — The FIPS code of the county in which the physician was located when interviewed. These codes were determined by matching the verbatim county and state responses against a file that contains all FIPS codes in the United States.

LOCCODE —

1 = Respondent remains in the same site where sampled (sites 1-60).

2 = Respondent was sampled in one site but moved to a different site. Supplemental respondents (all sampled as part of site 0) were located within a particular site when sampled but had moved to a different site at the time of interview.

3 = Respondent was sampled in the site sample but had moved outside the 60 sites (site 61).

4 = Respondent was sampled in the site sample but had moved to a new location, which was unknown.

5 = Respondent was sampled in the supplemental sample (site 0) and remained within the same site location as at the time of sampling (either sites 1-60 or site 61, outside the 60 sites).

STRATCHG —Applied only to cases in the supplemental sample, although "0" was used as a placeholder for site sample cases. By comparing the state where sampled with the state names in question A5a, we determined whether these cases were in the same stratum as when sampled, or whether they were in a different stratum.

1 = Respondent remained in the same stratum where sampled.

2 = Respondent moved to a different stratum.

3 = Respondent moved to a new, unknown location, stratum unknown.

SMPSITE=OLDSITE — For cases sampled in the supplemental sample, SMPSITE is the site in which the case would have been selected if part of the site sample (sites 1-60). If a supplemental case would not have been selected in any of the 60 sites, the SMPSITE value was 61. SMPSITE was used to create the LOCCODE variable.

STCNTY — This field was added to the final Round Two locator database and contains the two-letter state code concatenated with the county name, as given by the respondent.

V. SAMPLING AND ANALYSIS WEIGHTS

A. OVERVIEW

We distinguish between sampling weights and analysis weights. *Sampling weights* are calculated from the selection probabilities. Sampling units at each sampling stage have known probabilities of being selected, and the sampling weights equal the reciprocal of the product of these probabilities. We could have used sampling weights alone for our analyses if all the frame definitions had been correct, and if every eligible physician in the sample had been located and had completed a survey questionnaire. However, some of the frame definitions (for example, geographic and physician specialty coding) were incorrect; some physicians could not be located, and others did not participate. We therefore had to modify the sampling weights to account for errors in the sample frame and nonresponse. To produce valid study results, we had to use modified weights, which we refer to as *analysis weights.* Furthermore, because we use two samples (the site sample and the supplemental sample) in each study round and are interested in several different analyses objectives, several sets of both the sampling weights and analyses weights have been calculated.

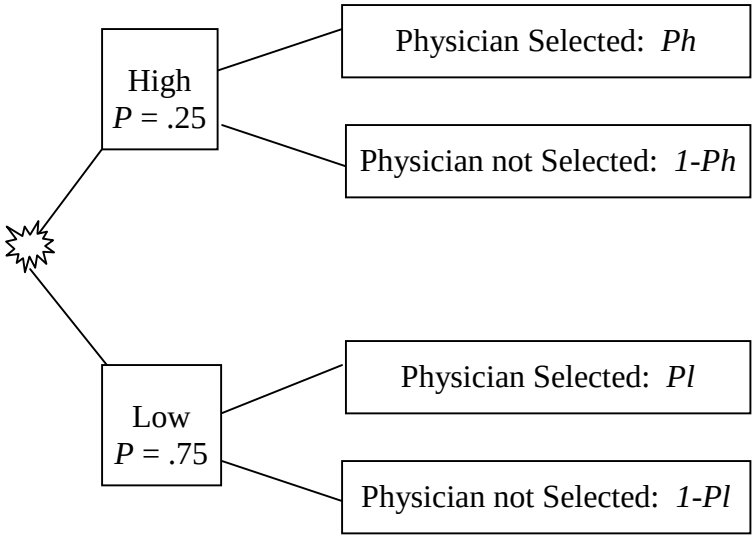
The objectives of the study and planned analyses (Chapter II) affect the calculation and use of the sampling and analysis weights. These features and the weighting implications are described in the following sections.

1. High-Intensity Sites

Of the 48 sites selected from MSAs with 200,000 or more population (in July 1992), 12 were randomly assigned as high-intensity sites and 36 as low-intensity sites (see Table I.1). Each of the 48 sites had a 25 percent chance of being assigned as a high-intensity site. (The other sites did not have a chance of being selected as a high-intensity site.) This random

assignment influenced the probability of selection for a physician practicing in one of the 48 sites. That is, a physician could be selected with one of two different sampling rates, depending on whether the physician's practice was assigned to a high- or low-intensity site.

We can view this situation as being analogous to an experiment with four possible outcomes:



Each physician practicing in a site could follow one of the four paths. The *Ph* and *Pl* are conditional probabilities that equal the probability of the physician being selected for the survey if his or her practice was in a high-intensity site (*Ph*) or low-intensity (*Pl*) site, respectively. The probability of any one of the four outcomes is equal to the product of the branching probabilities at each node along the path to that outcome. Note that the selection of a particular physician at that site coincides with two of the four outcomes. Hence, the probability of a physician being selected for the Round One study equaled the probability of selecting his or her site of practice multiplied by the sum of the probabilities for those two outcomes.

This basic concept can be extended to deal with the increased complexities of the longitudinal probabilities applicable to a study such as this one. The number of paths is simply

increased to account for selection in any one of several survey rounds and several categories of prior survey outcomes for a particular physician.

To calculate the selection probability for a physician, two conditional probabilities had to be calculated, one for each path. To calculate the conditional probabilities for the path to which the physician did not get assigned, the conditional probabilities were calculated using the sample allocation rules that would have been used for the alternative path. In Appendix B, we describe the full set of conditional probabilities; these probabilities were called *alternative probabilities*.

2. Competing Objectives

Several sets of analysis weights were developed for Round Two, reflecting the study's analytic objectives. The site sample in the high-intensity sites will be used to support site-level analyses for high-intensity sites. Combined with the low-intensity sites, both sets together comprised a valid national sample. Different site sample weights were developed for site- and national-level analyses because the weights that were efficient for national analyses were not suitable for site analyses. Simply multiplying analysis weights for site-level estimates by the site-level weight would produce valid national estimates, but with large variances because of variation size in the high- and low-intensity sites' sample sizes.

The supplemental sample was used to develop more efficient national-level estimates, unhampered by cluster sampling and the need to deal with geographic misclassification. The weights for this sample did not relate to whether practicing physicians practice within one of the survey sites. Supplemental sample weights would produce site-level estimates, but the sample sizes would be inadequate (that is, the estimates would have insufficient precision).

Several sets of weights were designed to utilize the two samples in combination to produce the most accurate estimates for the individual sites and nationally. All the weights were calculated separately for the two physician specialty categories (PCPs and specialists). Although

the equations are the same, the sampling rates differed and reflected the need to oversample primary care physicians.

Some of the national-level analyses used site-specific information. Hence, separate sets of national weights were developed that excluded physicians practicing outside the 60 sample sites.

Finally, panel weights were developed for longitudinal analyses. These weights were designed to permit analyses of individual changes for physicians who responded to both Round One and Round Two. These longitudinal analyses can use a model such as the following:

$$(1) \quad Y_{ij} = B_C x_{i1} + B_L (X_{ij} - X_{i1}) + e_{ij},$$

where Y_{ij} denotes the observed data for the ith physician at time j, X_{i1} denotes the value of the independent variable at time 1 for the ith physician, B_C denotes the coefficient estimate at time 1, X_{ij} denotes the value of the independent variable at time j for the ith physician, B_L denotes the coefficient estimate at time j, and e_{ij} is the random error term. The first two terms on the right side of the equation are the cross-sectional and the longitudinal terms, respectively, for subject i at time j (Diggle et al. 1999).

3. Focus on Primary Care

PCPs were sampled at approximately twice the rate as specialists to produce the desired precision for these physicians and for all physicians who had patient contact. The different sampling rates for PCPs and specialists resulted in unequal weights and, hence, reduced the survey precision for estimates for all physicians who had patient contact. Because of this disproportionate sampling, the two physician categories were designated as strata to control sample sizes and were candidates for separate nonresponse adjustments. Prior to sample selection and interviewing, physicians were classified as PCPs or specialists based on the

sampling frame information from AOA and AMA (for physicians who had not previously been interviewed) or on the Round One survey response (for those who completed Round One interviews). During the Round Two survey, some of the physicians were re-classified based on information provided by survey responses. However, sample weights had to ensure that they retained their initial probability of selection, even if they changed specialty classification based on interview data. (See Chapter II for a more detailed discussion of this problem.)

4. Supplemental Sample

The use of a supplemental, unclustered national sample improved the precision of national estimates because the clustering and different sampling rates in the site sample reduced the precision for national estimates from that source. The site and supplemental sample designs were quite different and required different equations for calculating weights. Therefore, using the two samples in combination in various ways required several different sets of weights (for example, augmented sample estimates and combined national-level estimates).

5. Geographic Misclassification (Movers)

Physicians in the site sample were to be assigned to the site containing their practice. However, information available at the time of sample selection did not always identify whether the practice was in one of the 60 sites; the information available may have been the physician's home address. Because practice site was an important analysis domain, some physicians had to be reassigned to a site other than the one assigned at sample selection because the practice site was not known with certainty until the interview (also discussed in Chapter II).

Reassigning practice sites resulted in unequal weighting and complicated the equations used to compute the weights because physicians selected from one sampled site who practiced in another sampled site must reflect probabilities associated with both sites (referred to as *joint*

inclusion probabilities). The sampling weight for these cases therefore sometimes differed substantially from the weight for the other physicians practicing in the same site.[1]

6. Longitudinal Versus Cross-Sectional Estimates

Because the CTS is a longitudinal survey, the Round Two sample will be used to provide both cross-sectional and change estimates. As discussed in Chapter II, part of the sample was interviewed in both rounds to improve the precision of both change and cross-sectional (point-in-time) estimates.

Weighting for longitudinal surveys is complex because the inclusion probabilities are defined not only on the current conditional selection probabilities, but also partly on the selection of physicians from prior surveys and the number of times the physicians are selected for additional surveys. Finally, panel weights for the reinterviewed physicians required adjustments so that the panel weights related to the same reference population (that is, the panel weights for Round Two respondents were scaled to the Round One population distribution).

7. Analysis Weights

Unbiased estimates are the goal of any serious survey. However, some of the physicians sampled for the CTS Physician Survey could not be located, and others who were located refused to participate or did not respond after many calls. Using logistic regression models based on available data from the sampling frames (for all physicians) and from the prior survey (for reinterviewed physicians), we developed weights for these physicians to reduce the potential for bias by compensating for the physicians who could not be located and for nonresponses among located physicians. We refer to these weights as the *analysis weights*. Separate multivariate

[1]Extremely large weights may be trimmed to improve the precision for site-level estimates. However, we minimized weight trimming to avoid introducing significant bias into the survey estimates.

models were developed to adjust the weights for unlocated and nonresponding physicians in the sample.

8. Weights Used

The limitations of the sample frames (for example, missing or incorrect information from the AMA and AOA files) and the need to use unequal sampling rates both influenced and complicated the calculation of sampling and analysis weights. In addition, the analytic objectives required the calculation of several sets of analysis weights. The various weights include those needed for:

- National-level estimates for the site sample, supplemental sample, augmented site sample, and combined sample (using both site and supplemental samples)
- Site-level estimates
- Panel analyses

Table V.1 summarizes the weights and their uses.

B. COMPUTATIONAL METHODS

1. Overview

The sampling and analysis weights had one component in common—the weight was calculated as the reciprocal of the inclusion probability of the physician. This weight was based on the site weight and one or more conditional weights (based on reciprocal selection probabilities). As Table V.1 shows, several sets of weights were computed to serve different analytic objectives. Because the equations for each weight were complex, only a few examples are presented here. The process for adjusting the sampling weights to account for unlocated

TABLE V.1

SUMMARY OF ANALYSIS WEIGHTS

Type of Estimate	Sample	Weight Names[a]		Records with Completed Interviews[b]		Comments
		Round One	Round Two	Round One	Round Two	
Site-Specific	Site sample (practice in 60 sites)	*PHYWGT1*	*PHYWGT1*	10,881	10,434	Does not include additional cases from the supplemental sample
	Augmented site sample	*PHYWGT5* *(WTPHY1)*	*PHYWGT5* *(WTPHY1)*	11,456[c]	10,920	Best option for site-specific estimates, because site samples include additional cases from the supplemental sample
National	Site sample (practice in 60 sites)	*PHYWGT6* *(WTPHY2)*	n.a.	10,881	n.a.	Does not include additional cases from the supplemental sample
	Site sample (all)	*PHYWGT2*	*PHYWGT2*	11,310	11,216	Does not include additional cases from the supplemental sample
	Supplemental sample	*PHYWGT4* *(WTPHY3)*	*PHYWGT4* *(WTPHY3)*	1,218	1,088	Unclustered design, minimal design effect
	Augmented site sample	n.a.	*WT_NAUG* *PHYWGT7* *(WTPHY5)*	n.a.	10,920	Best option for national estimates when using site-level variables in analysis, because it includes additional cases from the supplemental sample
	Combined sample	*PHNATLWT* *(WTPHY4)*	*WT_COMB* *(WTPHY4)*	12,528	12,304	Best option for most national estimates, because it uses all cases from site and supplemental samples
National Panel	Combined sample	n.a.	*PANEL_WT* *PPHNTLWT* *(WTPAN1)*	n.a.	7,092	Includes only those physicians interviewed in both Round One and Round Two
	Site sample (all)	n.a.	*PPHYWGT2* *(WTPAN2)*	n.a.	6,569	

[a]Name in parentheses refers to variable name on the Public Use File and Restricted Use File.

[b]Some physicians were sampled for both the site and supplemental samples and are included in each sample, although they were interviewed only once. There were 143 physicians included in both samples for Round One and 24 for Round Two.

[c]11,474 in augmented sample, minus 18 supplemental cases that were misclassified as outside the 60 sites.

physicians and nonresponse was complex and included nonresponse adjustments (including separate treatment of unlocated physicians and nonresponding physicians who were located), poststratification, and weight trimming.

2. Probability of Selection

Sampling weights were essential for calculating unbiased statistics from the survey data and for conducting valid analyses. To calculate the weights, the inclusion probabilities had to be calculated for each record on the data file.

As noted, the entire site sample, including movers, was used to develop weights for national estimates. The site sample was a two-stage probability sample drawn from the national frame (that is, from the population of all physicians in the defined target population). For national estimates, the calculation of the inclusion probability (P_i) for any sampled physician accounted for the selection probability of the site, the random assignment of a site as either a high- or low-intensity study site, and the selection probability of the physician in the site.

To illustrate, for the Round One sample, the probability of selection (P_i) of a physician sampled within a site was calculated according to the following equation:

$$(2)\quad P_i = P(site)*P(i/site)$$

$$= P(site)*[P(HI)(n_{HI}/ N_s) + (1 - P(HI))(n_{LO}/N_s)],$$

where N_s was the sampling frame size, $P(HI)$ = 12/48=1/4 for the 48 large metropolitan sites and = 0 for the other sites, and n_{HI} (n_{LO}) was the sample size that would have been allocated to a site if it was chosen as a high- (low-)intensity site. To use equation (2), we had to estimate the sample size that would have been released under our original sample allocation plan, treating each site first as a high-intensity one and then as a low-intensity one. The process was required for each of the four sampling strata used in Round One of the study (PCP or specialist by frame

source [AMA or AOA]) within each of the 48 large metropolitan sites.

For the Round One supplemental sample, the calculation of the probabilities for the basic weights was a simpler single-stage process. The same strategy was used to calculate Round Two inclusion probabilities, except that more sampling strata were defined in each site or supplement sample stratum. We also had to account for the fact that a physician could have been selected in either Round One or Round Two.

At this point, we ignore the issue of physicians whose geographic or patient care classification was misassigned by the frame. (This issue is discussed in Appendix B.) In this example, we also ignore the fact that large MSA sites were randomly assigned as high- or low-intensity sites in order to simplify the discussion. In Round Two and subsequent rounds, these calculations must also reflect probabilities and response status relating to previous points in time.

Consider that a physician could be sampled for Round Two via several paths, which were used to develop four frame strata:

1. Physician was eligible and completed a Round One interview (a Round One eligible *complete*)
2. Physician was selected in Round One but did not complete the interview (for example, was ineligible, could not be located, or refused) (a Round One *noninterview*)
3. Physician was not selected in Round One but was in the Round One frame (an *old* frame physician)
4. Physician was not in the Round One frame (a *new* frame physician)

If we consider the chain of events for the Round Two physicians selected from the Round One population, we have two possible routes, *a* (was selected in the Round One sample) and *b* (was not selected in the Round One sample):

(3) $Pa = P1*P11*P21$

and

(4) $Pb = P1*(1 - P11)*P23$,

where:

P1 = the (unconditional) probability of selecting the site.

The conditional probabilities are defined as *Pij*, *i* relates to Round One or Round Two, and *j* relates to the frame strata 1 to 4 for primary care (and 5 to 8 for specialists, reflecting the different selection probabilities of PCP and specialists).

P11 = the conditional probability of selecting the physician in Round One given the site was selected

P21 = the conditional probability of selecting the physician in Round Two given the physician was an eligible in the Round One sample ($j = 1$)

P23 = the conditional probability of selecting the physician in Round Two given the physician was not selected in Round One (but was in the Round One frame).

The inclusion probability, *P*, equals the sum of probabilities for occurrence in one or the other of two disjoint events. That is, $P = P1*\{P11*P21+(1-P11)*P23\}$.

Clearly, one can use different assumptions to calculate the basic sampling weights in longitudinal surveys. The method used in Round Two is a slight variation of the method shown here. The alternatives that were considered produce unbiased estimates subject to some reasonable assumptions. In addition, the resulting variances are similar. The full equations used to calculate the Round Two weights are in Appendix B.

C. LOGISTIC PROPENSITY MODELS FOR NONRESPONSE ADJUSTMENTS

The purpose of nonresponse adjustment to sampling weights is to reduce the potential for bias associated with nonresponse. If nonresponse to a survey is completely random, then

weighted estimates of means would be unbiased and nonresponse adjustment would not be required. For estimating totals, however, a single adjustment still would be needed to inflate a weighted total to account for the proportion of physicians who did not respond. However, nonresponse is rarely completely random, and it is possible to ascertain patterns about characteristics of sampled individuals, such as physicians, who do or do not respond. For the CTS Physician Survey, the concept underlying nonresponse adjustments is to find groups of physicians who respond with a similar probability, and to compute an adjustment value for each of the groups. The adjustment factors are simply the inverse of the response rate for physicians in that group.

The most common method for computing these nonresponse adjustments is to form mutually exclusive classes of physicians who seem to have the same response probability, or propensity (Brick and Kalton 1996). A weighted response rate is computed independently in each class, and the inverse of the response rate is the adjustment factor. A key determinant in developing these weighting classes is the availability of information for respondents and nonrespondents. In many surveys, limited information is available beyond that used for sampling strata. However, we have considerable information from the sample frames and the Round One survey that can be used to adjust for nonresponse to the Physician Survey. For nearly all sampled physicians, selected demographic and practice characteristics are available from the AMA and AOA files that were used as the sample frame. We also have an extensive array of variables from the Round One survey for physicians who completed interviews in Round One. For nonresponding or unlocated Round One physicians selected for Round Two, we have data on survey dispositions for both rounds.

In the weighting class nonresponse adjustment procedure, the mutually exclusive weighting classes must contain a sufficient number of physicians so that the estimate of the weighted

response rate is stable. The usual criterion is that 20 or more cases should be in a weighting class so that the variance of the response rate is sufficiently small that the estimate is accurate and stable.[2] (Some researchers may require 50 or more in each class to reduce instability.) Weighting classes are combined if the number of cases is less than this count. However, given that the purpose of forming weighting classes is to group physicians with similar response probabilities to reduce the potential for bias, combining weighting classes may reduce some of the value of this approach.

Logistic regression modeling for the probability of responding is an extension of the weighting class approach. The predicted value for a physician is the probability that the physician would respond (the response propensity), so the inverse of the response propensity is equivalent to the inverse of the weighted response rate estimated in the weighting class method (Iannacchione et al. 1991).

Logistic propensity modeling has three major advantages over the weighting class approach. First, mutually exclusive classes are not needed. The logistic model can use categorical as well as continuous data as independent variables, and interactions among these variables can be included in this model. Second, the weighted response rate is a model-based estimate that uses information from all physicians, not just the physicians with similar characteristics (that is, physicians in a specific weighting class). In the modeling process, alternative variables and scalings of variables can be tested for the best ability to predict the propensity to respond. Third, the predicted response propensity is estimated using a model and the full sample of physicians, so the variance for the response propensity will generally be substantially less than the variance from a comparable weighting class approach.

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[2]Assuming a sample size of 20 implies a confidence interval of ± 0.20 for a response rate, r, around 0.60 (0.40 to 0.80), where the variance is estimated by $r * (1 - r)/20$.

A disadvantage of the logistic propensity modeling is that the predicted propensity value can be small and, therefore, the inverse of this value would be large. A large adjustment value can result in greater variation in the final analysis weights, but various methods of smoothing the adjustments may be used to reduce the impact of large values on weights (Little 1986).

To summarize, the two approaches will have identical results if the independent variables used in a logistic propensity model exactly match the mutually exclusive classes used in the weighting class procedure. In this case, the predicted response propensity values would be identical to the weighted response rates in the weighting class approach. The adjustment is simply the inverse of the predicted response propensity or the weighted response rate. However, this is rarely the case, and the advantages of modeling the propensity of response will usually outweigh its disadvantages.

Logistic propensity modeling has been used for surveys where information on the characteristics of both respondents and nonrespondents is available. For example, this approach was used for the National Survey of Family Growth (Potter et al. 1998) and has been tested for use with the Survey of Income and Program Participation (Folsom and Witt 1994). The procedure also has been used in surveys of military personnel (Iannacchione et al. 1991) and in surveys of Medicare and Medicaid populations for which demographic and economic data are available from federal or state administrative files (CyBulski et al. 1999).

The first steps in adjusting for nonresponse are:

1. Examining patterns of nonresponse
2. Determining what factors may be related to the likelihood of responding
3. Developing adjustment factors that are assigned to each respondent to compensate for nonrespondents

The following sections describe how the models were developed; we then describe the weight adjustment procedures.

1. Examining Patterns of Nonresponse

First, we examined the pattern of nonresponse relative to the data available on sample members. For this survey, we had different levels of data for the site sample and for the supplemental sample, as well as for subgroups based on their Round One interview status. For both the site sample and the supplemental sample, we had three subgroups of physicians:

1. ***Round One Interviews.*** Physicians who completed the Round One interview
2. ***Round One Noninterviews.*** Physicians who were selected for the Round One sample but who did not complete the interview for some reason
3. ***New Sample.*** Physicians in the Round Two sampling frame who were not selected for the Round One sample

We therefore had six groups of physicians with different levels of data. We had the most information on physicians who responded and completed the Round One interview (Round One interviews). This information included information from the Round Two sampling frame, responses from the Round One instrument, and information from Round One survey dispositions (such as the record of calls for the Round One interview). We had information on Round One noninterviews from the Round Two sampling frame and survey dispositions (such as response status and the record of calls for Round One). Only information from the Round Two sampling frame was available for new sample.

2. Determining Factors Influencing Response

We examined the pattern of nonresponse in each group to determine which factors might have influenced the likelihood of responding. As expected, a major factor was whether a physician could be located. This finding led us to examine factors associated with whether a

physician could be located and then to separately analyze factors associated with response among located physicians. We used a variety of procedures, including simple cross-tabulations and analysis of variance (ANOVA) procedures to identify candidate variables and classifications of the variables.[3]

3. Developing Adjustment Factors

To estimate the adjustment factors for locating a physician and for responding among located physicians, we used weighted logistic regression to estimate a "response propensity" score for each physician. The modeling approach can result in a few sample members being assigned an extremely large adjustment factor (Little 1986). However, the possibility of large adjustment factors can be reduced by using a restricted logistic regression model[4] or by trimming and compensating for adjustment factors from an unrestricted logistic regression model in a sample alignment or poststratification adjustment process. We used the latter approach.

The model-based nonresponse adjustments represented predicted values (based on a best linear unbiased prediction model) and were used in the computation of different sets of analysis weights. That is, the model-based propensity scores developed for the full sample were used to account for the inability to locate a physician and physician nonresponse in the computation of weights for site-level estimates (for both the unaugmented and augmented samples) and for panel estimates. (A weighting class approach would have required the estimation of adjustment factors separately for each set of weights.)

[3]The nonresponse analysis is included in Appendix C of the full report, which is available to RUF users.

[4]The coefficients of the model are estimated based on restrictions on the size of the adjustment factor.

After computing adjustment factors for the inability to locate a physician and for nonresponse among located physicians, various sets of weights were computed. These adjusted weights were then checked for consistency with known (or estimated) population counts of eligible physicians and were poststratified. Because of the variation in the weights based on the original selection probabilities as well as the adjustment factors, analysis weights for some physicians differed substantially from that of other physicians within a pool of similar physicians. We evaluated the few extreme weights, which could have decreased the precision of the survey estimates and analysis, and trimmed some of them.

The following section describes weight adjustment procedures and construction of analysis weights in more detail.

D. RESPONSE PROPENSITY MODELS

1. General Model Development

We prepared two sets of weighted logistic regression models to adjust the survey weights for our ability to locate physicians and to obtain a response (either a completed or ineligible interview) among the located cases. We developed separate models for location and response for physicians for (1) Round One completed interviews among eligible physicians, (2) Round One noninterviews, and (3) physicians not in the Round One sample (the new sample). We used this trichotomy because the physician characteristics associated with the ability to locate a physician and response varied across these three groups and because available data varied by groups. We also developed separate models for the site and supplemental samples because different data were again available for each sample. In total, we developed 12 models—separate location and response adjustments for the site and supplemental sample crossed with the three groups (Round One interviews, Round One noninterviews, and new sample).

Each model was used to predict the value for location or response among located cases as a function of physician characteristics represented by a series of indicator variables. The models used the sampling weights applicable to the specific sample and analysis objective (site-level estimates versus national estimates). For the location models, the weights consisted of the normalized initial weight computed on the basis of the original selection probabilities. For the nonresponse models, the weights consisted of the normalized product of the initial weight computed on the basis of the original selection probability and the location adjustments.

After reviewing the results from our nonresponse analysis, we concluded that most of the characteristics could help predict location or nonresponse. Therefore, we began by including all of them in the models. Many of them contained categorical responses (for example, specialty type, PCP status), so we transformed them into a series of indicator variables. If a category contained 100 or fewer cases, we collapsed some of the categories. In addition, we collapsed categories with similar location and response rate patterns. For a few variables, we modified the indicator variable definitions depending on whether they were used for the locating models or for the response models. In particular, we included a variable for each site in the site sample, with one exception. To prevent a singularity in the model, we combined sites in which all physicians were located or all physicians responded with sites with the next highest rate. In addition, we combined variables with missing information (for example, unknown country of graduation) with other categories or created an indicator to denote a status of missing.

We also examined the ability to locate or respond for various bivariate interactions between characteristics. To isolate the interactions, we conducted cross-tabulations on the location rates and the response rates by pairs of physician characteristics. To help reduce the initial list of possible interactions, we also conducted an ANOVA study of the characteristics, treating the outcomes as the dependent variable and the characteristics as the treatment effects, using the

SAS GLM procedure. Although the data violate the ANOVA model assumptions (about the error term for the data; $e = N(0,\sigma)$), we found this method to correctly identify potential interaction effects. Our analysis indicated possible interactions for locating and response for site membership and age and site membership and PCP status. As a result, we included some indicators in the models for these effects.

To prepare the models, we used a weighted stepwise variable selection logistic regression procedure from SAS. We decided to use a significance level for variable inclusion of 0.15 to keep variables in the model that had a potential impact on the outcome. We used this criterion because the primary purpose of the models was to predict a response rate for a physician, rather than to explain the relationships between the dependent variable and the characteristics.

The predicted values from the models were used to prepare two sets of adjustments (which were equal to the inverse of the predicted response propensity) for each physician who (1) was located (among the located and unlocated cases), or (2) completed the survey (completed interviews and ineligible physicians among the located physicians). The inverse of the predicted propensity value sometimes contained large values (for example, 5 or higher), and we conducted a trimming process on the adjustment values. For the trimming, we computed the standard deviation of the adjustment values and identified cases with adjustments that were more than 2.5 for the location model or 2.5 times the standard deviations from the mean for the response model.

The adjustment values that exceeded these limits were considered to be "outliers" and we decided to reduce them to limit the potential for extremely large weights. Although a fixed trimming value (of 2.5) could be used in the location models, the higher level of nonresponse and variability in the response rates indicated that the trimming value had to accommodate the inherent variation. The adjustment factor value was trimmed for those that exceeded the cut-off

value at the trimming value, and the trimmed excess was allocated among the cases that had an adjustment value between 1.0 and 2.5 for the location model or between 1.5 or 2.5 times the standard deviations from the mean for the response model. That is, the trimmed excess was distributed among cases that reflected the next "tier" of cases that had similar low predicted probabilities of location or response.

For example, in the location model for the site sample, Round One nonrespondents (based on 4,932 located cases), the maximum adjustment value (the inverse of the predicted propensity) was 4.47; the mean adjustment value was 1.14 and the standard deviation was .0243. We capped all the cases with adjustment values at or above 2.5 (22 cases) to the value 2.5. We then examined the sum of the survey weights (using the location-adjusted weights) for the pool of 654 cases that had scores at or above one standard deviation above the mean (1.38 = 1.14 + .0243), which included the 22 trimmed cases. Before trimming, the sum of the weights was 22,330 for the 654 cases; after trimming, it was 22,213. We then spread the weighted trimmed excess of 87 (22,330 - 22,213) for the trimmed cases across the 654 cases by multiplying the weights for the 654 cases in the pool by 1.0052 = (22,330/22,213). This step produced a maximum adjustment value of 2.51 and reduced the coefficient of variation in the propensity adjustment values from 21.3 to 20.6. This example is typical for many of the models in that the methodology trimmed only a relatively few of the extreme propensity adjustment values.

Tables V.2 and V.3 summarize the indicator variables that were significant at a .15 level in the stepwise logistic regression procedures for the six location models for the site sample and supplemental sample, respectively. Tables V.4 and V.5 present the results for the response models. For each variable, the tables present the standardized coefficient assigned to the indicator variable or physician characteristic. For each model, we also present the *r*-squared values and the Hosmer-Lemeshow goodness-of-fit test statistic *p*-value (Hosmer and Lemeshow

TABLE V.2

RESULTS OF THE LOCATION MODELING PROCEDURES, BY PANEL, FOR THE SITE SAMPLE

Characteristic/Indicator Variable	Standardized Logistic Regression Coefficient		
	Round One Reinterview	Round One Noninterview	New Sample
Age 25 to 44 Years		0.0840	-0.0747
Age 65+ Years		0.2944	0.1145
Board Certified in Primary Specialty	0.1156	n.a.	n.a.
Gender Male		0.0425	0.1207
AMA Member	0.1568	0.1989	0.1607
Round One Managed Care Revenue 60 Percent or Higher		n.a.	n.a.
Round One Number of Physicians in Office Is 2 to 10	0.0735	n.a.	n.a.
Round One Full or Part Owner	0.1939	n.a.	n.a.
Question A19 Career Satisfaction High (5)	0.1715	n.a.	n.a.
Round Two Present Employment 011,013 Solo + Partnership		-0.0878	
Round Two Present Employment 035 (HMO) + Other	-0.0970	-0.0984	-0.1413
0 to 2 Years in Practice	-0.0742	n.a.	n.a.
3 to 9 Years in Practice	-0.1512	n.a.	n.a.
Groups of Sites Combined that Have Close to 100 Percent Location Rate (Site 18, 56, and 60)	0.4131		
Site Sample # 1 Boston MA			-0.0430
Site Sample # 2 Cleveland OH			
Site Sample # 3 Greenville SC	-0.1643		
Site Sample # 4 Indianapolis IN		0.0558	
Site Sample # 5 Lansing MI			
Site Sample # 6 Little Rock AR			-0.0394
Site Sample # 7 Miami FL	0.0887		-0.0927
Site Sample # 8 Newark NJ		-0.0421	-0.0717
Site Sample # 9 Orange County CA	-0.0794	-0.0381	-0.0684
Site Sample # 10 Phoenix AZ		-0.0461	
Site Sample # 11 Seattle WA			
Site Sample # 12 Syracuse NY			
Site Sample # 13 Atlanta GA		-0.0412	
Site Sample # 14 Augusta GA			-0.0751
Site Sample # 15 Baltimore MD	-0.0367	-0.0672	
Site Sample # 16 Bridgeport CT		0.0733	
Site Sample # 17 Chicago IL	-0.0677		
Site Sample # 19 Denver CO		-0.0380	
Site Sample # 20 Detroit MI		-0.0697	
Site Sample # 21 Greensboro NC			
Site Sample # 22 Houston TX	-0.0534		-0.0307
Site Sample # 23 Huntington WV			
Site Sample # 24 Killeen TX			-0.0393
Site Sample # 25 Las Vegas NV			
Site Sample # 27 Los Angeles CA		-0.0521	-0.0730
Site Sample # 28 Middlesex NJ			
Site Sample # 29 Milwaukee WI			
Site Sample # 30 Minneapolis MN			
Site Sample # 31 Modesto CA			
Site Sample # 32 Nassau NY			-0.0288
Site Sample # 33 New York City NY		-0.0601	-0.0261
Site Sample # 34 Philadelphia PA			-0.0483
Site Sample # 35 Pittsburgh PA			
Site Sample # 36 Portland OR			

Table V.2 *(continued)*

Characteristic/Indicator Variable	Standardized Logistic Regression Coefficient		
	Round One Reinterview	Round One Noninterview	New Sample
Site Sample # 37 Riverside CA			-0.0406
Site Sample # 38 Rochester NY			0.0551
Site Sample # 39 San Antonio TX	-0.0527		
Site Sample # 40 San Francisco CA			-0.0456
Site Sample # 41 Santa Rosa CA	-0.0936		-0.0515
Site Sample # 42 Shreveport LA			-0.0583
Site Sample # 43 St. Louis MO			-0.0288
Site Sample # 44 Tampa FL			-0.0367
Site Sample # 45 Tulsa OK	-0.1360		
Site Sample # 46 Washington DC		0.0526	
Site Sample # 47 W Palm Beach FL		-0.0424	
Site Sample # 48 Worchester MA			0.0572
Site Sample # 49 Dothan AL			
Site Sample # 50 Terre Haute IN	-0.1623		
Site Sample # 51 Wilmington NC		-0.0684	0.0735
Site Sample # 52 W-Cen Alabama	-0.0695	-0.0404	-0.0697
Site Sample # 53 Cen Arkansas	-0.0997		
Site Sample # 54 N Georgia	-0.1454		
Site Sample # 55 NE Illinois			
Site Sample # 57 E Maine			
Site Sample # 58 E North Carolina	-0.1679		
Site Sample # 59 N Utah		-0.0689	
Cardiologist Specialty Indicator for Location Model	0.1408	0.0733	
General Practice Specialty High-Location Subcategories			0.0657
General Practice Specialty Low-Location Subcategories			-0.0549
Internal Medicine Specialty High-Location Subcategories		0.0730	0.1404
Psychiatrist Status for Location Model			-0.0773
Surgeon Status for Location Model	0.1589		
Graduate of European, Canadian, or Other Medical School	0.1773		-0.0370
Unknown Graduate School Country	-0.0576		0.0768
Graduate of Latin America, Asian, or South American Medical School		-0.0545	-0.0962
Round One Number of Calls 1 to 4 (Location Model)	0.1189		n.a.
Round One Status Not Located	n.a.	-0.6156	n.a.
Round One Status Hard Refusal	n.a.		n.a.
Round One Status Ineligible	n.a.	-0.2464	n.a.
Site 4 and Age Interaction	0.0735		
Site 5 and Age Interaction	0.1497		
Site 6 and Age Interaction			
Site 30 and Age Interaction			
Site 54 and Age Interaction			
Site 55 and Age Interaction	-0.0682	-0.0678	
Site 7 and Age Interaction			
Site 10,19,40,46 and PCP Status Interaction	-0.0434		
Estimated *R*-Square Value	0.0357	0.1606	0.0593
Hosmer and Lemeshow Goodness-of-Fit *P*-Value[a]	0.2327	0.5886	0.7603

n.a. = not applicable.

[a]Test of goodness-of-fit with null hypothesis of no difference between distribution of observed and predicted value. A higher *p*-value imples a better fit of model to data.

TABLE V.3

RESULTS OF THE LOCATION MODELING
PROCEDURES, BY PANEL, FOR THE SUPPLEMENTAL SAMPLE

	Standardized Logistic Regression Coefficient		
Characteristic/Indicator Variable	Round One Reinterview	Round One Noninterview	New Sample
Age 25 to 44 Years	-0.2351	0.2241	
Age 65+ Years		0.4787	
Board Certified in Primary Specialty		n.a.	n.a.
Gender Male			0.0904
AMA Member			0.1148
Round One Managed Care Revenue 60 Percent or Higher		n.a.	n.a.
Round One Number of Physicians in Office Is 2 to 10		n.a.	n.a.
Round One Full or Part Owner	0.4730	n.a.	n.a.
Question A19 Career Satisfaction High (5)		n.a.	n.a.
Round Two Present Employment 011,013 Solo + Partnership	-0.3801		0.2841
Round Two Present Employment 035 (HMO) + Other	-0.4307		
0 to 2 Years in Practice		n.a.	n.a.
3 to 9 Years in Practice		n.a.	n.a
AMA Region 1			
AMA Region 2			
AMA Region 3			
AMA Region 4			
AMA Region 5			-0.1015
AMA Region 6			
AMA Region 7			
AMA Region 8		-0.1269	
AMA Region 9			
Cardiologist Specialty Indicator for Location Model			
General Practice Specialty High-Location Subcategories			
General Practice Specialty Low-Location Subcategories			
Internal Medicine Specialty High-Location Subcategories			
Psychiatrist Status for Location Model	-0.2055		
Surgeon Status for Location Model			
Graduate of European, Canadian, or Other Medical School			
Unknown Graduate School Country			
Graduate of Latin America, Asian, or South American Medical School		-0.1594	-0.1675
Round One Number of Calls 1 to 4		n.a.	n.a.
Round One Status Not Located	n.a.	-0.8908	n.a.
Round One Status Hard Refusal	n.a.		n.a.
Round One Status Ineligible	n.a.	-0.4216	n.a.
Estimated *R*-Square Value	0.0522	0.1845	0.0355
Hosmer and Lemeshow Goodness-of-Fit *P*-Value[a]	0.5033	0.9085	0.7713

n.a. = not applicable.

[a]Test of goodness-of-fit with null hypothesis of no difference between distribution of observed and predicted value. A higher *p*-value imples a better fit of model to data.

TABLE V.4

RESULTS OF THE RESPONSE MODELING PROCEDURES, BY PANEL, FOR THE SITE SAMPLE

Characteristic/Indicator Variable	Standardized Logistic Regression Coefficient		
	Round One Reinterview	Round One Noninterview	New Sample
Age 25 to 44 Years	-0.0317		0.0415
Age 65+ Years	0.1043	0.2299	0.1474
Board Certified in Primary Specialty	0.0242	n.a.	n.a.
Gender Male			
AMA Member		-0.0415	-0.0208
Round One Managed Care Revenue 60 Percent or Higher	0.0261	n.a.	n.a.
Round One Number of Physicians in Office Is 2 to 10		n.a.	n.a.
Round One Full or Part Owner	-0.0935	n.a.	n.a.
Question A19 Career Satisfaction High (5)		n.a.	n.a.
Round Two Present Employment 011,013 Solo + Partnership			-0.0369
Round Two Present Employment 035 (HMO) + Other			
0 to 2 Years in Practice		n.a.	n.a.
3 to 9 Years in Practice		n.a.	n.a.
Groups of Sites that Have Close to 100 Percent Completion Rate			
Site Sample # 1 Boston MA	-0.0261		0.0369
Site Sample # 2 Cleveland OH			0.0314
Site Sample # 3 Greenville SC			
Site Sample # 4 Indianapolis IN			0.0294
Site Sample # 5 Lansing MI			
Site Sample # 6 Little Rock AR	-0.0511		
Site Sample # 7 Miami FL	-0.0692	-0.0509	
Site Sample # 8 Newark NJ	-0.0236		0.0342
Site Sample # 9 Orange County CA			
Site Sample # 10 Phoenix AZ			
Site Sample # 11 Seattle WA			0.0263
Site Sample # 12 Syracuse NY			
Site Sample # 13 Atlanta GA			
Site Sample # 14 Augusta GA	-0.0242		
Site Sample # 15 Baltimore MD		0.0274	0.0462
Site Sample # 16 Bridgeport CT		-0.0528	
Site Sample # 17 Chicago IL			0.0291
Site Sample # 19 Denver CO	0.0294		0.0403
Site Sample # 20 Detroit MI	-0.0221		
Site Sample # 21 Greensboro NC			
Site Sample # 22 Houston TX		-0.0326	
Site Sample # 23 Huntington WV			
Site Sample # 24 Killeen TX			
Site Sample # 25 Las Vegas NV	-0.0229		
Site Sample # 27 Los Angeles CA			
Site Sample # 28 Middlesex NJ			
Site Sample # 29 Milwaukee WI			
Site Sample # 30 Minneapolis MN			0.0311

Table V.4 *(continued)*

Characteristic/Indicator Variable	Standardized Logistic Regression Coefficient		
	Round One Reinterview	Round One Noninterview	New Sample
Site Sample # 31 Modesto CA			-0.0189
Site Sample # 32 Nassau NY		-0.0682	-0.0316
Site Sample # 33 New York City NY		-0.0310	0.0821
Site Sample # 34 Philadelphia PA		-0.0256	0.0415
Site Sample # 35 Pittsburgh PA			0.0298
Site Sample # 36 Portland OR			
Site Sample # 37 Riverside CA		-0.0255	
Site Sample # 38 Rochester NY	0.0416		
Site Sample # 39 San Antonio TX			
Site Sample # 40 San Francisco CA	0.0327		
Site Sample # 41 Santa Rosa CA			
Site Sample # 42 Shreveport LA		-0.0528	
Site Sample # 43 St. Louis MO			
Site Sample # 44 Tampa FL			
Site Sample # 45 Tulsa OK			
Site Sample # 46 Washington DC			0.0660
Site Sample # 47 W Palm Beach FL		-0.0373	
Site Sample # 48 Worchester MA			0.0342
Site Sample # 49 Dothan AL		-0.0306	
Site Sample # 50 Terre Haute IN		-0.0942	
Site Sample # 51 Wilmington NC	-0.0497		
Site Sample # 52 W-Cen Alabama	-0.0538	0.0319	0.0221
Site Sample # 53 Cen Arkansas		0.0268	
Site Sample # 54 N Georgia			
Site Sample # 55 NE Illinois			
Site Sample # 57 E Maine	0.0379		
Site Sample # 58 E North Carolina			
Site Sample # 59 N Utah	-0.0408		0.0492
Cardiologist Specialty High-Response Subcategories	-0.0200		
General Practice High-Response Subcategories	0.0537	0.0466	0.0757
Internal Medicine Specialty High-Response Subcategories	0.0287		
Internal Medicare Specialty Low-Response Subcategories		-0.0373	-0.0241
Psychiatrist Status for Response Model			0.0707
Surgeon Status for Response Model			-0.0311
Graduate of European, Canadian, or Other Medical School		0.0345	
Unknown Graduate School Country			
Graduate of Latin America, Asian, or South American Medical School	-0.0465		

Table V.4 *(continued)*

Characteristic/Indicator Variable	Standardized Logistic Regression Coefficient		
	Round One Reinterview	Round One Noninterview	New Sample
Round One Number of Calls 1 to 4	0.3668	n.a.	n.a.
Round One Number of Calls 5 to 14	0.1810	n.a.	n.a.
Round One Status Not Located	n.a.	0.1888	n.a.
Round One Status Hard Refusal	n.a.	-0.0927	n.a.
Round One Status Ineligible	n.a.	0.2960	n.a.
Site 4 and Age Interaction		0.0332	
Site 5 and Age Interaction			
Site 6 and Age Interaction	0.0332	-0.0417	
Site 30 and Age Interaction		-0.0503	
Site 54 and Age Interaction			
Site 55 and Age Interaction			
Site 7 and Age Interaction	0.0358		
Site 10,19,40,46 and PCP Status Interaction	-0.0338		
Estimated *R*-Square Value	0.0578	0.1588	0.0383
Hosmer and Lemeshow Goodness-of-Fit *P*-Value[a]	0.1333	0.7584	0.2895

n.a. = not applicable.

[a]Test of goodness-of-fit with null hypothesis of no difference between distribution of observed and predicted value. A higher *p*-value imples a better fit of model to data.

TABLE V.5

RESULTS OF THE RESPONSE MODELING PROCEDURES,
BY PANEL, FOR THE SUPPLEMENTAL SAMPLE

Characteristic/Indicator Variable	Standardized Logistic Regression Coefficient		
	Round One Reinterview	Round One Noninterview	New Sample
Age 25 to 44 Years			0.1104
Age 65+ Years		0.1895	0.1915
Board Certified in Primary Specialty		n.a.	n.a.
Gender Male			
AMA Member			
Round One Managed Care Revenue 60 Percent or Higher		n.a.	n.a.
Round One Number of Physicians in Office Is 2 to 10		n.a.	n.a.
Round One Full or Part Owner		n.a.	n.a.
Question A19 Career Satisfaction High (5)		n.a.	n.a.
Round Two Present Employment 011,013 Solo + Partnership	-0.0799		
Round Two Present Employment 035 (HMO) + Other			-0.0638
0 to 2 Years in Practice		n.a.	n.a.
3 to 9 Years in Practice		n.a.	n.a.
AMA Region 1			
AMA Region 2			
AMA Region 3			
AMA Region 4			
AMA Region 5			-0.1020
AMA Region 6			
AMA Region 7			
AMA Region 8			
AMA Region 9			
Cardiologist Specialty High-Response Subcategories	-0.1049		-0.0709
General Practice High-Response Subcategories			
Internal Medicine Specialty High-Response Subcategories			
Internal Medicare Specialty Low-Response Subcategories	-0.0787		-0.0670
Psychiatrist Status for Response Model		0.1029	0.0853
Surgeon Status for Response Model			
Graduate of European, Canadian, or Other Medical School			
Unknown Graduate School Country			0.0789
Graduate of Latin America, Asian, or South American Medical School			0.0661
Round One Number of Calls 1 to 4	0.3670	n.a.	n.a.
Round One Number of Calls 5 to 14	0.1957	n.a.	n.a.
Round One Status Not Located	n.a.	0.1913	n.a.
Round One Status Hard Refusal	n.a.	-0.1178	n.a.
Round One Status Ineligible	n.a.	0.3843	n.a.
Estimated *R*-Square Value	0.0478	0.1756	0.0493
Hosmer and Memeshow Goodness-of-Fit *P*-Value[a]	0.7923	0.8714	0.3455

n.a. = not applicable.

[a]Test of goodness-of-fit with null hypothesis of no difference between distribution of observed and predicted value. A higher *p*-value imples a better fit of model to data.

1989). (A large *p*-value indicates a good fit because it implies that the null hypothesis of no difference between the observed and predicted distributions is not rejected.) The goodness-of-fit test indicated that the models were a reasonable fit (the smallest *p*-value was 0.13). The *r*-squared values were small (as is common for weighted logistic regression models), with an average value of about nine percent for both the location and response models. Table V.6 presents the range in the propensity scores for each of the 12 models after trimming and indicates the impact of the adjustment on the design effects based on the variability in the survey weights.

2. Poststratification and Ratio-Type Adjustments

After applying the adjustments to the weights for unlocated physicians and for nonresponse among located physicians, the weighted counts for physicians who completed the interviews or who were ineligible did not reproduce the Round Two frame totals for some of the primary analytic domains of PCP/specialists and sample source. Therefore, we computed a ratio-type adjustment so that the sum of the nonresponse-adjusted weights matched the frame counts, before adjusting for geographic misclassification. In general, these adjustments were the frame count for a group divided by the corresponding sum of the nonresponse-adjusted weights for the completed and ineligible interviews in the group. Table V.7 presents the cell definitions used to poststratify or ratio-adjust each type of survey weight.[5]

Because patient care classification (PCP or specialist) was a key variable, this characteristic was used in all the poststratification adjustments. We prepared the adjustments for each sample separately and then used these adjustments to prepare the adjustments for the augmented site sample weights. For the national estimates from the site sample, we poststratified the weights to the frame counts generally using the combination of PCP/specialist status and sample frame

[5]The national combined weight was not poststratified; the site and supplement components were separately poststratified and combined using lambda.

TABLE V.6

SUMMARY OF THE PROPENSITY SCORE ADJUSTMENTS,
BY SAMPLE TYPE AND PANEL

Sample Type and Panel	Maximum Locatability Adjustment	Maximum Response Adjustment	Percentage Change in Design Effect from Starting Weights	
			With Locating Adjustment	With Both Adjustments
Site Sample				
Reinterview	1.77	1.74	-0.3	0.9
Noninterviews	2.51	5.74[a]	3.7	18.5
New Cases	2.07	2.23	1.3	-4.2
Supplemental Sample				
Reinterview	1.63	1.78	0.5	1.3
Noninterviews	2.40	4.29[b]	4.1	15.2
New Cases	1.44	2.53	0.9	2.8

[a]12.77 prior to trimming.

[b]Not trimmed.

TABLE V.7

POSTSTRATIFICATION AND RATIO-TYPE ADJUSTMENTS
FOR NATIONAL AND SITE ESTIMATES WEIGHTS

Weight Name	Analytic Purpose of Weight	Poststratification and Ratio-Adjustment Methodology
PHYWGT2	National estimates from site sample	Four cells defined by PCP/specialist and Round One frame versus remainder of Round Two frame
PHYWGT4	National estimates from supplemental sample	Four cells defined based on combination of PCP/specialist status, region membership, and new to the frame versus original frame cases
WT_NAUG	National estimates from augmented site sample[a]	Applied adjustments for *PHYWGT2* weights to site sample cases and adjustments for *PHYWGT4* weights to supplemental sample cases
PHYWGT1	Site-level estimates from site sample	Weights aligned to frame on a 120-cell basis. The 120 cells defined based on combination of PCP/specialist status and site membership[b]
PHYWGT5	Site-level estimates from augmented site sample	Applied adjustments for *PHYWGT1* weights to site sample cases and adjustments for *PHYWGT4* weights to supplemental sample cases

[a]The augmented site sample includes the site sample cases plus any cases from the supplemental sample that had offices in the 60 sites.

[b]For consistency with the available frame counts, site membership was defined as the physicians' site membership at the time of sample selection, rather than as the site membership reported during the interview.

characteristic (physicians in both Round One and Round Two frame versus physicians only in the Round Two frame).

For the supplemental sample, we used regional frame counts for the four combinations (40 cells). We used these totals because they were known counts. For the site-level weights, the poststratification adjustment was limited to site membership (as of sample selection) and PCP/specialist status (120 cells).

For the augmented national- and site-level weights (*WT_NAUG* and *PHYWGT5*, respectively), we applied the previously computed site sample adjustments to the site sample cases (adjustments for *PHYWGT2* and *PHYWGT1*) and applied the supplemental sample adjustment to the supplemental sample cases.

To ensure that the weights for the completed interviews produced consistent totals, we also conducted a similar poststratification adjustment after the weights were trimmed (see Section D.4) and made adjustments to the site estimates (see Section D.3). For the national estimates, the augmented site sample *(WT_NAUG)* had the largest sample size and provided the most precise estimate of the eligible physician population weights for the site sample and the supplemental sample. We therefore adjusted *PHYWGT2* and *PHYWGT4* to match the sum of the *WT_NAUG* weights among the completed interviews for the augmented national sample on the four cells listed in Table V.7. For the weights for site-level estimates, we selected the augmented site sample weight *(PHYWGT5)* to estimate the population of eligible physicians, and we adjusted the weights for the site estimates using only the site sample *(PHYWGT1)* to match the sum of the weights for the augmented site sample *(PHYWGT5)* on the 120 cells defined in Table V.7.

3. Site Estimate Adjustments

Site estimates were desired on the basis of the physician's practice, but the site assignment at the time of sample selection may have been based on the physician's home address.

Physicians who were misclassified were called *movers,* and we had to account for this misclassification in the physician's weights and for site estimates of the eligible physician population.

The weights from the site sample *(PHYWGT1* and *PHYWGT5)* adjusted for nonresponse and ratio-adjusted to site totals, as of sample selection, provided the basis for estimating the number of physicians in each site. Physicians who indicated during the interview that their office was located in a site other than the one recorded at the time of selection were classified as *out-movers*. Out-movers residing in one of the other 60 sites were defined as *in-movers* to that site. Out-movers who were not in one of the 60 sites were not used in the site estimates. In preparing initial site estimate totals, we excluded the out-movers and included the in-movers. Hence, in comparison with the weighted count in each site based on the sample frame (frame estimate), the omission of the out-movers deflated the value for the estimate based on the Round Two survey (survey estimate), and the in-movers increased the value.

Because in-movers had a potentially substantial impact on the survey estimate, we reviewed the estimate and adjusted it. First, in-movers generally had larger weights relative to nonmovers (physicians who were correctly assigned to the site), because the weights for the in-movers also included a component to account for the joint selection of the two sites involved.[6] Second, if a physician from a low-intensity site (with a fairly large weight) was reclassified into a high-intensity site (with a lower weight), the weight for that in-mover might have been substantially larger than the weight for a nonmover. Although the resulting variability in the weights can be substantially increased, there were few such cases, so their impact on sampling variability was

[6]The in-movers usually have a larger weight relative to static site cases and out-movers because an in-mover must have had original (frame) and current (survey) site membership in two of the selected 60 sites. As such, we adjusted the probabilities of selection for these cases to account for the joint selection probabilities of the two sites involved (see Section IV.2).

manageable. We therefore decided to review the changes in the site estimates as a function of the in-movers, and to smooth the changes when the impacts appeared to be excessive and were based on few cases.

Because the weight from the augmented site sample *(PHYWGT5)* provided the best site estimates (the largest sample sizes), we reviewed the impact of in-movers on the survey site estimates using this weight. We then used the poststratification procedures described in Section D.2 to adjust the weight (for the site sample only cases *[PHYWGT1])* to match the final adjusted site estimates from the augmented site sample. In the review, we computed for each site and PCP/specialist status combination (120 cells) the percentage of the total weight accounted for by the in-movers, and the average percentage of the total weight accounted for by each individual in-mover.

We also computed a trimming criterion value (the "NAEP" value) associated with the weights. The NAEP weight trimming algorithm compared each weight with the square root of the average value of the squared weight (Potter 1990):

(5) $NAEP = SQRT\ [\ c * (\text{Sum of squared weights})/\ n\ ]$,

where c = 10 and n is the size of the subgroup. This trimming criterion suggested a maximum weight value for the cell. Based on this information, we adjusted the weights for 18 of the cells by truncating the in-mover weights in the cells to the NAEP value. We based this decision partly on the fact that each in-mover accounted for more than two percent of the total estimate in the 18 cells.[7] We truncated the weight for 65 physicians (ranging from 1 to 13 in a site and PCP/specialist combination).[8]

[7]Each in-mover accounted for an average of 10 percent of the total site estimate, which we believed was too large relative to the other values to provide a stable estimate. For example, in

This process introduced a small downward bias in population totals because the truncated values were not redistributed. The weights used for national-level estimates were therefore ratio-adjusted to estimates from the supplemental sample, which was not influenced by in-movers or related site-level adjustments.

4. Weight Trimming

After the site population estimates were developed, a second round of trimming was conducted to address the potential of extreme weights to inflate the sampling variance of survey estimates. The NAEP procedure was used with an assessment of the impact of the trimming on the sampling variance (that is, we estimated the design effect from unequal weighting and other factors). The following discussion summarizes the procedure for weight trimming to achieve the site population estimates.

The second round of weight trimming identified weights to be trimmed and distributed the trimmed excess among the weights that were not trimmed. The statistical measure of the impact of the trimming was based on the design effect attributable to the variation in the sampling weights. The design effect attributable to weighting is a measure of the potential loss in precision caused by the variation in the sampling weights relative to a sample of the same size with equal weights. Sampling weights were trimmed to reduce the design effect and to minimize the risk of introducing bias into the sample estimates (that is, trimming was limited to ensure a

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(continued)
site 55 (NE Illinois), the one in-mover among the 53 cases interviewed in the site in the augmented sample accounted for 33 percent of the initial total site estimate of 196 physicians.

[8] The final site estimates of numbers of physicians, by PCP status, are presented in Table V.8 of the full report (available to RUF users). This table also shows frame counts and the initial weight totals using the weight for site estimates from the augmented site sample.

minimal effect on survey estimates). A weight for site-level estimates was trimmed for 1.75 percent of the physicians.

For the weights designed to produce national estimates, similar weight trimming was conducted using the NAEP procedure and an assessment of the impact of the trimming on the design effect from unequal weights. Fewer than one percent of these weights were trimmed.

5. Panel Weights

Some physicians responded to both Round One and Round Two. The panel represents a valid probability sample of physicians because approximately 75 percent of the responding Round One physicians were randomly selected for Round Two, and a high percentage of those selected responded in the second round (see Chapter IV). The inferential population was based on the Round One population, so the Round One site and supplemental physician weights were adjusted to account for Round Two sampling rates and were then adjusted by the Round Two response rates among these physicians. These adjusted weights were then ratio-adjusted, using a raking procedure to the Round One totals for various factors.

To control the variation between the Round One survey responses, we conducted a weight raking or calibration procedure on the panel weights. This procedure adjusted the survey weights for the Round Two completes and for ineligible cases so that the weighted distribution for a specified set of Round One survey items would match the reported results from the Round One analysis.

We conducted a least-squares raking procedure (Deville and Sarndal 1992 and 1993) for the site sample and a weighted least-squares procedure for the supplemental sample. Both procedures differ from the traditional iterative proportional fitting procedure of Deming and Stephan (1940) in that they use an iterative least squares loss function to identify a raked set of survey weights that meet the desired constraints while minimizing the squared differences

between the pre- and post-raked weights. The raking procedure program also enabled us to control the minimum or maximum size of the weight produced by the raking procedure. Hence, it offered greater control over the variation added to the weights from the calibration process. The weighted procedure differed from the standard least-squares approach by minimizing the relative squared difference, rather than by minimizing the actual difference between the pre-raked weights and the new weights. As such, the squared differences were minimized relative to the starting weights (thus giving this process its name). The procedure ensures that the process does not make a larger relative change in a small weight value than in a large weight in meeting the constraints. It also reduces the variability in the survey weights and the size of the relative changes resulting from calibration. Despite these advantages, the weighted method requires substantial computer resources, so we did not use it for the site sample. In both methods, the constraints are specified in terms of the desired weighted counts for a set of categories.

Table V.9 presents the survey items used in the raking procedure for the site and supplemental samples. As desired, the initial raking procedures increased the coefficient of variation (CV) in the site weights only slightly. For the supplemental sample, the raking adjustments had a greater increase in the design effect from unequal weighting.

6. National Analysis Based on Combined Site and Supplemental Samples

Point and variance estimates based on the combination of the two samples in the CTS (the national multistage sample using 60 sites and the national supplemental sample) can be constructed using estimates computed from the site and supplemental samples separately and then combining the estimates to form national estimates. This strategy provides the most accurate point estimates in that it minimizes the estimates of the sampling variance. However, it also creates discrepancies in the analyses (for example, the sum of percentages does not always

add to 100 percent) and involves additional processing time. Furthermore, this strategy is difficult to implement for regression-type analyses.

TABLE V.9

ROUND ONE QUESTIONNAIRE ITEMS USED IN RAKING PROCEDURES

Site Sample		Supplemental Sample	
Item	Categories	Item	Categories
IMGUSPR: Foreign Medical School Graduate	2 (Yes/No)	IMGUSPR: Foreign Medical School Graduate	2 (Yes/No)
GENDER	2 (Male, Female)	GENDER	2 (Male, Female)
DOCTYP: Doctor Type	2 (MD, DO)	DOCTYP: Doctor Type	2 (MD, DO)
SPECX: Specialty and Subspecialty	7 Categories	SPECX: Specialty and Subspecialty	7 Categories
CARSAT: Overall Career Satisfaction	5-Point Scale Rating/5 Categories	CARSAT: Overall Career Satisfaction	5-Point Scale Rating/4 Categories
HRFREEC: Hours of Charity Care	4 Ranges		
OWNPR: Ownership Status	3 Categories (Full/Part/Not an Owner)		
PRACTICE: Practice Type	10 Categories 1=Solo 2=Partnership 3=Small Group 4=Medium Group 5=Large Group 6=HMO Group 7=Medical School 8=Hospital 9=Local Government + Unknown 10=Freestanding Clinic	PRACTICE: Practice Type	10 Categories 1=Solo 2=Partnership 3=Small Group 4=Medium Group 5=Large Group 6=HMO Group 7=Medical School 8=Hospital 9=Local Government + Unknown 10=Freestanding Clinic
EFPROFL: Effect of Practice Profile Result	6 Categories	EFPROFL: Effect of Practice Profile Result	5 Categories
CLNFREE: Freedom for Clinical Decisions	5-Point Scale Rating/5 Categories	CLNFREE: Freedom for Clinical Decisions	5-Point Scale Rating/4 Categories
HIGHCAR: Possibility of High-Quality Care	5-Point Scale Rating/5 Categories	HIGHCAR: Possibility of High-Quality Care	5-Point Scale Rating/4 Categories
OBREFS: Referrals to Quality Specialists	6 Categories		
OBUTPT: High-Quality Outpatient Mental Health Care	6 Categories		
SALWAGE: Salary Compensation	3 Categories 1=Fixed Salary, Not Eligible for Bonus 2=Fixed Salary, Eligible for Bonus 3=Other	SALWAGE: Salary Compensation	3 Categories 1=Fixed Salary, Not Eligible for Bonus 2=Fixed Salary, Eligible for Bonus 3=Other
PMCAREC: % Payment Medicare	5 Ranges	PMCAREC: % Payment Medicare	5 Ranges
PMCAIDC: % Payment Medicaid	5 Ranges	PMCAIDC: % Payment Medicaid	5 Ranges
PCAPREVC: % Revenue Pre-Pay Capitation	4 Categories	PCAPREVC: % Revenue Pre-Pay Capitation	4 Categories
NMCCONC: # Managed Care Clinics	5 Categories		
PMCC: % Revenue Managed Care	5 Categories		
SSAT: Patient Satisfaction Affects Compensation	3 Categories		
PCTINCNC: Income Category Includes Bonus	3 Categories		
YRPRACC: Years in Practice	5 Categories		
INCOMEC: Physician's Own Net Income from Medical Practice(s)	6 Categories		
Site Membership	13 Categories (12 High Intensity + All Others)	AMA Region Strata	10 Categories in Combination with PCP Status (20 Total)
PCP Status	2 Categories (PCP, specialist)		
TOTAL CONSTRAINTS[a]	98 Unique Category Targets		64 Unique Category Targets

[a]Including one continuous variable constraint equal to the total number of managed care contracts, and the total number of physicians in the study as estimated from the Round One sample.

Given these difficulties, we used a strategy of combining the two sample components by adjusting the weight for each sample so that the sum of the weights across the two samples would equal the population total. (See Appendix D for details and equations.) This effort was designed to identify one or more values of a scaling factor (called lambda) that could be used to combine the weights from each sample component and achieve the best estimates with nearly minimal sampling variances for these estimates. It also was designed to reduce the amount of computer processing. Conceptually, any value of lambda would result in unbiased estimates, but the best point estimate would be associated with the value of lambda that achieved the minimum variance. The effort therefore was directed at identifying a value of lambda that achieved the smallest variance estimates across different subpopulations and analysis variables.

The estimation of the scaling factor used variance estimates computed for each component survey for multiple subpopulations and for both continuous and categorical analysis variables (11 populations and 26 variables). Values of lambda were computed directly from the variance estimates. The lambda values were evaluated first by assessing the distribution of the lambdas and determining factors explaining the variation in the lambda values and then by assessing the effect of different lambda values on the point estimate and the variance estimates for the subpopulations and analysis variables.

With these procedures, a single value of lambda of 0.8742 was identified for the physician survey. This value achieved the desired level of sampling variances and simplified the processing of all estimates.

For the physician survey, the lambda value was estimated from the average of the medians for 10 subpopulations of physicians. The evaluation of the effect of the lambda value indicated that the increase in the sampling variance would be between one and three percent for most subpopulations. For the larger populations, the sampling variances would increase by four to

five percent. This increase in the sampling variance would be for populations that generally have smaller sampling variances.

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APPENDIX A

SURVEY INSTRUMENT AND ADVANCE MATERIALS

THE
ROBERT WOOD
JOHNSON
FOUNDATION

July 1998

Dear :

Roughly two years ago, you took time to participate in the Community Tracking Study, a telephone survey conducted by The Gallup Organization on behalf of The Robert Wood Johnson Foundation. I want to personally thank you for your time and help. Your willingness to respond to the interview helps to ensure that our study about the impact of changes in the health care system reflects the views of physicians throughout the country.

In order to continue to track the important changes taking place in health care and their effects on physicians, we are now beginning our second round of surveys. Once again, your participation is extremely important to the success of our efforts and we hope that we can count on your help. The following organizations endorse the survey and urge members to participate:

American Medical Association
American Osteopathic Association
American Academy of Family Physicians
American Academy of Pediatrics
American College of Physicians--
American Society of Internal Medicine
American Psychiatric Association
American College of Surgeons

The interview, which takes about 20 minutes, will be conducted by an experienced interviewer from Gallup at a time that's convenient for you. If you would like to contact Gallup directly for an appointment, please call Donna Stetler at 1-800-274-5447. Although we cannot compensate you for the time spent responding to the survey, we offer an honorarium of $25 as a token of our appreciation for your help.

Enclosed is more information about the Community Tracking Study and The Center for Studying Health System Change, the organization responsible for analyzing results. If you have any questions about the study, please call Dr. Alice Kroliczak, Project Director at Gallup at 1-800-288-9439 or Maureen Michael at the Foundation at 1-800-719-9419. Please also feel free to review results of this research at www.hschange.com, or to get results mailed, please fax your name and address to 202-484-9258.

Thank you in advance for your time and cooperation. I know you are extremely busy and appreciate your willingness to help inform the public debate on health care.

Sincerely,

Steven A. Schroeder, M.D.

Office of the President

Route 1 and College Road East Post Office Box 2316 Princeton, New Jersey 08543-2316 (609) 452-8701

THE
ROBERT WOOD
JOHNSON
FOUNDATION

July 1998

Dear :

The Robert Wood Johnson Foundation is sponsoring the Community Tracking Study, a major study to track important changes taking place in health care and their effects on physicians. We would greatly appreciate your participation in a brief telephone interview to ensure that this study reflects the views of physicians throughout the country.

The interview, which takes about 20 minutes, will be conducted by an experienced interviewer from the Gallup Organization at a time that is convenient for you. If you would like to contact Gallup directly for an appointment, please call Donna Stetler at 1-800-274-5447. Although we cannot compensate you for the time spent responding to the survey, we offer an honorarium of $25 as a token of our appreciation for your help.

Your participation is extremely important to the success of the study and we hope we can count on your help. The following organizations endorse the survey and urge members to participate:

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American Osteopathic Association	American Society of Internal Medicine
American Academy of Family Physicians	American Psychiatric Association
American Academy of Pediatrics	American College of Surgeons

Enclosed is more information about the study and the Center for Studying Health System Change, the organization analyzing the results for us. If you have any questions, please call Dr. Alice Kroliczak, Project Director at Gallup at 1-800-288-9439 or Maureen Michael at the Foundation at 1-800-719-9419. Also, please feel free to review the results of our research at www.hschange.com, or to get mailed results, please fax your name and address to 202-484-9258.

Thank you in advance for your time and cooperation. I know you are extremely busy and appreciate your willingness to help inform the public debate on health care.

Sincerely,

Steven A. Schroeder, M.D.

Office of the President

Route 1 and College Road East Post Office Box 2316 Princeton, New Jersey 08543-2316 (609) 452-8701

December 8, 1999

Ms. Chrissa Baroga
Doctors Without Borders USA, Inc.
6 East 39th Street, 8th Floor
New York, NY 10016

Dear Ms. Baroga:

The Robert Wood Johnson Foundation is pleased to submit a check in the amount of $250 in support of your organization's international humanitarian efforts. The donation is on behalf of 10 doctors whose names and addresses are listed on the enclosed sheet. These doctors participated in a survey sponsored by Robert Wood Johnson Foundation and elected to have their honorariums go to Doctors Without Borders.

On behalf of all of these doctors, I thank you for the important work Doctors Without Borders is doing.

Sincerely,

Steven A. Schroeder, M.D.

/ml

November 4, 1999

William B. Walsh, President
Project HOPE
International Headquarters
Health Sciences Education Center
Carter Hall
Millwood, VA 22646

Dear Mr. Walsh:

The Robert Wood Johnson Foundation is pleased to submit a check in the amount of $200 in support of your organization's international humanitarian efforts. The donation is on behalf of 8 doctors whose names and addresses are listed on the enclosed sheet. These doctors participated in a survey sponsored by Robert Wood Johnson Foundation and elected to have their honorariums go to Project HOPE.

On behalf of all of these doctors, I thank you for the important work Project HOPE is doing.

Sincerely,

Steven A. Schroeder, M.D.

/ml

CENTER for STUDYING HEALTH SYSTEM CHANGE

Center for Studying Health System Change

An Overview

Our Mission: To Inform Public and Private Decision Makers About How the Health System is Changing

The Center for Studying Health System Change (HSC), a non-partisan think tank, was founded to inform health care decision makers about changes in the health care system on both the local and national levels, and the effect of such changes on people. HSC seeks to provide incisive, timely analyses that lead to sound policy and management decisions, with the ultimate goal of improving the health of the American public. Health System Change is funded exclusively by the Robert Wood Johnson Foundation, the world's largest health-related philanthropy.

HSC's Approach to Documenting and Interpreting Change

Starting in 1996, HSC began conducting large scale surveys of physicians (12,000), consumers (60,000) and employers (23,000) to understand how health care financing and delivery is changing at both the community and national levels. Based on these surveys, which are fielded every two to four years, as well as intensive case studies in 12 communities and secondary data, HSC's researchers are answering two major, pressing questions that are critical to health care decision makers:

- *How is the organization of the health system changing?* HSC is documenting how health plans, hospitals, physicians, safety net providers, public health agencies and other providers are affected by managed care and other forces.

- *Are consumers benefiting from these changes?* HSC researchers are analyzing how access to care, costs, satisfaction, perceived quality, insurance coverage, and use of services are affected by managed care and other changes in the health system.

CENTER FOR STUDYING HEALTH SYSTEM CHANGE
600 MARYLAND AVENUE SW, SUITE 550, WASHINGTON, DC 20024-2512 TEL: 202-484-5261 FAX: 202-484-9258 WEB: WWW.HSCHANGE.COM
THE CENTER, SUPPORTED BY THE ROBERT WOOD JOHNSON FOUNDATION AS PART OF ITS HEALTH TRACKING INITIATIVE, IS AFFILIATED WITH MATHEMATICA POLICY RESEARCH, INC

The first round of surveys and site visits, conducted in 1996-1997, provided baseline data – the starting point against which changes documented in subsequent surveys and site visits will be tracked and compared. The second round of data collection began in June 1998.

More Information about Health System Change

Health System Change, based in Washington, D.C., was founded by Paul B. Ginsburg, Ph.D, a nationally renowned economist, who continues to serve as HSC's president. Before starting HSC, Ginsburg served as executive director of the Physician Payment Review Commission (now known as MedPAC, Medicare Payment Advisory Commission). HSC's staff come from a variety of academic disciplines, and most have either industry experience or policy expertise, as well as proven research skills.

How to Learn About Our Results

HSC is a national resource for information on health system change for policy makers, industry executives, employers, association leaders, the press and the public at large -- virtually anyone who wants to understand how managed care and other forces are affecting the American health system, both nationally and at the local level. Look to HSC to provide information through:

- HSC publications which include *Issue Briefs, Data Bulletins* and *Technical Publications;*
- HSC national conferences, held on a quarterly basis, focusing on critical issues related to health system change;
- HSC's web site (www.hschange.com) which includes abstracts of peer reviewed journal articles by HSC researchers, as well as full text of HSC publications; and
- HSC news releases, media interviews, legislative testimony and speeches.

To get on HSC's mailing list to receive publications, conference announcements, and other HSC information, please visit our web site (**www.hschange.com**).

The New York Times

WEDNESDAY, MARCH 24, 1999 A17

Managed Care Squeezes Research Funds and Charity Health Aid, Studies Find

By SHERYL GAY STOLBERG

WASHINGTON, March 23 — In the wake of the managed care revolution, health policy analysts have long suspected that financial pressures would threaten care for the poor and prevent academic health centers from financing their own biomedical research. Now, two new studies provide the first evidence that those suspicions are correct.

The studies, paid for by nonprofit health care research organizations, found that in regions of the country where managed care competition is most intense, doctors are less likely to provide free care to the indigent, and academic institutions are significantly less likely to use their own money for scientific research.

The findings, which appear in the current issue of The Journal of the American Medical Association, are based on surveys of more than 10,000 physicians and more than 2,000 faculty members of medical schools. Taken together, the studies suggest that as managed care takes hold, doctors and academic researchers are losing their ability to provide for "the common good," said Dr. David Blumenthal, director of the Institute for Health Policy at Massachusetts General Hospital, who is an author of the medical school study.

Health care economists, however, said society, not managed care, was to blame. Now that "cross-subsidies" — the practice of shifting profits from patient care to pay for unreimbursed work — have been squeezed out of the system, they said, Americans must confront the questions of how to finance research and how to care for the growing number of uninsured, now estimated at 43 million.

"Any economist would have predicted this," said Uwe Reinhardt, professor of economics at Princeton University. "I see in the medical establishment all this hand-wringing of saying the managed care industry is destroying all the good things in American health care. That's bull shine. Do we want this research? Yes? Then let's pay for it. Do we want to provide the uninsured care? Yes? Then let's pay for it."

In their analysis of charity care, researchers at the Center for Studying Health System Change, a nonprofit organization in Washington, surveyed 10,881 physicians in 60 randomly selected communities in 1996 and 1997, asking them about the amount of free care they provided in the month prior to being interviewed.

> ***A sign that 'the holes in the safety net are getting bigger.'***

The study, paid for by the nonprofit Robert Wood Johnson Foundation, found that doctors who depend on managed care plans for 85 percent or more of their income spent, on average, 5.2 hours a month caring for indigent patients, while doctors who derived no income from managed care spent nearly twice that amount of time, 10 hours a month. Even so, more than three-fourths of the doctors provided some charity care.

The study also found that a climate of intense managed care competition had an effect on the behavior of doctors, even when they did not accept managed care plans themselves. In communities with the most competition, the researchers found, doctors on the whole provided about 25 percent less charity care than their counterparts elsewhere. In addition, doctors who did not own their own practices were also less likely to provide charity care.

The study did not compare the amount of indigent care today to what has been provided in the past. Nonetheless, Peter J. Cunningham, the lead author of the research, said: "The evidence suggests that the holes in the safety net are getting bigger. In areas where managed care is more highly developed, it is more difficult for uninsured persons to get care."

The analysis of academic research spending was paid for by the Commonwealth Fund, a nonprofit organization in New York that in 1995 created a panel to examine how the marketplace affects academic health centers. In surveying 2,336 faculty members at 117 of the nation's medical schools, Dr. Blumenthal and his colleagues tried to assess the amount of "unsponsored research" — studies financed by faculty members themselves or by their institutions, as opposed to the pharmaceutical industry or the Federal Government.

The study found that nearly three-fourths of those surveyed conducted some unsponsored research, and about 4.4 percent of the total cost of research was paid for by institutions.

But the amount of institutional financing declined, the authors found, in communities where managed care competition was most pronounced. In the least competitive markets, including Chicago and Atlanta, financing for unsponsored research was more than twice as high — 6.1 percent of the total — as it was in more competitive markets like San Diego or Minneapolis-St. Paul.

Although the budget for the National Institutes of Health is scheduled to increase by 15 percent this year, Dr. Blumenthal said that would not solve the problem. To make use of additional grant money, many academic health centers would have to build more laboratory space. But in an era when revenue from patient care is declining, Dr. Blumenthal said, the centers might not want to invest money in building new labs.

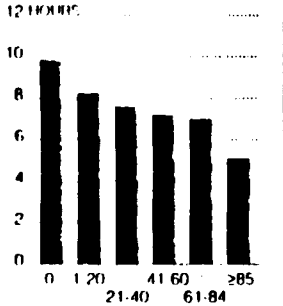
If money for unsponsored research shrinks, Dr. Blumenthal warned, the training of young scientists will be compromised and creative work that is too nascent to warrant industry or Federal support will be lost. Indeed, the study found that unsponsored research was generally productive, almost four-fifths of it led to publications in peer-reviewed journals, and about 12 percent resulted in patent applications.

"It's a very uncertain time," Dr. Blumenthal said. "You won't see holes in the ground where academic medical centers used to be. You will see a great erosion of a capability which has been built up over many decades."

BY THE NUMBERS

Giving Less Time

Estimated time spent by doctors providing charity care in one month



Source: Journal of the American Medical Association

The New York Times

THE WALL STREET JOURNAL

EDNESDAY, MARCH 24, 1999

Rise in Health-Care Competition Saps Medical-Research Funds, Charity Care

By RON WINSLOW
Staff Reporter of THE WALL STREET JOURNAL

BOSTON—Two new studies suggest that the rise of competition in health-care markets puts a squeeze on charity care provided by doctors and on funds that academic medical centers earmark to support medical research.

The reports, published in today's Journal of the American Medical Association, are among the first to provide significant documentation for what some economists and researchers have long suspected are important consequences of the rise of managed care in markets around the U.S.

"This is substantial evidence that as you move toward a market that is more competitive, we see some significant unraveling of the longstanding system of cross-subsidies" that have enabled doctors and medical centers to devote time and revenue to providing care for the indigent and for missions of teaching and research, said Paul Ginsburg, president of the Center for Studying Health System Change in Washington, which conducted the study on physicians and charity care.

For years, doctors and research and teaching hospitals have essentially built into their rates what have amounted to hidden subsidies for these so-called public-good activities. But as employers have looked increasingly to managed-care organizations to reduce or hold the line on health-care costs, these subsidies have gradually been squeezed out of reimbursement for clinical services.

"As we go forward with this approach in health care, we have to be attentive to the side effects of market forces," said David Blumenthal, a researcher at Harvard Medical School and chief of health-policy research at Massachusetts General Hospital.

Dr. Blumenthal is co-author of the study that linked high penetration of managed care in a health-care market with reduced medical-center support for research. "This activity shouldn't be an orphan caught between advocates for managed care and advocates for academic medical centers," he said. "No substitute currently exists to support activities that are being reduced in the current market."

In the study about physicians, researchers led by Peter J. Cunningham of the Center for Studying Health System Change found that physicians who derive at least 85% of their incomes from managed health-care plans were significantly less likely to provide charity care or spent fewer hours providing the service than doctors who had little involvement with managed care. The findings are based on a survey of a random sample of 10,881 doctors in 60 U.S. markets.

The other report found that academic medical centers in less competitive markets provided 6.1% of total research funding awarded to its faculty, compared with 2.5% in highly competitive markets. Joel S. Weissman, who teaches health-care policy at Harvard Medical School, was the lead author.

In an editorial accompanying the articles, Robert H. Fletcher, a professor at Harvard Medical School, cautioned against blaming managed care for the squeeze on these activities, which aren't "the direct responsibility of any one health-care provider or insurance organization." Rather, indigent care and research and teaching functions should find a more reliable source of support, he suggested.

"If the U.S. is to rely on market forces to deal with cost and quality [of health care], some other mechanisms must be put in place to make up for what has been left unattended."

Issue Brief
Findings from HSC

MANAGED CARE COST PRESSURES THREATEN ACCESS FOR THE UNINSURED

People without health insurance have historically received medical care from the safety net, which among many kinds of providers includes physicians who voluntarily provide uncompensated care. With 43 million Americans uninsured today—a group that has grown by 1 million a year for the last decade—the health care safety net is increasingly critical as a way for the medically indigent to get services. However, there are signs that the safety net is weakening because of certain changes in the health care system. This Issue Brief discusses Center for Studying Health System Change (HSC) findings from its Community Tracking Study indicating that higher managed care penetration is associated with both physicians providing less charity care and less access to care for the uninsured.

Access Suffers in High Managed Care Markets

Changes in the health care system are putting a strain on safety net providers, including free-care clinics, public and teaching hospitals, some not-for-profit hospitals and others that voluntarily provide uncompensated care. Specifically, there is growing concern among policy makers and advocates for the poor that the financial and competitive pressures associated with the rise of managed care—including Medicaid managed care—are limiting providers' ability to offer uncompensated care to the needy.

Few studies examine how managed care affects physicians' provision of charity care and access to care of uninsured persons. An analysis of HSC's Physician and Household Surveys provides new insights into these issues and offers the following four key findings:

- Physicians who derive most of their practice revenue from managed care provide 40 percent less charity care than those who receive relatively little revenue from managed care plans.
- Physicians who practice in areas with high managed care penetration provide less charity care than physicians in other areas, regardless of their own level of involvement with managed care.
- Low-income uninsured persons report lower access to care in areas with high Medicaid managed care penetration.
- Differences in access between insured and uninsured persons—the so-called access gap—are even greater in areas with higher Medicaid managed care penetration.

ata Sources

is Issue Brief is based on data
m the Community Tracking
dy Household and Physician
rveys. The Household Survey
a nationally representative
ephone survey of the civilian,
ninstitutionalized population
well as of 60 randomly selected
mmunities. Data were supple-
nted by in-person interviews
households without telephones
ensure proper representation.
e survey contains observations
nearly 33,000 families and
,000 individuals.

The Physician Survey is a
tionally representative tele-
one survey of non-federal,
tient care physicians (excluding
tain specialties—e.g., radiolo-
anesthesiology, pathology)
d is conducted in the same 60
mmunities included in the
usehold Survey. Primary care
vsicians were oversampled. The
vey contains observations on
r 12,000 physicians.

Interviews for both surveys
k place between July 1996
d August 1997. Both surveys
ieved a response of 65 percent.
ormation about the specific
nples used in the analyses can
found in the related journal
icles cited on page 6 of this
ue Brief.

Pressures on the Safety Net

One way providers have long subsidized the care they provide to the medically indigent is by shifting the costs of this care onto other public and private payers. However, with managed care increasing its share in both public and private insurance, health plans have pushed down provider payment rates, making cross-subsidization of indigent care more difficult. In addition, many traditional safety net providers—such as public hospitals and community health centers—face increasing competition for Medicaid managed care patients, a source of revenue that is important for their very survival and their ability to subsidize care for the uninsured.

Other pressures on the safety net, taken collectively, could further decrease access to care for uninsured persons:

- Many safety net providers are facing increased demands for uncompensated care because of the growing numbers of uninsured Americans.
- Direct public subsidies for indigent care have been reduced in many areas, due to cuts in state uncompensated care pools and reductions in Medicaid disproportionate share hospital payments resulting from the Balanced Budget Agreement of 1997.

Physicians as Providers of Charity Care

Physicians are a significant part of the safety net, and HSC's survey found that 77 percent of doctors provided at least some charity care, averaging 10.3 hours a month. The survey defined charity care as charging either no fee or a reduced one because of the financial need of the patient; care for patients expected to pay but who did not was not counted.

Researchers then examined the relationship between the level of charity care physicians provided against the amount of revenue their practice derived from all types of managed care plans and the overall level of managed care penetration in the community where they practice. Managed care penetration in the community is defined here as the percent of physician revenue derived from managed care, averaged across all physicians in the community. Researchers also controlled for specialty as well as other physician practice and market characteristics that might be related to the amount of charity care that physicians provide.

Researchers found that the number of hours spent on charity care varied significantly based on physicians' involvement with managed care. More managed care

Figure 1
Hours Physicians Spent Providing Charity Care during the Previous Month

Percent of Physician's Practice Revenue Derived from Managed Care	Managed Care Penetration at the Community Level		
	Low	Average	High
0	*11.2 hours*	*10.0 hours*	*8.5 hours*
1-20	*9.4*	*8.4*	*7.2*
21-40	*8.6*	*7.7*	*6.6*
41-60	*8.3*	*7.4*	*6.3*
61-84	*8.5*	*7.5*	*6.5*
85+	*5.8*	*5.2*	*4.4*

Note: Estimates are computed from multivariate analyses that include other characteristics of physicians, physician practice and the market.

HSC Community Tracking Study, Physician Survey, 1996-1997

meant fewer hours treating the indigent for free or a reduced fee.

Specifically:

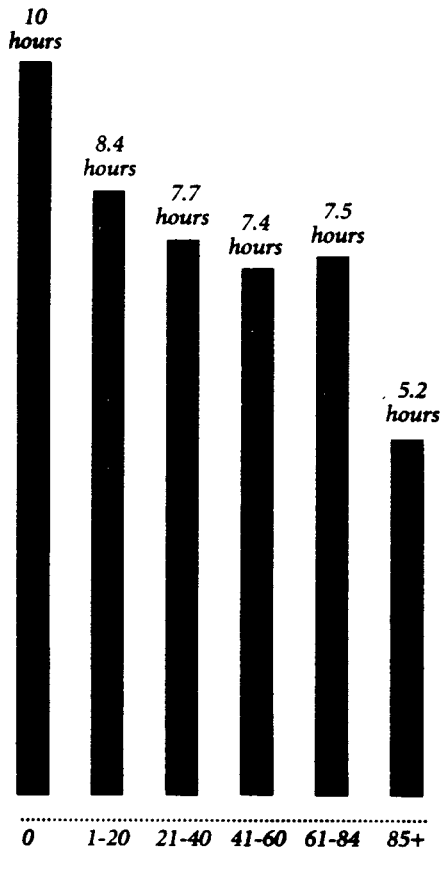
- Physicians who derive 85 percent or more of their total practice income from managed care provided about half as much charity care as those with no managed care business, and about 40 percent less than those who derive 1-20 percent of revenue from managed care (see Figures 1 and 2).

- The degree of managed care in the community is also an important factor. Researchers found that physicians who practiced in areas of highest penetration provided about 25 percent less charity care than those in areas of lowest managed care penetration.

- Practice arrangements, size and ownership made a difference in how much charity care physicians provided. Physicians in medium to large groups were one-third less likely to offer charity care than those in solo or two-person practices, while physicians in staff- and group-model health maintenance organizations (HMOs) were only one-third as likely to provide charity care as those in solo or two-person practices. Physicians in larger practices provided less charity care than those in smaller practices, and physicians who are full or part owners of their practices were almost twice as likely to provide charity care than those who did not own any part of their practice.

Figure 2

Average Hours Physicians Spent Providing Charity Care during the Previous Month



Note: Estimates are computed from multivariate analyses that include other characteristics of physicians, physician practice and the market.

HSC Community Tracking Study, Physician Survey, 1996-1997

This may be due to larger practices setting up unintentional or intentional barriers to their physicians giving charity care because of competing organizational goals or other reasons. In addition, physicians in large groups and those who do not have an ownership stake in their practices may have less control over their ability to see needy low-income patients without insurance. Because charity care provision is more strongly associated with small or solo-practice physicians, the growing number of physicians affiliated with larger and more formal groups who may also not have an ownership stake in their practice raises the concern about further erosion of charity care.

HSC's findings also showed that physicians tend to provide more charity care in areas with relatively fewer public hospitals or hospital emergency rooms. This suggests that physicians pick up some of the excess demand for indigent care where there are fewer community-based resources. On the other hand, physicians tend to provide more charity care in areas with relatively large numbers of teaching hospitals. It could be that teaching hospitals and their staff play an important role by encouraging a community-wide commitment to charity care.

Impact on Access for the Uninsured

HSC researchers examined how low-income uninsured people's access to health care services relates to the level of managed care penetration in the community as well as Medicaid managed care penetration in the state. This latter measure is important given how dependent many safety net providers are on Medicaid revenue. The Medicaid managed care penetration measure reflects the percentage of Medicaid enrollees in capitated managed care plans in the state; community-level data were not available.

To determine whether a low-income person had access to care, researchers used three standard measures of access: (1) whether a person had an ambulatory care visit in the past year; (2) whether that person had a usual source of care; and (3) whether that individual was able to obtain needed medical services during the previous year. The study controlled for individual demographic characteristics, including health and socioeconomic status, and community and health system characteristics.

In general, the low-income uninsured had more difficulty getting access to care in communities with high Medicaid managed care penetration (see Figures 3A and B):

- Only about half of all low-income uninsured persons had an ambulatory care visit in the past year in high Medicaid managed care states, while more than 60 percent of the uninsured had such visits in low Medicaid managed care areas.
- Uninsured persons were about 75 percent more likely to lack a usual source of care in states with high Medicaid managed care penetration than uninsured persons in low Medicaid managed care states.

The gap between insured and uninsured persons as it relates to access to care is larger in areas with high Medicaid managed care (see Figure 4). Specifically, uninsured persons are about 2.5 times more likely than insured persons to lack a usual source of care in states with low Medicaid managed care penetration, but more than four times more likely in high Medicaid managed care states. This gap is larger, in part, because for low-income people with health insurance, there are virtually no differences on these two measures by the level of Medicaid managed care in the community.

On another measure, unmet medical needs, low-income persons as a group—the insured and uninsured—were more likely to report difficulty in states with high Medicaid managed care penetration. The difference for the uninsured population on this measure was not statistically significant, perhaps due to a smaller sample size.

When researchers examined the relationship between overall managed care penetration and access for the uninsured, little independent effect was found. This suggests that Medicaid managed care is the dominant factor in explaining lower access to care for the uninsured in high managed care markets.

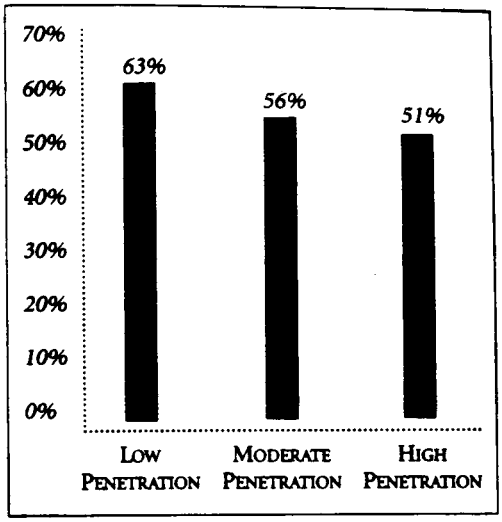
In addition to Medicaid managed care penetration, the rate of uninsurance in the community proved to be an important factor associated with access. In communities with the highest levels of uninsurance, the uninsured had the most difficulty getting access to care, perhaps due

Figure 3

Access to Care for Uninsured Low-Income Persons by Level of Medicaid Managed Care in the Area

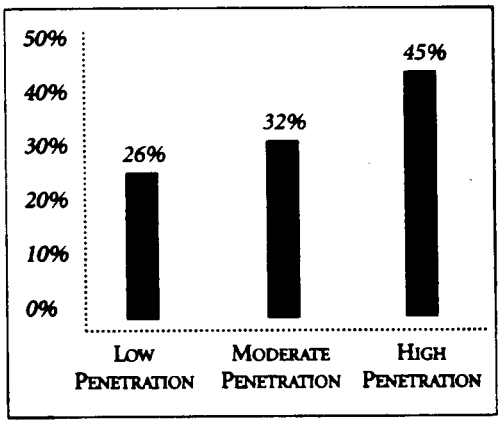
3A

Percent with an Ambulatory Care Visit



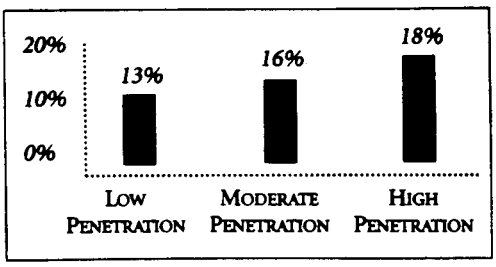
3B

Percent with No Usual Source of Care



3C

Percent with Unmet Medical Needs



HSC Community Tracking Study, Household Survey, 1996-1997

The hours spent on charity care varied significantly based on physicians' involvement with managed care. More managed care meant fewer hours treating the indigent.

Figure 4
Access to Care for Low-Income Persons by Level of Medicaid Managed Care in the Area

Medicaid Managed Care Penetration	Percent with an Ambulatory Care Visit		Percent with No Usual Source of Care		Percent with Unmet Medical Needs	
	Uninsured	Insured	Uninsured	Insured	Uninsured	Insured
Less than 10%	*63%*	*82%*	*26%*	*11%*	*13%*	*6%*
10-39%	*56**	*83*	*32**	*9**	*16*	*7*
40% and higher	*51**	*83*	*45**	*10*	*18*	*8**

* Within insurance groups, difference with estimate for sites with lowest managed care penetration/uninsurance rate is statistically significant at the $p<0.05$ level.

Note: Estimates control for sociodemographic and health characteristics of individuals, health system and other market characteristics.

HSC Community Tracking Study, Household Survey, 1996-1997

The low-income uninsured had more difficulty getting access to care in communities with high Medicaid managed care penetration.

to higher community demand for indigent care. Specifically, in these communities, uninsured persons were less likely to have had an ambulatory care visit in the past year, more likely to lack a usual source of care and more likely to have unmet medical needs than uninsured persons in areas with low rates of uninsurance (see Figure 5).

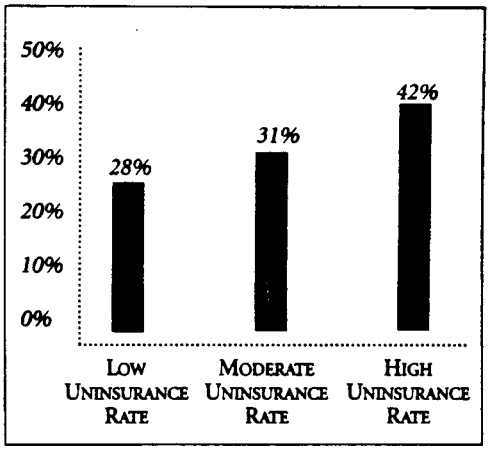
Implications for the Uninsured

HSC's findings related to managed care raise concerns about the continued viability of the safety net, where most uninsured people receive care in the United States. While many people credit managed care with containing runaway health care costs, one apparent consequence of managed care's drive toward greater cost efficiency is a loss of more generous payments that providers use to cross-subsidize care for the medically indigent. This appears to be an unintended consequence of managed care's more aggressive cost control objectives. Any type of cost control that limits provider revenue could potentially produce the same result.

There are two caveats: HSC researchers did not directly measure the causal mechanisms—financial and competitive pressures—attributed to these results. And because the analysis was based on comparisons across communities at one point in time, rather than longitudinally, HSC cannot conclude with certainty that an increase in managed care over time is eroding charity care and access to care of the uninsured. However, HSC researchers have previously found that access to care

Figure 5

Percent of Uninsured Low-Income Persons with No Usual Source of Care by the Uninsurance Rate in the Community



Note: Estimates control for sociodemographic and health characteristics of individuals, health system and other market characteristics.

HSC Community Tracking Study, Household Survey, 1996-1997

for the uninsured is eroding, specifically the proportion of uninsured individuals who do not have a usual source of care.

Some health policy analysts believe that cost savings from managed care will actually reduce the number of uninsured persons, either by making private insurance more affordable to employers and families or by states explicitly using cost savings from their Medicaid managed care programs to fund increased eligibility for current programs or to support additional ones for the poor. While HSC researchers did not test this hypothesis directly, the descriptive findings question such assertions. Specifically, HSC's results show that the uninsurance rate (and therefore the demand for indigent care) is at least as high in areas with high managed care penetration as it is in areas with low managed care penetration, suggesting that lower access for uninsured persons is not offset by fewer numbers of uninsured.

Policy Implications

The U.S. health system has long provided care for the indigent, in part through private cross-subsidization that is unique in the industrialized world. Historically, hospitals and physicians have charged insured patients rates high enough to leave them with the ability to provide free or less expensive care to low-income patients without insurance. When these rates are squeezed, whether through Medicare and Medicaid reimbursement policies or competitive purchasing by managed care plans, these important cross-subsidies are threatened.

Policies that respond to these threats and enable providers to continue serving the uninsured fall into three general categories. First, steps can be taken to expand insurance coverage, thus reducing the need for cross-subsidization. These can be incremental expansions, such as the federal Children's Health Insurance Program (CHIP), or universal expansion policies. Second, steps can be taken to lessen the degree of downward pressure on payment rates. Finally, steps can be taken to provide explicit subsidies to those providers that provide uncompensated care. This can be done either with public funds or through a pool of funds obtained from all payers.

Policies in each of these categories have been pursued to some extent in the past. However, given the well-documented problems of access to care for the uninsured, it is possible that more fundamental changes need to be made in providing care for the medically indigent.

JOURNAL ARTICLES

This Issue Brief is adapted from "Managed Care and Physicians' Provision of Charity Care," by Peter J. Cunningham, Joy M. Grossman, Robert F. St. Peter and Cara S. Lesser, which appeared in the *Journal of the American Medical Association*, Vol. 281, No. 12 (March 24-31, 1999) and "Pressures on the Safety Net: Differences in Access to Care for Uninsured Persons by the Level of Managed Care Penetration and Uninsurance Rate in a Community," by Peter J. Cunningham, which appeared in *Health Services Research*, Vol. 34, No. 1, Part 2, Supplemental Edition (April 1999).

ISSUE BRIEFS are published by Health System Change.

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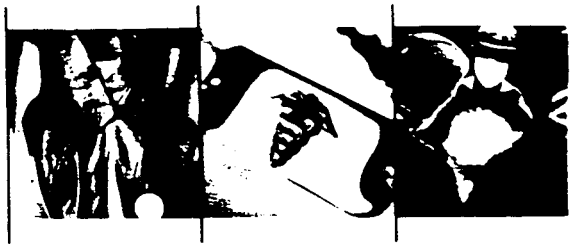
Issue Brief
Findings from HSC



HOW PHYSICIAN ORGANIZATIONS ARE RESPONDING TO MANAGED CARE

Despite a rash of troubles in 1998, physician organizations—formed in response to managed care plans—can thrive if they are locally owned, physician-run and rationally sized, said panelists at a recent roundtable organized by the Center for Studying Health System Change (HSC). The panelists also noted the market's slow progress toward global capitation as a way of compensating physician organizations, and the generally weak state of information systems required to support the goals behind capitation: accountability, efficiency and quality. This Issue Brief reports on governance, physician-hospital relationships, capital needs, compensation and other developments covered at the roundtable.

No One-Size-Fits-All Organizations

Physicians are key to the delivery of effective care, and their decisions drive approximately 80 percent of all medical spending. So any organization that wants to influence their behavior and control quality "needs to be able to come up with appropriate incentives and structures," said HSC health researcher Joy M. Grossman.

Consequently, a wide variety of physician entities have sprung up to organize physicians in ways that go beyond the traditional practice of medicine and billing. These organizations have attempted to consolidate physicians as a means to obtain more advantageous managed care contracts and gain administrative and clinical efficiencies. Such organizations have also sought to acquire capital to finance organizational growth; to develop information and clinical management systems to control costs and improve quality; and to develop strategies that tie physicians to larger, integrated health care organizations.

There is no one-size-fits-all physician organization. They may be locally owned and operated or regional/national in scope. They can be single-specialty or multispecialty practices. And they can be owned by the physicians themselves, a hospital, outside public or private investors or a health plan. Other defining characteristics are the management techniques an organization brings to bear, how active the physicians are in setting practice policy, the financial incentives physicians face and whether the organization is tied exclusively to one payer.

Many of the challenges confronted by physician organizations today stem from a sense that certain, hoped-for economies of scale have not yet emerged. For example, large practices tend to generate expensive new administrative complexities, including a layer of costly staff to support the organization. Moreover, larger entities, especially those formed from practices acquired by hospitals and physician practice management corporations (PPMCs), have often degraded physician performance, productivity and enthusiasm by shifting the doctors to salary-based compensation systems and eliminating or reducing their equity in the organization. How organizations attempt to balance their objectives of cost-effectiveness with physician satisfaction will be an important factor as health systems evolve in coming years.

This Issue Brief is based on a roundtable sponsored by HSC, held January 27, 1999, in Washington, D.C.

Panelists

David Blumenthal, M.D., M.P.P.
Director, Institute for Health Policy, MGH/Partners Health Care System, Inc.

Joy M. Grossman, Ph.D.
Health Researcher, Health System Change

J.D. Kleinke, M.S.B.
Chairman, Health Strategic Network, Inc.

Jacob G. Kuriyan, Ph.D.
CEO and President, Physmark

Moderator

Paul B. Ginsburg, Ph.D.
President, Health System Change

Governance and Physician Involvement

One of the core attributes of a viable physician organization identified by the panelists was physician buy-in based on a strong role in governance. The panelists concurred that an organization cannot be imposed from the outside on physicians, who by nature are highly independent, strong-willed people with "an almost religious sense" of autonomy. Moreover, their accountability and liability for their patients' well-being is a powerful disincentive to share responsibility for medical management with others.

These complex sociological, legal and economic factors have produced governance models that are often unstable. Many small practices wind up running like dictatorships, noted Jacob G. Kuriyan, CEO of Physmark. "As long as it is a benign dictatorship, these things seem to work," he said, but often those models leave the leader/owner vulnerable to buy-out offers from PPMCs or hospitals. Larger organizations, said David Blumenthal, director of the Institute for Health Policy, MGH/Partners Health Care System, Inc., can maintain the trust of members by operating like a republic or representative democracy, "with legitimacy deriving from the fact that people are elected and accountable."

Countering this, Grossman cited an Orange County, Calif., independent practitioner association (IPA) that had seen its democratic model evolve into a more authoritarian approach as the IPA gained leverage in the market, and various groups within the IPA became hesitant to share data with the whole organization.

J. D. Kleinke, chairman of Health Strategic Network, Inc., differentiated between the natural leadership exhibited in good physician-run organizations and the technocratic approach of institutional practice mangers. Management by formula, he said, "is anathema to the practice of medicine." The bottom line, said Blumenthal, is that "legitimate physician organizations for the most part are run by physicians."

Physician-Hospital Relationships

Questions of leadership and practice management can be particularly prickly when hospitals acquire physician practices in an attempt to control a primary care network. Many of these relationships had been costly for hospitals, Kleinke noted, largely because of the rush by competing hospitals and PPMCs to acquire practices. As a result, prices were driven up to unreasonable levels. Moreover, hospitals and other entities that purchase practices often put doctors on salary without performance-based adjustments and end up paying excessive salaries with declining productivity.

This does not mean that hospitals cannot make excellent organizing partners. "If practices need capital, information systems and the ability to assume global risk, and want to appeal directly to consumers to neutralize health maintenance organizations [HMOs], then the local hospital is the place that makes the most sense to organize physicians," Kleinke says.

Kuriyan agreed that the hospital model can work, but said that the degree of hospital control and the willingness of doctors to live with that control depends entirely on the local marketplace. Moreover, he said, "it is a mistake to think that owning a person is the best way to have a good tie with that person. There are better ways of building a relationship." One of those ways is for the hospital to educate its physicians about the business of managed care. "If physicians understand why the world has changed and why, for example, global packaged pricing needs to occur, then hospitals will have done an invaluable service," Kleinke said.

Hospitals' natural advantage as organizers of physicians, according to Blumenthal, is not that they have particular skill ("they are terrible at it, for the most part"), but that they are immovable fixtures in the community, and their profitability makes them a good source of capital. Even though long-standing antagonisms often fester between hospitals and physicians, the doctors ought to take a second look. "Hospitals' localness is a major advantage," he said.

Raising and Spending Capital

The amount of capital a physician practice needs to use to grow and modernize depends on its ambitions, according to the panelists. Modest-size local organizations are sustainable without much financing, and the capital can usually be raised from the member/owner

doctors themselves, said Kuriyan. Grossman noted that traditional, local sources of capital, such as banks, are proving to be good sources of capital for smaller operations. If an organization wants to adopt all or some of the attributes of a health plan, however, financial requirements for solvency and information systems quickly run into the many millions of dollars.

The most conspicuous and complicated influx of capital to the physician sector in recent years, panelists agreed, has come from Wall Street. Investors saw vast potential for consolidation, standardization and economies of scale. But Kuriyan cited two flaws in that vision. First, investors were looking for returns similar to those being realized in other hot sectors, such as Internet stocks—an impossibility given that physician practices make modest margins in the best of times. Second, Wall Street-style investments require a clear exit strategy—a point at which investors can take their gains and leave the field. This is "very difficult when you are talking about a lifelong relationship between a doctor and a patient," he said. In addition, Blumenthal maintains that investors in the corporate PPMC model did not understand the product. Investors assumed the work of physician offices could be standardized and franchised, but the complexity of clinical decision making and physicians' natural distrust of outside managers have made that difficult.

Compensation and Capitation

It is widely assumed that the efficiency and practice style of physicians is intimately related to how their services are compensated. The incentives apply at both the level at which a health plan pays a physician organization or intermediary (e.g., capitation) and the way the organization pays the individual doctor (e.g., through bonuses for productivity). Kuriyan said that capitation clearly reduces utilization, but Blumenthal noted that evidence of capitation's effects on long-term quality of care is still not available.

While it has proliferated more slowly than many experts predicted, capitation has had

THREE PHYSICIAN ORGANIZATIONS: A STUDY OF CONTRASTS

To demonstrate how dramatically different physician groups can be, HSC prepared case studies drawn from experiences in three of its 12 Community Tracking Study sites. Most of the forces affecting physician practices nationwide appear in at least one of these cases. Each panelist introduced one case study; detailed descriptions of each can be found at www.hschange.com.

Community Hospitals Indianapolis (CHI), a four-hospital health system with ownership interest in the practices of more than 270 primary care physicians in about 120 offices, is a good example of an integrated system trying to get doctors and hospitals to work together with aligned incentives, said Kuriyan. While CHI may have made a miscalculation typical of hospitals in recent years in "acquiring physician practices without quite understanding why," it has brought both flexibility and uniformity to its affiliated physician practices. Doctors may affiliate with CHI in three ways: (1) as CHI employees in CHI-owned practices; (2) as members of groups in which CHI has a minority ownership interest; or (3) as private practice physicians with privileges at one or more CHI hospitals. Whatever their affiliation, nearly all CHI doctors are part of a physician-hospital organization that acts as a contracting entity and either a primary care or specialty IPA affiliated with the hospital that organizes medical management. CHI is re-evaluating its relationships with "owned" physicians, including introducing productivity-based compensation because it is losing money with this arrangement.

Harvard Vanguard Medical Associates is a not-for-profit, semi-exclusive group practice affiliated with Harvard Pilgrim Health Plan (HPHP)—the sole source of its managed care business—with 600 physicians and 300,000 covered lives. Blumenthal said that when the staff-model clinic was spun off from its former parent HMO in 1997, it was to test the theory that "physicians who govern themselves and have autonomy in their organization can do better at controlling costs and improving quality than they could in a more complicated organization in which they had less governance control." Vanguard instituted risk-sharing between HPHP and the physicians for the first time and developed a compensation system based in part on patient satisfaction. The organization has close ties to Harvard Medical School and an active research program that maintains a reputation for clinical innovation and excellence, another important factor in maintaining physician loyalty.

Thomas-Davis Medical Centers, of Tucson and Phoenix, is a striking example of the possible perils of corporate ownership, said Kleinke. In his "autopsy" of the 70-year-old group practice, he noted several mistakes in the final years of the practice. First, when the clinic and its owned HMO partner were sold to a large national HMO in 1994, some senior doctors/owners earned more than $3 million each, but in their role as employees of the new organization, they lost governing authority. Second, the HMO sold the physician practice to a national PPMC, keeping the health plan in what Kleinke characterized as an "arbitrage play" for a "bargain-basement" price on 380,000 covered lives. The PPMC that bought Thomas-Davis imposed stiff cost-cutting measures, inflaming the clinic's Tucson doctors to the point where they joined a physicians' union. The PPMC also suffered from the ultimately futile attempt to manage physicians from a corporate headquarters in a remote city.

"Physicians do not want to be in organizations. It is something they are forced into for survival."

—David Blumenthal

"It is a mistake to think that owning a person is the best way to have a good tie with that person. There are better ways of building a relationship."

—Jacob Kuriyan

"If practices need capital, information systems and the ability to assume global risk, and want to appeal to consumers, then the local hospital is the place that makes the most sense to organize physicians."

— J.D. Kleinke

positive effects on some physician cultures. Blumenthal said that the group he works with confronted the constraints of capitation by subdividing into "pods" of eight to 12 doctors who meet weekly to review complications or deaths and discuss difficult or expensive cases. "This level of organization requires capital and support in the form of assistance—statistical, technical and other kinds—to realize its full potential," he said.

While capitation has not been without problems ("it has forced physicians to think like adverse selection-avoiding insurance executives"), Kleinke noted that it also offers incentives for efficiency and quality that are too powerful to ignore. "Being more attuned to the process of care when there is some financial pain associated with sloppiness ultimately drives the market toward capitation or some variant of it," he said.

The ways in which individual doctors get compensated are, if anything, even less advanced than capitation systems. The panelists did note, however, that two of the case study sites had taken opposite approaches. Harvard Vanguard, upon separating from its HMO partner, adopted an individual compensation system based in part on the productivity of each physician and on the satisfaction of his or her patients. After being acquired by an HMO, Thomas-Davis doctors were shifted to a straight salary system, only to see productivity and physician motivation fall sharply.

Information Systems

Much of the ability of physician organizations to monitor their own costs under capitation, work with hospital partners and refine the efficiency and effectiveness of their own care depends on advanced clinical and financial information systems. The health care sector has talked about leveraging informatics for years, but providers on the front lines have not invested in the best the market has to offer, Kleinke said. This is because "we are dealing with generations of disincentives to measure and understand" the process of medicine.

Information systems make their own argument for smaller, local physician organizations. The per-doctor cost of an off-the-shelf system that serves a small group is significantly lower than the cost for a larger group that needs customization. "One of the biggest PPMCs in the country had 43 databases that were all not talking to each other," Kuriyan noted. The result is that many groups do not know their costs in real time, who their underperforming doctors are or how to identify their especially costly patients.

Future Directions

The panelists pointed to a future in which global capitation—a payment that covers all or most medical expenses—would proliferate, but not without more struggle. Kuriyan said that direct contracting between employers demanding value for their health care premium dollar and physician groups seeking to box out the insurer middle man would be part of this future landscape. Kleinke said that IPAs appear to represent the "most flexible, nimble and fungible" kinds of organizations. Physicians also may find them more participatory than corporate organizations.

Blumenthal attempted to sum up the attributes of a successful physician organization. It would require: (1) true cost accountability of each group; (2) abundant sources of data about utilization and quality; (3) physician leadership; (4) modest size, involving accountability among cells of around 20 to 30 physicians; and (5) a multispecialty orientation to facilitate efficiency and exchange of information across the care continuum.

The fundamental problem, said Blumenthal, is that "physicians do not want to be in organizations. It is something they are forced into for survival. The only compelling glue that holds physician organizations together is the opportunity to negotiate better prices," he said. "We haven't yet developed other services to the point where physicians truly see the added value sufficiently so that they are willing to pay for these services by giving up something." ●

ISSUE BRIEFS are published by Health System Change

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FIELD FINAL - AUGUST 17, 1998
(Columns are "card/column")
(Revisions listed on last page)

AC7084
PROJECT REGISTRATION #123259
THE CENTER FOR STUDYING
HEALTH SYSTEM CHANGE (RWJ)
Washington, D.C.
Physicians Study
Max Larsen/Linda Keil
Alice Kroliczak/Stacey Richter
Brenda Mandelko, Specwriter
June, 1998 n=12,600

THE GALLUP ORGANIZATION

__X__ APPROVED BY CLIENT

__X__ APPROVED BY PROJECT MANAGER

I.D.#: __0__ (1-6)

**AREA CODE AND TELEPHONE NUMBER:

_____ _____
(1/32 - 1/41)

**INTERVIEW TIME:

_____ _____
(2/49 - 2/54)

SPECIALTY: **(Code from "Fone" file) (NOTE TO SURVENT: Show on "Intro" screen)

SPCLTY

_____ _____
(5/70 - 5/72)

STATE: **(Code from "Fone" file)

01	Alabama - SC	30	Montana - W
02	Alaska - W	31	Nebraska - NC
04	Arizona - W	32	Nevada - W
05	Arkansas - SC	33	New Hampshire - NE
06	California - W	34	New Jersey - NE
08	Colorado - W	35	New Mexico - W
09	Connecticut - NE	36	New York - NE
10	Delaware - SC	37	North Carolina - SC
11	Washington D.C. - SC	38	North Dakota - NC
12	Florida - SC	39	Ohio - NC
13	Georgia - SC	40	Oklahoma - SC
15	Hawaii - W	41	Oregon - W
16	Idaho - W	42	Pennsylvania - NE
17	Illinois - NC	44	Rhode Island - NE
18	Indiana - NC	45	South Carolina - SC
19	Iowa - NC	46	South Dakota - NC
20	Kansas - NC	47	Tennessee - SC
21	Kentucky - SC	48	Texas - SC
22	Louisiana - SC	49	Utah - W
23	Maine - NE	50	Vermont - NE
24	Maryland - SC	51	Virginia - SC
25	Massachusetts - NE	53	Washington - W
26	Michigan - NC	54	West Virginia - SC
27	Minnesota - NC	55	Wisconsin - NC
28	Mississippi - SC	56	Wyoming - W
29	Missouri - NC		

_____ (1/16) (1/17)

SECTION A
INTRODUCTION AND SCREENING

("FONE" MANAGEMENT NOTE: Any T&T's should send the case to a special "HOLD" category that could be reactivated by refusal converters if necessary)

S1. DOCTOR TYPE: **(Code from "Fone" file)**
DOCYPE
1 DO
2 MD _____ (7/80)

S1b. REPLICATE NUMBER: **(Code from "Fone" file)**
REPLICAT
[SET BY JOHN SELIX]

S1c. PANEL: **(Code from "Fone" file)**
PANEL
1 New
2 Re-interview
3 Non-respondent _____ (21/12)

S1d. **(If code "2" in S1c:)** BDCTSP: **(Code from "Fone" file)**
BDCTSPV
1 Yes
2 No _____ (21/13)

S1e. BDCTSB: **(Code from "Fone" file)**
BDCTSBV
1 Yes
2 No _____ (21/14)

S1f. BDCTPSP: **(Code from "Fone" file)**
BDCTPSPV
1 Yes
2 No _____ (23/80)

S2. DOCTOR NAME: **(Code from "Fone" file)**

_____ (/ - /)

S3. PRIMARY SPECIALTY: **(Code from "Fone" file)**

_____ (5/70 - 5/72)

S4. SITE NUMBER: **(Code from "Fone" file)**

_____ (/ - /)

S5. SITE TYPE: **(Code from "Fone" file)**

STYPE

1 High intensity
2 Low intensity/National

_____ (/)

HOLD 0 (6/26-6/27)

S6. ZIP CODE: **(Code from "Fone" file)**

ZIP

_____ (1/21 - 1/25)

(NOTE TO SURVENT: Display "doctor's name" and "gender" at top of screen)

(If code "1" or "3" in S1c, Continue; Otherwise, Skip to "Intro #2"

INTRO #1

HELLO1

Hello, Dr. **(name from "Fone" file)**, my name is __ from The Gallup Organization. A short time ago, you should have received a letter from the Robert Wood Johnson Foundation indicating that Gallup is conducting a national survey of physicians for the Foundation. The survey is part of a study of changes in the health care system in communities across the nation. It concerns how such changes are affecting physicians, their practices and the health care they provide to their patients.

The interview will take about 20 minutes and we are providing an honorarium of $25 as a small token of our appreciation to each physician who completes an interview. All the information you provide will be kept strictly confidential. It will be used in statistical analysis and reported only as group totals. I can conduct the interview now or at any time that's convenient for you.

0 Gatekeeper soft refusal

1 Respondent available - **(Skip to #A1)**
3 No longer works/Lives here - **(Skip to S8)**
4 Never heard of respondent - **(Skip to S7)**

5 Gatekeeper hard refusal

6 Answering service/Can't ever reach physician at this number - **(Skip to S11)**

7 Respondent not available - **(Set time to call back)**

8 Physician soft refusal
9 Physician hard refusal _____ (5/12)

INTRO #2

HELLO2

Hello, Dr. **(name from "Fone" file)**, my name is _____, from The Gallup Organization. You should have received a letter from the Robert Wood Johnson Foundation indicating that Gallup would be calling you again to participate in the second round of the study of changes in the health care systems in communities across the nation. The study concerns how these changes are affecting physicians, their practices and the health care they provide to their patients.

The interview will take about twenty minutes, and we are again providing an honorarium of $25 as a small token of our appreciation to each physician who completes an interview. All the information you provide will be kept strictly confidential. It will be used in statistical analysis and reported only as group totals. I can conduct the interview now, or at any time that's convenient for you.

0 Gatekeeper soft refusal

1 Respondent available - **(Skip to #A1)**
3 No longer works/Lives here - **(Skip to S8)**
4 Never heard of respondent - **(Continue)**

5 Gatekeeper hard refusal

6 Answering service/Can't ever reach physician at this number

7 Respondent not available - **(Set time to call back)**

8 Physician soft refusal
9 Physician hard refusal

_____ (5/12)

S7. **(If code "4" in "Intro", ask:)** I would like to verify that I have reached **(phone number from "Fone" file)**.

VPHONE

1 Yes - **(Thank and Terminate; Skip to S11)**

2 No - **(INTERVIEWER READ:)** I am sorry to have bothered you. - **(Reset to "Intro")**

3 (DK) **(Thank and Terminate; Skip to S11)**

4 (Refused) **(Thank and Terminate; Skip to S11)** _____ (9/18)

S8. **(If code "3" in "Intro", ask:)** Dr. **(response in S2)** is a very important part of a medical study for the Robert Wood Johnson Foundation. Do you have the address or telephone number where I can reach (him/her)?

DIFFADR

1 Yes - **(Skip to S10)**

2 No/Unknown **(Continue)**

3 (DK) **(Continue)**

4 (Refused) **(Continue)**

5 (Retired) - **(Thank and Terminate)** _____ (9/19)

S9. **(If code "2", "3" or "4" in S8, ask:)** Do you happen to know if the doctor is still in this area, or is (he/she) in another city?

WHERE

1 Same area - **(Thank and Terminate; Skip to S11)**

2 Different city - **(Continue)**

3 (DK) **(Thank and Terminate; Skip to S11)**

4 (Refused) **(Thank and Terminate; Skip to S11)** _____ (9/20)

S10. **(If code "2" in S9, OR code "1" in S8:)** ENTER PHONE NUMBER AND ADDRESS OR AS MUCH OF IT AS POSSIBLE.

WORK PHONE NUMBER:
NWPHONE
_____ (9/21 - 9/30) _____

HOME PHONE NUMBER:
NWHPHON
_____ (9/41 - 9/50) _____

STREET ADDRESS:
NWADDR
_____ (15/12 - 15/51) _____

CITY:
NWCITY
_____ (11/31 - 11/60) _____

STATE:
NWSTATE
_____ (9/31) (9/32) _____

ZIP CODE:
NWZIP
_____ (9/33 - 9/37)

**(All in S10, Thank and Terminate;
Call new number and reset to "Intro";
If "blank" in "WORK PHONE NUMBER" and
"HOME PHONE NUMBER" in S10, Continue)**

S11. **(If code "1", "3" or "4" in S7, OR code "8" in "Intro", OR code "1", "3" or "4" in S9, OR "blank" in "WORK PHONE NUMBER" and "HOME PHONE NUMBER" in S10:) (Call directory assistance for most recent city or area code. Ask for directory assistance using full name from "Fone" file.)**

(Original phone number from "Fone" file)

(Original city from "Fone" file) or **("CITY" from S10)**

(New city; New street address)

(Name from "Fone" file)

DIRPHON

1 New number - **(Enter on next screen)**

2 No number/Match - **(Thank and Terminate; Save Case ID)**

_____ (11/61)

S12 NEW PHONE NUMBER: **(FORCE 10 DIGITS)**

NWPHON

_____ (11/62 - 11/71) _____

(All in S12, call new number, and Reset to "Intro")

S13. VERBATIM SCREEN: Describe what happened on this call in as much detail as possible.

VERBAT

_____ (11/72) (11/73)

CLOCK:

_____ (28/12 - 28/15)

A1. Are you currently a full-time employee of a federal agency such as the U.S. Public Health Service, Veterans Administration or a military service? **(Probe:)** Do you receive your paychecks from a federal agency? **(If respondent works part-time for a Federal Agency, ask:)** Do you consider this (Federal Agency) your main practice?

FEDEMP

1 Yes - **(Continue)**

2 No - **(Skip to #A2)**

8 (DK) **(Thank and Terminate)**
9 (Refused) **(Thank and Terminate)** _____ (5/13)

(If code "1" in #A1, INTERVIEWER READ:) In this survey, we will not be interviewing physicians who are Federal employees. So it appears that we do not need any further information from you at this time, but we thank you for your cooperation. - **(Thank and Terminate)**

A2. Are you currently a resident or fellow?

RESFEL

1 Yes - **(Continue)**

2 No - **(Skip to #A3)**

8 (DK) **(Thank and Terminate)**
9 (Refused) **(Thank and Terminate)** _____ (5/14)

(If code "1" in #A2, INTERVIEWER READ:) In this survey, we will not be interviewing physicians who are residents or fellows. So it appears that we do not need any further information from you at this time, but we thank you for your cooperation. - **(Thank and Terminate)**

A3. During a TYPICAL week, do you provide direct patient care for at least twenty hours a week? **(If necessary, say:)** Direct patient care includes seeing patients and performing surgery. **(If necessary, say:)** INCLUDE time spent on patient record-keeping, patient-related office work, and travel time connected with seeing patients. EXCLUDE time spent in training, teaching, or research, any hours on-call when not actually working, and travel between home and work at the beginning and end of the work day.

FULLTIM

1 Yes - **(Skip to "Note" before #A3a)**

2 No - **(Continue)**

8 (DK) **(Thank and Terminate)**

9 (Refused) **(Thank and Terminate)** _____ (5/15)

(If code "2" in #A3, INTERVIEWER READ:) In this survey, we will not be interviewing physicians who typically provide patient care for less than 20 hours a week. So it appears that we do not need any further information from you at this time, but we thank you for your cooperation. - **(Thank and Terminate)**

(If code "1" or "3" in S1c, Continue; Otherwise, Skip to #A4)

A3a. Thinking back to April, 1996, at that time, were you a full-time employee of a federal agency?

FEDEMPV

1 Yes

2 No

8 (DK)

9 (Refused) _____ (21/15)

A3b. In April, 1996, were you a resident or fellow?

RESFELV

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/16)

A3c. In April, 1996, were you providing direct patient care for at least twenty hours a week?

FULLTMV

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/17)

A4. Do you currently provide patient care in one practice, or more than one practice? **(If necessary, say:)** We consider multiple sites or offices associated with the same organization to be only one practice. **(INTERVIEWER NOTE #1: Examples are: a private MD with a downtown and suburban office is one practice; a regional organization with member doctors practicing in numerous satellite clinics or offices is one practice; and multiple sites with DIFFERENT organizations are different practices.) (INTERVIEWER NOTE #2: Do not count non-patient-care activity, such as teaching or administrative jobs, as practices.)**

MULTPR

1 One - **(Skip to #A5)**

2 More than one - **(Continue)**

8 (DK) **(Skip to #A5)**
9 (Refused) **(Skip to #A5)** _____ (5/16)

A4a. **(If code "2" in #A4, ask:)** In how many different practices do you provide patient care? (Open ended **and code actual number)**

NUMPR

DK (DK)
RF (Refused)

_____ _____ _____
(5/17) (5/18)

A5. We'd like you to think about the practice location at which you spend the greatest amount of time in direct patient care. Is this practice located in **(county and state from "Fone" file)**? **(INTERVIEWER NOTE: Surgeons should give the location of their office, not the hospital where they perform surgery.)**

LOCCHK

1 Yes - **(Skip to "Note" before #A5b)**

2 No **(Continue)**
8 (DK) **(Continue)**
9 (Refused) **(Continue)** _____ (11/74)

A5a. **(If code "2", "8" or "9" in #A5, ask:)** In what county and state is the practice located. (Open ended) **(VERIFY SPELLING)**

DK (DK)
RF (Refused)

COUNTY:

SCNTY

_____ ____ ____
(14/34 - 14/58)

STATE:

SSTATE

_____ ____ ____
(14/59) (14/60)

(If code "15 - Hawaii" or "02 - Alaska" in #A5a - "State", Continue with "Interviewer Read"; Otherwise, Skip to #A5b)

(INTERVIEWER READ:) We are not interviewing physicians in your state at this time. So it appears that we do not need any further information from you, but we thank you for your cooperation. - **(Thank and Terminate)**

A5b. What is the zip code of your practice? (Open ended **and code all five digits of zip code)**

SZIP

99998 (DK)
99999 (Refused)

_____ (21/18 - 21/22)

(If code "2" in S1c, Skip to #A7; Otherwise, Continue)

A6. In what year did you begin medical practice after completing your undergraduate and graduate medical training? **(INTERVIEWER NOTE: A residency or fellowship would be considered graduate medical training.)** (Open ended **and code all four digits of year) (NOTE TO SURVENT: Force interviewers to enter FOUR DIGITS)**

YRBGN

DK (DK)
RF (Refused)

_____ (21/23 - 21/26)

(If code "999" in S3, Skip to #A8; Otherwise, Continue)

A7. We have your primary specialty listed as **(response in S3)**. Is this correct? **(If necessary, say:)** We define primary specialty as that in which the most hours are spent weekly.

SPCCOR

1 Yes - **(Autocode response in S3 into #A8)**

2 No - **(Continue)**

8 (DK) **(Thank and Terminate)**
9 (Refused) **(Thank and Terminate)** _____ (5/25)

A8. **(If code "2" or "blank" in #A7, ask:)** What is your primary specialty? **(If necessary, say:)** We define primary specialty as that in which the most hours are spent weekly. (Open ended **and code from hard copy)** **(INTERVIEWER NOTE: Probe for codeable response)**

NWSPEC

(If code "2" in S1 [MD-AMA LIST])

001	Allergy	(A)
133	Adolescent Medicine	(ADL)
127	Addiction Medicine	(ADM)
132	Addiction Psychiatry	(ADP)
002	Allergy & Immunology	(AI)
003	Allergy & Immunology/ Diagnostic Laboratory Immunology	(ALI)
005	Aerospace Medicine	(AM)
085	Adolescent Medicine	(AMI)
006	Anesthesiology	(AN)
007	Pain Management	(APM)
026	Abdominal Surgery	(AS)
103	Anatomic Pathology	(ATP)
104	Bloodbanking/Transfusion Medicine	(BBK)
049	Clinical Biochemical Genetics	(CBG)
008	Critical Care Medicine (Anesthesiology)	(CCA)
050	Clinical Cytogenetics	(CCG)
128	Critical Care Medicine	(CCM)
086	Critical Care Pediatrics	(CCP)
027	Critical Care Surgery	(CCS)
009	Cardiovascular Diseases (Cardiology)	(CD)
051	Clinical Genetics	(CG)
054	Child Neurology	(CHN)
010	Child & Adolescent Psychiatry	(CHP)
105	Clinical Pathology	(CLP)
052	Clinical Molecular Genetics	(CMG)
055	Clinical Neurophysiology	(CN)
011	Colon & Rectal Surgery	(CRS)
124	Cardiothoracic Surgery (Thoracic Surgery)	(CTS)
012	Dermatology	(D)
164	Dermatologic Surgery	(DS)
013	Clinical & Laboratory Dermatological Immunology	(DDL)
035	Diabetes	(DIA)
106	Dermatopathology	(DMP)
014	Diagnostic Radiology	(DR)
015	Emergency Medicine	(EM)
036	Endocrinology & Metabolism	(END)
016	Sports Medicine	(ESM)

A8. (Continued:)

140	Medical Toxicology (Emergency Medicine)	(ETX)
018	Forensic Pathology	(FOP)
019	Family Practice	(FP)
020	Geriatric Medicine	(FPG)
078	Facial Plastic Surgery	(FPS)
021	Sports Medicine	(FSM)
022	Gastroenterology	(GE)
061	Gynecological Oncology	(GO)
023	General Practice	(GP)
024	General Preventive Medicine	(GPM)
029	General Surgery	(GS)
062	Gynecology	(GYN)
037	Hematology	(HEM)
038	Hepatology	(HEP)
107	Hematology Pathology	(HMP)
030	Head & Neck Surgery	(HNS)
136	Hematology/Oncology	(HO)
070	Hand Surgery	(HSO)
101	Hand Surgery	(HSP)
031	Hand Surgery	(HSS)
039	Cardiac Electrophysiology	(ICE)
040	Infectious Diseases	(ID)
004	Immunology	(IG)
041	Clinical & Laboratory Immunology	(ILI)
042	Internal Medicine	(IM)
043	Geriatric Medicine	(IMG)
044	Sports Medicine	(ISM)
129	Legal Medicine	(LM)
138	Medical Management	(MDM)
063	Maternal & Fetal Medicine	(MFM)
053	Medical Genetics	(MG)
108	Medical Microbiology	(MM)
137	Internal Medicine/Pediatrics	(MPD)
099	Public Health & General Preventive Medicine	(MPH)
056	Neurology	(N)
058	Critical Care Medicine (Neurosurgery)	(NCC)
045	Nephrology	(NEP)
057	Nuclear Medicine	(NM)
109	Neuropathology	(NP)
087	Neonatal/Perinatal Medicine (Neonatology/Perinatology)	(NPM)
117	Nuclear Radiology	(NR)
059	Neurological Surgery	(NS)
060	Pediatric Neurosurgery	(NSP)

A8. (Continued:)

046	Nutrition	(NTR)
071	Adult Reconstructive Orthopedics	(OAR)
064	Obstetrics & Gynecology	(OBG)
065	Obstetrics	(OBS)
066	OB Critical Care Medicine	(OCC)
134	Foot & Ankle Orthopedics	(OFA)
068	Occupational Medicine	(OM)
072	Musculoskeletal Oncology	(OMO)
047	Medical Oncology	(ON)
073	Pediatric Orthopedics	(OP)
069	Ophthalmology	(OPH)
074	Orthopedic Surgery	(ORS)
028	Other Specialty	(OS)
075	Sports Medicine (Orthopedic Surgery)	(OSM)
076	Orthopedic Surgery of the Spine	(OSS)
079	Otology	(OT)
080	Otolaryngology	(OTO)
077	Orthopedic Trauma	(OTR)
082	Psychiatry	(P)
130	Clinical Pharmacology	(PA)
147	Pulmonary Critical Care Medicine	(PCC)
110	Chemical Pathology	(PCH)
111	Cytopathology	(PCP)
088	Pediatrics	(PD)
089	Pediatric Allergy	(PDA)
098	Pediatric Cardiology	(PDC)
090	Pediatric Endocrinology	(PDE)
145	Pediatric Infectious Diseases	(PDI)
081	Pediatric Otolaryngology	(PDO)
091	Pediatric Pulmonology	(PDP)
118	Pediatric Radiology	(PDR)
032	Pediatric Surgery	(PDS)
139	Medical Toxicology (Pediatrics)	(PDT)
144	Pediatric Emergency Medicine	(PE)
017	Pediatric Emergency Medicine	(PEM)
135	Forensic Psychiatry	(PFP)
092	Pediatric Gastroenterology	(PG)
093	Pediatric Hematology/Oncology	(PHO)
112	Immunopathology	(PIP)
094	Clinical & Laboratory Immunology	(PLI)
143	Palliative Medicine	(PLM)
100	Physical Medicine & Rehabilitation	(PM)
142	Pain Medicine	(PMD)
095	Pediatric Nephrology	(PN)
146	Pediatric Opthalmology	(PO)
113	Pediatric Pathology	(PP)

A8. (Continued:)

096	Pediatric Rheumatology	(PPR)
102	Plastic Surgery	(PS)
097	Sports Medicine (Pediatrics)	(PSM)
114	Anatomic/Clinical Pathology	(PTH)
141	Medical Toxicology (Preventive Medicine)	(PTX)
116	Pulmonary Diseases	(PUD)
083	Psychoanalysis	(PYA)
084	Geriatric Psychiatry	(PYG)
119	Radiology	(R)
067	Reproductive Endocrinology	(REN)
048	Rheumatology	(RHU)
115	Radioisotopic Pathology	(RIP)
120	Neuroradiology	(RNR)
123	Radiation Oncology	(RO)
121	Radiological Physics	(RP)
150	Spinal Cord Injury	(SCI)
149	Sleep Medicine	(SM)
151	Surgical Oncology	(SO)
148	Selective Pathology	(SP)
033	Trauma Surgery	(TRS)
152	Transplant Surgery	(TTS)
125	Urology	(U)
025	Undersea Medicine	(UM)
126	Pediatric Urology	(UP)
131	Unspecified	(US)
122	Vascular & Interventional Radiology	(VIR)
165	Vascular Medicine	(VM)
034	Vascular Surgery	(VS)

997 Other (list) - **(USE VERY SPARINGLY; Thank and Terminate)**

998 (DK) **(Thank and Terminate)**
999 (Refused) **(Thank and Terminate)**

_____ _____
_____ (5/26 - 5/28)

A8. (Continued:)

(If code "1" in S1 [DO-AOA LIST])

002	Allergy and Immunology	AI	
003	Allergy-Diagnostic Lab Immunology	ALI	
004	Immunology	IG	
005	Preventive Medicine-Aerospace Medicine	AM	
006	Anesthesiology	AN	
006	Anesthesiology	CAN	
006	Anesthesiology	IRA	
006	Anesthesiology	OBA	
006	Anesthesiology	PAN	
007	Pain Management	APM	
007	Pain Management	PMR	
008	Critical Care-Anesthesiology	CCA	
009	Cardiovascular Diseases-Cardiology	C	
009	Cardiovascular Diseases-Cardiology	CVD	
009	Cardiovascular Diseases-Cardiology	IC	
010	Pediatric Psychiatry	CHP	
010	Pediatric Psychiatry	PDP	
011	Colon & Rectal Surgery	CRS	
012	Dermatology	D	
014	Diagnostic Radiology	DR	
015	Emergency Medicine	EM	
015	Emergency Medicine	EMS	
015	Emergency Medicine	FEM	
015	Emergency Medicine	IEM	
016	Sports Medicine (Emergency Medicine)		ESM
017	Pediatric Emergency Medicine	PEM	
018	Forensic Pathology	FOP	
019	Family Practice	FP	
019	Family Practice	UFP	
020	Geriatrics-General or Family Practice	GFP	
020	Geriatrics-General or Family Practice	GGP	
021	Sports Medicine-Family or General Practice	SFP	
021	Sports Medicine-Family or General Practice	SGP	
022	Gastroenterology	GE	
023	General Practice	GP	
024	Preventive Medicine	PVM	
025	Undersea Medicine	UM	
026	Abdominal Surgery	AS	
027	Critical Care-Surgery or Trauma	CCS	
027	Critical Care-Surgery or Trauma	CCT	
028	Other Specialty	OS	
029	Surgery-General	S	
030	Head & Neck Surgery	HNS	

A8. (Continued:)

031	Hand Surgery	HS
031	Hand Surgery	HSS
032	Pediatric Surgery	PDS
033	Traumatic Surgery	TRS
034	Vascular Surgery-General or Peripheral	GVS
034	Vascular Surgery-General or Peripheral	PVS
036	Endocrinology	END
037	Hematology	HEM
039	Cardiac Electrophysiology	ICE
040	Infectious Diseases	ID
041	Diag Lab Immunology-Int Med	ILI
042	Internal Medicine	IM
042	Internal Medicine	IP
043	Geriatrics-Internal Medicine	GER
043	Geriatrics-Internal Medicine	GIM
044	Sports Medicine	ISM
044	Sports Medicine	PMS
044	Sports Medicine	RMS
044	Sports Medicine	SM
045	Nephrology	NEP
046	Nutrition	NTR
047	Oncology	ON
048	Rheumatology	RHU
050	Clinical Cytogenetics	CCG
051	Clinical Genetics	CG
053	Medical Genetics	IMG
054	Pediatric or Child Neurology	CHN
054	Pediatric or Child Neurology	PDN
055	Clinical Neurophysiology	CN
056	Neurology	N
056	Neurology	NMD
056	Neurology	NP
056	Neurology	NPN
057	Nuclear Medicine	NI
057	Nuclear Medicine	NM
057	Nuclear Medicine	NV
058	Critical Care-Neuro Surgery	NCC
059	Neurological Surgery	NS
061	Gynecological Oncology	GO
062	Gynecology	GS
062	Gynecology	GYN
063	Maternal & Fetal Medicine	MFM
064	Obstetrics & Gynecology	OBG
064	Obstetrics & Gynecology	OGS
065	Obstetrics	OBS
066	Critical Care-Obstetrics & Gynecology	OCC

A8. (Continued:)

067	Reproductive Endocrinology	RE
068	Occupational Medicine	OCM
068	Occupational Medicine	OM
069	Ophthalmology	COR
069	Ophthalmology	OAS
069	Ophthalmology	OCR
069	Ophthalmology	OGL
069	Ophthalmology	OPH
069	Ophthalmology	VRS
070	Hand Surgery-Orthopedic Surg	HSO
071	Adult Reconstructive Orthopedics	OAR
072	Musculoskeletal Oncology	OMO
073	Pediatric Orthopedics	OP
074	Orthopedic Surgery	AJI
074	Orthopedic Surgery	OR
074	Orthopedic Surgery	ORS
075	Sports Medicine-Orthopedic Surgery	OSM
076	Orthopedic Surgery-Spine	OSS
078	Facial Plastic Surgery	OPL
080	Otolaryngology or Rhinology	OTL
080	Otolaryngology or Rhinology	OTR
080	Otolaryngology or Rhinology	RHI
081	Pediatric Otolaryngology	PDO
082	Psychiatry	P
083	Psychoanalysis	PYA
084	Geriatric Psychiatry	PYG
085	Adolescent Medicine-Family or General Practice	AFP
085	Adolescent Medicine-Family or General Practice	AGP
086	Pediatric Intensive Care	PIC
087	Neonatology	NE
088	Pediatrics	PD
089	Pediatric Allergy & Immunology	PAI
091	Pediatric Pulmology Medicine	PDX
092	Pediatric Gastroenterology	PG
093	Pediatric Hematology-Oncology	PHO
094	Pediatric Diag Lab Immunology	PLI
095	Pediatric Nephrology	PNP
096	Pediatric Rheumatology	PPR
097	Sports Medicine - Pediatrics	PSM
098	Pediatric Cardiology	PDC
099	Preventive Medicine, Epidemiology or Public Health	EPI
099	Preventive Medicine, Epidemiology or Public Health	OE

A8. (Continued:)

099	Preventive Medicine, Epidemiology or Public Health	PH
099	Preventive Medicine, Epidemiology or Public Health	PHP
100	Physical Medicine & Rehabilitation	IAR
100	Physical Medicine & Rehabilitation	PDR
100	Physical Medicine & Rehabilitation	PM
100	Physical Medicine & Rehabilitation	RM
101	Hand Surgery-Plastic Surg	HSP
102	Plastic Surgery	OOP
102	Plastic Surgery	PLR
103	Anatomic Pathology	AP
104	Blood Banking-Transfusion Medicine	BBT
104	Blood Banking-Transfusion Medicine	LBM
105	Clinical Pathology	CLP
106	Dermatopathology	DPT
107	Hematology-Pathology	HEP
108	Medicine Microbiology	MMB
109	Neuropathology	NPT
110	Chemical Pathology	CP
111	Cytopathology	CY
112	Immunopathology	IPT
113	Pediatric Pathology	PP
114	Anatomic/Clinical Pathology	APL
114	Anatomic/Clinical Pathology	PTH
115	Radioisotopic Pathology	RIP
116	Pulmonary Diseases	PUD
116	Pulmonary Diseases	PUL
117	Nuclear Radiology	NR
118	Pediatric Radiology	PRD
119	Radiology	DUS
119	Radiology	R
119	Radiology	RI
119	Radiology	RT
119	Radiology	RTD
120	Neuroradiology	NRA
121	Radiological Physics	RP
122	Angiography & Intervent'l Radiology	ANG
122	Angiography & Intervent'l Radiology	SCL
123	Radiation Oncology	RO
123	Radiation Oncology	TR
124	Cardiovascular or Thoracic Cardiovascular Surgery	CVS

A8. (Continued:)

124	Cardiovascular or Thoracic Cardiovascular Surgery	TS
125	Urology	U
125	Urology	URS
126	Pediatric Urology	UP
127	Addictive Diseases	ADD
128	Critical Care-Medicine	CCM
129	Legal Medicine	LM
130	Clinical Pharmacology	PA
131	Unknown Blank	
133	Adolescent Medicine	ADL
134	Orthopedic Foot & Ankle Surg	OFA
135	Forensic Psychiatry	FPS
136	Hematology & Oncology	HEO
137	Internal Med-Pediatrics	IPD
139	Toxicology	TX
142	Psychosomatic Medicine	PYM
145	Pediatric Infectious Diseases	PID
146	Pediatric Ophthalmology	PO
147	Pulmonary-Critical Care	PUC
153	MOHS Micrographic Surgery	DMS
154	Hair Transplant	HT
155	Osteo Manipulative Treat +1	OM1
156	Spec Prof in Osteo Manip Med	OMM
157	Sports Medicine - OMM	OMS
158	Osteo Manipulative Medicine	OMT
159	Proctology	PR
160	Internship	IN
161	Retired	RET
162	Transitional Year	TY
209	Nuclear Cardiology	NC
997	Other (list) - **(USE VERY SPARINGLY; Thank and Terminate)**	
998	(DK) **(Thank and Terminate)**	
999	(Refused) **(Thank and Terminate)**	

_____ _____
(5/26 - 5/28)

(If code "003", "005-007", "013-014", "018", "025", "028", "057", "099", "103-115", "117-123", "129-131", "135", "138-143", "148-149", "160-162" or "209" in #A8, INTERVIEWER READ:) In this survey, we are only interviewing physicians in certain specialties, and your specialty is not among those being interviewed. So, it appears that we do not need any further information from you at this time, but we thank you for your cooperation. - **(Thank and Terminate)**

**(If code "042", "088" or "137" in #A8, Continue;
If code "001-002", "004", "009", "012", "015-016", "020-022", "024", "035-041", "043-048", "055-056", "085", "116", "128", "136" or "147" in #A8, Skip to #A9a;
If code "017", "049-054", "063", "086-087", "089-094", "095-098", "133" or "144-145" in #A8, Skip to #A9b;
Otherwise, Skip to #A15)**

A9. **(If code "042", "088" or "137" in #A8, ask:)** Do you spend more hours weekly in general **(response in #A8)**, or a subspecialty in **(response in #A8)**? **(INTERVIEWER NOTE: If respondent says "50/50 split", code as "1")**

GENSUB

1 General - **(Skip to #A15)**

2 Subspecialty (including adolescent medicine or geriatrics) - **(Skip to #A10)**

8 (DK) **(Skip to #A15)**

9 (Refused) **(Skip to #A15)** _____ (5/29)

A9a. **(If code "001-002", "004", "009", "012", "015-016", "020-022", "024", "035-041", "043-048", "055-056", "085", "116", "128", "136" or "147" in #A8, ask:)** Do you spend most of your time practicing in **(response in #A8)**, or in general internal medicine? **(INTERVIEWER NOTE: If respondent says "50/50 split", code as "1")**

SIPNPED

1 Subspecialty
2 General internal medicine (or general family practice)
3 General pediatrics
8 (DK)
9 (Refused)

_____ (12/80)

(All in #A9a, Skip to #A15)

A9b. **If code "017", "049-054", "063", "086-087", "089-098", "133" or "144-145" in #A8, ask:)** Do you spend most of your time practicing in **(response in #A8)**, or in general pediatrics? **(INTERVIEWER NOTE: If respondent says "50/50 split", code as "1")**

SIPPED

1 Subspecialty
2 General internal medicine (General Family Practice)
3 General pediatrics
8 (DK)
9 (Refused)

_____ (8/77)

(All in #A9b, Skip to #A15)

A10. **(If code "2" in #A9, ask:)** And what is that subspecialty? **(If "More than one", say:)** We're interested in the one in which you spend the most hours weekly. (Open ended **and code from hard copy)** **(CHECK SPELLING)**

SUBSPC

(If code "2" in S1 [MD-AMA LIST])

001	Allergy	(A)
133	Adolescent Medicine	(ADL)
127	Addiction Medicine	(ADM)
132	Addiction Psychiatry	(ADP)
002	Allergy & Immunology	(AI)
003	Allergy & Immunology/ Diagnostic Laboratory Immunology	(ALI)
005	Aerospace Medicine	(AM)
085	Adolescent Medicine	(AMI)
006	Anesthesiology	(AN)
007	Pain Management	(APM)
026	Abdominal Surgery	(AS)
103	Anatomic Pathology	(ATP)
104	Bloodbanking/Transfusion Medicine	(BBK)
049	Clinical Biochemical Genetics	(CBG)
008	Critical Care Medicine (Anesthesiology)	(CCA)
050	Clinical Cytogenetics	(CCG)
128	Critical Care Medicine	(CCM)
086	Critical Care Pediatrics	(CCP)
027	Critical Care Surgery	(CCS)
009	Cardiovascular Diseases (Cardiology)	(CD)
051	Clinical Genetics	(CG)
054	Child Neurology	(CHN)
010	Child & Adolescent Psychiatry	(CHP)
105	Clinical Pathology	(CLP)
052	Clinical Molecular Genetics	(CMG)
055	Clinical Neurophysiology	(CN)
011	Colon & Rectal Surgery	(CRS)
124	Cardiothoracic Surgery (Thoracic Surgery)	(CTS)
012	Dermatology	(D)
013	Clinical & Laboratory Dermatological Immunology	(DDL)
035	Diabetes	(DIA)
106	Dermatopathology	(DMP)
014	Diagnostic Radiology	(DR)
015	Emergency Medicine	(EM)
036	Endocrinology & Metabolism	(END)
016	Sports Medicine	(ESM)

A10. (Continued:)

140	Medical Toxicology (Emergency Medicine)	(ETX)
018	Forensic Pathology	(FOP)
019	Family Practice	(FP)
020	Geriatric Medicine	(FPG)
078	Facial Plastic Surgery	(FPS)
021	Sports Medicine	(FSM)
022	Gastroenterology	(GE)
061	Gynecological Oncology	(GO)
023	General Practice	(GP)
024	General Preventive Medicine	(GPM)
029	General Surgery	(GS)
062	Gynecology	(GYN)
037	Hematology	(HEM)
038	Hepatology	(HEP)
107	Hematology Pathology	(HMP)
030	Head & Neck Surgery	(HNS)
136	Hematology/Oncology	(HO)
070	Hand Surgery	(HSO)
101	Hand Surgery	(HSP)
031	Hand Surgery	(HSS)
039	Cardiac Electrophysiology	(ICE)
040	Infectious Diseases	(ID)
004	Immunology	(IG)
041	Clinical & Laboratory Immunology	(ILI)
042	Internal Medicine	(IM)
043	Geriatric Medicine	(IMG)
044	Sports Medicine	(ISM)
129	Legal Medicine	(LM)
138	Medical Management	(MDM)
063	Maternal & Fetal Medicine	(MFM)
053	Medical Genetics	(MG)
108	Medical Microbiology	(MM)
137	Internal Medicine/Pediatrics	(MPD)
099	Public Health & General Preventive Medicine	(MPH)
056	Neurology	(N)
058	Critical Care Medicine (Neurosurgery)	(NCC)
045	Nephrology	(NEP)
057	Nuclear Medicine	(NM)
109	Neuropathology	(NP)
087	Neonatal/Perinatal Medicine (Neonatology/Perinatology)	(NPM)
117	Nuclear Radiology	(NR)
059	Neurological Surgery	(NS)
060	Pediatric Neurosurgery	(NSP)

A10. (Continued:)

046	Nutrition	(NTR)
071	Adult Reconstructive Orthopedics	(OAR)
064	Obstetrics & Gynecology	(OBG)
065	Obstetrics	(OBS)
066	OB Critical Care Medicine	(OCC)
134	Foot & Ankle Orthopedics	(OFA)
068	Occupational Medicine	(OM)
072	Musculoskeletal Oncology	(OMO)
047	Medical Oncology	(ON)
073	Pediatric Orthopedics	(OP)
069	Opthalmology	(OPH)
074	Orthopedic Surgery	(ORS)
028	Other Specialty	(OS)
075	Sports Medicine (Orthopedic Surgery)	(OSM)
076	Orthopedic Surgery of the Spine	(OSS)
079	Otology	(OT)
080	Otolaryngology	(OTO)
077	Orthopedic Trauma	(OTR)
082	Psychiatry	(P)
130	Clinical Pharmacology	(PA)
147	Pulmonary Critical Care Medicine	(PCC)
110	Chemical Pathology	(PCH)
111	Cytopathology	(PCP)
088	Pediatrics	(PD)
089	Pediatric Allergy	(PDA)
098	Pediatric Cardiology	(PDC)
090	Pediatric Endocrinology	(PDE)
145	Pediatric Infectious Diseases	(PDI)
081	Pediatric Otolaryngology	(PDO)
091	Pediatric Pulmonology	(PDP)
118	Pediatric Radiology	(PDR)
032	Pediatric Surgery	(PDS)
139	Medical Toxicology (Pediatrics)	(PDT)
144	Pediatric Emergency Medicine	(PE)
017	Pediatric Emergency Medicine	(PEM)
135	Forensic Psychiatry	(PFP)
092	Pediatric Gastroenterology	(PG)
093	Pediatric Hematology/Oncology	(PHO)
112	Immunopathology	(PIP)
094	Clinical & Laboratory Immunology	(PLI)
143	Palliative Medicine	(PLM)
100	Physical Medicine & Rehabilitation	(PM)
142	Pain Medicine	(PMD)
095	Pediatric Nephrology	(PN)
146	Pediatric Opthalmology	(PO)

A10. (Continued:)

113	Pediatric Pathology	(PP)
096	Pediatric Rheumatology	(PPR)
102	Plastic Surgery	(PS)
097	Sports Medicine (Pediatrics)	(PSM)
114	Anatomic/Clinical Pathology	(PTH)
141	Medical Toxicology (Preventive Medicine)	(PTX)
116	Pulmonary Diseases	(PUD)
083	Psychoanalysis	(PYA)
084	Geriatric Psychiatry	(PYG)
119	Radiology	(R)
067	Reproductive Endocrinology	(REN)
048	Rheumatology	(RHU)
115	Radioisotopic Pathology	(RIP)
120	Neuroradiology	(RNR)
123	Radiation Oncology	(RO)
121	Radiological Physics	(RP)
150	Spinal Cord Injury	(SCI)
149	Sleep Medicine	(SM)
151	Surgical Oncology	(SO)
148	Selective Pathology	(SP)
033	Trauma Surgery	(TRS)
152	Transplant Surgery	(TTS)
125	Urology	(U)
025	Undersea Medicine	(UM)
126	Pediatric Urology	(UP)
131	Unspecified	(US)
122	Vascular & Interventional Radiology	(VIR)
034	Vascular Surgery	(VS)

997 Other (list) - **(USE VERY SPARINGLY; Thank and Terminate)**

998 (DK) **(Thank and Terminate)**
999 (Refused) **(Thank and Terminate)**

_____ (5/30 - 5/32)

A10. (Continued:)

(If code "1" in S1 [DO-AOA LIST])

002	Allergy and Immunology	AI	
003	Allergy-Diagnostic Lab Immunology	ALI	
004	Immunology	IG	
005	Preventive Medicine-Aerospace Medicine	AM	
006	Anesthesiology	AN	
006	Anesthesiology	CAN	
006	Anesthesiology	IRA	
006	Anesthesiology	OBA	
006	Anesthesiology	PAN	
007	Pain Management	APM	
007	Pain Management	PMR	
008	Critical Care-Anesthesiology	CCA	
009	Cardiovascular Diseases-Cardiology	C	
009	Cardiovascular Diseases-Cardiology	CVD	
009	Cardiovascular Diseases-Cardiology	IC	
010	Pediatric Psychiatry	CHP	
010	Pediatric Psychiatry	PDP	
011	Colon & Rectal Surgery	CRS	
012	Dermatology	D	
014	Diagnostic Radiology	DR	
015	Emergency Medicine	EM	
015	Emergency Medicine	EMS	
015	Emergency Medicine	FEM	
015	Emergency Medicine	IEM	
016	Sports Medicine (Emergency Medicine)		ESM
017	Pediatric Emergency Medicine	PEM	
018	Forensic Pathology	FOP	
019	Family Practice	FP	
019	Family Practice	UFP	
020	Geriatrics-General or Family Practice	GFP	
020	Geriatrics-General or Family Practice	GGP	
021	Sports Medicine-Family or General Practice	SFP	
021	Sports Medicine-Family or General Practice	SGP	
022	Gastroenterology	GE	
023	General Practice	GP	
024	Preventive Medicine	PVM	
025	Undersea Medicine	UM	
026	Abdominal Surgery	AS	
027	Critical Care-Surgery or Trauma	CCS	
027	Critical Care-Surgery or Trauma	CCT	
028	Other Specialty	OS	
029	Surgery-General	S	
030	Head & Neck Surgery	HNS	
031	Hand Surgery	HS	

A10. (Continued:)

031	Hand Surgery	HSS
032	Pediatric Surgery	PDS
033	Traumatic Surgery	TRS
034	Vascular Surgery-General or Peripheral	GVS
034	Vascular Surgery-General or Peripheral	PVS
036	Endocrinology	END
037	Hematology	HEM
039	Cardiac Electrophysiology	ICE
040	Infectious Diseases	ID
041	Diag Lab Immunology-Int Med	ILI
042	Internal Medicine	IM
042	Internal Medicine	IP
043	Geriatrics-Internal Medicine	GER
043	Geriatrics-Internal Medicine	GIM
044	Sports Medicine	ISM
044	Sports Medicine	PMS
044	Sports Medicine	RMS
044	Sports Medicine	SM
045	Nephrology	NEP
046	Nutrition	NTR
047	Oncology	ON
048	Rheumatology	RHU
050	Clinical Cytogenetics	CCG
051	Clinical Genetics	CG
053	Medical Genetics	IMG
054	Pediatric or Child Neurology	CHN
054	Pediatric or Child Neurology	PDN
055	Clinical Neurophysiology	CN
056	Neurology	N
056	Neurology	NMD
056	Neurology	NP
056	Neurology	NPN
057	Nuclear Medicine	NI
057	Nuclear Medicine	NM
057	Nuclear Medicine	NV
058	Critical Care-Neuro Surgery	NCC
059	Neurological Surgery	NS
061	Gynecological Oncology	GO
062	Gynecology	GS
062	Gynecology	GYN
063	Maternal & Fetal Medicine	MFM
064	Obstetrics & Gynecology	OBG
064	Obstetrics & Gynecology	OGS
065	Obstetrics	OBS
066	Critical Care-Obstetrics & Gynecology	OCC

A10. (Continued:)

067	Reproductive Endocrinology	RE
068	Occupational Medicine	OCM
068	Occupational Medicine	OM
069	Ophthalmology	COR
069	Ophthalmology	OAS
069	Ophthalmology	OCR
069	Ophthalmology	OGL
069	Ophthalmology	OPH
069	Ophthalmology	VRS
070	Hand Surgery-Orthopedic Surg	HSO
071	Adult Reconstructive Orthopedics	OAR
072	Musculoskeletal Oncology	OMO
073	Pediatric Orthopedics	OP
074	Orthopedic Surgery	AJI
074	Orthopedic Surgery	OR
074	Orthopedic Surgery	ORS
075	Sports Medicine-Orthopedic Surgery	OSM
076	Orthopedic Surgery-Spine	OSS
078	Facial Plastic Surgery	OPL
080	Otolaryngology or Rhinology	OTL
080	Otolaryngology or Rhinology	OTR
080	Otolaryngology or Rhinology	RHI
081	Pediatric Otolaryngology	PDO
082	Psychiatry	P
083	Psychoanalysis	PYA
084	Geriatric Psychiatry	PYG
085	Adolescent Medicine-Family or General Practice	AFP
085	Adolescent Medicine-Family or General Practice	AGP
086	Pediatric Intensive Care	PIC
087	Neonatology	NE
088	Pediatrics	PD
089	Pediatric Allergy & Immunology	PAI
091	Pediatric Pulmology Medicine	PDX
092	Pediatric Gastroenterology	PG
093	Pediatric Hematology-Oncology	PHO
094	Pediatric Diag Lab Immunology	PLI
095	Pediatric Nephrology	PNP
096	Pediatric Rheumatology	PPR
097	Sports Medicine - Pediatrics	PSM
098	Pediatric Cardiology	PDC
099	Preventive Medicine, Epidemiology or Public Health	EPI
099	Preventive Medicine, Epidemiology or Public Health	OE

A10. (Continued:)

099	Preventive Medicine, Epidemiology or Public Health	PH
099	Preventive Medicine, Epidemiology or Public Health	PHP
100	Physical Medicine & Rehabilitation	IAR
100	Physical Medicine & Rehabilitation	PDR
100	Physical Medicine & Rehabilitation	PM
100	Physical Medicine & Rehabilitation	RM
101	Hand Surgery-Plastic Surg	HSP
102	Plastic Surgery	OOP
102	Plastic Surgery	PLR
103	Anatomic Pathology	AP
104	Blood Banking-Transfusion Medicine	BBT
104	Blood Banking-Transfusion Medicine	LBM
105	Clinical Pathology	CLP
106	Dermatopathology	DPT
107	Hematology-Pathology	HEP
108	Medicine Microbiology	MMB
109	Neuropathology	NPT
110	Chemical Pathology	CP
111	Cytopathology	CY
112	Immunopathology	IPT
113	Pediatric Pathology	PP
114	Anatomic/Clinical Pathology	APL
114	Anatomic/Clinical Pathology	PTH
115	Radioisotopic Pathology	RIP
116	Pulmonary Diseases	PUD
116	Pulmonary Diseases	PUL
117	Nuclear Radiology	NR
118	Pediatric Radiology	PRD
119	Radiology	DUS
119	Radiology	R
119	Radiology	RI
119	Radiology	RT
119	Radiology	RTD
120	Neuroradiology	NRA
121	Radiological Physics	RP
122	Angiography & Intervent'l Radiology	ANG
122	Angiography & Intervent'l Radiology	SCL
123	Radiation Oncology	RO
123	Radiation Oncology	TR
124	Cardiovascular or Thoracic Cardiovascular Surgery	CVS
124	Cardiovascular or Thoracic Cardiovascular Surgery	TS
125	Urology	U

A10. (Continued:)

125	Urology	URS
126	Pediatric Urology	UP
127	Addictive Diseases	ADD
128	Critical Care-Medicine	CCM
129	Legal Medicine	LM
130	Clinical Pharmacology	PA
131	Unknown Blank	
133	Adolescent Medicine	ADL
134	Orthopedic Foot & Ankle Surg	OFA
135	Forensic Psychiatry	FPS
136	Hematology & Oncology	HEO
137	Internal Med-Pediatrics	IPD
139	Toxicology	TX
142	Psychosomatic Medicine	PYM
145	Pediatric Infectious Diseases	PID
146	Pediatric Ophthalmology	PO
147	Pulmonary-Critical Care	PUC
153	MOHS Micrographic Surgery	DMS
154	Hair Transplant	HT
155	Osteo Manipulative Treat +1	OM1
156	Spec Prof in Osteo Manip Med	OMM
157	Sports Medicine - OMM	OMS
158	Osteo Manipulative Medicine	OMT
159	Proctology	PR
160	Internship	IN
161	Retired	RET
162	Transitional Year	TY
209	Nuclear Cardiology	NC

997 Other (list) - **(USE VERY SPARINGLY; Thank and Terminate)**

998 (DK) **(Thank and Terminate)**

999 (Refused) **(Thank and Terminate)**

_____ (5/30 - 5/32)

(If code "003", "005-007", "013-014", "018", "025", "028", "057", "099", "103-115", "117-123", "129-131", "135", "138-143", "148-149", "160-162" or "209" in #A8, INTERVIEWER READ:) In this survey, we are only interviewing physicians in certain specialties, and your specialty is not among those being interviewed. So, it appears that we do not need any further information from you at this time, but we thank you for your cooperation. - **(Thank and Terminate)**

A11. Are you board-certified in **(response in #A10)**?

BDCTSB

1 Yes - **(Skip to #A13)**

2 No - **(Continue)**

8 (DK) **(Skip to #A12)**
9 (Refused) **(Skip to #A12)** _____ (8/78)

A11a. **(If code "2" in #A11, ask:)** Our survey data shows that you were board certified in **(response in #A10)**, when we last interviewed you. Is that correct? **(If necessary, say:)** The previous interviews were conducted between August, 1996 and August, 1997.

BDCTSBC

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/29)

A12. **(If code "2", "8" or "9" in #A11, ask:)** Are you board-eligible in **(response in #A10)**?

BDELSB

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/30)

A13. Are you board-certified in **(response in #A8)**?

BDCTSP

1 Yes - **(Skip to #A19)**

2 No - **(Continue)**

8 (DK) **(Skip to "Note" before #A14)**
9 (Refused) **(Skip to "Note" before #A14)** _____ (21/31)

**(If code "2" in S1c,
and code "2" in #A13,
and code "1" in S1d, Continue;
Otherwise, Skip to "Note" before #A14)**

A13a. Our survey data shows that you were board certified in **(response in #A8)**, when we last interviewed you. Is this correct? **(If necessary, say:)** The previous interviews were conducted between August, 1996 and August 1997.

BDCTSPC

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/32)

**(If code "1" in #A12, Skip to #A19;
Otherwise, Continue)**

A14. Are you board-eligible in **(response in #A8)**?

BDELSP

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/33)

(All in #A14, Skip to #A19)

A15. Are you board-certified in **(response in #A8)**?
(INTERVIEWER NOTE: If physician says "Board-Certified in Internal Medicine" or "Board-certified in Pediatrics", code as "1")

BDCTPSP

1 Yes - **(Skip to #A19)**

2 No - **(Continue)**

8 (DK) **(Skip to #A16)**
9 (Refused) **(Skip to #A16)** _____ (21/34)

(If code "2" in S1c, and code "2" in #A15, and code "1" in S1f, Continue; Otherwise, Skip to #A16)

A15a. Our survey data shows that you were board certified in **(response in #A8)**, when we last interviewed you. Is this correct? **(If necessary, say:)** The previous interviews were conducted between August, 1996 and August, 1997.

BDCTPSC

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/35)

A16. Are you board-eligible in **(response in #A8)**?
(INTERVIEWER NOTE: If physician says "Board-Certified in Internal Medicine" or "Board-certified in Pediatrics", code as "1")

BDELPSP

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/36)

(If code "019", "023", "042", "088" or "137" in #A8, Skip to #A19; Otherwise, Continue)

A17. Are you board certified in any specialty?

BDCTAY

1 Yes - **(Skip to #A19)**

2 No **(Continue)**
8 (DK) **(Continue)**
9 (Refused) **(Continue)** _____ (5/38)

(If code "1" in #A16, Skip to #A19; Otherwise, Continue)

A18. **(If code "2" or "8-9" in #A17, ask:)** Are you board eligible in any specialty?

BDELAY

1 Yes
2 No
8 (DK)
9 (Refused) _____ (5/39)

A19. Many of the remaining questions are about your practice and your relationships with patients. Before we begin those questions, let me ask you: Thinking very generally about your satisfaction with your overall career in medicine, would you say that you are CURRENTLY **(read 5-1)**?

CARSAT

5 Very satisfied
4 Somewhat satisfied
3 Somewhat dissatisfied
2 Very dissatisfied, OR
1 Neither satisfied nor dissatisfied

8 (DK)
9 (Refused) _____ (5/40)

CLOCK:

_____ ____ ____ (28/16 - 28/19)

SECTION B
UTILIZATION OF TIME

B1. **(If code "2" in #A4, AND code "03-97", "DK" or "RF" in #A4a, OR code "8" or "9" in #A4, ask:)** Considering all of your practices, approximately how many weeks did you practice medicine during 1997? Exclude time missed due to vacation, illness and other absences. **(If necessary, say:)** Exclude family leave, military service, and professional conferences. If your office is closed for several weeks of the year, those weeks should NOT be counted as weeks worked. (Open ended **and code actual number)**

(If code "2" in #A4, AND code "02" in #A4a, ask:) Considering both of your practices, approximately how many weeks did you practice medicine during 1997? Exclude time missed due to vacation, illness and other absences. **(If necessary, say:)** Exclude family leave, military service, and professional conferences. If your office is closed for several weeks of the year, those weeks should NOT be counted as weeks worked. (Open ended **and code actual number)**

(If code "1" in #A4, ask:) Approximately how many weeks did you practice medicine during 1997? Exclude time missed due to vacation, illness and other absences. **(If necessary, say:)** Exclude family leave, military service, and professional conferences. If your office is closed for several weeks of the year, those weeks should NOT be counted as weeks worked. (Open ended **and code actual number)**

WKSWRK

53-
97 (BLOCK)

DK (DK)
RF (Refused)

_____ (5/41) (5/42)

B2. **(If code "2" in #A4, AND code "03-97", "DK" or "RF" in #A4a, OR code "8" or "9" in #A4, ask:)** Considering all of your practices, during your last complete week of work, approximately how many hours did you spend in all medically related activities? Please include all time spent in administrative tasks, professional activities and direct patient care. Exclude time on call when not actually working. (Open ended **and code actual number)**

(If code "2" in #A4, AND code "02" in #A4a, ask:) Considering both of your practices, during your last complete week of work, approximately how many hours did you spend in all medically related activities? Please include all time spent in administrative tasks, professional activities and direct patient care. Exclude time on call when not actually working. (Open ended **and code actual number)**

(If code "1" in #A4, ask:) During your last complete week of work, approximately how many hours did you spend in all medically related activities? Please include all time spent in administrative tasks, professional activities and direct patient care. Exclude time on call when not actually working. (Open ended **and code actual number)**

HRSMD_A

169-
997 (BLOCK)

DK (DK)
RF (Refused)

_____ (5/43 - 5/45)

B3. **(If code "001-168" in #B2, ask:)** Of these **(response in #B2)** hours, how many did you spend in direct patient care activities? **(If necessary, say:)** INCLUDE time spent on patient record-keeping, patient-related office work, and travel time connected with seeing patients. EXCLUDE time spent in training, teaching, or research, any hours on-call when not actually working, and travel between home and work at the beginning and end of the work day. **(If appropriate, say:)** INCLUDE ALL PRACTICES, not just the main practice. (Open ended **and code actual number)**

(If code "DK" or "RF" in #B2, ask:) About how many hours did you spend in direct patient care activities? **(If necessary, say:)** INCLUDE time spent on patient record-keeping, patient-related office work, and travel time connected with seeing patients. EXCLUDE time spent in training, teaching, or research, any hours on-call when not actually working, and travel between home and work at the beginning and end of the work day. **(If appropriate, say:)** INCLUDE ALL PRACTICES, not just the main practice. (Open ended **and code actual number)**

HRSPT_A

169-
997 (BLOCK)

DK (DK)
RF (Refused)

_____ (5/46 - 5/48)

(If response in #B3 = response in #B2, Continue;
If response in #B3 > response in #B2, Skip to B4;
Otherwise, Skip to #B6)

B3a. So, you spent all of your time working in direct patient care activities, is that right?

ALLPAT

1 Yes - **(Skip to #B6)**

2 No - **(Continue)**

8 (DK) **(Skip to #B6)**
9 (Refused) **(Skip to #B6)** _____ (5/75)

B3b. **(If code "2" in #B3a, ask:)** I have recorded that you spent **(response in #B2)** hours in all medically related activities and **(response in #B3)** hours in direct patient care. Which of these is incorrect?

MEDPAT

1 All medically related activities hours - **(Continue)**

2 Direct patient care hours - **(Skip to #B3d)**

3 (Neither are correct) - **(Continue)**

4 (Both are correct)
8 (DK) **(Skip to #B6)**
9 (Refused) _____ (5/76)

B3c. **(If code "1" or "3" in #B3b, ask:)** Thinking of your last complete week of work, approximately how many hours did you spend in all medically related activities? Please include all time spent in administrative tasks, professional activities and direct patient care. Exclude time on call when not actually working. (Open ended **and code actual number)**

HRSMD_B

169-
997 (BLOCK)

DK (DK)
RF (Refused)

_____ (5/77 - 5/79)

B3d. **(If code "2" or "3" in #B3b, ask:)** Thinking of your last complete week of work, about how many hours did you spend in direct patient care activities? **(If necessary, say:)** INCLUDE time spent on patient record-keeping, patient-related office work, and travel time connected with seeing patients. EXCLUDE time spent in training, teaching, or research, any hours on-call when not actually working, and travel between home and work at the beginning and end of the work day. **(If appropriate, say:)** INCLUDE ALL PRACTICES, not just the main practice. (Open ended **and code actual number)**

HRSPT_B

169-
997 (BLOCK)

DK (DK)
RF (Refused)

_____ (6/74 - 6/76)

(All in #B3d, Skip to #B6)

B4. I may have made a recording mistake. My computer is showing that I've recorded more hours spent in direct patient care than in ALL medical activities. So, during your last complete week of work, approximately how many hours did you spend in ALL medically related activities? Please include all time spent in administrative tasks, professional activities and direct patient care, as well as any hours spent on call when actually working? (Open ended **and code actual number)**

HRSMD_C

169-
997 (BLOCK)

DK (DK)
RF (Refused)

_____ _____
_____ (5/49 - 5/51)

B5. And of those total [**(response in #B4)**] hours, about how many did you spend in direct patient care activities? **(If necessary, say:)** INCLUDE time spent on patient record-keeping, patient-related office work, and travel time connected with seeing patients. EXCLUDE time spent in training, teaching, or research, any hours on-call when not actually working, and travel between home and work at the beginning and end of the work day. **(If appropriate, say:)** INCLUDE ALL PRACTICES, not just the main practice. (Open ended **and code actual number)**

HRSPT_C

169-
997 (BLOCK)

DK (DK)
RF (Refused)

_____ _____
_____ (5/52 - 5/54)

B6. **(If code "8" or "9" in #A4, OR code "03-97", "DK" or "RF" in #A4a, ask:)** Again thinking of all your practices, during the LAST MONTH, how many hours, if any, did you spend providing CHARITY care? By this we mean, that because of the financial need of the patient you charged either no fee or a reduced fee. Please do not include time spent providing services for which you expected, but did not receive, payment. **(Probe:)** Your best estimate would be fine. (Open ended **and code actual number)**

(If code "02" in #A4a, ask:) Again thinking of both of your practices, during the LAST MONTH, how many hours, if any, did you spend providing CHARITY care? By this we mean, that because of the financial need of the patient you charged either no fee or a reduced fee. Please do not include time spent providing services for which you expected, but did not receive, payment. **(Probe:)** Your best estimate would be fine. (Open ended **and code actual number)**

(If code "1" in #A4, ask:) During the LAST MONTH, how many hours, if any, did you spend providing CHARITY care? By this we mean, that because of the financial need of the patient you charged either no fee or a reduced fee. Please do not include time spent providing services for which you expected, but did not receive, payment. **(Probe:)** Your best estimate would be fine. (Open ended **and code actual number)**

(If necessary, say:) EXCLUDE bad debt and time spent providing services under a discounted fee for service contract or seeing Medicare and

(If code "06" in "STATE", say:) MediCAL patients.

(If code "04" in "STATE", say:) AHCCCS ("Access") patients.

B6. (Continued:)

(If code "01-03", "05" or "07-56" in "STATE", say:) Medicaid patients.

(If necessary, say:) By the LAST MONTH, we mean the last four weeks.

HRFREE

DK (DK)
RF (Refused)

_____ (10/64 - 10/66)

CLOCK:

_____ (28/24 - 28/27)

SECTION C
TYPE AND SIZE OF PRACTICE

CA. PRACTICE: **(Code only)**

ONEPR

1 **(If code "1" in #A4:)** Practice

2 **(If code "2", "8" or "9" in #A4:)** Main Practice _____ (5/63)

(INTERVIEWER READ:) Now, I would like to ask you a series of questions about the **(response in #CA)** in which you work.

C1. Are you a full owner, a part owner, or not an owner of this practice? **(INTERVIEWER NOTE: A shareholder of the practice in which they work should be coded as "2 - Part owner")**

OWNPR

1	Full owner	**(Continue)**
2	Part owner	**(Continue)**
3	Not an owner	**(Skip to #C3)**
8	(DK)	**(Skip to #C3)**
9	(Refused)	**(Skip to #C3)**

_____ (5/64)

C2. **(If code "1" or "2" in #C1, ask:)** Which of the following best describes this practice? Is it **(read 06-16, then 01)**? **(INTERVIEWER NOTE: A free-standing clinic includes non-hospital-based ambulatory care, surgical and emergency care centers)**

TOPOWN

01 OR, something else (list) - **(Skip to #C4)**

02-05 HOLD

06 A practice owned by one physician (solo practice) - **(Skip to "Note" before #C3)**

07 A two physician practice - **(Skip to #C4)**

08 A group practice of three or more physicians (see AMA definition on card) - **(Continue)**

09 A group model HMO **Skip to #C7)**

10 A staff model HMO **Skip to #C7)**

11-15 HOLD

16 A free-standing clinic - **(Continue)**

98 (DK) **(Skip to #C4**

99 (Refused) **(Skip to #C4)**

_____ (5/65) (5/66)

C2a. **(If code "08" or "16" in #C2, ask:)** Is the practice a single-specialty or multi-specialty practice?

OWNNSPC

1 Single-specialty - **(Skip to "Note" before #C3)**

2 Multi-specialty - **(Continue)**

8 (DK) **(Skip to "Note" before #C3)**
9 (Refused) **(Skip to "Note" before #C3)** _____ (21/37)

(If code "019", "023", "042", "088" or "137" in #A10/#A8, OR if code "2" in #A9a, or code "3" in #A9a, or code "2" in #A9b, or code "3" in #A9b, Skip to #C2c; Otherwise, Continue)

C2b. Are any of the physicians in the practice in primary care specialties? **(Probe:)** By primary care specialties, we mean general or family practice, general pediatrics, or general internal medicine.

OWNPCP

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/38)

(All in #C2b, Skip to "Note" before #C3)

C2c. **(If code "019", "023", "042", "088" or "137" in #A10/#A8, or if code "2" in #A9a, or code "3" in #A9a, or code "2" in #A9b, or code "3" in #A9b, ask:)** Are any of the physicians in the practice in specialties other than general or family practice, general pediatrics or general internal medicine?

OWNSPEC

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/39)

(If code "1" in #C1, AND code "06" in #C2, Skip to #C7; Otherwise, Skip to #C4)

C3. **(If code "3", "8" or "9" in #C1, ask:)** Which of the following best describes your current employer or employment arrangement? Are you employed by **(read 06-16, then 01)**? **(INTERVIEWER NOTE: Stop once response is given)** **(If necessary, say:)** An EMPLOYER is the entity that pays you and should not be confused with where you work. For instance, your employer could be a group practice even if you work in a hospital.

TOPEMP

01 OR, something else (do NOT list here) - **(Skip to #C3b)**

02-05 HOLD

06 A practice owned by one physician (solo practice) - **(Skip to #C5)**

07 A two physician-owned practice - **(Skip to #C4)**

08 A group practice of three or more physicians (see) AMA definition on card) - **(Continue)**

09 A group model HMO **(Skip to #C7)**
10 A staff model HMO **(Skip to #C7)**

12 A medical school or university **(Skip to #C10)**
13 A non-government hospital or group of hospitals **(Skip to #C10)**

14 City, county or state government - **(Skip to #C3a)**

16 A free-standing clinic - **(Continue)**

98 (DK) **(Skip to #C3b)**
99 (Refused) **(Skip to #C3b)**

(5/67) (5/68)

C3aa. **(If code "08 or "16" in #C3, ask:)** Is the practice a single-specialty or multi-specialty practice?

EMPNSPC

1 Single-specialty - **(Skip to #C4)**

2 Multi-specialty - **(Continue)**

8 (DK) **(Skip to #C4)**
9 (Refused) **(Skip to #C4)** _____ (21/40)

(If code "019", "023", "042", "088" or "137" in #A10/#A8, OR if code "2" in #A9a, or code "3" in #A9a, or code "2" in #A9b, or code "3" in #A9b, Skip to C3ac; Otherwise, Continue)

C3ab. Are any of the physicians in the practice in primary care specialties? **(Probe:)** By primary care specialties, we mean general or family practice, general pediatrics, or general internal medicine.

EMPPCP

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/41)

(All in #C3ab, Skip to #C4)

C3ac. **(If code "019", "023", "042", "088" or "137" in #A10/#A8, or if code "2" in #A9a, or code "3" in #A9a, or code "2" in #A9b, or code "3" in #A9b, ask:)** Are any of the physicians in the practice in specialties other than general or family practice, general pediatrics or general internal medicine?

EMPSPEC

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/42)

(All in #C3ac, Skip to #C4)

C3a. **(If code "14" in #C3, ask:)** Is this a hospital, clinic or some other setting?

OTHSET

1 Hospital
2 Clinic
3 Other (do NOT list)
8 (DK)
9 (Refused) _____ (6/78)

(All in #C3a, Skip to #C10)

C3b. **(If code "01", "98" or "99" in #C3, ask:)** Are you employed by **(read 11-21, as appropriate, then 01)**?

EMPTYP

01 OR, something else (do NOT list here) - **(Continue)**

02-
10 HOLD

11 Other HMO, insurance company or health plan - **(Skip to #C10)**

15 An integrated health or delivery system - **(Skip to #C10)**

17 A physician practice management company or other for-profit investment company **(Skip to #C10)**

18 Community health center - **(Skip to #C7)**

19 Management Services Organization (MSO) **(Skip to #C10)**
20 Physician-Hospital Organization (PHO) **(Skip to #C10)**

21 Locum tenens - **(Skip to #C10)**

22 Foundation - **(Skip to #C3ca)**

25 Independent contractor **(Skip to #C10)**
26 Industry clinic **(Skip to #C10)**

98 (DK) **(Skip to #C4)**
99 (Refused) **(Skip to #C4)**

_____ (6/79) (6/80)

C3c. What type of organization do you work for? (Open ended and code, **if possible; otherwise, ENTER VERBATIM RESPONSE)**

EMPTYP2

01 Other (list) - **(Skip to #C10)**

02-
05 HOLD

06 A practice owned by one physician (solo practice) - **(Skip to #C5)**

07 A two physician-owned practice - **(Skip to #C4)**

08 A group practice of three or more physicians (see) AMA definition on card) - **(Skip to #C3ca)**

09 A group model HMO **(Skip to #C7)**
10 A staff model HMO **(Skip to #C7)**

12 A medical school or university **(Skip to #C10)**
13 A non-government hospital or group of hospitals **(Skip to #C10)**

14 City, county or state government - **(Continue)**

16 A free-standing clinic - **(Skip to #C3ca)**

17 HOLD

18 Community health center - **(Skip to #C4)**
19-
21 HOLD

22 Foundation - **(Skip to #C3ca)**

25 Independent Contractor **(Skip to #C10)**
26 Industry Clinic **(Skip to #C10)**

98 (DK) **(Skip to #C4)**
99 (Refused) **(Skip to #C4)**

(21/43) (21/44)

C3ca. **(If code "08" or "16" in #C3c, or code "22" in #C3b, ask:)** Is the practice a single-specialty or multi-specialty practice?

EM2NSPC

1 Single-specialty - **(Skip to #C4)**

2 Multi-specialty - **(Continue)**

8 (DK) **(Skip to #C4)**
9 (Refused) **(Skip to #C4)** _____ (5/57)

(If code "019", "023", "042", "088" or "137" in #A10/#A8, OR if code "2" or "3" in #A9a, OR code "2" or "3" in #A9b, Skip to #C3cc; Otherwise, Continue)

C3cb. Are any of the physicians in the practice in primary care specialties? By primary care specialties, we mean general or family practice, general pediatrics or general internal medicine.

EM2PCP

1 Yes
2 No
8 (DK)
9 (Refused) _____ (5/58)

(All in #C3cb, Skip to #C4)

C3cc. **(If code "019", "023", "042", "088" or "137" in #A10/#A8, OR code "2" or "3" in #A9a, OR code "2" or "3" in #A9b, ask:)** Are any of the physicians in the practice in specialties other than general or family practice, general pediatrics or general internal medicine?

EM2SPEC

1 Yes
2 No
8 (DK)
9 (Refused) _____ (5/59)

C3d. **(If code "14" in C3c, ask:)** Is this a hospital, clinic, or some other setting?

EM2HOSP

1 Hospital
2 Clinic
3 Other (do NOT list)
8 (DK)
9 (Refused) _____ (21/62)

C4. Do one or more of the other physicians in the practice in which you work have an ownership interest?

OTHPAR

1 Yes
2 No
8 (DK)
9 (Refused) _____ (5/69)

(If code "22" in #C3b or #C3c, Skip to #C7; Otherwise, Continue)

C5. Do any of the following have an ownership interest in the practice in which you work? This ownership interest may include ownership of only the assets or accounts receivable. Does **(read A-D)** have an ownership interest in the practice? **(If necessary, say:)** Do not include leased equipment.

1 Yes
2 No
8 (DK)
9 (Refused)

OTHGRP

A. Another physician group _____ (6/12)

HSPPAR

B. A hospital or group of hospitals _____ (6/13)

INSPAR

C. An insurance company, health plan or HMO _____ (6/14)

ORGPAR

D. Any other organization **(listed on next screen)** (6/15)

(If code "1" in #C5-D, Continue;
If code "2" to ALL in #C5 A-D, Skip to #C6a;
Otherwise, Skip to #C7)

C6. **(If code "1" in #C5-D, ask:)** What kinds of organizations are these? (Open ended and code) **(ENTER ALL RESPONSES)**

ORG_1,…, ORG_16 *

01	Other (list)	1	_____	(6/16)
02	(DK)	2		
03	(Refused)	3		
04	No others	4		
05	HOLD	5		
06	Integrated health or delivery system	6		
07	Physician practice management or other for-profit investment company	7		
08	Management Services Organization (MSO)	8		
09	Physician-Hospital Organization (PHO)	9		
10	University/Medical school	0		
11	Medical Foundation or Non-profit Foundation	1	_____	(6/17)
12	Other Non-profit or community-based organization	2		
13	Other physicians in this practice	3		
14	Another physician group	4		
15	A hospital or group of hospitals	5		
16	An insurance company, health plan or HMO	6		
		HOLD	0	(6/18-6/27)

C6a. **(If code "3" in #C1, AND code "2" in #C4, AND code "2" to ALL in #C5 A-D, ask:)** Who owns the practice in which you work? (Open ended)

OWNVERB

01	Other (list)		
02	(DK)		
03	(Refused)		
04	HOLD		
05	HOLD		

_____ _____
(7/72) (7/73)

C7. How many physicians, including yourself, are in the practice? Please include all locations of the practice. **(Probe:)** Your best estimate would be

fine. (Open ended **and code actual number)** **(INTERVIEWER NOTE: If asked, this includes both full- and part-time physicians)**

NPHYS

997 997+
DK (DK)
RF (Refused)

_____ (6/28 - 6/30)

C8. How many physician assistants, nurse practitioners, nurse midwives, and clinical nurse specialists are employed by the practice including all locations? Include both full- and part-time employees in your answer. **(Probe:)** Please include only those who fit these categories. Your best estimate would be fine. (Open ended **and code actual number)** **(INTERVIEWER NOTE: Do NOT include office staff or nursing or other personnel who do not fit these categories; examples: LPNs or RNs who are not nurse practitioners or clinical nurse specialists should not be included)**

NASSIST

997 997+
DK (DK)
RF (Refused)

_____ (6/31 - 6/33)

(If code "08" in #C2 or #C3 AND code "025-997" in #C7, Continue; Otherwise, Skip to #C10)

C9. Is your practice either a group model HMO or organized exclusively to provide services to a group model HMO?

GRPHMO

1 Yes
2 No
8 (DK)
9 (Refused) _____ (6/34)

C10. In the last two years, were you part of a practice that was purchased by another practice or organization? **(If necessary, say:)** We are only interested in purchases over the last two years that occurred while you were part of the practice.

ACQUIRD

1 Yes - **(Continue)**

2 No **(Skip to "Section D")**
8 (DK) **(Skip to "Section D")**
9 (Refused) **(Skip to "Section D")** _____ (6/35)

C11. **(If code "1" in #C10, ask:)** At the time of the purchase, were you a full owner, a part owner, or not an owner of the practice that was purchased? **(INTERVIEWER NOTE: If multiple purchases, ask about the most recent)**

OWNPUR

1 Full owner
2 Part owner
3 Not an owner
8 (DK)
9 (Refused) _____ (6/36)

CLOCK:

_____ _____
(28/32 - 28/35)

SECTION D
MEDICAL CARE MANAGEMENT

MANAGEMENT STRATEGIES

(INTERVIEWER READ:) Now, I would like to ask you a series of questions about various medical care management techniques or strategies that are sometimes used to manage the care physicians provide to their patients. For each, I'll ask you how large an effect they have on your practice of medicine. The choices are: a very large effect, large, moderate, small, very small, or no effect at all. **(If code "2", "8" or "9" in #A4, say:)** As you answer, please think only about your main practice.

D1. At present, **(read and rotate A-F)**? Would you say that (it has/they have) a **(read 5-0)**? **(If physician says "Do not use/receive", say:)** Does this mean (it has/they have) no effect?

5 Very large
4 Large
3 Moderate
2 Small
1 Very small, OR
0 No effect at all

8 (DK)
9 (Refused)

EFDATA

A. How large an effect does your use of computers to obtain or record clinical data, such as medical records and lab results, have on your practice of medicine **(INTERVIEWER NOTE: This could include the physician's own computer system or that provided by a health insurance plan or HMO, hospital or other institution.)** _____ (6/37)

D1. (Continued:)

EFTREAT

B. How large an effect does your use of computers to obtain information about treatment alternatives or recommended guidelines have on your practice of medicine **(INTERVIEWER NOTE: This could include the physician's own computer system or that provided by a health insurance plan or HMO, hospital or other institution.)**

EFRMNDR

C. **(If code "019-020", "023", "043", "062", "064-065", "085" or "133" in #A10/#A8, OR If code "1", "8" or "9" in #A9, or code "042", "088" or "137" in #A10, OR If code "2" or "3" in #A9a, OR If code "2" or "3" in #A9b, ask:)** How large an effect do reminders that you receive from either a medical group, insurance company or HMO alerting you about specific preventive services that may be due for your individual patients have on your practice of medicine **(INTERVIEWER NOTE: Includes reminders from either the medical practice, insurance companies, clinics or HMOs. Does NOT include general educational material about preventive services or other reminders that are not about specific services for specific patients.)** _____ (6/41)

EFGUIDE

D. How large an effect does your use of FORMAL, WRITTEN practice guidelines such as those generated by physician organizations, insurance companies or HMOs, or government agencies have on your practice of medicine **(INTERVIEWER NOTE: Exclude guidelines that are unique to the physician.)** **(If physician says that s/he uses his/her own guidelines, say:)** In this question, we are only interested in the use of formal, written guidelines such as those generated by physician organizations, insurance companies or HMOs, or other such groups.

D1. (Continued:)

EFPROFL

E. How large an effect do the results of practice profiles comparing your pattern of using medical resources to treat patients with that of other physicians have on your practice of medicine? **(INTERVIEWER NOTE: We are not interested in informal feedback, but only specific, quantified information about the physician's practice patterns.) (If necessary, say:)** A practice profile is a report that is usually computer generated which compares you to other physicians on things like referrals to specialists, hospitalizations, or other measures of cost-effectiveness. _____ (6/45)

EFSURV

F. How large an effect does feedback from patient satisfaction surveys have on your practice of medicine _____

(There are no D2-D6)

(If code "019-020", "023", "043", "085" or "133" in #A10/#A8, OR If code "1", "8" or "9" in #A9, OR If code "042", "088" or "137" in #A10, OR If code "2" or "3" in #A9a, OR If code "2" or "3" in #A9b, Continue; Otherwise, Skip to "Interviewer Read" before #D11)

(INTERVIEWER READ:) Now, I would like to ask you a couple of questions about the range and complexity of conditions you treat without referral to specialists.

D7. During the last two years, has the complexity or severity of patients' conditions for which you provide care without referral to specialists **(read 5-1)**? **(INTERVIEWER NOTE: If respondent says he/she has not been practicing medicine for two years, ask about time since he/she started.)**

CMPPROV

5 Increased a lot
4 Increased a little
3 Stayed about the same
2 Decreased a little, OR
1 Decreased a lot

8 (DK)
9 (Refused) _____ (6/49)

D8. In general, would you say that the complexity or severity of patients' conditions for which you are currently expected to provide care without referral is **(read 5-1)**?

CMPEXPC

5 Much greater than it should be
4 Somewhat greater than it should be
3 About right
2 Somewhat less than it should be, OR
1 Much less than it should be

8 (DK)
9 (Refused) _____ (6/50)

D9. During the last two years, has the number of patients that you refer to specialists **(read 5-1)**?

SPECUSE

5 Increased a lot
4 Increased a little
3 Stayed about the same
2 Decreased a little, OR
1 Decreased a lot

8 (DK)
9 (Refused) _____ (6/51)

D10. Some insurance plans or medical groups REQUIRE their enrollees to obtain permission from a primary care physician before seeing a specialist. For roughly what percent of your patients do you serve in this role? (Open ended **and code actual percent)**

(If necessary, say:) The term "gatekeeper" is often used to refer to this role.

(If necessary, say:) Include only those patients for whom it is required, not for patients who choose to do so voluntarily.

PCTGATE

000	None	**(Skip to "Section E")**
001	1% or less	**(Skip to "Section E")**
002-100		**(Skip to "Section E")**
DK	(DK)	**(Continue)**
RF	(Refused)	**(Continue)**

_____ _____
_____ (6/52 - 6/54)

D10a **(If code "DK" or "RF" in #D10, ask:)** Would you say you serve in this role for **(read 1-2)**?

PGATE25

1 Less than 25 percent of your patients, OR - **(Skip to #D10c)**

2 25 percent or more of your patients - **(Continue)**

8 (DK) **(Skip to "Section E")**
9 (Refused) **(Skip to "Section E")** _____ (6/55)

D10b **(If code "2" in #D10a, ask:)** Would you say for **(read 1-2)**?

PGATE50

1 Less than 50 percent of your patients

OR

2 50 percent or more of your patients

8 (DK)
9 (Refused) _____ (6/56)

(All in #D10b, Skip to "Section E")

D10c **(If code "1" in #D10a, ask:)** Would you say for **(read 1-2)**?

PGATE10

1 Less than 10 percent of your patients

OR

2 10 percent or more of your patients

8 (DK)
9 (Refused) _____ (6/57)

(All in #D10c, "Skip to Section E")

(INTERVIEWER READ:) Now, I would like to ask you a couple of questions about the range and complexity of conditions you treat.

D11. During the last two years, has the complexity or severity of patients' conditions at the time of referral to you by primary care physicians **(read 5-1)**?

CMPCHG

5 Increased a lot
4 Increased a little
3 Stayed about the same
2 Decreased a little, OR
1 Decreased a lot

8 (DK)
9 (Refused) _____ (6/58)

D12. In general, would you say that the complexity or severity of patients' conditions at the time of referral to you by primary care physicians is **(read 5-1)**?

CMPLVL

5 Much greater than it should be
4 Somewhat greater than it should be
3 About right
2 Somewhat less than it should be, OR
1 Much less than it should be

8 (DK)
9 (Refused) _____ (6/59)

D13. During the last two years, has the number of patients referred to you by primary care physicians **(read 5-1)**?

CHGREF

5 Increased a lot
4 Increased a little
3 Stayed about the same
2 Decreased a little, OR
1 Decreased a lot

8 (DK)
9 (Refused) _____ (6/60)

CLOCK:

_____ _____
(28/40 - 28/43)

(NOTE: If code "2" in S1c, Select SAME "Vignettes" as in Round #1. The question numbers will be in the "Fone" file - Skip to "Interviewer Read") (If Vignettes NOT asked last time, Continue with "Note" before #EA)

SECTION E
VIGNETTES

(If code "1", "2" or "3" in S1c, AND code "019", "023" or "137" in #A10/#A8, OR if code "2" or "3" in #A9a, OR code "2" or "3" in #A9b, Continue; Otherwise, Skip to "Note" after #EA)

EA. Does your **(response in #CA)** include providing care to **(read 1-3)**? **(INTERVIEWER NOTE: This question refers only to the physician's OWN PATIENTS)**

WHOCARE

1	Adults only	**(Continue)**
2	Children only, OR	**(Continue)**
3	Both adults and children	**(Continue)**
8	(DK)	**(Skip to "Section F")**
9	(Refused)	**(Skip to "Section F")**

_____ (6/61)

(NOTE: If code "42" in #A10, code as "1" in "Form";
If code "88" in #A10, code as "2" in "Form")

(If code "042" in #A8,
AND code "1", "8" or "9" in #A9,
OR code "1" in #EA, code as "1" in "FORM";
If code "088" in #A8,
AND code "1", "8" or "9" in #A9,
OR code "2" in #EA, code as "2" in "FORM";
If code "3" in #EA, code as "3" in "FORM";
Otherwise, Skip to "Section F")

FORM:

1 FORM 1 **(Rotate #E1, #E3, #E4, #E5, #E9 and #E10)**

2 FORM 2 **(Rotate #E11, #E16, #E17, #E18, #E20 and #E21)**

3 FORM 3 **(Randomly select and rotate) (Either #E5 or #E9 AND either #E1 or #E10 AND either E#3 or #E4 AND either #E17 or #E20 AND either #E11 or #E16 AND either #E18 or #E21)**

_____ (6/6

(INTERVIEWER READ:) I am going to read a description of a patient and I'll ask about a possible test, treatment, or recommendation. We want you to think about patients with similar problems you've seen in your own practice during the past twelve months. The key question I'll ask is for what percentage of the patients with that problem would you recommend the test, treatment, or evaluation? Reasons for not recommending the treatment may include feeling that no treatment, or that an alternative treatment, is a better option. Any percentage, from zero to 100 percent, is a valid response.

(If code "2" or "8-9" in #A4, say:) As you answer, please think only about your main practice.

(If code "2" in "FORM", Skip to #E11; Otherwise, Continue)

E1. **(If code "1" or "3" in "FORM", ask:)** What about treating an elevated cholesterol with oral agents for a 50 year old man who has no other cardiac risk factors except elevated cholesterol? After six months on a low cholesterol diet, his total cholesterol is 240 and his LDL is 150. His HDL cholesterol is 50, giving a ratio of total cholesterol to HDL cholesterol of 4.8. For what percentage of such patients would you recommend oral agents at this point? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

VCHOL

000 None **(Skip to "Next" item)**
001 1% or less **(Skip to "Next" item)**

002-
100 **(Skip to "Next" item)**

DK (DK) - **(Continue)**

RF (Refused) - **(Skip to "Next" item)**

_____ _____ (6/63 - 6/65)

E1a. **(If code "DK" in #E1, ask:)** Would you recommend oral agents **(read 6-1)**?

VCHOLF

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

8 (DK)
9 (Refused) _____ (6/66)

(There is no #E2)

E3. **(If code "1" or "3" in "FORM", ask:)** What about a urology referral for further evaluation of symptoms of benign prostatic hyperplasia in a 60 year old man. He is moderately symptomatic, has no evidence of renal compromise or cancer. The patient is somewhat bothered by these symptoms. For what percentage of such patients would you recommend a urology referral? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

VHYPER

000 None **(Skip to "Next" item)**
001 1% or less **(Skip to "Next" item)**

002-
100 **(Skip to "Next" item)**

DK (DK) - **(Continue)**

RF (Refused) - **(Skip to "Next" item)**

_____ _____ (7/12 - 7/14)

E3a. **(If code "DK" in #E3, ask:)** Would you recommend a urology referral **(read 6-1)**?

VHYPERF

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

8 (DK)
9 (Refused) _____ (7/15)

E4. **(If code "1" or "3" in "FORM", ask:)** What about a cardiology referral after a stress test for a 50 year old man with a one month history of exertional chest pain. On no medications, after 6 minutes of exercise, he developed 2 millimeters of ST depression in leads II, III, and F. For what percentage of such patients would you recommend a cardiology referral at this point? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

VCHEST

000 None **(Skip to "Next" item)**
001 1% or less **(Skip to "Next" item)**

002-
100 **(Skip to "Next" item)**

DK (DK) - **(Continue)**

RF (Refused) - **(Skip to "Next" item)**

_____ _____
_____ (7/16 - 7/18)

E4a. **(If code "DK" in #E4, ask:)** Would you recommend a cardiology referral **(read 6-1)**?

VCHESTF

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

8 (DK)
9 (Refused) _____ (7/19)

E5. **(If code "1" or "3" in "FORM", ask:)** What about an MRI for a 35-year-old man who developed low back pain after shoveling snow three weeks ago. He presents to the office for an evaluation. On examination there is a new left foot drop. For what percentage of such patients would you recommend an MRI? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

VBACK

000 None **(Skip to "Next" item)**
001 1% or less **(Skip to "Next" item)**

002-
100 **(Skip to "Next" item)**

DK (DK) - **(Continue)**

RF (Refused) - **(Skip to "Next" item)**

_____ _____
_____ (7/20 - 7/22)

E5a. **(If code "DK" in #E5, ask:)** Would you recommend an MRI **(read 6-1)**?

VBACKF

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

8 (DK)
9 (Refused) _____ (7/23)

(There are no #E6-#E8)

E9. **(If code "1" or "3" in "FORM", ask:)** What about PSA screening in an asymptomatic 60 year old white man who has no family history of prostate cancer and a normal digital rectal exam. For what percentage of such patients would you recommend a PSA (Prostate Specific Antigen) test? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

V60MAN

000 None **(Skip to "Next" item)**
001 1% or less **(Skip to "Next" item)**

002-
100 **(Skip to "Next" item)**

DK (DK) - **(Continue)**

RF (Refused) - **(Skip to "Next" item)**

_____ (7/36 - 7/38)

E9a. **(If code "DK" in #E9, ask:)** Would you recommend a PSA test **(read 6-1)**?

V60MANF

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

8 (DK)
9 (Refused) _____ (7/39)

E10. **(If code "1" or "3" in "FORM", ask:)** What about recommending an office visit for a 40 year old monogamous, married woman who calls to report a two day history of vaginal itching and thick white discharge. She has no abdominal pain or fever. For what percentage of such patients would you recommend an office visit to evaluate the vaginal discharge? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

VVITCH

000 None **(Skip to "Next" item)**
001 1% or less **(Skip to "Next" item)**

002-
100 **(Skip to "Next" item)**

DK (DK) - **(Continue)**

RF (Refused) - **(Skip to "Next" item)**

_____ (7/40 - 7/42)

E10a. **(If code "DK" in #E10, ask:)** Would you recommend an office visit **(read 6-1)**?

VVITCHF

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

8 (DK)
9 (Refused) _____ (7/43)

(If code "1" in "FORM", Skip to "Section F"; Otherwise, Continue)

E11. **(If code "2" or "3" in "FORM", ask:)** What about use of DDAVP for an otherwise healthy 10 year old boy who presents with long-term primary enuresis (en-your-ee-sis), repeatedly negative urinalysis and cultures, and who has failed fluid restriction and environmental interventions. For what percentage of such patients would you recommend DDAVP? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

VENUR

000 None **(Skip to "Next" item)**
001 1% or less **(Skip to "Next" item)**

002-
100 **(Skip to "Next" item)**

DK (DK) - **(Continue)**

RF (Refused) - **(Skip to "Next" item)**

_____ _____ (7/44 - 7/46)

E11a. **(If code "DK" in #E11, ask:)** Would you recommend DDAVP **(read 6-1)**?

VENURF

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

8 (DK)
9 (Refused) _____ (7/47)

(There are no #E12-#E15)

E16. **(If code "2" or "3" in "FORM", ask:)** What about an office visit for an otherwise healthy 10 year old boy whose parent calls to report a two day history of fever to 101 degrees, sore throat, nasal stuffiness, and no other signs or symptoms. For what percentage of such patients would you recommend an office visit in the next day or so? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

VTHRT

000	None	**(Skip to "Next" item)**
001	1% or less	**(Skip to "Next" item)**
002-100		**(Skip to "Next" item)**
DK	(DK) -	**(Continue)**
RF	(Refused) -	**(Skip to "Next" item)**

_____ _____
(7/64 - 7/66)

E16a. **(If code "DK" in #E16, ask:)** Would you recommend an office visit in the next day or so **(read 6-1)**?

VTHRTF

6	Always
5	Almost always
4	Frequently
3	Sometimes
2	Rarely, OR
1	Never
8	(DK)
9	(Refused)

_____ (7/67)

E17. **(If code "2" or "3" in "FORM", ask:)** What about a chest x-ray for a previously healthy 10 year old girl with a three day history of fever to 101.5, productive cough, tachypnea (tah-kip-knee-uh) and rales at the right base. She is taking fluids, is uncomfortable, but not in acute distress. For what percentage of such patients would you recommend a chest x-ray? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

VCOUGH

000 None **(Skip to "Next" item)**
001 1% or less **(Skip to "Next" item)**

002-
100 **(Skip to "Next" item)**

DK (DK) - **(Continue)**

RF (Refused) - **(Skip to "Next" item)**

_____ (7/68 - 7/70)

E17a. **(If code "DK" in #E17, ask:)** Would you recommend a chest x-ray **(read 6-1)**?

VCOUGHF

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

8 (DK)
9 (Refused) _____ (7/71)

E18. **(If code "2" or "3" in "FORM", ask:)** What about referral to an ENT specialist for PE tubes for an otherwise healthy 24 month old girl who presents with a history of six episodes of suppurative (SUPper-uh-tive) otitis media over the last year, treated with antibiotics with complete clearing. After her fifth episode she was placed on prophylactic antibiotics, but had a recurrence that again responded completely to antimicrobials. She is otherwise in good health and has normal hearing. For what percentage of such patients would you recommend referral to an ENT specialist for placement of PE tubes? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

VSUPOT

000	None	**(Skip to "Next" item)**
001	1% or less	**(Skip to "Next" item)**
002-100		**(Skip to "Next" item)**
DK	(DK) -	**(Continue)**
RF	(Refused) -	**(Skip to "Next" item)**

_____ _____ (8/12 - 8/14)

E18a. **(If code "DK" in #E18, ask:)** Would you recommend referral to an ENT specialist for placement of PE tubes **(read 6-1)**?

VSUPOTF

6	Always
5	Almost always
4	Frequently
3	Sometimes
2	Rarely, OR
1	Never
8	(DK)
9	(Refused)

_____ (8/15)

(There is no #E19)

E20. **(If code "2" or "3" in "FORM", ask:)** What about a sepsis workup including at least a CBC, sterile urine, and blood cultures, for a well-appearing and otherwise normal, full-term six week old child with a fever of 101. In what percentage of such patients would you recommend a sepsis workup including at least a CBC, sterile urine, and blood cultures? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

V6FEVR

000 None **(Skip to "Next" item)**
001 1% or less **(Skip to "Next" item)**

002-
100 **(Skip to "Next" item)**

DK (DK) - **(Continue)**

RF (Refused) - **(Skip to "Next" item)**

_____ (8/20 - 8/22)

E20a. **(If code "DK" in #E20, ask:)** Would you recommend a sepsis workup **(read 6-1)**?

V6FEVRF

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

8 (DK)
9 (Refused) _____ (8/23)

E21. **(If code "2" or "3" in "FORM", ask:)** What about referral to an allergist for a four year old with eczema and seasonal asthma whose asthma has been managed with intermittent oral steroids and bronchodilators. The frequency of asthma attacks is increasing despite prophylactic use of inhaled steroids. For what percentage of such patients would you recommend referral to an allergist for evaluation? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Consider all your patients with similar clinical descriptions.

VECZEM

000 None **(Skip to "Next" item)**
001 1% or less **(Skip to "Next" item)**

002-
100 **(Skip to "Next" item)**

DK (DK) - **(Continue)**

RF (Refused) - **(Skip to "Next" item)**

_____ (8/24 - 8/26)

E21a. **(If code "DK" in #E21, ask:)** Would you recommend referral to an allergist for evaluation **(read 6-1)**?

VECZEMF

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

8 (DK)
9 (Refused) _____ (8/27)

CLOCK:

_____ (28/48 - 28/51)

SECTION F
PHYSICIAN-PATIENT INTERACTIONS

F1. Next I am going to read you several statements. For each, I'd like you to tell me if you agree strongly, agree somewhat, disagree somewhat, disagree strongly, or if you neither agree nor disagree. **(If code "2" or "8-9" in #A4, say:)** As you answer, please think only about your main practice. **(Read and rotate A-E and H, then F and G)** Do you **(read 5-1)**? **(If necessary, say:)** We'd like you to think across all patients that you see in your practice.

5 Agree strongly
4 Agree somewhat
3 Disagree somewhat
2 Disagree strongly, OR
1 Do you neither agree nor disagree

7 (Doctor does not have office) [A only]
7 (Doctor does not have continuing relationship with patients) [H only]
8 (DK)
9 (Refused)

A. I have adequate time to spend with my patients during their office visits? **(INTERVIEWER NOTE: Do not further differentiate the level of visit, that is, whether brief, intermediate, etc.)** **(If necessary, say:)** We would like you to answer in general or on AVERAGE over all types of visits. (8/28)

ATMOFF

B. **(If code "7" in #F1-A, ask:)** I have adequate time to spend with my patients during a typical patient visit **(INTERVIEWER NOTE: This does not include surgery)** _____ (8/71)

ATMOTH

C. I have the freedom to make clinical decisions that meet my patients' needs _____ (8/29)

CLNFREE

D. It is possible to provide high quality care to all of my patients _____ (8/30)

HIGHCAR

F1. (Continued:)

E. I can make clinical decisions in the best interests of my patients without the possibility of reducing my income _____ (8/31)

NEGINCN

F. **(If code "019-020", "023", "043", "085" or "133" in #A10/#A8, OR if code "1", "8" or "9" in #A9, or if code "042","088" or "137" in #A10, OR if code "2" or "3" in #A9a, OR If code "2" or "3" in #A9b, ask:)** The level of communication I have with specialists about the patients I refer to them is sufficient to ensure the delivery of high quality care _____ (8/32)

USESPCS

G. **(If "Blank" in F1-F, ask:)** The level of communication I have with primary care physicians about the patients they refer to me is sufficient to ensure the delivery of high quality care _____ (8/3

COMPRM

H. It is possible to maintain the kind of continuing relationships with patients over time that promote the delivery of high quality care _____

PATREL

(There are no F2-F7)

F8. Now, I'm going to ask you about obtaining certain services for patients in your **(response in #CA)** when you think they are medically necessary. How often are you able to obtain **(read and rotate A, B and E, then read and rotate C and D, then read and rotate F and G, as appropriate)** when you think (they are/it is) medically necessary? Would you say **(read 6-1)**? **(If physician says it depends on which patients, say:)** We'd like you to think across all the patients that you see in your **(response in #CA)** and tell us how often you are able to obtain these services when you think they are medically necessary.

6 Always
5 Almost always
4 Frequently
3 Sometimes
2 Rarely, OR
1 Never

7 (Does not apply)
8 (DK)
9 (Refused)

A. **(If code "019", "020", "023", "043", "085" or "133" in #A10/#A8, OR code "1", "8" or "9" in #A9, or if code "042", "088" or "137" in #A10, OR code "2" or "3" in #A9a, OR code "2" or "3" in #A9b, ask:)** Referrals to specialists of high quality

OBREFS

(Otherwise, ask:) Referrals to other specialists of high quality _____ (8/35)

B. High quality ancillary services, such as physical therapy, home health care, nutritional counseling, and so forth _____ (8/3

OBANCL

C. Non-emergency hospital admissions _____ (8/37)

OBHOSP

D. Adequate number of inpatient days for your hospitalized patients _____ (8/38)

OBINPAT

E. High quality Diagnostic Imaging Services _____ (8/39)

OBIMAG

F8. (Continued:)

F. **(If code "010", "019", "020", "023", "043", "062", "064-065", "082-085", "127", "132" or "133" in #A10/#A8, OR code "1", "8" or "9" in #A9, OR code "2" or "3" in #A9a, or code "042", "088" or "137" in #A10, OR code "2" or "3" in #A9b, ask:)** High quality INPATIENT MENTAL health care _____ (8/40)

OBMENTL

G. **(If code "010", "019", "020", "023", "043", "062", "064-065", "082-085", "127", "132" or "133" in #A10/#A8, OR code "1", "8" or "9" in #A9, or code "2" or "3" in #A9a, or code "042", "088" or "137" in #A10, OR code "2" or "3" in #A9b, ask:)** High quality OUTPATIENT MENTAL health services _____ (8/41)

OBOUTPT

F9. Now, I'd like to ask you about new patients the practice in which you work might be accepting. Is the practice accepting all, most, some, or no new patients who are insured through **(read A-C)**? **(INTERVIEWER NOTE: Refers to entire practice not just to physician's own patients. Medicaid and Medicare beneficiaries who are enrolled in managed care plans should be included in A or B, respectively.)**

4 All
3 Most
2 Some
1 No new patients/None

8 (DK)
9 (Refused)

A. Medicare, including Medicare managed care patients _____ (8/43)

NWMCARE

B. **(If code "06" in "STATE", ask:)** MediCAL, including MediCAL managed care patients **(If code "04" in "STATE", ask:)** AHCCCS ("Access")

(If code "01-03", "05" or "07-56" in "STATE", ask:) Medicaid, including Medicaid managed care patients _____ (8/42)

NWMCAID

C. Private or commercial insurance plans including managed care plans and HMOs with whom the practice has contracts **(If necessary, say:)** This includes both fee for service patients and patients enrolled in managed care plans with whom the practice has a contract. It excludes Medicaid or Medicare managed care _____ (8/44)

NWPRIV

CLOCK:

_____ _____ (28/56 - 28/59)

_____

SECTION G
PRACTICE REVENUE

G1. Now, I'm going to ask you some questions about the patient care revenue received by the **(response in #CA)** in which you work. Approximately what percentage of the PRACTICE REVENUE FROM PATIENT CARE would you say comes from **(read A-B)**? (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** We're asking about the patient care revenue of the practice in which you work, not just the revenue from the patients YOU see. **(INTERVIEWER NOTE: "Other public insurance" includes Champus, Champva and Tricare)**

000 None
001 1 percent or less
DK (DK)
RF (Refused)

A. Payments from all Medicare, including Medicare managed care

PMCR_A

_____ (8/45 - 8/47) _____

B. **(If code "06" in "STATE", ask:)** Payments from MediCAL or any other public insurance, including Medical managed care

(If code "04" in "STATE", ask:) Payments from AHCCCS ("Access") or any other public insurance

(If code "01-03", "05" or "07-56" in "STATE", ask:) Payments from Medicaid or any other public insurance, including Medicaid managed care

PMCD_A

_____ (8/48 - 8/50) _____

(There are no C and D)

(If response in #G1-A + response in #G1-B > 100, Continue; Otherwise, Skip to #G3)

G1a. I have recorded that the combined practice revenue from Medicare and Medicaid is greater than 100 percent, can you help me resolve this? Approximately what percentage of the practice's revenue from patient care comes from **(read A-B)**? **(INTERVIEWER NOTE: Revenue from patients covered by both Medicare and Medicaid should be counted in MEDICARE ONLY)** (Open ended **and code actual percent)** **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** We're asking about the patient care revenue of the practice in which you work, not just the revenue from the patients YOU see.

PMCR_B

000 None
001 1 percent or less
DK (DK)
RF (Refused)

A. Payments from all Medicare, including Medicare managed care

_____ _____
_____ (8/54 - 8/56)

B. **(If code "06" in "STATE", ask:)** Payments from MediCAL or any other public insurance, including Medical managed care

(If code "04" in "STATE", ask:) Payments from AHCCCS ("Access") or any other public insurance

(If code "01-03", "05" or "07-56" in "STATE", ask:) Payments from Medicaid or any other public insurance, including Medicaid managed care

PMCD_B

_____ _____
_____ (8/57 - 8/59)

(There is no #G2)

G3. Now, again thinking about the patient care revenue from ALL sources received by the practice in which you work, what percentage is paid on a capitated or other prepaid basis? **(If necessary, say:)** Under capitation, a fixed amount is paid per patient per month regardless of services provided. **(Probe:)** Your best estimate would be fine. (Open ended **and code actual percent)** **(INTERVIEWER NOTE: Includes payments made on a capitated or other prepaid basis from Medicare or Medicaid)**

PCAP_A

000 None
001 1 percent or less
002-
100
DK (DK)
RF (Refused)

_____ _____ _____
(9/38 - 9/40)

(There are no #G3a-#G5)

G6. Thinking again about the practice in which you work, we have a few questions about contracts with managed care plans such as HMOs, PPOs, IPAs and Point-Of-Service plans. First, roughly how many managed care contracts does the practice have? **(Probe:)** Your best estimate would be fine. **(If necessary, say:)** 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. Direct contracts with employers that use these mechanisms are also considered managed care. **(INTERVIEWER NOTE: Include Medicare managed care, Medicaid managed care, and other government managed care contracts but not traditional Medicare or Medicaid.)** (Open ended **and code actual number)**

NMC_A

00	None -	**(Skip to #G7)**
01-19		**(Skip to #G8)**
20-97		**(Skip to #G6b)**
DK	(DK)	**(Continue)**
RF	(Refused)	**(Continue)**

_____ _____ _____ (9/58) (9/59)

G6a. **(If code "DK" or "RF" in #G6, ask:)** Would you say less than 3 contracts, 3 to 10, or more than 10 contracts?

NMCCAT

0	(None) -	**(Skip to #G7)**
1	Less than 3 (1 or 2)	**(Skip to #G8)**
2	3 to 10	**(Skip to #G8)**
3	More than 10 (11+)	**(Skip to #G8)**
8	(DK)	**(Skip to #G8)**
9	(Refused)	**(Skip to #G8)**

_____ (9/60)

G6b. **(If code "20-97" in #G6, ask:)** Just to be sure, is this the number of contracts, or patients?

CONPATS

1 Contracts - **(Skip to #G8)**

2 Patients - **(Continue)**

8 (DK) **(Skip to #G8)**
9 (Refused) **(Skip to #G8)** _____ (8/60)

G6c. **(If code "2" in #G6b, ask:)** In this question, we are asking about contracts. So, roughly how many managed care CONTRACTS does the practice have? (Open ended **and code actual number)**

NMC_B

00 None - **(Continue)**

01-
97 **(Skip to #G8)**

DK (DK) **(Skip to #G8)**
RF (Refused) **(Skip to #G8)**

_____ _____ _____
(8/61) (8/62)

G7. **(If code "00" in #G6, or code "0" in #G6a, or code "00" in #G6c, ask:)** What percentage, if any, of the patient care revenue received by the practice in which you work comes from all managed care combined? Please include ALL revenue from managed care including, but not limited to, any payments made on a capitated or prepaid basis. **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Managed care programs include, but are not limited to those with HMOs, PPOs, IPAs, and point-of-service plans. **(If necessary, say:)** 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. Direct contracts with employers that use these mechanisms are also considered managed care. (Open ended **and code actual percent)**

PMC_A

000 None
001 1 percent or less
DK (DK)
RF (Refused)

_____ (8/63 - 8/65)

(If code "00" in #G6,
and #G7 is LESS THAN response in #G3, Continue;
If code "00" in #G6a or #G6c,
And #G7 is LESS THAN response in #G3, Continue;
Otherwise, Skip to "Section H")

G7a. I may have recorded something incorrectly. I recorded that the percentage of practice revenue from all managed care is less than the percentage of practice revenue that is paid on a capitated or other prepaid basis. This seems inconsistent, so let me ask you again, what percent of patient care revenue received by the practice in which you work comes from all managed care combined? (Open ended **and code actual percent)** **(SURVENT: Show response in #G7)**

PMC_F

000 None
101 Less than 1%
DK (DK)
RF (Refused)

_____ (10/68 - 10/70)

G7b. Let me also ask you again, thinking about the patient care revenue from ALL sources received by the practice in which you work, what percentage is paid on a capitated or other prepaid basis? (Open ended **and code actual percent)** **(SURVENT: Show response in #G3)**

PCAP_D

000 None
101 Less than 1%
DK (DK)
RF (Refused)

_____ (10/71 - 10/73)

(All in #G7b, Skip to "Section H")

G8. **(If code "02-97" in #G6c, or code "1-3" in #G6a, or code "02-97" in #G6, ask:)** What percentage of the patient care revenue received by the practice in which you work comes from these **(response in #G6c/#G6a/#G6)** managed care contracts combined? **(If code "001-100", "DK" or "RF in #G3, say:)** Please include ALL revenue from these contracts including, but not limited to, any payments made on a capitated or prepaid basis. **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Managed care contracts include, but are not limited to those with HMOs, PPOs, IPAs, and point-of-service plans. **(If necessary, say:)** 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. Direct contracts with employers that use these mechanisms are also considered managed care. (Open ended **and code actual percent)**

(If code "01" in #G6c or #G6, ask:) What percentage of the patient care revenue received by the practice in which you work comes from this managed care contract? **(If code "001-100", "DK", or "RF", say:)** Please include ALL revenue from this contract including, but not limited to, any payments made on a capitated or prepaid basis. **(Probe once lightly:)** Your best estimate will be fine. **(If necessary, say:)** Managed care contracts include, but are not limited to those with HMOs, PPOs, IPAs, and point-of-service plans. **(If necessary, say:)** 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. Direct contracts with employers that use these mechanisms are also considered managed care. (Open ended **and code actual percent)**

G8. (Continued:)

(If code "DK" or "RF" in #G6c, or code "8" or "9" in #G6a, ask:) What percentage of the patient care revenue received by the practice in which you work comes from all of the practice's managed care contracts combined? **(If code "001-100", "DK", or "RF", say:)** Please include ALL revenue from these contracts including, but not limited to, any payments made on a capitated or prepaid basis. **(Probe once lightly:)** Your best estimate will be fine. **(If necessary, say:)** Managed care contracts include, but are not limited to those with HMOs, PPOs, IPAs, and point-of-service plans. **(If necessary, say:)** 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. Direct contracts with employers that use these mechanisms are also considered managed care. (Open ended **and code actual percent)**

PMC_B

000	None	**(Continue)**
001	1 percent or less	**(Continue)**
002-100		**(Continue)**
DK	(DK)	**(Skip to #G9)**
RF	(Refused)	**(Skip to #G9)**

_____ _____ _____ (9/62 - 9/64)

(If response in #G8 is less than response in #G3, Continue; If response in #G3 + response in #G8="0", Skip to "Section H"; If response in G8 > "000", Skip to #G8d)

G8a. **(If response in #G8 is less than response in #G3, ask:)** I have recorded that your revenue from all managed care contracts is less than the amount you received on a capitated or prepaid basis. We would like you to include all capitated payments in estimating managed care revenue. Would you like to change your answer of **(read 1-2)**?

FIXPMC

1 **(Response in #G8)** percent from all managed care contracts - **(Continue)**

OR

2 **(Response in #G3)** percent received on a capitated or prepaid basis - **(Skip to #G8c)**

3 (Both) - **(Continue)**

4 (Neither) **(Skip to "Note" before #G9)**
8 (DK) **(Skip to "Note" before #G9)**
9 (Refused) **(Skip to "Note" before #G9)** _____ (9/65)

(If code "01-19" in #G6, Skip to #G8b;
If code "20-97" in #G6,
AND code "1" in #G6b, Skip to #G8b;
If code "8", "9" or "Blank" in #G6a, AND
code "DK", "RF" or "BLANK" in #G6c,
Skip to #G8d;
Otherwise, Continue)

G8b. **(If code "1" or "3" in #G8a, ask:)**

(If code "02-97" in #G6c, or code "1-3" in #G6a or code "02-97" in #G6, ask:) So, what percentage of the practice's revenue from patient care would you say comes from all of these managed care contracts combined? (Open ended **and code actual percent)**

(If code "01" in #G6c or #G6, ask:) So, what percentage of the practice's revenue from patient care would you say comes from this managed care contract? (Open ended **and code actual percent)**

PMC_C

000 None - **(Skip to "Section H")**

001 1 percent or less
DK (DK)
RF (Refused)

_____ _____ (9/66 - 9/68)

G8c. **(If code "2" or "3" in #G8a, ask:)** So what percentage of patient care revenue received by the practice in which you work is paid on a capitated or other prepaid basis? **(If necessary, say:)** Under capitation, a fixed amount is paid per patient per month regardless of services provided. **(Probe:)** Your best estimate would be fine. (Open ended **and code actual percent)**

PCAP_B

000 None
001 1 percent or less
002-
100
DK (DK)
RF (Refused)

_____ _____
_____ (8/72 - 8/74)

G8d. **(If "specific" response in #G8b/#G8 = "specific" response in #G8c/#G3, ask:)** So, all of the practice's managed care revenue is paid on a capitated, or prepaid basis, is this correct?

ALLCAP

1 Yes - **(Skip to "Note" before #G9)**

2 No - **(Continue)**

8 (DK) **(Skip to "Note" before #G9)**
9 (Refused) **(Skip to "Note" before #G9)** _____ (8/66)

G8e. **(If code "2" in #G8d, ask:)** I have recorded that **(response in #G8)** percent of the practice revenue is from managed care and that **(response in #G3)** percent of the practice revenue is paid on a capitated or prepaid basis. Which of these is incorrect?

FIXCAP

1 Revenue from managed care - **(Continue)**

2 Revenue paid on capitated or prepaid basis - **(Skip to #G8g)**

3 Both are correct - **(Skip to "Note" before #G9)**

4 Neither are correct - **(Continue)**

8 (DK) **(Skip to "Note" before #G9)**
9 (Refused) **(Skip to "Note" before #G9)** _____ (8/67)

G8f. **(If code "1" or "4" in #G8e, ask:)**

(If code "02-97" in #G6c, or #G6 or code "1-3" in #G6a, ask:) What percentage of the patient care revenue received by the practice in which you work comes from these [**(response in #G6c/#G6)**] managed care contracts combined? **(If code "001-100", "DK" or "RF in #G3, say:)** Please include ALL revenue from these contracts including, but not limited to, any payments made on a capitated or prepaid basis. **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Managed care contracts include, but are not limited to those with HMOs, PPOs, IPAs, and point-of-service plans. **(If necessary, say:)** 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. Direct contracts with employers that use these mechanisms are also considered managed care. (Open ended **and code actual percent)**

G8f. (Continued:)

(If code "01" in #G6c or #G6, ask:) What percentage of the patient care revenue received by the practice in which you work comes from this managed care contract? Please include ALL revenue from this contract including, but not limited to, any payments made on a capitated or prepaid basis. **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Managed care contracts include, but are not limited to those with HMOs, PPOs, IPAs, and point-of-service plans. **(If necessary, say:)** 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. Direct contracts with employers that use these mechanisms are also considered managed care. (Open ended **and code actual percent)**

(If code "DK" or "RF" in #G6c or code "8" or "9" in #G6a, ask:) What percentage of the patient care revenue received by the practice in which you work comes from all of the practice's managed care contracts combined? Please include ALL revenue from these contracts including, but not limited to, any payments made on a capitated or prepaid basis. **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Managed care contracts include, but are not limited to those with HMOs, PPOs, IPAs, and point-of-service plans. **(If necessary, say:)** 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. Direct contracts with employers that use these mechanisms are also considered managed care. (Open ended **and code actual percent)**

G8f. (Continued:)

PMC_D

000 None - **(Skip to "Section H")**

001 1 percent or less **(Continue)**

002-
100 **(Continue)**

DK (DK) **(Continue)**
RF (Refused) **(Continue)**

_____ (8/68 - 8/70)

G8g. **(If code "2" or "4" in #G8e, ask:)** Now thinking about the patient care revenue from ALL sources received by the practice in which you work, what percentage is paid on a capitated or other prepaid basis? **(If necessary, say:)** Under capitation, a fixed amount is paid per patient per month regardless of services provided. **(Probe:)** Your best estimate would be fine. (Open ended **and code actual percent)** **(INTERVIEWER NOTE: Includes payments made on a capitated or other prepaid basis from Medicare or Medicaid)**

PCAP_C

000 None
001 1 percent or less
002-
100
DK (DK)
RF (Refused)

_____ (6/71 - 6/73)

(If code "01" in #G6c or #G6, Skip to "Note" before #G11; Otherwise, Continue)

G9. **(If code "000-100" in #G8, ask:)** Now, thinking of the ONE managed care contract that provides the largest amount of revenue for the practice in which you work, what percentage of the practice revenue would you say comes from this contract? **(Probe:)** Your best estimate will be fine. (Open ended **and code actual percent)**

(If code "DK" or "RF" in #G8, ask:) Would you be able to estimate, what percentage of the practice's revenue comes from the ONE contract that provides the largest amount of revenue in the practice in which you work? **(Probe:)** Your best estimate will be fine. (Open ended **and code actual percent)**

PBIG_A

000 None
001 1 percent or less
DK (DK)
RF (Refused)

_____ _____ (9/69 - 9/71)

(If code "8" or "9" in #G6a or "DK" or "RF" in #G6c, Skip to "Note" before #G11; Otherwise, Continue)

(If response in #G9 > response in #G8b, Continue; If response in #G9 = response in #G8b AND NOT code "01" in #G6, Skip to #G9c; If "Blank" in #G8b, Continue; If response in #G9 > response in #G8, Continue; If response in #G9 = response in #G8 AND NOT code "1" in #G6, Skip to #G9c Otherwise, Skip to "Note" before #G11)

G9a. I have recorded that the percentage of revenue that comes from the largest managed care contract is greater than the total revenue from all managed care contracts. Can you help me resolve this? What percentage of the practice's revenue from patient care would you say comes from the **(response in #G6c/#G6a/#G6)** managed care contracts combined? **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Managed care plans include, but are not limited to those with HMOs, PPOs, IPAs, and point-of-service plans. 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. Direct contracts with employers that use these mechanisms are also considered managed care. (Open ended **and code actual percent)**

PMC_D2

000 None
001 1 percent or less
DK (DK)
RF (Refused)

_____ (10/12 - 10/14)

G9b. Now thinking of the ONE managed care contract that provides the largest amount of revenue for the practice in which you work, what percentage of the practice revenue would you say comes from this contract? **(Probe:)** Your best estimate will be fine. (Open ended **and code actual percent)**

PBIG_B

000 None
001 1 percent or less
DK (DK)
RF (Refused)

_____ (10/15 - 10/17)

(All in #G9b, Skip to "Note" before #G11)

G9c. I may have recorded something incorrectly. Earlier I recorded that the practice in which you work has more than one managed care contract. But, I have also recorded that the percentage of revenue that comes from the largest managed care contract is the same as the total revenue from all managed care contracts. Can you help me resolve this? How many managed care contracts does the practice in which you work have with health insurers or payers? **(If necessary, say:)** Managed care plans include, but are not limited to those with HMOs, PPOs, IPAs, and point-of-service plans. 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. Direct contracts with employers that use these mechanisms are also considered managed care. **(INTERVIEWER NOTE: Can include Medicare managed care, Medicaid managed care, and other government managed care contracts but not traditional Medicare or Medicaid.)** (Open ended **and code actual number)**

NMC_C

00 - **(Skip to "Section H")**

01 One - **(Skip to "Note" before #G11)**

02-
97 **(Continue)**

DK (DK) **(Continue)**
RF (Refused) **(Continue)**

_____ (10/18) (10/19)

G9d. What percentage of the practice's revenue from patient care would you say comes from these **(response in #G9c)** managed care contracts combined? **(Probe:)** Your best estimate will be fine. **(If necessary, say:)** Managed care plans include, but are not limited to those with HMOs, PPOs, IPAs, and point-of-service plans. 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. Direct contracts with employers that use these mechanisms are also considered managed care. (Open ended **and code actual percent)**

PMC_E

000 None
001 1 percent or less
DK (DK)
RF (Refused)

_____ (10/20 - 10/22)

G9e. Now thinking of the ONE managed care contract that provides the largest amount of revenue for the practice in which you work, what percentage of the practice revenue would you say comes from this contract? **(Probe:)** Your best estimate will be fine. (Open ended **and code actual percent)**

PBIG_C

000 None
001 1 percent or less
DK (DK)
RF (Refused)

_____ (10/23 - 10/25)

(There is no #G10)

(If code "1" in #G8d, Skip to "Section H";
If response in #G8g equals response in #G9d,
Skip to "Section H";
If response in #G8g equals response
in #G9a and #G9c is "Blank", Skip to "Section H";
If response in #G8g equals response in
#G8c, and #G9d and #G9a are "Blank",
Skip to "Section H";
If response in ##G8g equals response in
#G8 and #G9d, #G9a and #G8f are "Blank",
Skip to "Section H";
If #G8g and #G8c are "Blank",
and response in #G3 equals response in #G9d,
Skip to "Section H";
If #G8g and #G8c are "Blank",
and response in #G3 equals response in #G9a,
and #G90d is "Blank",
Skip to "Section H";
If #G8g and #G8c are "Blank",
and response in #G# equals response in #G8c,
and #G9d and #G9a are "Blank",
Skip to "Section H";
If #G8a and #G8c are "Blank",
and response in #G3 equals response
in #G8 and #G9d, #G9c and #G9f,
Skip to "Section H";
If code "000" in #G8g/#G8c/#G3,
Skip to "Section H";
Otherwise, Continue)

G11. Would you say that all, most, some, or none of the patient care revenue received from this managed care contract is paid on a capitated or prepaid basis?

CAPAMT

4 All
3 Most
2 Some
1 None

8 (DK)
9 (Refused) _____ (10/28)

(There is no #G12)

CLOCK:

_____ _____ _____ (28/64 - 28/67)

SECTION H

PHYSICIAN COMPENSATION METHODS AND INCOME LEVEL

(If code "1" in #C1, AND code "06" in #C2, Skip to #H9; Otherwise, Continue)

(INTERVIEWER READ:) Now, I'm going to ask you a few questions about how the practice compensates you personally.

(If code "2" or "8-9" in #A4, say:) Again, please answer only about the main practice in which you work.

H1. Are you a salaried physician?

SALPAID

1	Yes - **(Skip to #H3)**	
2	No	**(Continue)**
8	(DK)	**(Continue)**
9	(Refused)	**(Continue)**

_____ (10/30)

H2. **(If code "2", "8" or "9" in #H1, ask:)** Are you paid in direct relation to the amount of time you work, such as by the shift or by the hour?

SALTIME

1	Yes - **(Skip to #H4)**	
2	No	**(Skip to #H7)**
8	(DK)	**(Skip to #H7)**
9	(Refused)	**(Skip to #H7)**

_____ (10/31)

H3. **(If code "1" in #H1, ask:)** Is your base salary a fixed amount that will not change until your salary is re-negotiated or is it adjusted up or down during the present contract period depending on your performance or that of the practice? **(If necessary, say:)** Adjusted up or down means for example, some practices pay their physicians an amount per month that is based on their expected revenue, but this amount is adjusted periodically to reflect actual revenue produced. **(INTERVIEWER NOTE: Base salary is the fixed amount of earnings, independent of bonuses or incentive payments.)**

SALADJ

1 Fixed amount - **(Continue)**

2 Adjusted up or down - **(Skip to #H7)**

8 (DK) **(Continue)**
9 (Refused) **(Continue)** _____ (10/32)

H4. **(If code "1" in #H2, OR code "1" or "8-9" in #H3, ask:)** Are you also currently eligible to earn income through any type of bonus or incentive plan? **(INTERVIEWER NOTE: Bonus can include any type of payment above the fixed, guaranteed salary.)**

BONUS

1 Yes
2 No
8 (DK)
9 (Refused) _____ (10/33)

H5. I am going to read you a short list of factors that are sometimes taken into account by medical practices when they determine the compensation paid to physicians in the practice. For each factor, please tell me whether or not it is EXPLICITLY considered

(If code "1" in #H1, AND code "2" or "8-9" in #H4, ask:) When your salary is determined, does the **(response in #CA)** consider **(read A-D)**?

(If code "1" in #H1 AND code "1" in #H4, ask:) When either your base salary or bonus is determined, does the **(response in #CA)** consider **(read A-D)**?

(If code "1" in #H2, AND code "2", "8" or "9" in #H4, ask:) When your pay rate is determined, does the **(response in #CA)** consider **(read A-D)**?

(If code "1" in #H2, AND code "1" in #H4, ask:) When either your pay rate or bonus is determined, does the **(response in #CA)** consider **(read A-D)**?

1 Yes
2 No
8 (DK)
9 (Refused)

A. Factors that reflect your own productivity **(If necessary, say:)** Examples include the amount of revenue you generate for the practice, the number of relative value units you produce, the number of patient visits you provide, or the size of your enrollee panel

SPROD_A _____

B. Results of satisfaction surveys COMPLETED BY YOUR OWN PATIENTS _____ (10/35)

SSAT_A

C. Specific measures of quality of care, such as rates of preventive care services for your patients _____ (10/36)

SQUAL_A

H5. (Continued:)

D. Results of practice profiling comparing your pattern of using medical resources to treat patients with that of other physicians **(INTERVIEWER NOTE: A practice profile is a report that is usually computer generated, which compares you to other physicians on things like referrals to specialists, hospitalizations and other measures of cost effectiveness.)** _____ (10/37)

SPROF_A

(If code "2", "8" or "9" in #H5-D, Skip to #H9; Otherwise, Continue)

H6. **(If code "1" in #H5-D, ask:)** Are these profiles risk-adjusted to consider the health status of your patients or the severity of their illnesses? **(INTERVIEWER NOTE: Other than by age and gender)**

RADJ_A

1 Yes
2 No
8 (DK)
9 (Refused) _____ (10/38)

(All in #H6, Skip to #H9)

H7. **(If code "2", "8" or "9" in #H2, or code "2" in #H3, ask:)** I am now going to read you a short list of factors that are sometimes taken into account by medical practices when they determine the compensation paid to physicians in the practice. For each factor, please tell me whether or not it is EXPLICITLY considered when your compensation is determined. Does the **(response in #CA)** in which you work consider **(read A-D)**?

1 Yes
2 No
8 (DK)
9 (Refused)

A. Factors that reflect YOUR OWN productivity **(If necessary, say:)** Examples include the amount of revenue you generate for the practice, the number of relative value units you produce, the number of patient visits you provide, or the size of your enrollee panel _____ (10/39)

SPROD_B

B. Results of satisfaction surveys COMPLETED BY YOUR OWN PATIENTS _____ (10/40)

SSAT_B

C. Specific measures of quality of care, such as rates of preventive care services for your patients _____ (10/41)

SQUAL_B

D. Results of practice profiles comparing your pattern of using medical resources to treat patients with that of other physicians **(INTERVIEWER NOTE: A practice profile is a report that is usually computer generated, which compares you to other physicians on things like referrals to specialists, hospitalizations and other measures of cost effectiveness.)** _____ (10/42)

SPROF_B

(If code "2", "8" or "9" in #H7-D, Skip to #H9; Otherwise, Continue)

H8. **(If code "1" in #H7-D, ask:)** Are these profiles risk-adjusted to consider the health status of your patients or the severity of their illnesses? **(INTERVIEWER NOTE: Other than by age and gender)**

RADJ_B

1 Yes
2 No
8 (DK)
9 (Refused) _____ (10/67)

H9. Of your total income from your **(response in #CA)** during calendar year 1997, approximately what percent would you estimate was earned in the form of bonuses, returned withholds, or other incentive payments based on your performance? **(INTERVIEWER NOTE: Do not include income based on productivity, only specific incentives or returned withholds/ bonuses.)** (Open ended **and code actual percent)**

PCTINCN

000 None - **(Continue)**

001 1% or less - **(Skip to #H10)**

002-
100 **(Skip to #H10)**

DK (DK) **(Skip to #H10)**
RF (Refused) **(Skip to #H10)**

_____ _____ (10/43 - 10/45)

H9a. **(If code "000" in #H9, ask:)** Were you eligible to earn any bonuses or other performance-based payments in 1997? **(INTERVIEWER NOTE: This question is asking about eligibility to earn bonuses in 1997. Earlier question (#H4) asked about whether the physician is eligible to earn a bonus at the time of the interview.)**

EBONUS

1 Yes
2 No
8 (DK)
9 (Refused)

_____ (10/46)

H10. During 1997, what was your own net income from the practice of medicine to the nearest $1,000, after expenses but before taxes? Please include contributions to retirement plans made for you by the practice and any bonuses as well as fees, salaries and retainers. Exclude investment income. **(If code "2" in #A4, say:)** Also, please include earnings from ALL practices, not just your main practice. **(If necessary, say:)** We define investment income as income from investments in medically related enterprises independent of a physician's medical practice(s), such as medical labs or imaging centers. **(If "Refused", say:)** This information is important to a complete understanding of community health care patterns and will be used only in aggregate form to ensure your confidentiality of the information. (Open ended **and code actual number)** **(If response is > $1 million, verify)**

INCOME

0000000-
9999999 **(Skip to #H11)**

DK (DK) **(Continue)**
RF (Refused) **(Continue)**

_____ _____ (10/47 - 10/53)

H10a. **(If code "DK" in #H10, ask:)** Would you say that it was **(read 01-04)**?

(If code "RF" in #H10, ask:) Would you be willing to indicate if it was **(read 01-04)**?

INCCAT

01 Less than $100,000
02 $100,000 to less than $150,000
03 $150,000 to less than $250,000
04 $250,000 or more

98 (DK)
99 (Refused)

_____ (10/54) (10/55)

H11. Do you consider yourself to be of Hispanic origin, such as Mexican, Puerto Rican, Cuban, or other Spanish background? **(Probe for refusals with:)** I understand this question may be sensitive. We are trying to understand how physicians from different ethnic and cultural backgrounds perceive some of the changes that are affecting the delivery of medical care.

HISP

1 Yes
2 No
8 (DK)
9 (Refused) _____ (21/29)

(DEMOGRAPHICS CONTINUED)

H12. What race do you consider yourself to be? [**(If respondent hesitates, read 06-09)**] [**(Probe for refusals with:)** I understand this question may be sensitive. We are trying to understand how physicians from different ethnic and cultural backgrounds perceive some of the changes that are affecting the delivery of medical care.] (Open ended and code) **(NOTE TO INTERVIEWER: If respondent specifies a mixed race or a race not pre-coded, code as "01 - Other")**

RACE

01 Other (list)

02-
05 HOLD

06 White/Caucasian
07 African-American/Black
08 Native American (American Indian) or Alaska Native
09 Asian or Pacific Islander

98 (DK)
99 (Refused)

_____ (21/60) (21/61)

CLOCK:

_____ (28/73 - 28/76)

SECTION I
ENDING

I1. Let me verify that your name and address are **(read information from "Fone" file/S4)**? **(ENTER ALL THAT ARE INCORRECT)**

1ST NAME:

_____ (23/12 - 23/20)

LAST NAME: **(Display from "Fone" file)**

_____ (23/21 - 23/47)

ADDRESS #1: **(Display from "Fone" file)**

CSTREET _____ **(12/12 - 12/35)**

ADDRESS #2: **(Display from "Fone" file)**

CSTRET2 _____ (/ - /)

CITY: **(Display from "Fone" file)**

CCITY _____ (12/42 - 12/55)

STATE: **(Display from "Fone" file)**

CSTATE _____ (12/67) (12/68)

ZIP CODE: **(Display from "Fone" file)**

CZIP _____ (12/69 - 12/74)

I1. (Continued:)

1 First name is incorrect
2 Last name is incorrect
3 Address is incorrect
4 City is incorrect
5 State is incorrect
6 Zip code is incorrect
7 All information correct _____ (/)

(There are no #I1a-#I2) HOLD 0 (10/74)

0 (23/12-23/41)

0 (10/63)

0 (12/12-12/73)

0 (17/18-17/47)

I3. Is the address of the practice we have been talking about during this interview **(read 1-2)**?

ADROKAY

1 **(Address from "Fone" file)** - **(Skip to "Note" before #I5)**

2 **(Address in #I1)** - **(Skip to "Note" before #I5)**

3 No/Neither - **(Continue)**

8 (DK) **(Skip to "Note" before #I5)**
9 (Refused) **(Skip to "Note" before #I5)** _____ (8/76)

I4. Will you please give me the address of the practice we have been talking about during this interview? (Open ended)

STREET ADDRESS #1:
PSTRET1
_____ (13/12 - 13/41) _____

STREET ADDRESS #2:
PSTRET2
_____ (17/48 - 17/77) _____

CITY:
PCITY
_____ (13/42 - 13/66)

STATE:
PSTATE
_____ (13/67) (13/68) _____

ZIP:
PZIP
_____ (13/69 - 13/73)

(If code "08-10" in #C2, #C3, #C3b or #C3c, Continue; If code "1" or "2" in #C3a or #C3b, Continue; Otherwise, Skip to "Section J")

I5. What is the name of the practice we have been talking about during this interview? Include the names of government clinics as eligible responses to this question. **(If necessary, say:)** This information will help us to better understand the nature of physician organizations in your region. (Open ended)

PNAME

00001 Other (list)
00002 HOLD
00003 HOLD
00004 No/Yes mind giving
00005 HOLD

99998 (DK)
99999 (Refused)

_____ (14/12 - 14/16)

(There are no #I6-#I9)

CLOCK:

_____ (28/69 - 28/72)

SECTION J
SWEEP-UP

(There are no #J1-#J3)

J4. This concludes the survey unless you have any brief comment you would like to add. (Open ended)

COMMENT

0001 Other (list)
0002-
0003 HOLD

0004 No/Nothing

9998 (DK)
9999 (Refused)

_____ _____
_____ (10/75 - 10/78)

J5. INTERVIEWER CODE ONLY: **(INTERVIEWER NOTE: Do NOT offer to send study report to respondent. Encourage use of Center's Website, www.hschange.com, and encourage them to put their name on the Center's mailing list by using the Website)** Did respondent ask any of the following?

1 Yes
2 No

A. Center's Website address so they can access it themselves _____ (/)

B. To be placed in the Center's mailing list (/)

C. Round 1 data bulletins _____ (/)

J6. INTERVIEWER COMMENTS:

INTCOMM

_____ _____
_____ (17/78) (17/79)

(INTERVIEWER READ:) Again, this is _____, with The Gallup Organization of Lincoln, Nebraska. I'd like to thank you for your time. Our mission is to "help people be heard", and your opinions are important to Gallup in accomplishing this.

(VALIDATE PHONE NUMBER AND THANK RESPONDENT)

INTERVIEWER I.D.# _____ (2/41-2/44)

CLOCK:

_____ _____ (28/44 - 28/47)

DESCRIPTIVE NAMES ONLY: NEED ACTUAL "FONE" FILE NAMES AND NUMBER OF COLUMNS!

1. MEDICAL EDUCATION: **(Code from "Fone" file)**

_____ _____ _____ (/ - /)

2. PHYSICIAN NAME: **(Code from "Fone" file)**

_____ _____ _____ (/ - /)

3. GENDER: **(Code from "Fone" file)** _____ (/)

4. PREFERRED PROFESSIONAL MAILING ADDRESS: **(Code from "Fone" file)**

_____ _____ _____ (/ - /)

5. GEOGRAPHIC CODES (STATE, COUNTY, ZIP, MSA, CENSUS REGION OR DIVISION): **(Code from "Fone" file)**

_____ _____
_____ (/ - /)

6. BIRTH DATE: **(Code from "Fone" file)**

_____ _____
_____ (/ - /)

7. BIRTH PLACE: **(Code from "Fone" file)**

_____ _____
_____ (/ - /)

8. CITIZENSHIP AND VISA: **(Code from "Fone" file)**

_____ _____
_____ (/ - /)

9. LICENSURE DATE: **(Code from "Fone" file)**

_____ _____
_____ (/ - /)

10. NATIONAL BOARD COMPLETION DATE: **(Code from "Fone" file)**

_____ _____
_____ (/ - /)

11. MAJOR PROFESSIONAL ACTIVITY: **(Code from "Fone" file)**

_____ _____
_____ (/ - /)

12. PRIMARY SPECIALTY: **(Code from "Fone" file)**

_____ _____
_____ (/ - /)

13. SECONDARY SPECIALTY: **(Code from "Fone" file)**

_____ _____
(/ - /)

14. PRESENT EMPLOYMENT: **(Code from "Fone" file)**

_____ _____
(/ - /)

15. AMERICAN SPECIALTY BOARD CERTIFICATION: **(Code from "Fone" file)**

_____ _____
(/ - /)

16. CURRENT AND FORMER MEDICAL TRAINING - (INSTITUTION, SPECIALTY, TRAINING DATES): **(Code from "Fone" file)**

_____ _____
(/ - /)

17. CURRENT AND FORMER GOVERNMENT SERVICE: **(Code from "Fone" file)**

_____ _____
(/ - /)

18. ECFMG CERTIFICATE: **(Code from "Fone" file)**

_____ _____
(/ - /)

19. TYPE OF PRACTICE: **(Code from "Fone" file)**

_____ _____
(/ - /)

20. TELEPHONE NUMBER: **(Code from "Fone" file)**

_____ _____
(/ - /)

21. FAX NUMBER: **(Code from "Fone" file)**

_____ _____
(/ - /)

REVISIONS

8/6/98

Added wording to #H12 and codes "06" and "07" on #H12

Added #I1

Deleted #I1a-#I2

9/1/98

Added "Address #2" to I1

vkt\larsen\rwj-physician-808

APPENDIX B

EQUATIONS USED FOR ROUND TWO INCLUSION PROBABILITIES

A. BACKGROUND

The background presented in Section B of Chapter V is repeated here to understand the appendix, along with the detailed equations. The sample allocation for the site survey in both Round One and Round Two was approximately proportional within the two patient care classifications in each site. The supplemental sample was almost completely self-weighting (proportional allocation among regions and by patient care classification), although some unequal weighting occurred as a result of the nonresponse adjustments.

The basic sampling weights (weights based on selection probabilities of the fielded sample, before nonresponse adjustments) vary in complexity. To provide a simple example, the calculation of the probabilities for basic weights is simple single-stage for the Round One supplemental sample, and the products of conditional and unconditional probabilities for the Round One site sample (such as the probability of a site selection multiplied by the probability of a physician selection *given* that the assigned site was selected). For simplicity, we defer the issue of the impact of geographic misclassification and patient care classification reassignment on the sampling weights and the random assignment of some sites to high-intensity site. In Round Two and subsequent rounds, these calculations must also reflect probabilities relating to previous points in time.

In Round One, the probability calculations for either survey are direct and simple, except for the calculation for movers (those who were geographically misclassified). For the second round, the situation can be viewed in several ways. To understand how the adopted method evolved, first consider that a physician could be included in the Round Two sample via any one of several paths:

- Physician was selected in Round One, was eligible and completed the interview, and was selected for the Round Two subsample (a Round One *complete*)
- Physician was selected in Round One, did not complete the interview (for example, was ineligible, could not be located, or refused), but was selected for the Round Two subsample (a Round One *noninterview*)
- Physician was not selected in Round One (but was in the Round One frame), but was selected for the Round Two sample (a Round One *frame physician*)
- Physician was not in the Round One frame, but was selected for the Round Two sample from the Round Two frame (a Round Two *new frame physician*)

If we consider the chain of events for the sample units representing the respondent domain of the Round One population, we have two possible routes, *a* (selected in Round One and Round Two) and *b* (selected in Round Two but not in Round One):

(1) $Pa = P1*P11*P21$

and

(2) $Pb = P1*(1 - P11)*P23$,

where *P1* is the probability (unconditional) of selecting the site, the conditional probabilities are defined as *Pij*, *i* relates to Round One or Round Two, and *j* relates to strata 1 to 4 for PCPs and to 5 to 8 for specialists.

- *P11* is the conditional probability of selecting the physician at Round One, given the site was selected.
- *P21* is the conditional probability of selecting the physician at Round Two, given it was a complete interview in Round One.
- *P23* is the conditional probability of selecting the physician at Round Two, given it was not selected in Round One (but was in the Round One frame).

Therefore, the inclusion probability equals the sum of probabilities for occurrence in one or the other of two disjoint events. That is, $P = P1*\{P11*P21 + (1 - P11)*P23\}$. This treatment assumes respondents and nonrespondents comprise fixed subpopulations.

One can calculate the basic sampling weights in longitudinal surveys using different assumptions. The method used in Round Two is a slight variant of the logic shown above. These methods produce unbiased estimates subject to some reasonable assumptions, and the resulting variances would be similar.

B. ROUND TWO METHODS

In this section, the method used to calculate the Round Two weights is outlined, with the proposition that no restrictive assumptions are required.

1. Basic Inclusion Probabilities

The Round Two weights were calculated using the fact that the probability of any physician being included from the Round One frame was the sum of the probability of a physician being selected in Round One plus the probability of his or her being selected in Round Two before the subsampling of strata 1 and 2 (this is valid for physicians for all three strata from the Round One frame):

(3) $P = P1*\{P11 + (1 - P11) * P23\}$.

This would have been the probability for all physicians if all the Round One completes and nonresponses had been included in the Round Two sample. (For physicians new to the Round Two frame, the probability is simply *P1*P24*, where *P24* is the sampling rate for new physicians.) These physicians were then partitioned or poststratified into the three categories (Round One completes, Round One noninterviews, and those not selected for Round One) for subsampling purposes. The inclusion probability was then multiplied by the respective sampling rates for the three strata: approximately 0.83 for *P21,* 0.68 for *P22,* and 1.0 for *P23*.

2. Stochastic Assignment to High-Intensity Sites

Twelve of the 48 large MSAs (>200,000 population) were selected as high-intensity sites (see Chapter II). This assignment was random so that the physicians in each site could have been assigned to two paths with substantially differing selection probabilities (the selection probabilities if it was a high-intensity site versus the selection probabilities if it was a low-intensity site). The rates are quite different (4 to 1), so that failing to account for the random assignment of physicians to these two paths when combining the site data for national estimates would have produced sampling weights that were quite different. So, as for Round One weights, the Round Two weights reflected the additional paths that a unit could have taken to be selected for the Round Two survey. For example, we added the probabilities of the alternate route to the probabilities for a high-intensity site (that is, the probabilities that would have occurred if the site had been selected as a low-intensity site [referred to as *altPij*]). Although this is almost essential to control the unequal weighting effects, we constructed the sampling rates that would have been used if the site had been assigned to the alternate level of sampling, using the same strategy that was used for sites actually assigned to that level of sampling.

The conditional probabilities and alternative conditional probabilities were calculated for each site (PCP/specialist) and each frame stratum (the sampling rates in each of the frame strata). The following equations are specific to each of the four frame strata (cases 1 to 4) and to three different site categories as described. The equations cited below are for PCPs but are analogous to those for specialists.

Case 1: Physicians who were classified according to the Round One frame as PCP and responded (Round Two stratum 1). The probability should be calculated as:

- High-intensity large MSA (sites 1-12)

  (4) $P = P1*[0.25*\{P11 + (1 - P11)*P23\}*P21 + 0.75*\{altP11 + (1 - altP11)*altP23\}*altP21]$

- Low-intensity large MSA (sites 13-48)

  (5) $P = P1*[0.75*\{P11 + (1 - P11)*P23\}*P21 + 0.25*\{altP11 + (1 - altP11)*altP23\}*altP21]$

- Other low-intensity (sites 49-60)

  (6) $P = P1*\{P11+(1 - P11)*P23\}*P21$

Thus, for the high-intensity sites, the inclusion probability for Round Two equals the site probability, *P1*, multiplied by the quantity in brackets, which is the sum of two conditional probabilities: (1) the probability that the site was selected as a high-intensity site (probability = 0.25) times the conditional probability of it being selected from the Round One frame times the conditional probability of it being selected from Round Two respondents; and (2) the same, except using 0.75 times the probabilities associated with the alternate route had it been selected. The equation for low-intensity sites is the same, except that 0.75 and 0.25 are switched. Other low-intensity sites (the nine sites selected in the stratum of small MSAs and those selected from nonmetropolitan areas) were not eligible for selection as high-intensity sites.

Case 2: Physicians who were classified according to the Round One frame as PCP and were nonrespondents (Round Two stratum 2). The probability should be calculated as in Case 1, except *P21* and *altP21* are replaced with *P22* and *altP22*, respectively.

Case 3: Physicians who were classified according to the Round One frame as PCP but were not selected in the Round One sample (Round Two stratum 3). The probability should be calculated as:

- High-intensity large MSA sites (1-12)

  (7) $P = P1*[0.25*\{P11 + (1 - P11)*P23\} + 0.75*\{altP11 + (1 - altP11)*altP23\}]$

- Low-intensity large MSA sites (13-48)

  (8) $P = P1*[0.75*\{P11 + (1 - P11)*P23\} + 0.25*\{altP11 + (1 - altP11)*altP23\}]$

- Other low-intensity sites (49-60)

  (9) $P = P1*\{P11 + (1 - P11)*P23\}$

Case 4: Physicians who were classified according to the Round Two frame as PCP and were not in the Round One frame (Round Two stratum 4). The probability was calculated as:

- High-intensity large MSA sites (1-12)

  (10) $P = P1*(0.25*P24 + 0.75*altP24)$

- Low-intensity large MSA sites (13-48)

  (11) $P = P1*(0.75*P24 + 0.25*altP24)$

- Other low-intensity sites (49-60)

  (12) $P = P1*P24$

Cases 5-9: Physicians who were classified according to the frames, as above, except as specialists rather than as PCPs. The probabilities should be calculated as in the preceding four cases, except that *P11* is replaced with *P12,* and *P21-P24* are replaced with *P25-P28*.

The basic sampling weight is the inverse of the selection probability (that is, *1/P*).

3. Geographic Misclassification

The physicians for the site sample were linked to the site in which they practice. For national estimates from the site sample, one could define the linkage according to the frame information on physician location (the physicians' preferred address). However, for the site-

level estimates, the linkage was defined as the practice location. As a result, some physicians were initially selected in a site that did not contain their practice. If their practice was not in one of the 60 sample sites, they were not included in the site analyses. However, if they were selected for one sample site and had a practice in another sample site, they were in the site sample as *movers*. In this case, however, their inclusion probabilities had to be adjusted to reflect the "move." Many of these situations were the problem cases for weight trimming, as their weights can be relatively large. In particular, for some sites, a substantial number of physicians were reassigned to a site (that is, they were *in-movers*). For some sites, this represented 10 to 20 percent of all physicians assigned to the site (see Table II.4 in Chapter II).

A mover was a member of the site sample only if both the frame and survey sites were in the sample (the joint inclusion probability, *Pij* for two sites, *i* and *j*). In the preceding equations, *P1* equals the inclusion probability for the frame site. Hence, *P/P1* equals the conditional probability for a sample physician. Finally, the inclusion probability for a mover equals *Pij*P/P1*, or the joint inclusion probability of the frame and survey sites times the conditional probability of physician selection in the frame site.

Joint inclusion probabilities for two sites (for example, site 1 and site 2) are:

(13) $P12 = P1*P2|P1,$

and, with independence:

(14) $P12 = P1*P2$

The second equation was used for the joint inclusion probability factor in the Round Two mover weights for the following reasons:

- Several simplifying assumptions were required to calculate the joint inclusion probabilities as in the first equation.

- The two equations produced similar values under these assumptions.
- The second equation was used in the calculation of Round One weights.

APPENDIX D

CONCEPTUAL FRAMEWORK FOR COMBINED-SAMPLE ESTIMATES

For computing survey estimates, *Est(Y)*, combined across the two sample components, separate estimates can be computed for each sample component and combined using the equation:

(1) $Est(Y) = \lambda\, Y(Site) + (1 - \lambda)\, Y(Supp)$,

where *Y(Site)* is the survey estimate from the site sample, *Y(Supp)* is the survey estimate from the supplemental sample, and λ (lambda) is an arbitrary constant between 0 and 1. For the sampling variance, *V(Y)*, the estimate is computed using the equation:

(2) $V(Y) = \lambda^2\, V(Y(Site)) + (1 - \lambda)^2\, V(Y(Supp))$,

where *V(Y(Site))* is the sampling variance for the estimate from the site sample, and *V(Y(Supp))* is the sampling variance for the estimate from the supplemental sample. Any value of λ would result in an unbiased estimate of the survey estimate, but not necessarily an estimate with the minimum sampling variance. A lambda value producing a sampling variance at its minimum value would result in the shortest confidence interval and, by implication, the most accurate point estimate.

A value of lambda can be computed in an optimal (minimum variance) sense as:

(3) $\lambda = 1/V(Y(Site) / [1 / V(Y(Site)) + 1/ V(Y(Supp)]$

$= V(Y(Supp)) / [V(Y(Site)) + V(Y(Supp))]$.

In this case, the minimum variance is:

(4) $V(Y) = [V(Y(Site)) * V(Y(Supp))] / [V(Y(Site)) + V(Y(Supp))]$.

To compute the combined-sample estimate with minimum variance, survey estimates are derived by first computing the estimates for each sample component, computing a value of λ for each pair of estimates, and then combining the point and variance estimates. Although it produces the minimum variance estimates, the process is computer intensive and results in some inconsistencies among estimates for percentages and proportions because of differing values among levels of a categorical variable.

The alternative approach is to identify one or more values of lambda and compute combined-sample weights. To compute the combined weight for physicians in the site sample:

(5) $WT(Combined) = WT(trimmed\ site\ sample\ weight).$

For units in the supplemental sample:

(6) $WT(Combined) = (1 - \lambda)\ WT(trimmed\ supplemental\ weight).$

After the combined-sample weight is computed, point and variance estimates can be computed directly using the SUDAAN survey data analysis software. The SUDAAN program code incorporates the estimation structure for the site sample and the supplemental sample as separate sets of strata.