

eHealth Benchmarking Good Practice Case National Physician Survey 2004, 2007

Case summary

The overall goal of the National Physician Survey (NPS) project is to produce a comprehensive database documenting what all physicians in Canada are doing in their practices in response to both societal needs and personal and professional interests. The database also includes the perspectives and expressed practice intentions of the physicians of tomorrow.

The NPS is an important study in large part because of the breadth of its mandate. Every three years, additional data is collected, providing us with both cross-sectional results and longitudinal trends.

The coordination and leadership of the NPS is quite unique as it is led by a partnership of the three major national medical organizations in Canada, namely the College of Family Physicians of Canada, the Canadian Medical Association, and The Royal College of Physicians and Surgeons of Canada.

Background and Objectives

Objectives

The three objectives are to:

- conduct a survey of Canadian physicians, residents and medical students every three years (beginning in 2004), thereby integrating the workforce surveys of the College of Family Physicians of Canada (CFPC), the Canadian Medical Association (CMA) and The Royal College of Physicians and Surgeons of Canada (RCPSC);
- inform health care system planners about overall physician workforce resource needs and allocation, as well as support and inform health care stakeholder organizations and training programs;
- develop and maintain an up-to-date physician workforce database; ensure that this database contains a comprehensive range of data, including, but not restricted to, practice profile, practice setting, remuneration mode, services provided, workload, on-call activities, populations served, perceived problems with access to medical care, planned changes in practice scope, and use of technology.

Background Information

The NPS questionnaire content is developed with the input of a broad range of organizations and individuals. Similarly, the results are used by a broad range of organizations and individuals. The project partners, the College of Family Physicians of Canada, the Canadian Medical Association, and the Royal College of Physicians and Surgeons of Canada each have provincial/territorial divisions and/or specialty-specific divisions, as well as direct affiliation with the Faculties of Medicine in Canada, who are involved with both the practicing physician questionnaires and the physician-in-training questionnaires.

National Physician Survey 2004, 2007

Executing agency



College of Family Physicians of Canada (CFPC), the Canadian Medical Association (CMA) and the Royal College of Physicians and Surgeons of Canada (RCPSC)

Year of publication	2004, 2007
Year(s) of available data	2004, 2007
Geographic coverage	Germany
Further information	http://www.nationalphysiciansurvey.ca/nps/results/PDF-e/FP/Tables/Demographics/NPS_Demographics_table_overview.pdf http://www.nationalphysiciansurvey.ca/nps/2007_Survey/Results/ENG/National/pdf/CANADA%20RESPONSE%20RATE%20Demographics.pdf

The results of the NPS are used in much of the policy decision making of the partner organizations and others. The periodicity of the NPS questionnaires being done every three years, allows for both longitudinal analyses as well as point-in-time/cross-sectional analyses.

Type of activity

- Measuring eHealth / ICT availability and use
- Measuring attitudes towards eHealth and eHealth use
- Data gathering with the aim of eHealth market sizing
- Evaluation of an eHealth application / Service

Budget

The budget for the NPS covers the three year 'survey cycle', which includes the development of the questionnaire tools, the conduct of the survey, on-going dissemination of the results, maintenance of a website. The three-year survey cycle budget is \$1,213,968.00.

The breakdown per year is: year 1: \$878,664.00; year 2: \$167,902.00; year 3: \$167,402.00.

The breakdown by expense category is \$527,511.00 administrative expenses; \$549,707.00 operating expenses for conducting the survey and creating the databases; \$124,000.00 for communications and dissemination of results; \$12,750 for committee expenses.

Of the total budget, \$297,288 is provided as in-kind contributions from the CFPC, CMA, RCPSC, the Canadian Institute for Health Information (CIHI). The remaining budget is funded by the CFPC, CMA, RCPSC, CIHI and Health Canada.

Main Actors

The College of Family Physicians of Canada (CFPC) is a national professional medical organization involved in setting standards for the education and training of family physicians in Canada, and supporting and facilitating family physicians in their practice and lifelong educational needs.

The CFPC is partnered with the CMA and the RCPSC to run the NPS. The CFPC is responsible for the overall coordination of the NPS Project, including the management of the NPS finances, the work of the NPS Executive Committee, the questionnaire development working groups, the Technical Advisory Committee, the non-respondent follow-up study, proposal writing, ethics review submission, development and coordination of the survey materials (cover letters, questionnaires), pilot testing each questionnaire in English and French, database analysis coordination, maintaining the NPS website and posting data to the website, maintaining an on-going tracking system of all the data requests made, responding to data requests, disseminating the results.

The CFPC helps fund the NPS. Contact information is available at www.nationalphysiciansurvey.ca

The Canadian Medical Association (CMA), as a national voluntary organization of individual member physicians, unites physicians in Canada and acts as their national advocate, in partnership with the people of Canada for the highest standards of health and health care.

The CMA is partnered with the CFPC and the RCPSC to run the NPS. The CMA is responsible for managing the actual conduct of the survey (hiring and coordinating external contracts with a desk-top publisher, printing firm/ mailing house, data entry group and web-based programmer), preparing the coding manuals, data entry templates and rules for cleaning the data, arranging for the delivery and tracking of all survey materials, responding to data requests.

The CMA helps fund the NPS.

The Royal College of Physicians and Surgeons of Canada (RCPSC), as a national, not for profit, professional organization of medical specialists in Canada, is dedicated to ensuring the highest standards and quality of health care through accreditation, certification, continuing professional development and the development of sound health policy.

The RCPSC is partnered with the CFPC and the CMA to run the NPS. The RCPSC assists in the development of the questionnaires, the survey methodology, and the results dissemination. The RCPSC helps fund the NPS.

The Canadian Institute for Health Information (CIHI) is a national not-for-profit organization whose mandate is to coordinate the development and maintenance of a comprehensive and integrated approach to health information in Canada, and to provide and coordinate the provision of accurate and timely data and information.

CIHI is involved in the questionnaire development, and in particular in the survey methodology. CIHI helps fund the NPS.

Health Canada is the Federal department responsible for helping Canadians maintain and improve their health, while

respecting individual choices and circumstances.

Health Canada helps fund the NPS.

Implementation

Data gathering approach

The data is gathered using survey questionnaires. The 2007 NPS questions evolved from questions used on the 2004 NPS. A working group approach, including representatives from the CFPC, the CMA, the RCPSC, the 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.

The questionnaires are available at http://www.nationalphysiciansurvey.ca/nps/2007_Survey/questionnaires-2007-e.asp

Sampling and fieldwork

This was a census survey. Sampling was only used to identify recipients of the long or short versions of the survey.

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.

Timing

- 2007 questionnaire development and pilot testing: January-October 2007
- Questionnaire desk-topping, database development: October-December 2007
- Physician survey completion: January-May 2007
- Student and resident survey completion: February-March 2007
- Physician non-responder survey: July 2007
- Sharing initial database and coding etc. with the partners: September 2007
- Comparison of respondents and total physician population: November 2007
- Share final database, coding manuals etc. among partners: December 2007
- Initial national-level public data release/media release: January 9, 2008
- Regional-level media release: March 18, 2008
- Student and resident results release: April 28, 2008
- Specialized physician care media release: June 11, 2008
- Responding to individual data requests: June 2008 to present

Analysis and Reporting

With the NPS, the non-response adjustments for both the sample survey component and the census component were performed at the level of the province where the physicians works, the type of physician (either family physician or other specialist), the age-group and gender, 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.

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.

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).

Reporting: The National Physician Survey website www.nationalphysiciansurvey.ca is the primary communication tool. With each of the four media releases, the related information was added to the website. The physician results for the 2004 and 2007 questionnaires are posted on the website at the national level, by broad specialty (family physician or other specialist), by age group, by sex, by province, by individual specialty. The medical student and resident results are posted by year of training for students and by broad training program (family medicine or other specialty program) for residents.

The website also contains the media releases and background reports, a full methodology and generalizability of the results report, published articles, short articles, etc. The reports are available at:

<http://www.nationalphysiciansurvey.ca/nps/news/reportsnews-e.asp>

Evaluation of implementation aspects

Quality Criteria	Score	Explanation
1. Relevance and transferability		
"The indicators clearly refer to eHealth."	○●●●	eHealth is one of many topics covered on the NPS
"The indicators cover the respective issues/topics in sufficient depth."	○●●●	
"The indicators allow regular measurement in the same context in the future".	○●●●	
"The indicators can be applied to a different national context."	○●●●	
2. Accessibility of information		
"The publication of the study presents enough methodological information to enable the reader to judge its validity. (i.e. information on sample size, weighting etc.)"	●●●●	
"The research results have been published in English"	●●●●	
3. Validity of measurement		
"The concept of eHealth used by the study is clearly expressed and therefore understandable for a variety of survey respondents."	○●●●	
"The operationalisation of the indicators has been validated before use."	○●●●	The questions were developed with the assistance of groups like the Primary Healthcare Indicators Group from the Canadian Institute for Health Information. The NPS repeats questions from previous survey cycles, and pilot tests the questionnaires before using them.
"The likelihood of social desirability bias/context bias is avoided as much as possible"	○●●●	
"In the case of a multinational study: appropriate translation procedures of survey instruments are used."	○●●●	All survey materials are available in English and French. Multiple verification steps were implemented in the development of the French questionnaires. Physicians who are bilingual reviewed the English and the French materials together.
"The instrument follows the general rules for questionnaire design:" Question wording: simple, unambiguous, defining unclear terms Question wording: single stimuli Question wording: factual, not hypothetical Question wording: clear time and actor reference Question wording: neutral, not suggestive Question content: respondent has necessary knowledge and information in order to answer the questions	○●●●	The general rules are followed.

Population validity

Sampling frame quality: Very good. This was a census survey, so the sampling was strictly to determine who would receive the longer version of the questionnaire and who would receive the shorter version. Two goals were in mind when creating our sampling frame for which physicians would receive the longer version of the questionnaire, and which physicians would receive the shorter version of the questionnaire – minimizing survey burden and maximizing response rates to ensure the ability to report the results at fine levels of geography.

Data collection quality: Very good – see the description of the tracking of respondents in the Implementation section

above. Unfortunately the response rate is not as high as would be liked, but the process for collecting the data is sound.

Documentation of non response rate: Excellent. 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.

To illustrate the overall comparability of the 2007 NPS respondents to the total physician population, a comparison of

physician subgroups as defined by a province or territory, FP/GP or other specialist physician category, an age by sex group and a graduation year decade was done. The square root of the count of physicians in the defined group, for both the NPS respondents, and the physician population was plotted and revealed a 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.

A second approach to assessing the representativeness of the physicians who responded to the survey, compared to all physicians, was to circulate a one page follow-up study to those physicians who did not respond to the original questionnaire. NPS non-respondents who subsequently responded to the one page follow-up study were found to be comparable to NPS respondents 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 nonresponse, 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.

Respondent load

The burden on the physician respondents to complete the National Physician Survey would have been significant, but not impossible. All of the questions relate to the physician and what he/she is doing. They would not need to look up any of the results or refer to any other resources to complete the questionnaire.

Interestingly, there was no difference in the response rate among those physicians who received the shorter 6 page questionnaire relative to those physicians who received the longer 12 page questionnaire.

Conclusions and learning points

From the point of view of the ordering customer / funding organisation

Strengths

The comprehensiveness of the database and the analyses.

Weaknesses

- The use of specialty-specific information for some specialties is limited because of the number of respondents.
- The wording of the questions limits some interpretation and/or use of the data.

Facilitators

The infrastructure resources and coordination have been invaluable.

Usefulness of the activity

This has been and continues to be an invaluable source for analyzing the present physician workforce and planning the future. It is limited by its physician specificity, and while that is also a strength, future surveys could be more inclusive of the integrated, inter-professional environments in which physicians increasingly work.

From the point of view of the implementing organisation

Strengths

Strengths include the comprehensiveness of the National Physician Survey, in that it covers such a broad scope of topics, and that it is completed by medical students, medical residents and practicing physicians, thus providing the perspectives from individuals representing the full continuum of future physicians, to physicians in their first few years, to physicians in mid-career, and physicians in late career.

Another strength is the partnership of the College of Family Physicians of Canada, the Canadian Medical Association, and the Royal College of Physicians and Surgeons of Canada, with significant methodological input from the Canadian Institute for Health Information, collaborating to conduct the NPS.

Weaknesses

The main weakness is the low response rate. Fortunately though, because this is a census survey, nearly 20,000 physicians responded. This high number of respondents allows the results to be broken down to the level of specific regions, which is invaluable.

Facilitators

Helpful factors included the level of collaboration among the partner organizations, the degree of outreach and communication done with stakeholders, and the increased value of the survey results created by the longitudinal analyses developed by asking similar questions with each survey cycle.

Constraints

The need for the questionnaires to be relevant to all physicians, irrespective of their specialty and irrespective of the province and health system within which they practice, detracts from the overall relevance of the questionnaire to many grassroots physicians.

Learning points

There was no significant difference in the response rate among physicians who were sent the 12-page questionnaire vs. physicians who were sent the 6-page questionnaire.

There was a higher response rate among physicians who received the questionnaire in hard copy by postal mail, compared to physicians who received electronic invitations to complete the electronic questionnaire.

In terms of encouraging physicians to participate in the NPS, a successful strategy is to engage a physician leader to communicate the importance of this project to their peers. This was successful among the smaller specialties in Canada where the leaders of these specialties took our request to encourage their peers very seriously, and by outlining how the NPS was useful to their specialty, resulted in greater response rates than among specialties or provinces where this role was not filled as well.

The length of the survey didn't affect the response rate. Perhaps we need to go to a one-page questionnaire.

Limitations of interpretation due to set questions.

The invaluable power of data in public relations and government relations

References

All of the NPS information is available at the National Physician Survey website:

<http://www.nationalphysiciansurvey.ca/nps/home-e.asp>

The eHealth Benchmarking Study

The "eHealth Benchmarking" study is carried out by empirica on behalf of the European Commission, Information Society and Media Directorate-General. The study aims to collate and analyse existing eHealth monitoring and benchmarking sources in order to identify best practice in data gathering and to develop a framework for an EU-wide eHealth benchmarking activity. The intention is not only to help better understand eHealth progress but also to identify the main gaps, obstacles and barriers in relation to eHealth monitoring / benchmarking to be overcome in the next few years. In doing so, the study covers the Member States of the European Union, Norway, Iceland, Canada and the United States.

The benchmarking sources were identified by means of a combination of different research methods, including a survey among the experts of the EEA Working Group on Information Society statistics, desk research on sources of eHealth data and measurements on a supranational and European level, and research on the national level carried out by a network of national correspondents.

More information on the study is available online at <http://www.ehealth-benchmarking.eu/> or from the project coordinator:



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Authorship

This case was written by the case owner organisation.

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