B.   **Collection of Information Employing Statistical Methods**

1. Respondent Universe and Sampling Methods

The respondent universe for the survey consists of physicians in each of the following five specialties: Family Medicine, Diagnostic Radiology, Orthopedic Surgery, Cardiology, and Ophthalmology. The number of physicians in the U.S. as a whole and for each of the study specialties is shown in Table B1 here, along with the targeted number of completed surveys.

Table B1. Number of Entities in Universe Covered by Collection and in Corresponding Samples, by Proposed Strata

	U.S. Total *	Targeted number of completes from--		Total anticipated sample (completes)
		AMA Masterfile	Integrated delivery system	
All	950,000	300	300	600
Family Practice	85,931	60	60	120
Diagnostic radiology	28,385	60	60	120
Orthopedic surgery	21,475	60	60	120
Cardiology	21,445	60	60	120
Ophthalmology	17,963	60	60	120

*Source: AMA Masterfile, approximate count of practicing physicians (office- and hospital-based), in specialty with contact information available.

Based on past experience conducting physician surveys, we are targeting a response rate between 55 and 60 percent. The sample sizes were derived based on available resources for conducting the survey and power calculations shown in Table B2. The analytic measure of interest is the mean ratio of the respondent-reported clinical time to the time in the Medicare Fee Schedule, calculated at the service level. The analysis will compare the ratios across services, both within and across specialties, and across the two components of the sample.

In order to conduct the power calculations, we relied on data provided to the project team by the American Medical Association from past RVS Update Committee (RUC) surveys. The data they provided included the first quartile, median, and third quartile values for physician reports of time spent for approximately 500 different services. The inter-quartile ranges varied greatly according to service, with the time reports for some services tending to be far more homogeneous than for others. Some CPT-defined service categories are far narrower in their time requirements than others and reporting physicians clearly differed in the level of complexity they were considering when asked about a particular service designation. On the basis of the inter-quartile ranges and the

apparent shapes of the distributions it was possible to make rough approximations of the standard deviations of the responses for particular services. We calculated the power of t-tests for three different "typical" sizes of standard deviation on the basis of our approximations derived from the RUC data. The sample sizes appear sufficiently large to detect most substantively important differences with a beta error of 20 percent or less even for services with responses that may have relatively large standard deviations although the level of beta error may be somewhat higher for a few highly heterogeneous service categories.

Table B2. Power calculations for survey of physicians, comparison of means of ratios of respondent-reported clinical time to fee schedule time, for a given service

Comparison	Anticipated sample sizes	Detectable difference in means of ratios at 80% power[a,b]		
		Assumed size of standard deviations of ratios		
		Large—0.9	Medium—0.5	Small—0.2
All service-level estimates from Masterfile sample and all service-level from IDS sample	1800 vs. 1800	0.08	0.05	0.02
Between service-level estimates for 2 specialties, within one sample (i.e., either Masterfile or IDS)	360 vs. 360	0.19	0.10	0.04
Between service-level estimates for evaluation and management, within one sample (i.e., either Masterfile or IDS)	120 vs. 120	0.33	0.18	0.07

[a]Calculations were made using SAS 9.2 Proc Power.

[b]Power for two-tailed t test of difference between means, alpha = .05, null hypothesis: difference between means =0.

2. Procedures for the Collection of Information

The sample will include two independent components. The first component sample will be drawn from the Physician Masterfile, which includes current and historical data for more than 1.4 million physicians, residents, and medical students in the United States. The second sample will be drawn from lists of physicians affiliated with several large multispecialty medical group practices. (The project team is currently in discussions with a number of practices in order to gain access to their physician rosters.) With both sampling frames, the samples will be stratified by the following five specialties: Family Practice, Diagnostic Radiology, Orthopedic Surgery, Cardiology, and Ophthalmology (also indicated above in Table B1). For each of the sample components, within each of the specialty strata, we will use simple random sampling in order to target an equal number of cases from each specialty.

3. Methods to Maximize Response Rates and Deal with Nonresponse

We plan to have a number of procedures in place to maximize response rates. The survey will be conducted using multiple modes to minimize the burden on respondents and make it as easy and convenient as possible to respond. Initial contacts will be sent by mail in a FedEx or Priority mail envelope to get the respondent's attention. A link to a web version of the survey will be provided for those who prefer to complete the survey online. Respondents will be given the opportunity to return the hardcopy survey in a prepaid envelope or by fax. We will also have skilled telephone interviewers conducting phone prompting and available to complete the survey with the respondent by phone if requested.

We will use multiple mailings of professionally formatted materials, and will alternate mailings of the survey with reminder postcards to encourage participation. We plan to include a prepaid incentive of $100 will be included in the initial mailing as an indication of respect for the respondent's valuable time and effort. The physician survey literature clearly demonstrates that monetary incentives, and prepaid ones in particular, increase response rates and that higher response rates are more effective than lower ones. For the sample derived from medical group practices, we will also include a letter of endorsement from the organization in the survey packet mailings. Given our past experience with physician surveys, we anticipate a response rate of between 55 and 60 percent.

In terms of non-response, we note that nonresponse imparts bias in survey estimates only to the extent that non-responders differ from responders with respect to the analytic variables of interest. As such, any non-response adjustment is effective only to the extent that responders with specific characteristics respond like the non-responders would have responded. In other words, the nonresponse adjustment assumes that the available variables used in the adjustment are correlated with non-response bias. We also note that there is an empirical literature on early and late responders to physician surveys which indicates that it is reasonable to assume that there will not be significant non-response bias. Using variables available from the frames, we will compare responders to non-responders in order to assess how the two groups may differ. There will be a limited set of variables available for this purpose—age and specialty of physician, geographic practice location (e.g., U.S. Census region, metro area vs non-metro).

4. Tests of Procedures or Methods to be Undertaken

Where available, we have drawn questions for the survey instrument from existing surveys. We have also conducted a limited pre-test of the survey instrument to gather additional information on clarity of wording, completeness of response categories, and ease of understanding and responding. The pre-test was limited to nine respondents

from the selected specialties. The physician respondents were recruited through the professional networks of the project team. These individuals were contacted by email by one of SSS's senior interviewing staff to set up a time for a phone interview. They were then sent a copy of the draft questionnaire. Prior to the phone interview, they were asked to complete the questionnaire. During the phone interview, using a prepared protocol, an SSS interviewer went through the survey instrument section by section, asking if there was any confusing wording, unclear questions, missing response categories, questions that were difficult to answer, and so on. Responses were compiled and shared with the project team and some questions in the instrument were revised. The revised survey instruments—one per specialty—are included as part of this package. (See Appendix C for survey instruments. See Appendix D for respondent communications.)

5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

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