

2007 National Physician Survey (NPS) Methodology & Comparability Between The Total Eligible Physician Population, Survey Respondents and Non-Respondents

Survey Methodology:

The National Physician Survey (NPS) is an ongoing collaborative initiative led by the College of Family Physicians of Canada (CFPC), the Canadian Medical Association (CMA) and the Royal College of Physicians and Surgeons of Canada (RCPSC). Every three years, all practicing physicians, second year residents, and medical students in Canada are surveyed about what they are doing (or intend to do) in their practices in response to both societal needs, as well as their personal and professional interests.

Practicing Physicians:

Questionnaire Design

The 2007 National Physician Survey (NPS) questions evolved from questions used on the 2004 NPS. A working group approach, including representatives from the College of Family Physicians of Canada (CFPC), the Canadian Medical Association (CMA), the Royal College of Physicians and Surgeons of Canada (RCPSC), the Canadian Institute for Health Information (CIHI), and other affiliated societies was used to review and refine the 2004 questions. The refinement process included a call for content input. In particular, an effort was made to identify new areas of focus, with outreach to a wide range of medical associations/affiliates/groups, medical institutions, governments, research groups, etc. The rationale for the final questionnaire content was: 1) to repeat questions from the 2004 survey that were essential for longitudinal tracking; 2) to edit questions from the 2004 survey, to improve usefulness of the answers provided; 3) to put aside questions from the 2004 survey, where changes occur more gradually, and the 2004 results were still considered valid. These 2004 questions may be reconsidered for inclusion on later versions of the NPS questionnaire, e.g. 2010); 4) to add new questions in response to new and/or developing issues.

Similar to the Canadian Census approach of issuing a core questionnaire to be completed by the majority of respondents, and a more detailed questionnaire to be completed by a subset of respondents, the 2007 NPS consisted of multiple questionnaires. One version of the core questionnaire was developed, and two versions of the detailed questionnaire were developed - one for family physicians and general practitioners (FPs), and one for all other specialists. All of the content captured on the core questionnaire was also captured on the detailed questionnaires. Ninety percent of the questions on the detailed questionnaires were identical for FPs vs. all other specialists, with differences predominantly occurring in the clinical practice profile questions.

The questions were piloted in the fall of 2006 with a variety of physician committees and national specialty societies, and finalized in November 2006. The NPS received ethical approval from the University of British Columbia Behavioural Ethics Review Board.

Sample Design

The process of determining who would receive the 6 page core questionnaire, and who would receive the 12 page detailed questionnaire, had the goal of maximizing response rate and statistical reliability, while minimizing survey burden. Physicians were assigned to strata based upon their province/territory of practice, broad specialty (either family medicine/general practice or other medical specialty), and sex. For large population provinces, (British Columbia, Alberta, Ontario, and Quebec), one in three physicians in each stratum received the detailed questionnaire, while all other physicians received the core (shorter) questionnaire. For smaller population provinces (the Atlantic provinces, Manitoba, and Saskatchewan) and the territories, two out of three physicians in each stratum received the detailed questionnaire, while all other physicians received the core questionnaire.

Mailing List Data Collection

The 2007 NPS was carried out as a self-reported survey of all physicians licensed to practice in Canada, and was completed either on paper or electronically. The mail and email contact lists were generated from the NPS Masterfile. The NPS Masterfile was populated with information from the CMA Membership System, the CFPC membership database, and the RCPSC membership database. The CMA Membership System was used as the template, as it included all physicians in Canada holding a medical license, and is compiled and updated on a daily basis with information received from provincial licensing bodies, associations, CFPC and RCPSC membership listings, and individual physicians. The information provided by CFPC and RCPSC added additional information (e.g. email addresses, more recently updated mailing addresses) to the content already supplied by the CMA Membership System.

Once fully populated, an NPS survey ID, not related to any existing member ID in any of the membership databases, was assigned to each record in the NPS Masterfile. These identification numbers were used to ensure that physician responses would remain confidential, to enable subsequent mailings/emailings of the questionnaire to be sent only to physicians who had not yet replied, and to provide the opportunity to apply the same numbers to future NPS surveys for longitudinal analyses, if permission was granted by the individuals.

Administration of the Survey

Based upon the information available in the NPS Masterfile, physicians were allocated to one of two contact modes; either the email group, or the regular mail group. Email addresses were verified for 58% of all physicians. The remaining 42% of physicians received all NPS communications by regular mail. In total, 62,441 physicians in all provinces and territories were asked to reply to the 2007 NPS, 32,891 FP/GPs and 29,550 other specialists.

Email Survey Group

Physicians were contacted multiple times with invitations to complete the NPS questionnaire. Beginning in mid January 2007, physicians in the email group received an advanced notification message about the NPS. Communications were sent in either

English or French, depending on the physician's preferred language of correspondence. Those whose email addresses proved to be undeliverable were moved to the regular mail group. Two weeks later (late January 2007), the email group received an invitation to complete the e-questionnaire online. The invitation contained the web link to the e-questionnaire, and each physician's unique identification number. One week later, the email group received a reminder email, again containing the link to the e-questionnaire, and their unique identification number. Four weeks later (early March 2007), the email group received another email invitation to complete the online survey (containing the link and their ID number). Finally, in mid-April, all physicians originally in the email group, who had not yet submitted their completed e-questionnaire, were sent a paper copy of the questionnaire by regular mail (their envelope contained the questionnaire, a cover letter, a flyer, and a postage-paid reply envelope). It should be noted that all physicians receiving emailed invitations to complete the questionnaire electronically were also given the opportunity to request a paper copy of the questionnaire at any point in the process.

Mail Survey Group

For physicians in the regular mail group, their advanced notification letter was mailed late in January 2007, followed a week and a half later by the survey package (questionnaire, cover letter, flyer, and postage-paid return envelope). A month later (mid-March 2007), a second survey package was mailed to all physicians who had not yet replied. Finally, in mid-April, a third and final survey package, in a heavier cardboard envelope, printed in colour, was mailed to all physicians who had not yet replied. Physicians who received their questionnaire by mail had the option of completing the paper copy, or typing in the web link provided on both the front cover of the paper questionnaire, and the cover letter enclosed with the questionnaire, and completing their questionnaire electronically.

Responses from all questionnaires returned by June 15th, 2007 were captured into an electronic database file. The file created by physicians completing the online e-questionnaire and the file created by the returned paper responses were then merged to create a single NPS database.

Maintenance of certification credits from the CFPC and the RCPSC were available to physicians who completed the questionnaire, and who subsequently completed a related reflective exercise. Credits included 2 Mainpro-C credits from the CFPC for completing a "Linking learning to practice" reflective exercise, or 2 Maintenance of Certification credits from the RCPSC for completing a review of the summary of their practice in relation to the aggregate survey results, and documenting the outcomes of the review.

Response Rates

A separate database pertaining to all eligible survey respondents was developed in order to assess the comparability and representativeness of the survey respondents to the total physician population, and to develop statistical weights to be applied to each stratum and age grouping within the 2007 survey results. From the NPS Masterfile, physician age, sex, province, language, and year of MD graduation were captured, along with an indication of whether or not the individual completed the questionnaire. No names or addresses were contained in this separate database.

Of the 62,441 doctors identified on the original mailing/emailing list, a total of 1,630 individuals were found to have no known mailing address, or to be retired, residents, or

working abroad. Eliminating these cases reduced the original study population to 60,811 physicians considered to have had the opportunity and to be eligible to respond to the 2007 NPS. Of these, 19,239 replied to the survey, for an overall study response rate of 31.64%.

As mentioned above, 58% of eligible respondents were contacted initially by email, and the remaining 42% by regular mail. Here are the response rates by contact mode (paper or email) and completion mode (paper or online):

Response Rates	Initial contact mode	
	Paper	Email
Completion mode		
Paper	32.1%	6.0%
Online	2.0%	23.8%
Subtotal Survey Respondents	34.1%	29.9%
Did not respond	65.9%	70.1%
Total	100%	100%

Among those who were contacted by postal mail, the response rate was 34.1%, compared to a response rate of 29.9% among those who were in the email group. We suspect that the heavier paper mailer that was used to contact the physicians in the paper-mode group may have elicited a higher response rate in this group.

There was no important difference in the response rate between the extended/longer more detailed surveys and the shorter/core surveys (31.7% and 31.6% respectively). 38% of eligible respondents received the long survey and 62% the shorter survey. Here are the response rates by survey type (detailed, or core only) and completion mode (paper or online):

Response Rates	Survey type	
	Detailed (12 pages)	Core only (6 pages)
Completion mode		
Paper	16.9%	16.8%
Online	14.8%	14.8%
Subtotal Survey Respondents	31.7%	31.6%
Did not respond	68.3%	68.4%
Total	100.0%	100%

The response rate among physicians contacted in French was higher than the response rate among physicians contacted in English (33% vs. 31%), $p < 0.0001$.

Table 1 presents the provincial and territorial response rate information for family physicians/general practitioners (FP/GPs) and other specialist physicians. The provinces of Newfoundland and Labrador, Manitoba, Saskatchewan, Alberta and British Columbia registered response rates below the overall national rate of 31.64%, based upon the combined results for FP/GPs and other specialists across all provinces. Response rates for these provinces were 27.62%, 30.76%, 30.64%, 31.47% and 30.01%, respectively. Over 40% of physicians in Prince Edward Island and the combined territories responded to the 2007 NPS (Table 2). FP/GPs and other specialist physicians were very similar in terms of their overall survey response rates (32.07% and 31.16%, respectively).

Table 1: Physician Distributions and Response Rates, by Province, Territory and Broad Medical Specialty

Province / Territory	Broad Specialty	Eligible Population ¹		NPS Respondents ²		Response Rate (%)
		Number of Physicians	Distribution Across Eligible Population (%)	Number of Physicians	Distribution Across NPS Respondents (%)	
NL	FP/GP	654	1.08%	188	0.98%	28.75%
	Other Specialist	385	0.63%	99	0.51%	25.71%
PEI	FP/GP	137	0.23%	54	0.28%	39.42%
	Other Specialist	79	0.13%	34	0.18%	43.04%
NS	FP/GP	1124	1.85%	415	2.16%	36.92%
	Other Specialist	955	1.57%	352	1.83%	36.86%
NB	FP/GP	836	1.37%	290	1.51%	34.69%
	Other Specialist	513	0.84%	171	0.89%	33.33%
QC	FP/GP	7890	12.97%	2574	13.38%	32.62%
	Other Specialist	7279	11.97%	2248	11.68%	30.88%
ON	FP/GP	10855	17.85%	3571	18.56%	32.90%
	Other Specialist	11179	18.38%	3432	17.84%	30.70%
MB	FP/GP	1157	1.90%	350	1.82%	30.25%
	Other Specialist	1008	1.66%	316	1.64%	31.35%
SK	FP/GP	1036	1.70%	303	1.57%	29.25%
	Other Specialist	583	0.96%	193	1.00%	33.10%
AB	FP/GP	3335	5.48%	1033	5.37%	30.97%
	Other Specialist	2863	4.71%	919	4.78%	32.10%
BC	FP/GP	4896	8.05%	1449	7.53%	29.60%
	Other Specialist	3918	6.44%	1196	6.22%	30.53%
NT, YT, NU ³	FP/GP	106	0.17%	43	0.22%	40.57%
	Other Specialist	23	0.04%	9	0.05%	39.13%
Canada	FP/GP	32026	52.66%	10270	53.38%	32.07%
	Other Specialist	28785	47.34%	8969	46.62%	31.16%
Total		60811	100.00%	19239	100.00%	31.64%

Notes:

1. NPS Masterfile physicians who were deemed eligible to complete the 2007 National Physician Survey.
2. 2007 National Physician Survey respondents.
3. Includes physicians in Nunavut, the Northwest Territories and Yukon.

Source: 2007 NPS Masterfile

Table 2: Physician Response Rates by Province/Territory

Province/ Territory	Response Rate (%)	NPS Respondents		Total Population	
		n	%	N	%
NL	27.62%	287	1.49%	1039	1.71%
PE	40.74%	88	0.46%	216	0.36%
NS	36.89%	767	3.99%	2079	3.42%
NB	34.17%	461	2.40%	1349	2.22%
QC	31.79%	4822	25.06%	15169	24.94%
ON	31.78%	7003	36.40%	22034	36.23%
MB	30.76%	666	3.46%	2165	3.56%
SK	30.64%	496	2.58%	1619	2.66%
AB	31.49%	1952	10.15%	6198	10.19%
BC	30.01%	2645	13.75%	8814	14.49%
NT, YT, NU	40.31%	52	0.27%	129	0.21%
CANADA	31.64%	19239	100.00%	60811	100.00%

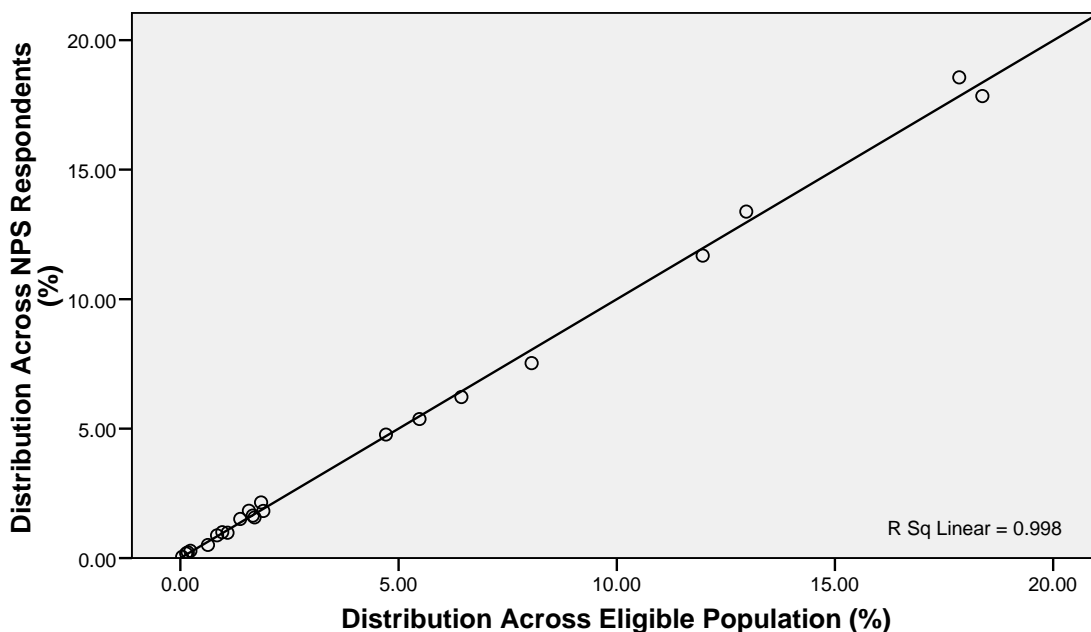
Source: 2007 NPS Masterfile

Comparison of Demographic Distributions in the 2007 NPS Database and the Total Physician Population

Figure 1 plots the percent distribution data presented in Table 1 for the eligible physician population and NPS respondents. Each data point in Figure 1 represents a physician subgroup defined by a province, territory and FP/GP or other specialist physician group. The correlation between the distribution in the physician population and the NPS respondents is high and positive ($r=0.998$). This indicates that, in general, subgroups that comprise a large proportion of the eligible population also comprise a large proportion of the NPS respondents.

Figure 1:

Percent Distribution of Physicians in the Eligible Population and in the 2007 National Physician Survey Database



Note: Each data point plots the percent values for a defined group of family physicians/general practitioners or other specialist physicians in a particular province or territory.

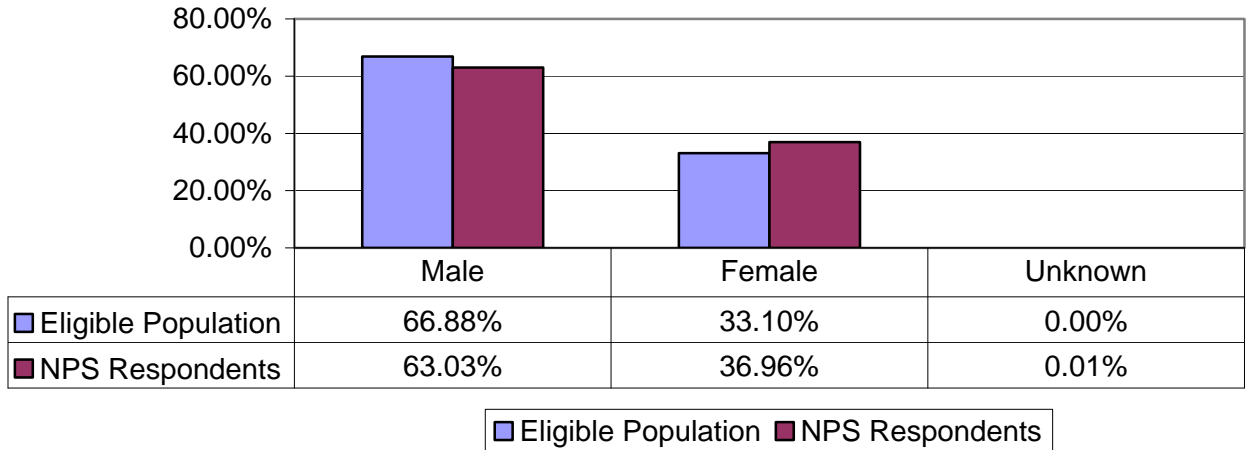
Source: 2007 NPS Masterfile.

An examination of the representativeness of the NPS respondents can be extended to physician age and sex distributions. Age and sex comparisons are presented in Figures 2 and 3. Among NPS respondents, there are proportionately more females than the physician population, 37.0% versus 33.1% respectively (see Figure 2).

Physicians aged 55 and older comprise a slightly larger proportion of the group of NPS respondents compared to the population, while physicians aged 44 and under are proportionately less represented (see Figure 3). The discrepancy between NPS respondents and population age group proportions is greatest for physicians aged between 35 and 44, with percentages equal to 26.0% and 23.3% respectively.

Figure 2:

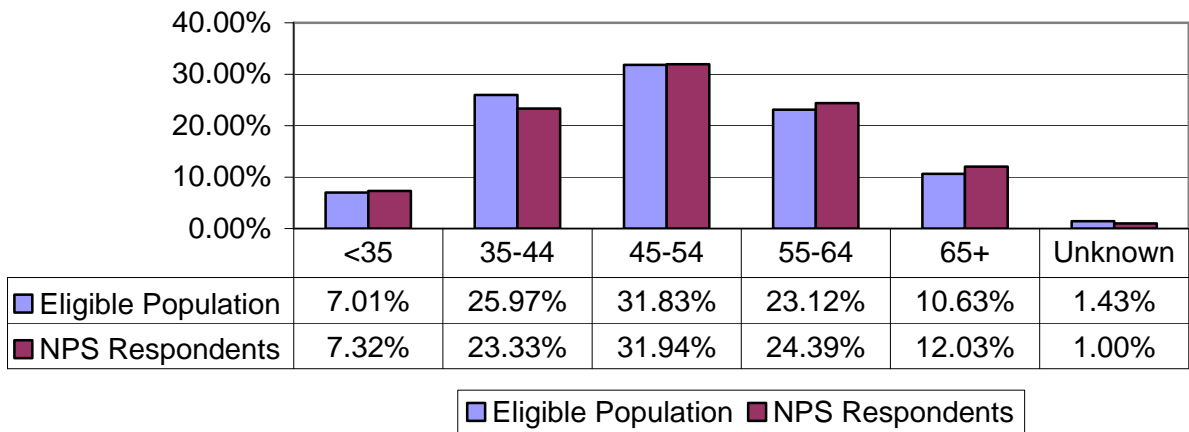
Percent Distribution of Physicians in the Eligible Population and in the 2007 National Physician Survey Database, by Sex



Source: 2007 NPS Masterfile

Figure 3:

Percent Distribution of Physicians in the Eligible Population and in the 2007 National Physician Survey Database, by Age Groups



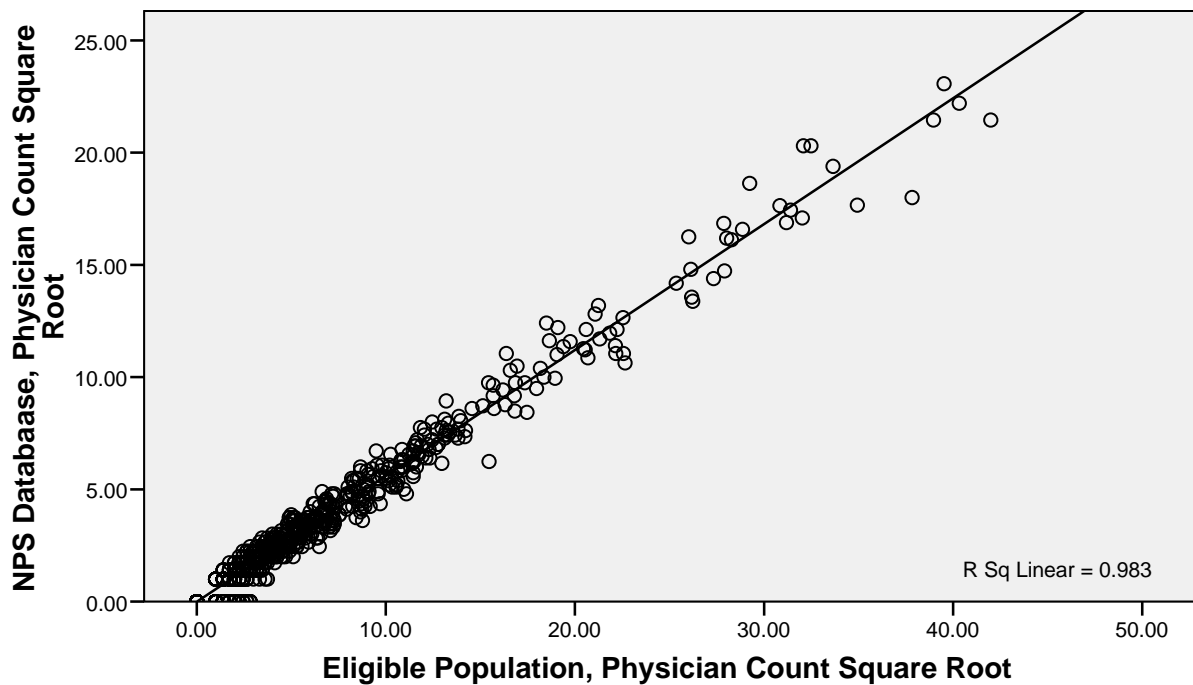
Source: 2007 NPS Masterfile

To illustrate the overall comparability of the 2007 NPS respondents to the physician population, Figure 4 combines data for all of the demographic characteristics reported above, with the addition of the decade in which the physician graduated from undergraduate medical school. Each data point in Figure 4 plots information for a

physician subgroup as defined by a province or territory, FP/GP or other specialist physician category, an age by sex group and a graduation year decade. The data that is plotted is the square root of the count of physicians in the defined group, for both the NPS respondents, and the physician population. The square root of the physician count is used in order to plot results for groups of very disparate size. As with the results shown in Figure 1, Figure 4 illustrates the strong correlation ($r=0.983$) between subgroup distributions in the NPS respondents, and the physician population, based on five basic demographic characteristics. The strong similarity between the respondents and the population suggests that non-response bias should be low for estimates from the NPS.¹

Figure 4:

Square Root of Physician Counts Within the Eligible Population and in the 2007 National Physician Survey Database. Groups Defined by Province or Territory, Broad Medical Specialty, Sex, Age Group Categories, and Graduation Year Decade.



Note: Each data point plots the square root of the physician count for a group of family physicians/general practitioners or other specialist physicians in a particular provincial/territorial, sex, age group, and graduation year decade group.

Source: 2007 NPS Masterfile.

¹ This section has been adapted from: Canadian Institute for Health Information, *Analytical Bulletin: 2004 National Physician Survey Response Rates and Comparability of Physician Demographic Distributions with those of the Physician Population* (Ottawa: CIHI, 2005).

Sampling Weights, Estimation Weights, and Non-response Adjustments

When a sample is selected for a survey with unequal probabilities (as was the case for the NPS detailed questionnaire sample), weights are used when making estimates in order that the weighted sample is representative of the population. The original sampling weights (based on selection probabilities) are usually adjusted before estimation to reduce possible non-response biases. Censuses (a census was attempted for the 2007 NPS core questions) are subject to non-response, and as a result, weights to be used in estimation can be derived to reduce possible non-response biases. With the NPS, the non-response adjustments for both the sample survey component and the census component were performed at the province by physician type by age-group by gender level, using the method of calibration (reference: Survey Methods and Practices. Statistics Canada catalogue no.12-587-XPE, 2003.) The reference population for this calibration was the NPS Masterfile.

Eligible Population: Of the 62,441 physicians on the initial list eligibility could be determined for 20,869 physicians, of whom 1,630 were found to be ineligible. The weighting and non-response adjustment process included both the 19,239 physicians who responded to the survey and the 1,630 found to be ineligible, which allowed the estimation of the number of ineligible physicians among the 41,572 physicians whose eligibility was not confirmed. This method produces an estimate of 57,757 eligible physicians. The shaded cells in the table below are the estimated counts.

Estimated Eligible Population, 2007 NPS:

	Eligibility Determined	Eligibility not Determined	Total
Eligible	19,239	38,518	57,757
Not Eligible	1,630	3,054	4,684
Total	20,869	41,572	62,441

Responding Sample: For the core survey questions, there were 19,239 responses representing the 57,757 eligible physicians. After the non-response adjustments for different demographic groups, the final weights for these responses average almost exactly 3 (3.002), and range from 1.00 to 4.31.

For the questions on the detailed questionnaires, there were 7,347 responses representing the 57,757 eligible physicians. After the non-response adjustments were applied to the sampling weights for different demographic groups, the final weights for these responses average 7.86, and range from 1.00 to 13.72.

More detail on the distribution of the weights is provided in APPENDIX C.

Using the Weights

There are two sets of weights, one for the questions that appear on both the core and detailed questionnaires (core questions) and one for the questions that appear only on the detailed questionnaires (detail questions). For estimates that involve only core questions, such as 'Main Patient Care Setting by Province', or 'Satisfaction with Professional Life by Main Patient Care Setting', the core question weight should be used. Similarly, for estimates that only involve detail questions, such as 'Type of Internet Access by Record Keeping System', the detail question weight should be used. For tables that use both core questions and detail questions, such as 'Type of Internet Access by Main Patient Care Setting', the detail question weight should be used.

The two sets of weights make it possible to produce two estimates for any of the core questions. One is the natural estimate, using all the respondents and the core question weights, and the other is obtained by using the core question responses from the detailed questionnaire respondents (the core questions form a subset of the questions on the longer, detailed questionnaire) and the detail question weights. (The marginal totals for the core question from a table of a core question by a detail question will be estimates of the second type.) These two estimates will be slightly different because they are based on different sets of respondents. The estimates based on the larger sample (the core questionnaire sample) will be more precise because there are more respondents.

Sampling Variability of Estimates

The data from the 2007 NPS are based on a sample survey in the case of the detail questions and on a census with considerable non-response in the case of the core questions. Different results would have been obtained if a census with no non-response had been conducted for all of the items. These differences are called sampling and non-response errors, and sampling theory gives us a way to estimate how large they might be. For the NPS it has been assumed that the non-response was approximately at random and so that it can be treated essentially as part of the random selection process.

The variability of a survey estimate depends upon many factors, such as the size of the sample, its distribution among the strata, the size of the estimate, and the details of the sample design. Using the usual formulae for the sampling variance of estimates from simple random samples (ref: Cochran, W. (1977). *Sampling Techniques*. John Wiley and Sons, New York), and a conservative design effect adjustment to account for stratification and calibration, variability guidelines can be established for the 2007 NPS, and some general statements about precision of the estimates can be made:

- Estimates using core questions from the NPS for proportions of the entire population of physicians over all provinces will be within 1 percentage point of the true proportion, 19 times out of 20.
- Canada level estimates for core questions, but restricted to the Other Specialist or Family/General subpopulations will be within 1.5 percentage points, 19 times out of 20.

- Canada level estimates for detail questions for the entire population of physicians will be within 3.2 percentage points 19 times out of 20.
- Canada level estimates for detail questions for the Other Specialist or Family/General subpopulations will be within 5 percentage points 19 times out of 20.

These are conservative guidelines, based on the population and sample sizes, and on the most difficult proportion to estimate. This proportion is 50%; for smaller or larger estimates the confidence intervals are considerably narrower. For instance, an estimate of 5% (or 95%) for all physicians across Canada can be expected to be within .45 percentage points of the true value, 19 times out of 20.

The width of these confidence intervals is highly dependant on the sizes of the population and of the sample. The confidence interval widths for estimates for Newfoundland and Labrador or Prince Edward Island are about ten times the width of those for Canada, while those for Quebec or Ontario are only about three times the width of those for Canada. Please refer to APPENDIX A for additional detail about confidence limits and APPENDIX B for a list of provincial/territorial confidence limits.

The validity of the estimates of sampling variability and the resulting confidence intervals and tests of hypotheses depends on the validity of the assumptions on which they are based. The essential assumption is that the combined effect of sampling and non-response is approximately like that of a random sample within the classes that have been used for calibration. This is also the assumption under which the 2007 NPS estimates will accurately reflect the entire population of eligible physicians.

There were relatively few data elements available to test this assumption, but for the characteristics of physicians that were known for both the respondents and non-respondents the two groups looked very similar (see previous section). The next section presents the results of a supplementary survey of non-respondents to the full 2007 NPS that found some small but statistically significant differences between the respondent and non-respondent physicians.

The weighting adjusts for over- or under-representation of groups defined by province, type of physician (specialist versus FP/GP), age, and sex. Hence any response bias due to differential non-response between these groups has been removed through the calibration of the weights.

Analysis of the Follow-up Survey of Non-Respondents

A second approach used to assess the comparability and representativeness of the survey respondents to the total physician population involved mailing a one-time, brief “fact sheet” questionnaire to all non respondents following the close of the NPS survey completion phase. The fact sheet asked all of these physicians, who were non-respondents to the original NPS survey, to provide their basic information on the key work profile comparison variables - hours worked, main work setting, number of patient visits. This survey was completed by the middle of August 2007. Of the 41,572 physicians who did not reply to the original questionnaire, and were asked to reply to the brief fact sheet, 93 were found to have no known address, or to be retired, residents, or working abroad. Eliminating these cases reduced the eligible population to 41,479 physicians considered to have had the opportunity to respond to the 2007 NPS follow-up fact sheet. Of these, 6,046 returned their one page survey, resulting in a 14.6% response rate for the NPS non-responders.

When comparing the 19,239 physicians who responded to the original NPS survey – ‘NPS Respondents’ – with the 6,046 physicians who responded to the follow-up fact sheet – ‘NPS Non-Respondents’ – they were found to be very similar for a number of characteristics:

- The average total work hours (excluding on-call) per week was 51.09 for NPS Respondents and 51.32 for NPS Non-Respondents. These averages are not significantly different ($p=0.37$).
- The mean age (50.69 years old among NPS Respondents vs. 50.68 years old among NPS Non-Respondents) did not differ significantly ($p=0.95$).
- The percentage in group practice (46.9% of NPS Respondents vs. 46.9% of NPS Non-Respondents) was not significantly different ($p=1.0$).

It should be noted that census studies of very large populations, such as this one, may indicate that rather small differences between large groups are statistically significant. This may, or may not be due to actual differences of practical interest or relevance between the groups being studied. In addition, the weighting process used to create the NPS Database ensures that the weighted file is representative of the FP/GP versus other specialist proportions, as well as the male to female, and provincial proportions in the NPS Masterfile.

Differences between NPS Respondents and NPS Non-Respondents that had statistical significance are indicated below.

- A greater percentage of NPS Respondents than NPS Non-Respondents were family physicians/general practitioners compared to other specialists (53.4% of NPS Respondents were family physicians general practitioners, compared to 49.3% of NPS Non-Respondents, $p<0.0001$).
- A greater percentage of NPS Respondents than NPS Non-Respondents were females (62.4% males and 37.6% females among NPS Respondents and 65.4% males and 34.6% females among NPS Non-Respondents, $p<0.0001$).
- A smaller percentage of NPS Respondents than NPS Non-Respondents do on-call (72.3% of NPS Respondents and 75.8% of NPS Non-Respondents, $p<0.0001$).

- A smaller percentage of NPS Respondents provide patient care compared with NPS Non-Respondents (96.0% of NPS Respondents and 96.7% of Non-Respondents, p=0.009).
- The percentage who completed their undergraduate medical education in Canada (79.4% of NPS Respondents and 77.5% of NPS Non-Respondents, p=0.002).

The following tables compare the NPS Respondents and NPS Non-Respondents with respect to their Current Situation (Table 3), Method of Remuneration (Table 4), Population Primarily Served (Table 5), and Main Patient Care Setting (Table 6):

Table 3: Current Situation for Physicians Who Responded to the Original National Physician Survey (NPS Respondents) and Physicians Who Responded to the Follow-Up Fact Sheet (NPS Non-Respondents)

Current situation	Proportion of NPS Respondents (n=18,899)	Proportion of NPS Non-Respondents (n=6,044)	p value
In full-time or part-time medical practice	92.8%	93.0%	p=0.6
Semi-retired	5.8%	5.8%	p=1.0
Locum tenens	3.8%	3.5%	p=0.3
Employed in a another medical/medically related field	19.1%	25.5%	p<0.0001
On leave/sabbatical	1.3%	1.3%	p=1.0

Note: Includes only respondents who provided a valid response.

Differences with p values less than .05 are significant at a 95% confidence level.

Sources: 2007 National Physician Survey Database. 2007 NPS Non-respondent follow-up survey.

Table 4 presents some similarities and differences in the methods of remuneration between NPS Respondents and NPS Non-Respondents. (Differences with p values less than .05 are significant at a 95% confidence level.) In Table 4 we see a number of categories where small differences in percentages were found to be statistically significant. Among both the NPS respondents and the NPS Non-respondents, about half reported that their remuneration was 90% or more from fee-for-service, but the percentage for NPS respondents was about 3 percentage points lower than that for the NPS Non-Respondents.

Table 4: Method of Remuneration Among Physicians Who Responded to the Original National Physician Survey (NPS Respondents) and Physicians Who Responded to the Follow-Up Fact Sheet (NPS Non-Respondents)

Method of Remuneration	Proportion of NPS Respondents (n=18,414)	Proportion of NPS Non-Respondents (n=5,951)	p values
90+% Fee-for-Service	49.9%	52.9%	p<0.0001
90+% Salary	8.7%	8.8%	p=0.8
90+% Capitation	0.5%	0.8%	p=0.2

90+% Sessional/per diem/hourly	3.9%	3.1%	p=0.003
90+% Service contracts	2.8%	2.6%	p=0.4
90+% Other	1.9%	1.5%	p=0.03
Not 90+% of any one method	32.2%	30.3%	p=0.006
Total	100.0%	100.0%	

Note: Includes only respondents who provided a valid response.

Differences with p values less than .05 are significant at a 95% confidence level.

Sources: 2007 National Physician Survey Database. 2007 NPS Non-respondent follow-up survey.

Table 5 presents some similarities and some differences in the primary populations served by NPS Respondents and NPS Non-Respondents. Only two of the differences here are statistically significant. When compared to the NPS Non-respondents, the NPS respondents slightly under-represent inner city physicians, and over-represent small town physicians.

Table 5: Population Primarily Served by Physicians Who Responded to the Original National Physician Survey (NPS Respondents) and Physicians Who Responded to the Follow-Up Fact Sheet (NPS Non-Respondents)

Primary population served	Proportion of NPS Respondents (n=17,823)	Proportion of NPS Non-Respondents (n=5,670)	p value
Inner city	12.2%	13.5%	p=0.012
Urban/suburban	58.3%	58.7%	p=0.6
Small town	14.3%	12.2%	p=0.0001
Rural	7.1%	7.2%	p=0.8
Geographically isolated/remote	1.7%	1.4%	p=0.1
Cannot identify a primary population	5.6%	6.2%	p=0.1
Other	0.8%	0.8%	p=1.0
Total	100.0%	100.0%	

Note: This table only includes respondents who provide patient care and provided a valid response.

Differences with p values less than .05 are significant at a 95% confidence level.

Sources: 2007 National Physician Survey Database. 2007 NPS Non-respondent follow-up survey.

Table 6 contrasts NPS Respondents and NPS Non-Respondents with respect to their main patient care setting. The NPS Respondents reported community clinic/health centre and other settings more often than the NPS Non-respondents, while the NPS Non-respondents reported working in a private office/clinic more often than the NPS respondents.

Table 6: Main Patient Care Setting Among Physicians Who Responded to the Original National Physician Survey (NPS Respondents) and Physicians Who Responded to the Follow-Up Fact Sheet (NPS Non-Respondents)

Main patient care setting	Proportion of NPS Respondents (n=18,190)	Proportion of NPS Non-Respondents (n=5,747)	p value
Private office/clinic	47.2%	48.7%	p=0.05
Academic health sciences centre	19.6%	20.1%	p=0.4
Community hospital	13.1%	13.8%	p=0.18
Emergency department	5.6%	5.0%	p=0.07
Community clinic/ community health centre	5.8%	4.6%	p=0.0002
Other settings	8.7%	7.7%	p=0.01
Total	100.0%	100.0%	

Note: This table only includes respondents who provide patient care and provided a valid response.

Differences with p values less than .05 are significant at a 95% confidence level.

Sources: 2007 National Physician Survey Database. 2007 NPS Non-respondent follow-up survey.

CONCLUSION: This comparison found that those who responded to the NPS, and those NPS non-respondents who subsequently responded to the one page follow-up study are comparable with respect to many of their demographic and practice profile characteristics. Where the two groups do differ statistically, the size of the difference is generally small relative to the total population. Although we don't know whether either of these two groups is truly representative of the population of interest, the biases due to the observed over/under-representation of some groups will not have a large impact on most estimates for the total population.

This comparison was based on the unweighted files of NPS Respondents and NPS follow-up study respondents. Weights have been assigned to the NPS respondent records to account for the initial sampling (for the detailed questionnaire), for non-response, and to make it more representative. For some characteristics of the population of physicians, the weighting process ensures that the weighted file is representative of the NPS Masterfile. These characteristics are age distribution, sex, FP/GP status versus other specialist status, and province/territory in which they mainly practice. Potential biases for characteristics that are correlated with age, sex, geographical setting and FP/GP versus other specialist status will be reduced by using the weights for estimation.

Many efforts were made to make the estimates from the NPS as representative as possible of the population of interest. The analyses here, and above in the comparison of demographic distributions in the 2007 NPS Database and the total physician population, have shown that for many characteristics, there is little evidence that the respondents differ in an important way from the population of interest. However, for some characteristics, there were significant differences observed between the

respondents and the follow-up respondents, suggesting that there may be an insufficient representation with respect to these characteristics in the NPS analysis file. Even though these differences were often very small proportionately, they indicate that some caution should be used when interpreting related estimates.

For further information please contact:

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APPENDIX A: Sampling Variability of Estimates and Confidence Intervals

The data from the 2007 NPS are based on a sample survey in the case of the long questionnaire items and on a census with considerable non-response in the case of the core questionnaire items. Different results would have been obtained if a census with no non-response had been conducted for all of the items. These differences are called sampling and non-response errors, and sampling theory gives us a way to estimate how large they might be. For the NPS it has been assumed that the non-response is approximately at random.

In the case of estimates of proportions, the variance of an estimate from a simple random sample is: (Cochran 1977)

$$V(\hat{p}) = \frac{p(1-p)}{n-1} \times \frac{N-n}{N}$$

where

\hat{p} is the estimate

N is the population size and

n is the sample size

This variance is often estimated by substituting \hat{p} for p and multiplying by a design effect (*deff*).² Typical design effects have been calculated for many sub-populations for the 2007 NPS and are given in the tables of APPENDIX B.

Including the design effect, the formula for estimating variances becomes:

$$V(\hat{p}) = \frac{\hat{p}(1-\hat{p})}{n-1} \times \frac{N-n}{N} \times deff$$

or

$$V(\hat{p}) = \hat{p}(1-\hat{p}) \times \frac{N-n}{(n-1)N} \times deff$$

or

$$V(\hat{p}) = \hat{p}(1-\hat{p}) \times K$$

where $K = \frac{N-n}{(n-1)N} \times deff$ is constant for a specific sub - population

When n is large, the 95% confidence interval for \hat{p} is:

² The design effect is a factor that accounts for the differences between the actual sample design and a simple random sample. The design effect is specific to each estimate, but it is similar for many estimates that are not strongly related to the design and so a typical design effect is often used to simplify calculations.

$$\hat{p} \pm 1.96 \times \sqrt{V(\hat{p})} \text{ or}$$

$$\hat{p} \pm 1.96 \times \sqrt{\hat{p}(1 - \hat{p}) \times K}$$

Since $\hat{p}(1 - \hat{p})$ is largest when $\hat{p} = .5$, the widest possible confidence interval for an estimate of a proportion is:

$$\hat{p} \pm 1.96 \times \sqrt{.25 \times K}$$

(Note that when \hat{p} is small, this is an extreme overestimate of the width of the confidence interval.)

For the widest possible confidence interval for any sub-population we can define:

$$W = 1.96 \times \sqrt{.25 \times K}$$

The fact that there is a widest confidence interval makes it possible to make blanket statements for surveys such as: 'estimates will be within x percentage points 19 times out of 20', which means that for this survey the widest interval is $\hat{p} \pm x$.

Tables of N , n , $deff$, and K , as well as $W (= 1.96 \times \sqrt{.25 \times K})$ (converted to a percentage) for many sub-populations are provided in APPENDIX B.

For example, suppose that an estimate of 5% is made for physicians in Ontario using the core weight. Table B-1 tells us that K is .0001, and that W is .9701. W gives us an immediate and conservative confidence interval of 5 plus or minus .97. K lets us calculate a less conservative interval as:

$$\hat{p} \pm 1.96 \times \sqrt{\hat{p}(1 - \hat{p}) \times K}$$

$$.05 \pm 1.96 \times \sqrt{.05 \times (1 - .05) \times .0001}$$

$$.05 \pm .0043$$

In percentages this is 5 plus or minus .43, less than half the width of the interval based on W .

Two Examples of Confidence Intervals:

- 1) Confidence intervals for a core question (a survey question asked of all respondents) estimate for all physicians in Canada:

From the survey results, 91.7% of physicians in Canada indicated that they are in full-time or part-time medical practice.

- a) Using the more conservative W -based confidence interval approach (see Table B-1), this becomes 91.7 +/- 0.58% of all physicians in Canada. That's to say that based on the 2007 NPS an estimated 91.7% of all

physicians in Canada are in full or part time medical practice, with a 95% confidence interval of 91.12% to 92.28%.

- b) Using the less conservative K-based confidence interval approach (see Table B-1), this becomes 91.7 +/- [1.96 X sqrt(0.92 X 0.08 X 0.0000356)] or +/- 0.32%, a little more than half as wide. The result is a confidence interval of 91.38% to 92.02% for the proportion of all physicians in Canada in full or part time medical practice.

- 2) Confidence intervals for a detail question (a survey question asked only on the detailed questionnaire), estimated for physicians in Nova Scotia:

From the survey results, an estimated 39.2% of physicians in Nova Scotia provide extended office hours.

- a) Using the more conservative W-based confidence interval approach (see Table B-2), the 95% confidence interval is estimated as 39.2 +/- 3.72%. So the estimate is that 39.2% of physicians in Nova Scotia provide extended office hours, with a 95% confidence interval of 35.48% to 42.92%.
- b) Using the less conservative K-based confidence interval approach (see Table B-2), this becomes 39.2 +/- [1.96 X sqrt(0.39 X 0.61 X 0.0014417)] or +/- 3.63%, only a very little bit narrower. The result is a confidence interval of 35.57% to 42.83% for the proportion of physicians in Nova Scotia who provide extended office hours.

The K-based approach involves more calculation but is more specific to the particular estimate - it yields a narrower confidence interval. The W-based approach is fast and easy but conservative in that it produces a wider than necessary confidence interval. However, as the examples above show, for an estimate of 39% there is very little difference between the two. In fact the estimate has to be smaller than 30% before the conservative interval is 10% too wide, so it may only be important to use the K-based calculation for relatively small estimated proportions.

Statistical Tests for Comparing Estimated Proportions

To assess whether the observed difference between two estimated proportions might be due to sampling variability rather than true differences, a t-test should be used. When the result of the t-test is greater than 1.96 it means that sampling variability would rarely (less than 5% of the time) lead to an observed difference as large as that actually observed, if there was no true underlying difference. (The 1.96 critical value is valid when n is large.)

When the two estimates are uncorrelated, the t-test is based on the variances of the two estimates and their values:

$$t(\hat{p}_1 - \hat{p}_2) = \frac{|\hat{p}_1 - \hat{p}_2|}{\sqrt{V(\hat{p}_1) + V(\hat{p}_2)}}$$

$V(\hat{p}_1)$ and $V(\hat{p}_2)$ should be calculated using one of the expressions above, i.e.:

$$V(\hat{p}_1) = \hat{p}_1(1 - \hat{p}_1) \times \frac{N_1 - n_1}{(n_1 - 1)N_1} \times deff_1 \quad \text{and}$$

$$V(\hat{p}_2) = \hat{p}_2(1 - \hat{p}_2) \times \frac{N_2 - n_2}{(n_2 - 1)N_2} \times deff_2$$

or

$$V(\hat{p}_1) = \hat{p}_1(1 - \hat{p}_1) \times K_1 \quad \text{and}$$

$$V(\hat{p}_2) = \hat{p}_2(1 - \hat{p}_2) \times K_2$$

Example 1:

To test whether the proportion of other specialists in full or part-time practice is different from the same proportion of FP/GP's, one would calculate:

For the other specialists:

$$\hat{p}_1 = 90.7\%$$

from Appendix B, Table B - 5

$$N_1 = 27,358, \quad n_1 = 8,967, \quad deff_1 = 1.029, \quad K_1 = .0000771$$

so we can calculate $V(\hat{p}_1)$ two ways :

$$V(\hat{p}_1) = \hat{p}_1(1 - \hat{p}_1) \times \frac{N_1 - n_1}{(n_1 - 1)N_1} \times deff_1$$

$$V(\hat{p}_1) = 0.907(1 - 0.907) \times \frac{27,358 - 8,967}{(8,967 - 1)27,358} \times 1.029$$

$$V(\hat{p}_1) = 0.00000651$$

or

$$V(\hat{p}_1) = \hat{p}_1(1 - \hat{p}_1) \times K_1$$

$$V(\hat{p}_1) = 0.907(1 - 0.907) \times .0000771$$

$$V(\hat{p}_1) = 0.00000650$$

For the Family/General practitioners:

$$\hat{p}_2 = 91.6\%$$

from Appendix B, Table B - 3

$$N_2 = 30,399, \quad n_2 = 10,272, \quad deff_2 = 1.024, \quad K_2 = .000066$$

so we can calculate $V(\hat{p}_2)$ two ways :

$$V(\hat{p}_2) = \hat{p}_2(1 - \hat{p}_2) \times \frac{N_2 - n_2}{(n_2 - 1)N_2} \times deff_2$$

$$V(\hat{p}_2) = 0.916(1 - 0.916) \times \frac{30,399 - 10,272}{(10,272 - 1)30,399} \times 1.024$$

$$V(\hat{p}_2) = 0.00000508$$

or

$$V(\hat{p}_2) = \hat{p}_2(1 - \hat{p}_2) \times K_2$$

$$V(\hat{p}_2) = 0.916(1 - 0.916) \times .000066$$

$$V(\hat{p}_2) = 0.00000508$$

Then we can calculate the t-statistic:

$$t(\hat{p}_1 - \hat{p}_2) = \frac{|\hat{p}_1 - \hat{p}_2|}{\sqrt{V(\hat{p}_1) + V(\hat{p}_2)}}$$

$$t(\hat{p}_1 - \hat{p}_2) = \frac{|0.907 - 0.916|}{\sqrt{0.00000651 + .00000508}}$$

$$t(\hat{p}_1 - \hat{p}_2) = \frac{.009}{\sqrt{0.00001159}}$$

$$t(\hat{p}_1 - \hat{p}_2) = 2.64$$

This is greater than 1.96 so we reject the hypothesis that the proportion is the same for the two groups.

Example 2:

To test whether the proportion of male family physicians/general practitioners (FP/GP's) collaborating with obstetricians is the same as the proportion of female FP/GP's (this question was asked on the detailed questionnaire), one would calculate:

For male family physicians/general practitioners:

$$\hat{p}_1 = 65.0\%$$

from Appendix B, Table B - 10

$$N_1 = 18,889, \quad n_1 = 2,356, \quad deff_1 = 1.10028, \quad K_1 = .0004089$$

so we can calculate $V(\hat{p}_1)$ two ways :

$$V(\hat{p}_1) = \hat{p}_1(1 - \hat{p}_1) \times \frac{N_1 - n_1}{(n_1 - 1)N_1} \times deff_1$$

$$V(\hat{p}_1) = 0.65(1 - 0.65) \times \frac{18,889 - 2,356}{(2,356 - 1)18,889} \times 1.10028$$

$$V(\hat{p}_1) = 0.0000930$$

or

$$V(\hat{p}_1) = \hat{p}_1(1 - \hat{p}_1) \times K_1$$

$$V(\hat{p}_1) = 0.65(1 - 0.65) \times .00041089$$

$$V(\hat{p}_1) = 0.0000930$$

For Female family physicians/general practitioners:

$$\hat{p}_2 = 64.4\%$$

from Appendix B, Table B - 16

$$N_2 = 11,510, \quad n_2 = 1,624, \quad deff_2 = 1.09150, \quad K_2 = .000578$$

so we can calculate $V(\hat{p}_2)$ two ways :

$$V(\hat{p}_2) = \hat{p}_2(1 - \hat{p}_2) \times \frac{N_2 - n_2}{(n_2 - 1)N_2} \times deff_2$$

$$V(\hat{p}_2) = 0.644(1 - 0.644) \times \frac{11,510 - 1,624}{(1,624 - 1)11,510} \times 1.09150$$

$$V(\hat{p}_2) = 0.000132$$

or

$$V(\hat{p}_2) = \hat{p}_2(1 - \hat{p}_2) \times K_2$$

$$V(\hat{p}_2) = 0.644(1 - 0.644) \times .000578$$

$$V(\hat{p}_2) = 0.000132$$

Then we can calculate the t-statistic:

$$t(\hat{p}_1 - \hat{p}_2) = \frac{|\hat{p}_1 - \hat{p}_2|}{\sqrt{V(\hat{p}_1) + V(\hat{p}_2)}}$$

$$t(\hat{p}_1 - \hat{p}_2) = \frac{|0.65 - 0.644|}{\sqrt{0.000093 + 0.000132}}$$

$$t(\hat{p}_1 - \hat{p}_2) = 0.40$$

This is less than 1.96 so we accept the hypothesis that the proportion is the same for the two groups.

Sampling Variability of Regression and other Analytic Estimates

The respondents of the 2007 NPS do not form a simple random sample of the target population. Instead, the survey had stratified design, with unequal probabilities of selection of respondents in different strata (for the detailed questionnaire). This means that the unweighted sample is not representative of the target population, even if there were no non-response. However, there was considerable non-response (to both the core and the detailed questionnaire), and non-response rates varied by demographic group, making the unweighted sample even less representative.

Hence the estimation weights must be used when producing estimates or performing analyses with the 2007 NPS data in order to account as much as possible for any over- or under-representation due to the stratification and allocation, and for any differential non-response rates for demographic groups. While many analytic procedures found in statistical packages allow weights to be used, the meaning or definition of the weight in these procedures often differs from that which is appropriate in a sample survey framework, with the result that while in many cases the estimates produced by the packages are correct, the variances that are calculated are not useful for testing statistical hypotheses.

For many analysis techniques (for example linear regression, logistic regression, estimation of rates and proportions, and analysis of variance), a method exists which can make the variances calculated by the standard packages more meaningful. If the weights on the subset of the data that is of interest are rescaled so that the average weight is one (1), then the variances produced by the standard packages will be more meaningful; they still will not fully take into account the stratification of the NPS sample's design, but they will take into account the unequal probabilities of selection and rates of non-response. This rescaling can be accomplished by dividing each weight by the overall average weight (for the subgroup) before the analysis is conducted.

For more details on this and questions about the sample design and its implications for analysis and variance estimation, contact:

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APPENDIX B: Sample Design Information for Variance Estimation and Confidence Intervals

Tables:

- Table B-1: NPS 2007 Sample Design Information For Core Question Estimates, All Physicians, Both Sexes
- Table B-2: NPS 2007 Sample Design Information For Detail Question Estimates, All Physicians, Both Sexes
- Table B-3: NPS 2007 Sample Design Information For Core Question Estimates, Family Physicians/General Practitioners, Both Sexes
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Table B-1: NPS 2007 Sample Design Information
 For Core Question Estimates
 All Physicians
 Both Sexes

Prov/Terr	N	n	deff	K	W(%)
Canada	57757	19239	1.02674	0.0000356	0.5847
NF	974	287	1.02275	0.0025220	4.9215
PEI	206	88	1.01333	0.0066788	8.0090
NS	1967	767	1.01695	0.0008100	2.7892
NB	1300	461	1.04854	0.0014714	3.7592
QC	14235	4822	1.02357	0.0001404	1.1612
ON	21031	7003	1.02870	0.0000980	0.9701
MB	2059	666	1.01372	0.0010314	3.1473
SK	1505	496	1.03418	0.0014009	3.6680
AB	5943	1952	1.01304	0.0003487	1.8300
BC	8420	2645	1.02283	0.0002653	1.5963
YT	55	30	1.00019	0.0156770	12.2704
NWT	52	19	1.00000	0.0354406	18.4492
NU	7	3	1.24490	0.3556851	58.4466

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-2: NPS 2007 Sample Design Information
 For Detail Question Estimates
 All Physicians
 Both Sexes

Prov/Terr	N	n	deff	K	W(%)
Canada	57757	7347	1.11383	0.0001323	1.1274
NF	974	193	1.02717	0.0042894	6.4184
PEI	206	59	1.02222	0.0125837	10.9934
NS	1967	521	1.01973	0.0014417	3.7210
NB	1300	310	1.08410	0.0026721	5.0658
QC	14235	1551	1.03557	0.0005953	2.3911
ON	21031	2375	1.03797	0.0003879	1.9300
MB	2059	450	1.01784	0.0017715	4.1248
SK	1505	328	1.03507	0.0024757	4.8761
AB	5943	659	1.04098	0.0014066	3.6755
BC	8420	869	1.03934	0.0010738	3.2114
YT	55	21	1.01977	0.0315200	17.3988
NWT	52	8	1.02849	0.1245284	34.5828

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-3: NPS 2007 Sample Design Information
 For Core Question Estimates
 Family Physicians/General Practitioners
 Both Sexes

Prov/Terr	N	n	deff	K	W(%)
Canada	30399	10272	1.02439	0.0000660	0.7964
NF	618	188	1.02227	0.0038044	6.0446
PEI	130	54	1.01921	0.0112294	10.3850
NS	1053	415	1.02018	0.0014927	3.7863
NB	812	291	1.03297	0.0022856	4.6852
QC	7398	2574	1.02386	0.0002595	1.5786
ON	10426	3571	1.02081	0.0001880	1.3437
MB	1102	350	1.01192	0.0019787	4.3593
SK	939	303	1.03306	0.0023166	4.7169
AB	3188	1034	1.00807	0.0006593	2.5164
BC	4634	1449	1.02487	0.0004865	2.1615
YT	40	22	1.00000	0.0214286	14.3457
NWT	52	19	1.00000	0.0354406	18.4492
NU	6	2	1.00000	0.6666667	80.0167

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-4: NPS 2007 Sample Design Information
 For Detail Question Estimates
 Family Physicians/General Practitioners
 Both Sexes

Prov/Terr	N	n	deff	K	W(%)
Canada	30399	3980	1.10111	0.0002405	1.5198
NF	618	125	1.03355	0.0066499	7.9916
PEI	130	34	1.01075	0.0226051	14.7343
NS	1053	282	1.02189	0.0026624	5.0567
NB	812	201	1.04416	0.0039286	6.1425
QC	7398	810	1.04209	0.0011471	3.3191
ON	10426	1233	1.01728	0.0007281	2.6443
MB	1102	237	1.01212	0.0033664	5.6860
SK	939	193	1.03259	0.0042724	6.4056
AB	3188	357	1.01765	0.0025384	4.9375
BC	4634	483	1.01443	0.0018853	4.2551
YT	40	15	1.01427	0.0452799	20.8535
NWT	52	8	1.02849	0.1245284	34.5828

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-5: NPS 2007 Sample Design Information
 For Core Question Estimates
 Other Specialists
 Both Sexes

Prov/Terr	N	n	deff	K	W(%)
Canada	27358	8967	1.02878	0.0000771	0.8607
NF	355	99	1.01896	0.0075013	8.4878
PEI	77	34	1.00000	0.0168350	12.7155
NS	915	352	1.01306	0.0017755	4.1294
NB	488	170	1.07349	0.0041409	6.3063
QC	6837	2248	1.02163	0.0003052	1.7120
ON	10605	3432	1.03445	0.0002039	1.3995
MB	957	316	1.01508	0.0021586	4.5531
SK	567	193	1.03439	0.0035526	5.8412
AB	2755	918	1.01856	0.0007407	2.6671
BC	3786	1196	1.02028	0.0005840	2.3684
YT	15	8	1.00000	0.0666667	25.3035

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-6: NPS 2007 Sample Design Information
 For Detail Question Estimates
 Other Specialists
 Both Sexes

Prov/Terr	N	n	deff	K	W(%)
Canada	27358	3367	1.12497	0.0002931	1.6777
NF	355	68	1.01504	0.0122513	10.8472
PEI	77	25	1.01033	0.0283398	16.4977
NS	915	239	1.01705	0.0031567	5.5061
NB	488	109	1.13812	0.0081861	8.8668
QC	6837	741	1.02857	0.0012393	3.4500
ON	10605	1142	1.05221	0.0008229	2.8112
MB	957	213	1.02410	0.0037557	6.0058
SK	567	135	1.02466	0.0058251	7.4796
AB	2755	302	1.06729	0.0031572	5.5065
BC	3786	386	1.06902	0.0024936	4.8937
YT	15	6	1.03750	0.1245000	34.5789

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-7: NPS 2007 Sample Design Information
 For Core Question Estimates
 All Physicians
 Male only

Prov/Terr	N	n	deff	K	W(%)
Canada	38485	12128	1.02532	0.0000579	0.7457
NF	688	188	1.01051	0.0039279	6.1419
PEI	153	63	1.01366	0.0095952	9.5996
NS	1291	480	1.01680	0.0013334	3.5785
NB	888	293	1.04489	0.0023975	4.7985
QC	8721	2718	1.01524	0.0002572	1.5717
ON	14264	4540	1.03215	0.0001550	1.2202
MB	1432	450	1.01194	0.0015456	3.8528
SK	1081	329	1.02432	0.0021724	4.5677
AB	4041	1297	1.01676	0.0005328	2.2620
BC	5857	1739	1.01759	0.0004117	1.9884
YT	35	19	1.00022	0.0253041	15.5891
NWT	30	11	1.00000	0.0637931	24.7522

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-8: NPS 2007 Sample Design Information
 For Detail Question Estimates
 All Physicians
 Male only

Prov/Terr	N	n	deff	K	W(%)
Canada	38485	4678	1.11677	0.0002098	1.4193
NF	688	123	1.00697	0.0067789	8.0688
PEI	153	41	1.01278	0.0185123	13.3339
NS	1291	332	1.02328	0.0022963	4.6962
NB	888	195	1.08002	0.0043444	6.4594
QC	8721	866	1.02548	0.0010678	3.2024
ON	14264	1567	1.04695	0.0005951	2.3907
MB	1432	297	1.01604	0.0027207	5.1117
SK	1081	220	1.02617	0.0037320	5.9869
AB	4041	438	1.05423	0.0021510	4.5451
BC	5857	582	1.04340	0.0016174	3.9413
YT	35	12	1.00058	0.0596732	23.9395
NWT	30	4	1.00000	0.2894462	52.7242

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-9: NPS 2007 Sample Design Information
 For Core Question Estimates
 Family Physicians/General Practitioners
 Male only

Prov/Terr	N	n	deff	K	W(%)
Canada	18889	5955	1.02057	0.0001174	1.0617
NF	438	122	1.00709	0.0060031	7.5930
PEI	94	37	1.01581	0.0171103	12.8190
NS	625	229	1.01766	0.0028289	5.2123
NB	516	173	1.02561	0.0039649	6.1708
QC	4066	1255	1.00964	0.0005566	2.3121
ON	6613	2168	1.02366	0.0003175	1.7463
MB	738	224	1.01055	0.0031560	5.5055
SK	667	198	1.02398	0.0036550	5.9247
AB	2029	633	1.00791	0.0010972	3.2461
BC	3046	891	1.01905	0.0008101	2.7892
YT	24	13	1.00000	0.0375000	18.9776
NWT	30	11	1.00000	0.0637931	24.7522

N = Population size (estimated using the weight)

n = Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-10: NPS 2007 Sample Design Information
 For Detail Question Estimates
 Family Physicians/General Practitioners
 Male only

Prov/Terr	N	n	deff	K	W(%)
Canada	18889	2356	1.10028	0.0004089	1.9818
NF	438	79	1.01083	0.0106202	10.0993
PEI	94	23	1.00000	0.0343327	18.1585
NS	625	163	1.02715	0.0046877	6.7098
NB	516	122	1.03994	0.0065637	7.9396
QC	4066	384	1.02481	0.0024230	4.8240
ON	6613	773	1.02067	0.0011676	3.3486
MB	738	147	1.00164	0.0054939	7.2638
SK	667	124	1.01419	0.0067126	8.0292
AB	2029	218	1.02201	0.0042036	6.3538
BC	3046	310	1.01042	0.0029372	5.3112
YT	24	8	1.00000	0.0945055	30.1269
NWT	30	4	1.00000	0.2894462	52.7242

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-11: NPS 2007 Sample Design Information
 For Core Question Estimates
 Other Specialists
 Male only

Prov/Terr	N	n	deff	K	W(%)
Canada	19596	6173	1.02990	0.0001143	1.0477
NF	251	66	1.01431	0.0114956	10.5073
PEI	59	26	1.00000	0.0222222	14.6090
NS	665	251	1.01559	0.0025302	4.9295
NB	372	120	1.07035	0.0060894	7.6474
QC	4655	1463	1.02008	0.0004785	2.1436
ON	7651	2372	1.03765	0.0003020	1.7030
MB	694	226	1.01092	0.0030303	5.3947
SK	414	131	1.02237	0.0053753	7.1850
AB	2013	664	1.02459	0.0010356	3.1537
BC	2812	848	1.01548	0.0008373	2.8357
YT	11	6	1.00000	0.0933333	29.9395

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-12: NPS 2007 Sample Design Information
 For Detail Question Estimates
 Other Specialists
 Male only

Prov/Terr	N	n	deff	K	W(%)
Canada	19596	2322	1.13052	0.0004294	2.0307
NF	251	44	1.00001	0.0191735	13.5699
PEI	59	18	1.00000	0.0407240	19.7766
NS	665	169	1.01953	0.0045275	6.5941
NB	372	73	1.10815	0.0123668	10.8982
QC	4655	482	1.02196	0.0019047	4.2770
ON	7651	794	1.06068	0.0011987	3.3930
MB	694	150	1.02913	0.0054145	7.2112
SK	414	96	1.01480	0.0082045	8.8767
AB	2013	220	1.08737	0.0044225	6.5171
BC	2812	272	1.07617	0.0035869	5.8693
YT	11	4	1.00000	0.2148148	45.4212

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-13: NPS 2007 Sample Design Information
 For Core Question Estimates
 All Physicians
 Female only

Prov/Terr	N	n	deff	K	W(%)
Canada	19272	7111	1.01115	0.0000897	0.9284
NF	285	99	1.01128	0.0067391	8.0450
PEI	54	25	1.00103	0.0223239	14.6424
NS	677	287	1.00469	0.0020227	4.4074
NB	413	168	1.02199	0.0036282	5.9030
QC	5514	2104	1.01067	0.0002972	1.6895
ON	6767	2463	1.00666	0.0002601	1.5804
MB	627	216	1.01190	0.0030855	5.4436
SK	425	167	1.00793	0.0036832	5.9476
AB	1902	655	1.00093	0.0010033	3.1041
BC	2563	906	1.01263	0.0007233	2.6357
YT	20	11	1.00016	0.0453179	20.8622
NWT	22	8	1.00000	0.0911330	29.5845
NU	4	2	1.50000	0.7500000	84.8705

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-14: NPS 2007 Sample Design Information
 For Detail Question Estimates
 All Physicians
 Female only

Prov/Terr	N	n	deff	K	W(%)
Canada	19272	2669	1.09339	0.0003531	1.8414
NF	285	70	1.00272	0.0109673	10.2630
PEI	54	18	1.01311	0.0396522	19.5146
NS	677	189	1.00763	0.0038624	6.0905
NB	413	115	1.04645	0.0066212	7.9743
QC	5514	685	1.01911	0.0013048	3.5400
ON	6767	808	1.01225	0.0011046	3.2570
MB	627	153	1.00177	0.0049827	6.9176
SK	425	108	1.02012	0.0071083	8.2624
AB	1902	221	1.00726	0.0040463	6.2339
BC	2563	287	1.01773	0.0031600	5.5089
YT	20	9	1.00833	0.0696434	25.8622
NWT	22	4	1.00000	0.2729885	51.2033

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-15: NPS 2007 Sample Design Information
 For Core Question Estimates
 Family Physicians/General Practitioners
 Female only

Prov/Terr	N	n	deff	K	W(%)
Canada	11510	4317	1.01049	0.0001463	1.1854
NF	181	66	1.00606	0.0098211	9.7120
PEI	36	17	1.00000	0.0328125	17.7519
NS	427	186	1.00458	0.0030668	5.4271
NB	296	118	1.02615	0.0052718	7.1155
QC	3332	1319	1.00630	0.0004613	2.1048
ON	3813	1403	1.00600	0.0004535	2.0870
MB	364	126	1.00245	0.0052450	7.0974
SK	272	105	1.00051	0.0059027	7.5292
AB	1159	401	1.00109	0.0016369	3.9649
BC	1588	558	1.01287	0.0011797	3.3659
YT	16	9	1.00000	0.0562500	23.2427
NWT	22	8	1.00000	0.0911330	29.5845

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-16: NPS 2007 Sample Design Information
 For Detail Question Estimates
 Family Physicians/General Practitioners
 Female only

Prov/Terr	N	n	deff	K	W(%)
Canada	11510	1624	1.09150	0.0005776	2.3553
NF	181	46	1.00010	0.0165634	12.6125
PEI	36	11	1.00000	0.0692647	25.7918
NS	427	119	1.01108	0.0061825	7.7057
NB	296	79	1.04228	0.0097938	9.6984
QC	3332	426	1.00887	0.0020703	4.4591
ON	3813	460	1.01060	0.0019361	4.3121
MB	364	90	1.00200	0.0084761	9.0225
SK	272	69	1.00516	0.0110281	10.2915
AB	1159	139	1.00083	0.0063827	7.8294
BC	1588	173	1.01955	0.0052820	7.1224
YT	16	7	1.00000	0.0953704	30.2645
NWT	22	4	1.00000	0.2729885	51.2033

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-17: NPS 2007 Sample Design Information
 For Core Question Estimates
 Other Specialists
 Female only

Prov/Terr	N	n	deff	K	W(%)
Canada	7762	2794	1.01111	0.0002317	1.4917
NF	105	33	1.00620	0.0215395	14.3828
PEI	18	8	1.00000	0.0793651	27.6084
NS	249	101	1.00182	0.0059574	7.5640
NB	117	50	1.00714	0.0117582	10.6267
QC	2182	785	1.01149	0.0008260	2.8165
ON	2954	1060	1.00715	0.0006098	2.4200
MB	263	90	1.02496	0.0075746	8.5291
SK	153	62	1.02042	0.0099401	9.7706
AB	742	254	1.00060	0.0026019	4.9989
BC	974	348	1.01209	0.0018747	4.2432
YT	4	2	1.00000	0.4666667	66.9467

N = Population size (estimated using the weight)

n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

Table B-18: NPS 2007 Sample Design Information
 For Detail Question Estimates
 Other Specialists
 Female only

Prov/Terr	N	n	deff	K	W(%)
Canada	7762	1045	1.09476	0.0009074	2.9521
NF	105	24	1.00000	0.0335182	17.9418
PEI	18	7	1.00000	0.1018519	31.2760
NS	249	70	1.00168	0.0104388	10.0127
NB	117	36	1.04286	0.0206154	14.0709
QC	2182	259	1.03049	0.0035200	5.8143
ON	2954	348	1.01403	0.0025780	4.9759
MB	263	63	1.00094	0.0122761	10.8582
SK	153	39	1.04767	0.0205328	14.0427
AB	742	82	1.01263	0.0111209	10.3346
BC	974	114	1.01125	0.0079018	8.7114
YT	4	2	1.00000	0.4666667	66.9467

N = Population size (estimated using the weight)

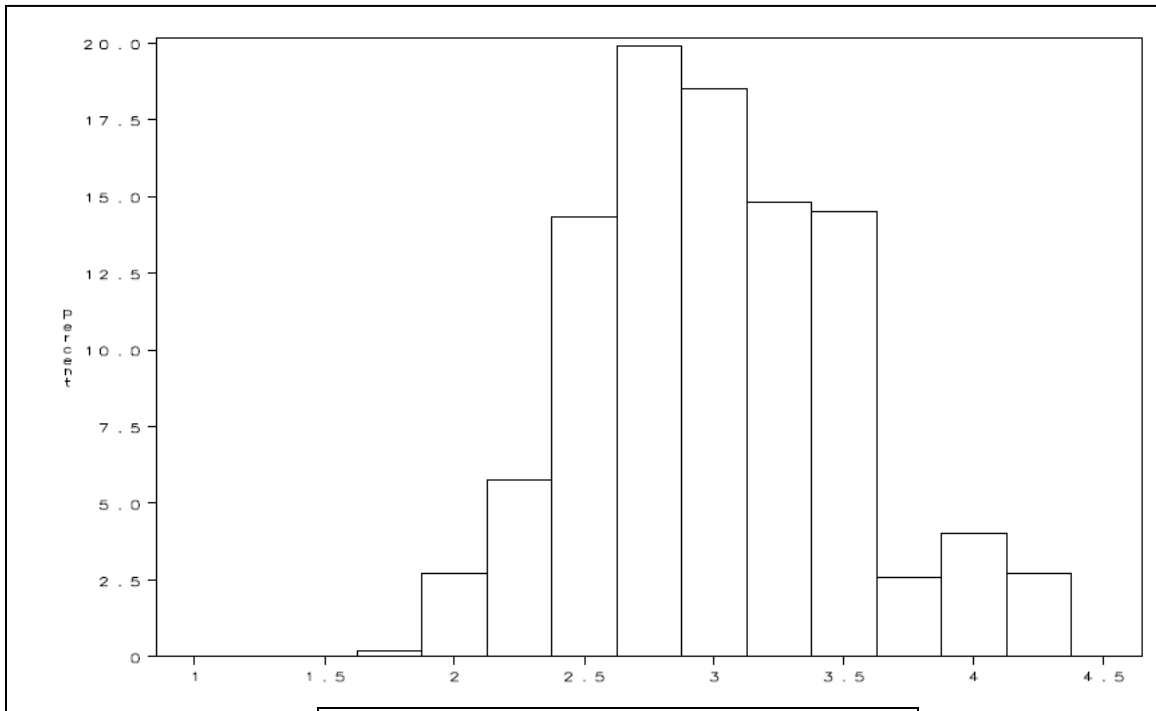
n= Sample size (number of respondents)

deff = Design effect

K, W: see APPENDIX A for definitions and explanations for use

APPENDIX C: Frequency Distribution of Estimation Weights for 2007 NPS

1. Weights applied to respondents of the core questions



Weights for core survey question responses

2. Weights applied to respondents of the detailed questions

