

Practice Analysis Study of Nurse Practitioners



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Acknowledgements

On behalf of Professional Examination Service (ProExam), we are pleased to have conducted this major research study for the Canadian Council of Registered Nurse Regulators (CCRNRR). This report describes the competencies and work of nurse practitioners across Canada, explores the evolving nature of their practice, and provides recommendations for examination development initiatives.

A project of this magnitude depends on the hard work and commitment of many professionals, and we are pleased to acknowledge their contributions to the final product. We are indebted to the Working Group for the oversight and wisdom it provided throughout the course of this study. Its members—Paul Boudreau, Donna Cooke, Teri Crawford, Suzanne Durand, Deb Elias, Linda Finley, Donna Harpell-Hogg, Rosanne Jabbour, Odette Lavoie, Mieke Leonard, Judith Leprohon, Bev McIsaac, Lynn Miller, Karen Nelson, Joy Peacock, Chris Penney, Donna Stanley-Young, Carolyn Trumper, and Suzanne Wowchuk— worked with us and supported our efforts. In particular, we wish to acknowledge the contributions of Teri Crawford, Lynn Miller, and Bev McIsaac, who provided an extra level of strategic leadership and guidance across the many phases of this study.

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We conclude by stating the views expressed in this report are those of ProExam and do not necessarily reflect the views of CCRNR, the NP Practice Analysis working group or of those experts who provided advice on the development and implementation of this study.

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Background

In support of a national approach for nurse practitioner (NP) licensure/registration/certification¹, the Canadian Council of Registered Nurse Regulators (CCRNR) embarked on a project to analyze NP practice across Canada in three practice streams (Adult, Family/All Ages, and Pediatrics). Currently, the examinations and requirements for licensure of NPs differ from province to province. The outputs of the study will inform future decisions about entry-to-practice exams and permit CCRNR member organizations to develop consistent requirements for licensure across the country. Consistent requirements will make it easier for all applicants seeking NP licensure in Canada to understand what is required to become an NP. A national approach to NP examination supports full labour mobility of NPs and the development of fair, transparent and accountable regulatory policies and processes to support the labour market integration of all NPs, including internationally educated NPs, in the public interest.

Family/all ages (referred to as primary health care in some jurisdictions), adult, and pediatric practice are the streams most commonly licensed by Canadian regulatory bodies. The nurse practitioner practice analysis was undertaken to provide a comprehensive description of these three streams of NP practice.

Purpose of Practice Analysis

Practice analysis is a set of structured processes used to identify the key elements of a job, such as tasks performed or worker attributes required (Sackett & Laczo, 2003). Practice analysis is the foundation for validity of examinations used for the purpose of professional regulation (Raymond, 2001). The current study conforms to best practices in practice analysis as described in the 2014 revision of the *Standards for Educational and Psychological Testing* (American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education), *ISO/IEC/17024 Standards* (2003), *Standards for the Accreditation of Certification Programs* (National Commission for the Accreditation of Certification Programs (2014), and in the *ProExam Guidelines for the Development, Use, and Evaluation of Licensure and Certification Programs* (1995).

While there is no single correct way to conduct a practice analysis, the use of multiple data collection methods is recommended. The current study employed a mixed-methods approach, employing subject-matter expert input, relevant literature, and surveys.

¹ Terminology differs across the country; for ease of reference, this report will use the term “licensure” to mean licensure, registration and certification of NPs

Objectives of the Study

Regulators are focused on ensuring that entry-level nurse practitioners possess the knowledge, skills, and abilities to perform competently—that is, in a way that does not subject patients and the public to harm. For CCRNR, the objectives of the study were to:

1. Describe behavioural indicators of the competencies that entry-level NPs are expected to demonstrate in practice for three streams of practice.
2. Determine which behavioural indicators are core (i.e., common to all practice streams) and unique (specific to one or two specific practice streams).
3. Describe and analyze, by practice stream, the seriousness of consequences to clients and frequency ratings that NPs assign to the behavioural indicators.
4. Determine whether practice patterns differ across Canada (in the interest of establishing a national set of entry-level competencies).
5. Identify a set of entry-level NP competencies that could be tested on a regulatory exam in (the interest of public protection).

Methods

Committee Structure

CCRNR established a national Working Group, consisting of representatives from 11 of the 12 Canadian nursing regulatory bodies, to coordinate the various phases of this project and to act as a liaison between CCRNR and ProExam. The members of the Working Group and their affiliations are found in Appendix 1. The NP practice analysis project was officially launched in February 2014 and began with a meeting between the Working Group and Professional Examination Service (ProExam), the vendor selected to facilitate the project through a competitive bid process. ProExam is a non-profit organization that has provided North American leadership in the field of professional licensure and certification since 1941. ProExam brought to the project its extensive experience in conducting practice analysis studies for a wide variety of professions in Canada and the United States.

The Working Group appointed a nine-member Research Advisory Committee (RAC) comprised of six prominent researchers, educators and administrators in the advanced nursing practice field and three Working Group members, two of whom are nurse practitioners. The RAC served in an advisory capacity for the duration of the project. A list of the members of the RAC, their affiliations, and the terms of reference for their work can be found in Appendix 2. The RAC met four times over the course of the study.

The role of RAC was to provide research expertise for the NP Practice Analysis Working Group and ProExam. Specific objectives included:

1. To advise and provide recommendations on Canadian and international NP research relevant to the Canadian context.
2. To develop, revise, and review competencies and behavioural indicators for entry-level NPs.
3. To review and comment on the content of surveys prior to distribution.
4. To review NP practice analysis results post-distribution.
5. To advise on best methods of assessing specific types of knowledge, skills and abilities of entry-level NPs.

Guidance from the Practice Analysis Working Group

At the outset of the study, the Working Group asked the RAC to consider various sources of information in performing its work, including:

- current regulatory documents such as NP standards and the current NP competencies²
- scholarly literature
- educational program curricula, and
- current research on NP practice³.

While three streams of practice were being studied, one objective of the study was to identify behavioral indicators that are common to all practice streams in addition to those that are unique (e.g. specific to one or two practice streams). The Working Group suggested that it would be important to determine meaningful differences in practice activities across the streams, and that only meaningful differences should be categorized as unique indicators.

Finally, the Working Group recommended that the work product from the study encompass the breadth of activities that are performed by entry-level nurse practitioners in Canada, regardless of whether *all* jurisdictions permit the activity under their specific legislative frameworks.

Research Advisory Committee Meeting One

At its first meeting, held in May 2014, the RAC created an overarching structure for the competency framework organized around four major competency areas: Client Care; Evidence-informed Practice, Quality Improvement, and Research; Leadership; and Education. The RAC then began drafting a set of key behavioural indicators that describe the practice of a competent, entry-level nurse practitioner within each of the competency areas. Behavioral indicators were

² Most jurisdictions in Canada adopted, or otherwise endorsed the 2010 CNA *Canadian NP Core Competency Framework* as their entry-to-practice competencies. British Columbia's and Nova Scotia's regulatory authorities made small adaptations to the document for their jurisdictional purposes.

³ Both Working Group and RAC members contributed current literature to a common repository that served as a resource to the RAC and other subject-matter experts involved in the study.

defined as observable behaviours performed by individuals at entry-level proficiency. In adopting this definition, it was noted that observing a behavior means you can either *see* or *hear* an individual exhibiting that behavior, or you can validate the behaviour by examining evidence that the behaviour was performed.

At the end of the first meeting, the RAC verified that all relevant content from the 2010 CNA *Canadian NP Core Competency Framework* was appropriately reflected in the draft entry-level behavioral indicators.

The following considerations guided the delineation of behavioural indicators:

1. Ask yourself how the entry-level nurse practitioner demonstrates the competency. What specific, observable, measurable behaviours are associated with the competency?
2. Consider key aspects of the competency that are most central to public protection. It is not necessary to develop an exhaustive list of behavioural indicators.
3. What evidence would you need to see in order to judge that an entry-level nurse practitioner possessed the competency?
4. It is not a requirement to define the same number of behavioral indicators for each competency. By their nature, some competencies may lend themselves to finer delineation.
5. Consider areas where entry-level nurse practitioners run into difficulties on the job. Can indicators be written to capture these critical behaviours?
6. Behavioural indicators should sound like advanced practice. They should not describe entry-level RN practice.

Following the first meeting, members of the RAC individually reviewed and commented on the meeting output. After compiling all comments from individual RAC members, ProExam facilitated two virtual meetings during which the RAC revised the draft behavioral indicators in preparation for the meetings with the subject-matter expert (SME) panels.

SME Panel Meetings

To bring additional clinical expertise and new perspectives to the process, and to explore commonalities and differences across the three streams of practice, subject-matter expert (SME) panels representative of each of the three streams met to review the draft behavioral indicators, recommend revisions, and identify any indicators that would be unique to their stream of practice.

In the spring of 2014, jurisdictional regulators distributed a call to nurse practitioners working in the three streams of practice soliciting interest to participate in the SME panels. An on-line

application for the selection of volunteers for the SME panels and pilot group was developed approved, pilot tested and distributed to those NPs who had expressed interest in participation. All correspondence and the survey tool were translated into French and surveys were sent to applicants in the language of their choice.

The Working Group selected panelists from the pool of approximately 180 volunteers. Selection criteria for the SME panels included current NP clinical knowledge, experience, and practice as an NP in one of the three streams. In addition, the composition of each panel was designed to provide a balanced representation of NP practice including years of experience, diverse practice settings, geographic location (urban/rural, province/territory) and other demographics within each stream. At least one member of the CCRNR NP Practice Analysis Working Group who is an NP attended each SME panel meeting. Copies of the outreach materials, list of attendees, and terms of reference for the SME panels can be found in Appendix 3.

Three, 2-day SME panel meetings were held, one for each of the three streams of practice. Each panel was comprised of NPs working in the practice stream: adult, pediatric, or family/all ages.

Each meeting included a mix of large- and small-group activities designed to engage participants in a thoughtful review of the behavioral indicators. After an orientation to CCRNR and the purpose of the project, the SME panelists shared their overall impressions of the behavioral indicators to ensure they provided a complete and clear representation of NP practice across each stream at the entry-level. Through participation in small group work, the SME panels made suggested revisions and additions to the behavioral indicators.

The SMEs were asked to ensure that the indicators:

- described nurse practitioner practice,⁴
- focused on entry-level practice,
- described competent NP practice, *not* expert or proficient,
- were written clearly,
- did not include unintended overlap, and
- were comprehensive.

Refinement of the behavioral indicators occurred through an iterative process with all three SME panels. The Adult SME panel reviewed and suggested revisions to the initial draft created by the RAC. The indicators and suggested revisions made by the Adult SME panel were subsequently

⁴ While the original guidance from the Working Group was to delineate behaviors that applied solely to advanced practice nurses, the SME panelists strongly recommended the inclusion of certain critical behaviors related to relationship building, communication, and professionalism that were shared by RNs and NPs. Therefore these behavioral indicator statements were left in for purposes of the analysis.

reviewed and revised by the Pediatric and Family/All Ages panels in turn. Each of these panels made further suggestions to the indicators which improved clarity and specificity of each indicator statement within each of the four competency areas. This iterative process provided a mechanism for continual improvement of the behavioral indicators.

Finalizing the Behavioral Indicators

At a one-day meeting of the RAC in Toronto in September 2014, the draft delineation of the behavioral indicators that was produced by the SME panel process was further refined. The final structure of the entry-level competency framework consisted of four competency areas. The Client Care competency area contained six sub-areas, and the Education competency area contained two sub-areas. The names and definitions of the competency areas and sub-areas appear in Exhibit 1.

Exhibit 1. Competency Areas and their Definitions

Competency Area	Definition
I. Client Care	
A. Client Relationship Building and Communication	Uses appropriate communication strategies to create a safe and therapeutic environment for client care.
B. Assessment	Integrates an evidence-informed knowledge base with advanced assessment skills to obtain the necessary information to identify client diagnoses, strengths, and needs.
C. Diagnosis	Is engaged in the diagnostic process and develops differential diagnoses through identification, analysis, and interpretation of findings from a variety of sources
D. Management	On the basis of assessment and diagnosis, formulates the most appropriate plan of care for the client, implementing evidence-informed therapeutic interventions in partnership with the client to optimize health
E. Collaboration, Consultation, and Referral	Identifies when collaboration, consultation, and referral are necessary for safe, competent, and comprehensive client care.
F. Health Promotion	Uses evidence and collaborates with community partners and other healthcare providers to optimize the health of individuals, families, communities, and populations
II: Quality Improvement and Research	Uses evidence-informed practice, seeks to optimize client care and health service delivery, and

Competency Area	Definition
	participates in research
III. Leadership	Demonstrates leadership by using the NP role to improve client care and facilitate system change
IV. Education	
A. Client, Community, and Healthcare Team Education	Integrates formal and informal education into practice. This includes but is not limited to educating self, clients, the community, and members of the healthcare team.
B. Continuing Competence	

At the September 2014 meeting, the RAC also provided advice regarding the planned validation strategies, specifically the conduct of the NP survey and an additional survey for approved NP education programs. One of the outcomes of this meeting was development of the proposed rating scales for the surveys. Finally, the RAC recommended that the practice analysis included the collection of additional information related to the three streams of practice. This included specific patient characteristics, work activities, and tests and procedures performed by NPs in the three streams of practice.

The Working Group met by teleconference on September 29th and 30th 2014 to finalize the competency areas and activities and to approve the rating scales and demographic questionnaire to be used in the practice analysis and educator surveys. At the end of this Working Group meeting, the NP practice analysis survey was ready for pilot testing.

Structure and Content of the NP Practice Analysis Survey

The practice analysis survey was designed for administration to all licensed NPs in Canada in the adult, family/all ages, and pediatric practice streams.

The survey began with two questions designed to identify and screen out individuals who either (1) had not practiced in a clinical NP role during the past 12 months, or (2) practiced exclusively as a neonatal NP⁵. The first criterion was used because one of the validation rating scales asked about activities performed in the past 12 months. The second criterion was used to ensure that only adult, family/all ages, and pediatric NPs answered the survey.

In the first section of the survey, participants made two ratings for each behavioural indicator, defined as activities that may be performed by newly-licensed NPs. The behavioural indicators

⁵ The number and frequency of candidates who qualify for licensure/registration by writing a neonatology exam is too low to sustain a national exam. Since the NP Practice Analysis was not intended to be used to inform future decisions about a neonatology exam, neonatal NP practice was not explored in the study.

were organized within the four major competency areas identified by the RAC and refined by the SME panelists. The two rating scales were:

How frequently did you personally perform the activity in the past 12 months?

- Never*
- Rarely (less than once per month)*
- Monthly (at least once per month)*
- Weekly (at least once per week)*
- Daily (at least once per day)*

How serious would the consequences be to client(s) if a newly-licensed NP failed to perform the activity competently?

- Not serious (no harm to client(s))*
- Minimally serious (causes inconvenience)*
- Moderately serious (hinders or delays therapeutic progress)*
- Highly serious (worsens condition/requires intervention)*
- Critically serious (potentially life threatening)*

In the second section of the survey, participants made two additional ratings for each competency area and subcompetency:

What percentage of your work time did you spend in each competency (and subcompetency) area in the past 12 months?

How serious would the consequences be to clients(s) if a newly-licensed NP in your practice setting failed to perform the activities in the area competently?

- Not serious (no harm to client(s))*
- Minimally serious (causes inconvenience)*
- Moderately serious (hinders or delays therapeutic progress)*
- Highly serious (worsens condition/requires intervention)*
- Critically serious (potentially life threatening)*

In the third section of the survey, respondents answered a background characteristics questionnaire, rated the perceived completeness of the delineation of practice, and wrote in anything that they perceived to be missing from the description of entry-level practice.

Finally, participants were asked to indicate whether they performed specific activities, tests and procedures by selecting one of seven response options:

- Yes, I perform the activity autonomously under my own authority⁶*
- Yes, I perform the activity with physician approval⁷*

⁶ Performing activity autonomously under the NP's own authority: The provincial regulation includes the activity within the NP's own authority and the regulatory body does not restrict the activity

⁷ Performing the activity with physician approval: The activity does not fall within the NPs own authority, but is performed by the NP with a physician's order, delegation, sign-off, or supervision

Approach to Data Analysis

Frequency distributions indicating the number and percent of responses were produced for categorical variables, and summary statistics were computed. Means, standard deviations and number of respondents were computed for ordinal variables. For all analyses (i.e., demographics and professional background, activities performed, client population, competency areas and subcompetencies [both frequency and seriousness], behavioural indicators [both frequency and seriousness]), subgroup analyses were conducted to explore similarities and differences across regions, practice streams, and years of experience. The development of the cohorts used for subgroup analyses is described in detail in the **Results** section of this report.

Results of the Practice Analysis Survey

Survey Response Rate

The response rate to the survey was calculated by taking the number of invitations emailed to each province or territory and subtracting the number that were undeliverable due to invalid email addresses, as well as subtracting the surveys that were terminated because the invitee was ineligible to participate based on responses to the two screening questions. This process provided the number of valid invitations from each jurisdiction. The number of respondents was divided by the number of valid invitations to calculate the response rate for the jurisdiction.

As shown in Table 1 nearly 22% of all NPs in Canada completed the survey, representing a 24.6% response rate. Participation in the survey by NPs in each province or territory ranged from less than 15% from Saskatchewan and 16% from Alberta to more than 30% from Prince Edward Island and Yukon completing the survey.

The nearly 25% response rate reflects a good level of participation for such a long and complex survey. This percentage is within the range of normal and acceptable response rates for a practice analysis validation survey, and is comparable to that achieved in other job analyses (Impara, 1995).

The lower percentage of respondents from some jurisdictions may have resulted from a number of factors. Variations in response rates may reflect the methods used to obtain the survey samples from each jurisdiction. Because some jurisdictions were not permitted by law to provide their databases to ProExam for dissemination of the survey invitations, ProExam had to rely on a registration process whereby NPs from these jurisdictions signed up to take the survey. Some of the highest response rates were from provinces or territories where the samples were collected either entirely or partially from the online registration site, including British Columbia, Saskatchewan, Northwest Territories and Nunavut, and Yukon. This reflects a tendency of individuals to respond at a higher rate to surveys for which they proactively register. However, while the response *rates* to the survey from British Columbia and Saskatchewan were among the

highest; because the number of invitations sent to NPs in these two provinces did not include the entire population of NPs, but only those who had registered, the overall representation of NPs from these provinces was lower than in those provinces where the entire population of NPs was invited to participate. Alberta's relatively low response rate may have been due to potential survey fatigue and/or confusion over the purpose of the of the practice analysis survey, since another similar survey had been circulated just prior to the practice analysis survey, and multiple surveys had been recently sent from other sources, including Alberta Health Services.

Table 1. Response rates by province/territory, and percentage of NPs in province/territory completing survey

Province/Territory	NPs completing survey by jurisdiction		Survey invitations sent and completed surveys					Response rate
	NPs in jurisdiction ¹	% of NPs in jurisdiction	Invitations sent	Undeliverable ²	Terminated ³	Valid invitations	Completed	
Alberta	405	16.0%	405	2	9	394	65	16.5%
British Columbia	319	14.1%	123	0	2	121	45	37.2%
Manitoba	140	25.0%	140	2	5	133	35	26.3%
New Brunswick	117	19.7%	115	3	3	109	23	21.1%
Newfoundland and Labrador	126	19.0%	128	6	8	114	24	21.1%
Northwest Territories & Nunavut	52	25.0%	38	0	1	37	13	35.1%
Nova Scotia	146	29.5%	141	3	5	133	43	32.3%
Ontario	2437	22.8%	2442	16	89	2337	555	23.7%
Prince Edward Island	16	31.3%	16	1	1	14	5	35.7%
Quebec	245	29.4%	243	2	4	237	72	30.4%
Saskatchewan	186	14.5%	77	3	3	71	27	38.0%
Yukon	6	33.3%	2	0	0	2	2	100.0%
TOTAL	4195	21.7%	3870	38	130	3702	909	24.6%

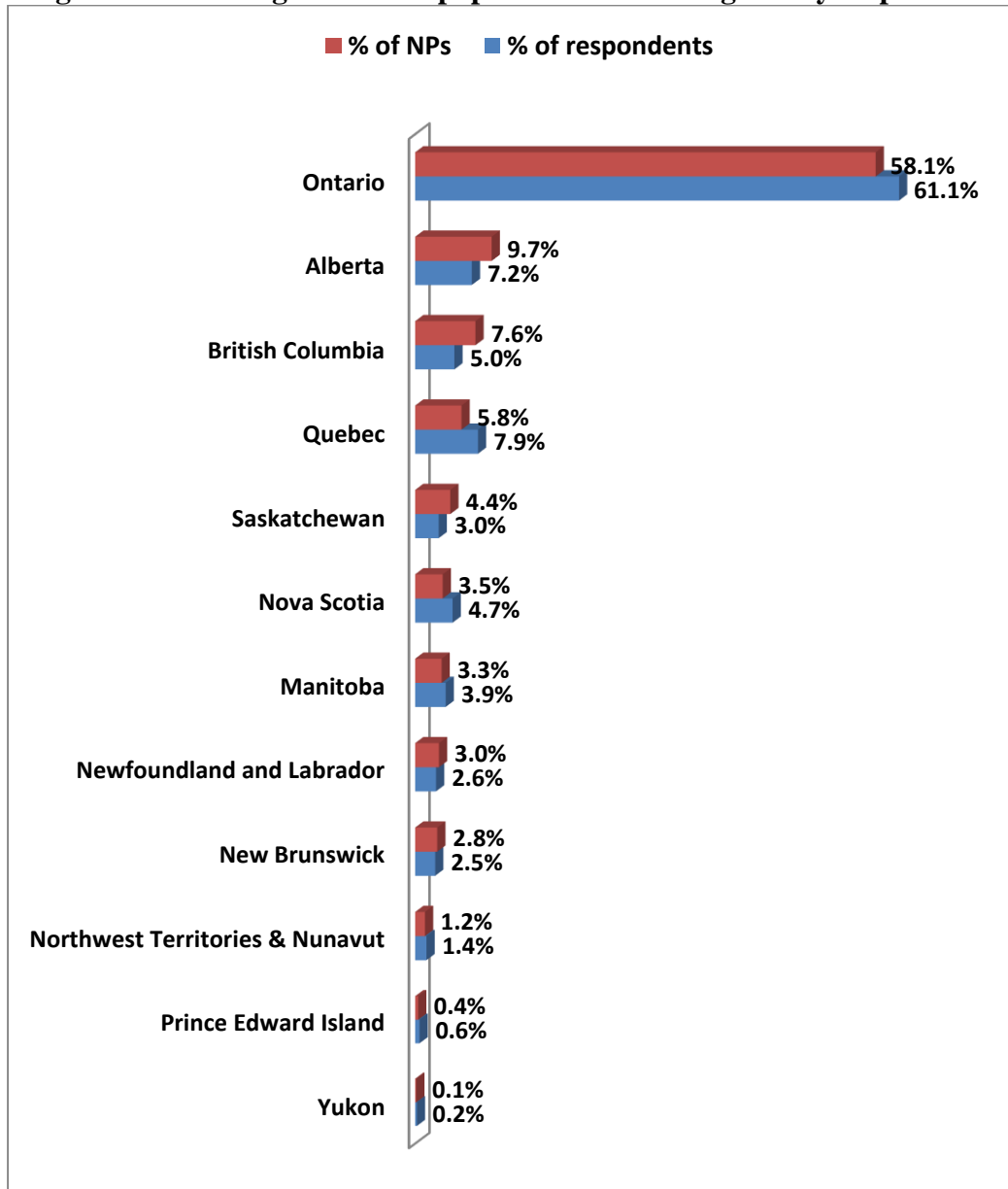
¹ As of 01 November, 2014, including neonatal NPs. Note: exclusively neonatal NPs were routed out the survey as shown in column 6.

² Invalid email address

³ Did not meet screening criteria (no clinical practice in past 12 months; or exclusively neonatal practice)

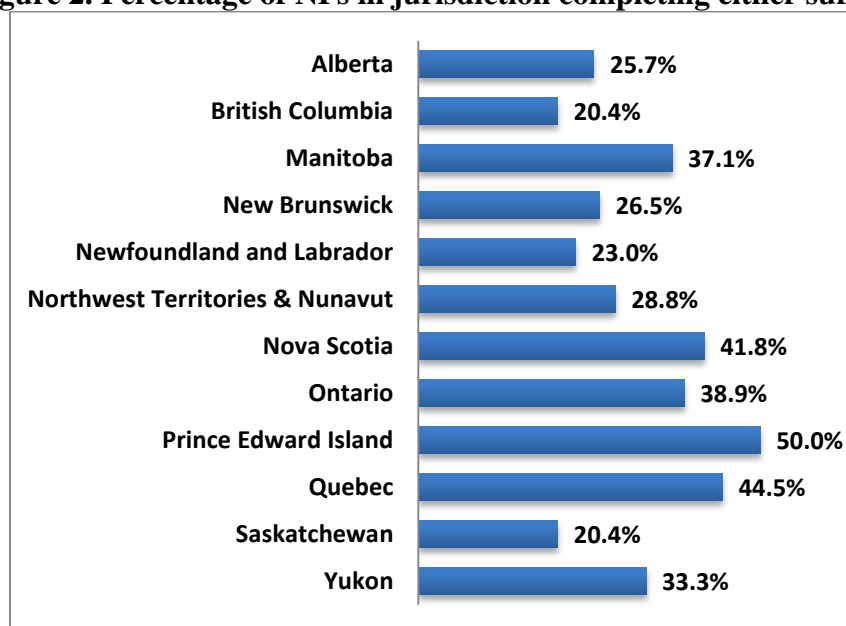
Overall, however, as shown in Figure 1, NPs in each jurisdiction participated in the survey in approximately the same proportion as their representation in the total population of NPs across Canada, with only small variations between the percentages of NPs in the population versus the percentages of NPs among the survey respondents. As an illustration, NPs from Ontario make up 58% of the total NPs in Canada, and represented 61% of survey respondents. Some provinces were slightly over-represented among survey respondents and some were slightly underrepresented, but the sample of NPs that responded to the survey well represents the geographic distribution of NPs across Canada.

Figure 1. Percentage of NPs in population and among survey respondents



When the results of the non-respondent survey are included, nearly 35% of NPs from across Canada completed either the primary practice analysis survey or the non-responder survey. (For complete results of the non-respondent survey, see Appendix 7). There were only very small differences between responses obtained from the primary survey and those from the non-respondent survey. Therefore, we can conclude that the results of the primary survey are representative of those of NPs in each jurisdiction. Figure 2 displays the percentage of NPs in each province or territory that completed either the primary or the non-respondent survey. Participation rates ranged from 20% of NPs in British Columbia to 50% in Prince Edward Island.

Figure 2. Percentage of NPs in jurisdiction completing either survey



While many invitations contained links to both the English and French language versions of the survey, for some provinces, invitations were sent exclusively in one language (based on the preferred language of the recipient). Regardless of the language of the invitation, response rates were virtually identical, as shown in Table 2.

Table 2. Response rates by language

Language	Invitations sent	Undeliverable	Terminated	Valid invitations	Completed	Response rate
English	3532	36	125	3371	825	24.5%
French	338	2	5	331	84	25.4%
Total	3870	38	130	3702	909	24.6%

A review of the responses of invitees who were screened out of the survey shows that more than three quarters (78%) were terminated because they were not engaged in NP clinical practice in the past 12 months, while the remaining 22% worked exclusively as a neonatal NP (see Table 3).

Table 3. Analysis of terminated invitations

	n	%
Has not practiced in a clinical NP role in past 12 months	101	77.7%
Work exclusively as neonatal NP	29	22.3%
Total	130	100.0%

For purposes of examining practice patterns of NPs across Canada, respondents were categorized into five geographical groups depending on their province or territory of NP licensure.

Atlantic–New Brunswick, Newfoundland and Labrador, Nova Scotia, Prince Edward Island

West–Manitoba, Saskatchewan, Alberta, British Columbia

North–Northwest Territory, Nunavut, Yukon Territory

Ontario and **Quebec** remained as separate regions

As shown in Table 4, Quebec had the highest percentage of NPs in the jurisdiction completing the survey, and the Atlantic, North and Ontario had between 23% and 26% representation. The West had the lowest representation, with 16% of NPs completing the survey.

Table 4. Percentage of NPs in region completing survey

Province/Territory	NPs in jurisdiction	Completed	% of NPs completing survey
Atlantic	405	95	23.5%
Ontario	2437	555	22.8%
Quebec	245	72	29.4%
West	1050	172	16.4%
North	58	15	25.9%
TOTAL	4195	909	21.7%

Demographic and Professional Characteristic of Respondents

The professional and demographic characteristics of survey respondents are presented in the following section. Frequency distributions of responses and descriptive statistics (i.e., mean, standard deviation, and N), if applicable, were calculated for the total sample for the demographic and professional variables. In reviewing these data, note that not all respondents answered every question.

Respondents had completed a variety of education programs as shown in the demographics on educational background in Table 5. Because respondents were able to select all options that applied, this data is difficult to interpret and may represent individual interpretation of what was being asked in the question. For example, while only 93.7% of respondents indicated that they had completed a nursing diploma or BScN / BN program, it is important to note all NPs would have completed one of these programs to become a registered nurse; a prerequisite for education and licensure as an NP. Forty-one percent of respondents had completed a post-baccalaureate, post-RN diploma NP certificate or diploma program, and almost 93% had completed a Master level program or higher.

Table 5. Educational background

Multiple responses permitted—respondents could select all that applied; totals do not equal 100%.

	n	%
Nursing Diploma	263	28.9%
BScN or BN	589	64.8%
Baccalaureate Degree in another area ¹	90	9.9%
NP Certificate or Diploma (Post RN Diploma, Post-Baccalaureate)	368	40.5%
Master of Nursing	181	19.9%
Master of Nursing-NP	356	39.2%
Master of Nursing- NP plus DESS in Medical Sciences (QC only)	60	6.6%
Master of Science-NP	63	6.9%
Master's Degree in another area ¹	64	7.0%
Post-Masters Certificate in NP practice	91	10.0%
Doctorate or PhD (Nursing)	18	2.0%
Doctorate or PhD in another area ¹	11	1.2%

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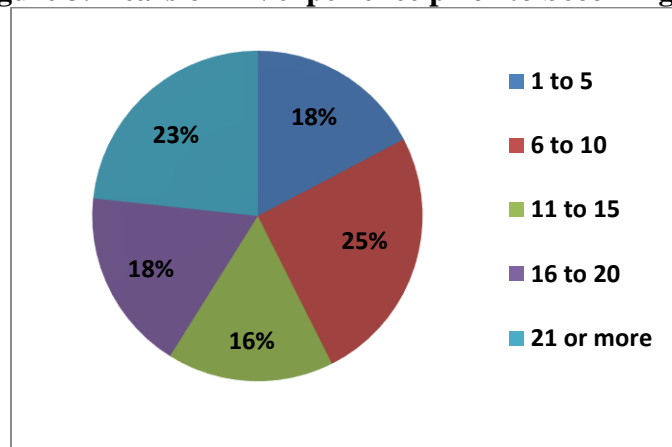
Respondents were experienced RNs before becoming NPs, with an average of 14.3 years of RN experience. They had an average of 7.6 years of experience as NPs (see Table 6.)

Table 6. Years of experience, summary statistics

	M	SD	Minimum	Maximum
Years of RN experience prior to becoming NP	14.3	(8.3)	1	31
Years of NP experience	7.6	(5.4)	1	31

Years of experience data for RNs was categorized as shown in Figure 3. Almost one quarter of respondents had 21 years or more of RN experience, while 18% of respondents had 1 to 5 years of RN experience.

Figure 3. Years of RN experience prior to becoming NP



Slightly different categories were developed to classify years of NP experience versus RN years of experience, with greater precision at the lower end of the range of experience to provide a clearer picture of which NPs were closer to entry-to-practice. As shown in Figure 4, 20% of respondents had 1 to 2 years of NP experience, and 23% had 3 to 5 years of NP. While 9% had 16 or more years of experience, indicating they were among the first NPs licensed in Canada.

Figure 4. Years of NP experience

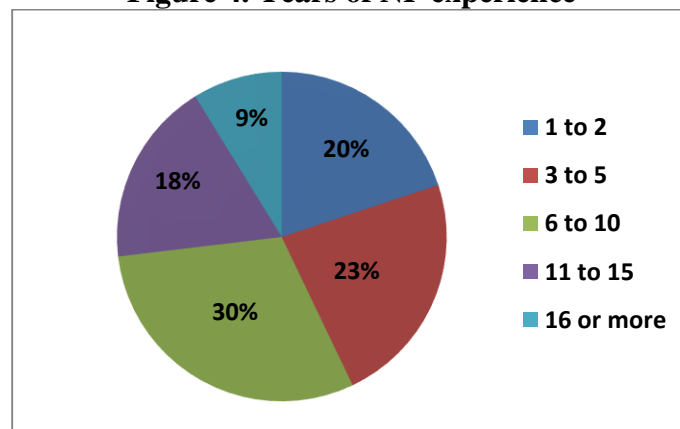
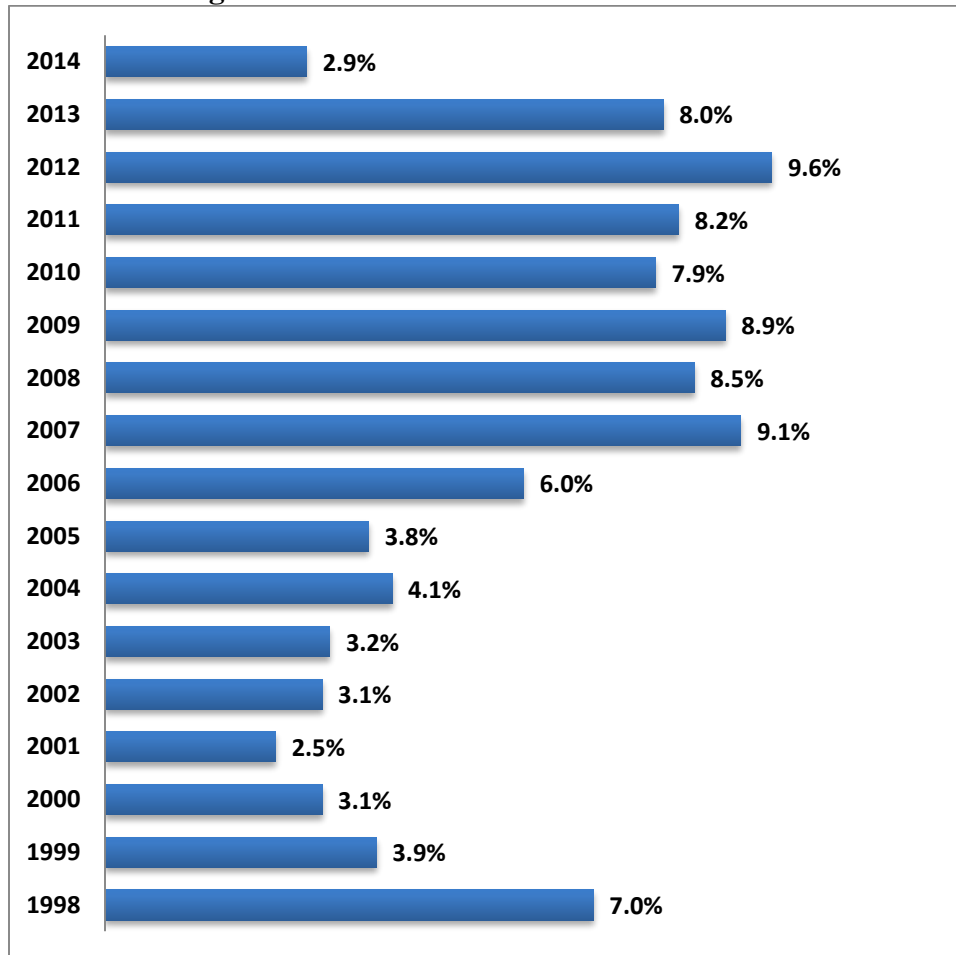


Figure 5 shows the year of respondents' initial licensure as an NP in Canada. The greatest number of respondents were licensed in 2012 (86), followed by 2007 (82).

Figure 5. Year first licensed as NP in Canada



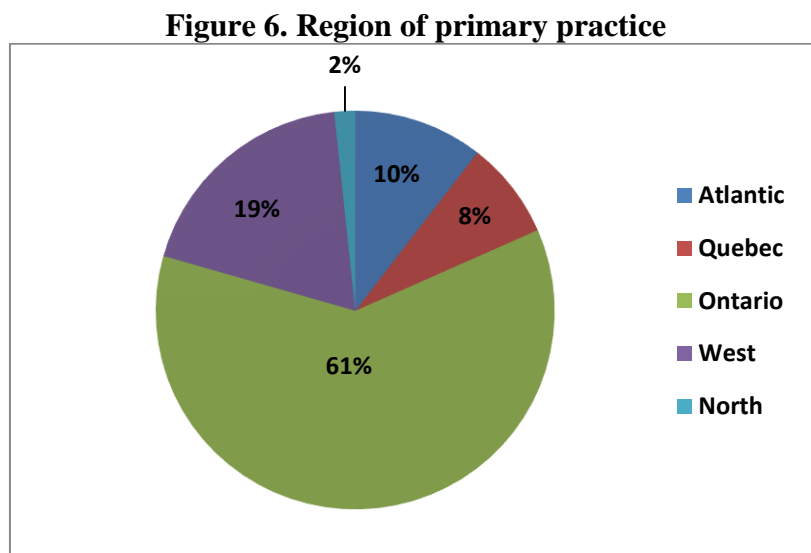
Respondents were asked two questions related to their province or territory. First, they were asked to indicate *all* provinces or territories where they were currently licensed to practice. Multiple responses were permitted for this question to allow respondents licensed in more than one jurisdiction to list all jurisdictions in which they held an NP license. Second, they were asked to indicate the province or territory of their *primary practice setting*. As shown in Table 7, 50 respondents held licenses in more than one jurisdiction; consequently, with the exception of Prince Edward Island, the percentage of respondents practicing *primarily* in any given province or territory is lower than the percentage licensed as an NP in that province or territory.

**Table 7. Province(s)/Territory(ies) where currently licensed as NP;
and province/territory of primary practice**

*Multiple responses permitted to "Where licensed" question—respondents could select all that applied.
Totals do not sum to 100% for this variable.*

	Where licensed		Primary practice	
	n	%	n	%
Alberta	74	8.2%	65	7.2%
British Columbia	52	5.7%	45	5.0%
Manitoba	40	4.4%	35	3.9%
New Brunswick	25	2.8%	23	2.5%
Newfoundland and Labrador	28	3.1%	24	2.6%
Northwest Territories & Nunavut	15	1.7%	11	1.2%
			2	0.2%
Nova Scotia	46	5.1%	43	4.7%
Ontario	565	62.4%	555	61.1%
Prince Edward Island	5	0.6%	5	0.6%
Quebec	74	8.2%	72	7.9%
Saskatchewan	31	3.4%	27	3.0%
Yukon Territory	4	0.4%	2	0.2%
Total	959	106.0%	909	100.0%

Using the geographical categories described earlier, it can be seen in Figure 6 that the majority of respondents practiced in Ontario (61%), with 19% practicing in the West, 10% in the Atlantic, 8% in Quebec, and 2% in the North.



Respondents indicated the streams of practice in which they were currently licensed. The largest group was licensed in the FAA/Primary care⁹ stream (70%). Approximately 21% of respondents indicated they were licensed as Adult NPs, and less than 5% were Pediatric NPs. Nineteen respondents (2%) indicated they were licensed in more than one stream.¹⁰

Table 8. Stream(s) in which currently licensed/registered/certified as NP

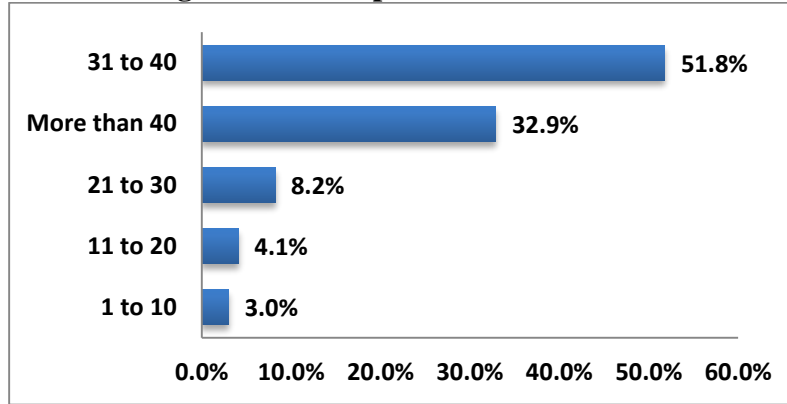
	n	%
FAA/Primary	637	70.1%
Adult	189	20.8%
Pediatric	42	4.6%
Neonatology (QC, Alberta, and Nova Scotia)	0	0.0%
Nephrology (QC only)	7	0.8%
Cardiology (QC only)	9	1.0%
More than one stream	19	2.1%
Did not answer	6	0.7%
Total	909	100.1%

⁹ The response option provided in the survey for this stream was labeled *Family/All Ages/Primary Health Care/Primary Care* to reflect the stream designation used in different jurisdictions.

¹⁰ Twenty-one additional respondents from Quebec initially indicated that they were certified in multiple streams. Because certification in multiple streams is not possible in Quebec, these responses were manually recoded to reflect their actual stream.

The majority of respondents (52%) worked from 31 to 40 hours per week as an NP, with one-third working more than 40 hours per week (see Figure 7). Only 3% worked in the NP role for 10 or fewer hours per week.

Figure 7. Hours per week of NP work

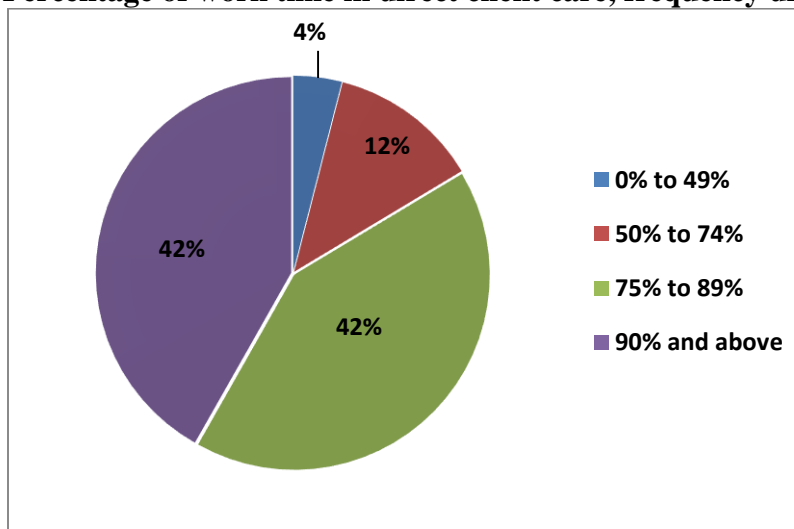


As shown in Table 9 and Figure 8, NPs spent the majority of their work time (81%) providing direct client care. Only 4% of respondents spent less than half their work time in direct client care, and 42% of respondents spent at 90% or more of their work time providing direct care.

Table 9. Percentage of work time in direct client care, summary statistics

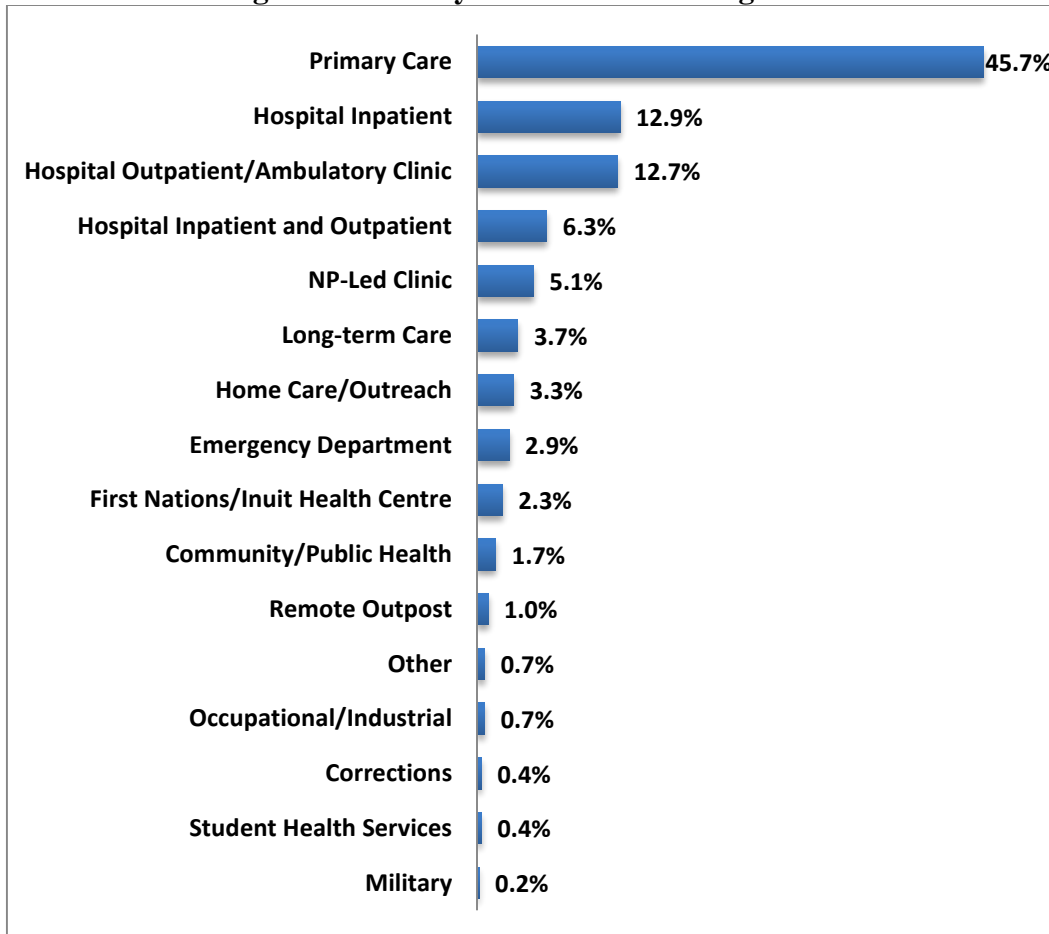
	Mean %	SD	Minimum	Maximum
Percentage of work time	81.2%	(16.4)	2	100

Figure 8. Percentage of work time in direct client care, frequency distributions



As shown in Figure 9, the primary clinical setting where NPs were most likely to work was primary care (almost 46%), while approximately 32% of respondents worked in hospital inpatient, hospital outpatient, or a combination of hospital in- and outpatient settings. Five percent or fewer respondents worked in any of the other specifically-delineated work settings.

Figure 9. Primary clinical work setting as NP

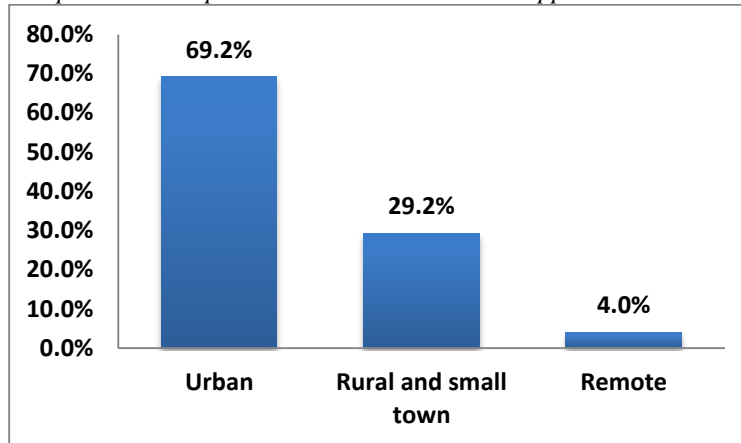


Write-in responses to "Other" settings may be found in Appendix 9.

Respondents were asked to indicate all the geographic settings in which they practice; multiple responses were permitted. NPs were most likely to work in urban settings (69%), although a significant percentage practiced in rural or small town settings (29%). Only 4% worked in remote settings (see Figure 10).

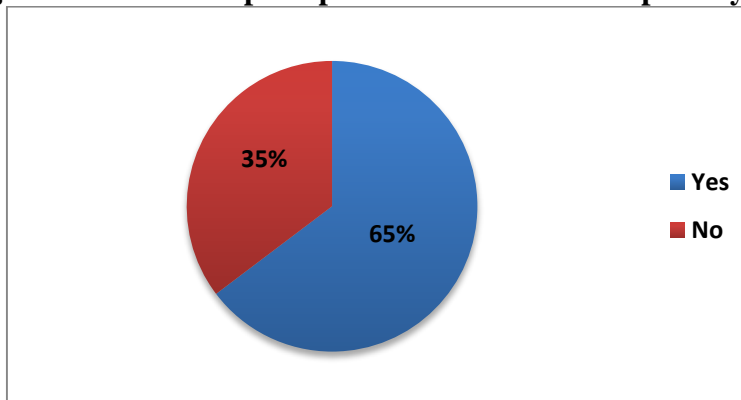
Figure 10. Geographic setting(s) of NP practice

Multiple responses permitted—respondents could select all that applied. Totals do not sum to 100%.



As shown in Figure 11, about two thirds of respondents had served as a preceptor for NP students in the past two years.

Figure 11. Served as preceptor for NP students in past 2 years



Interpretation of the results of the practice analysis survey which follows, and extrapolation of those findings to the population of Canadian NPs as a whole should be made with reference to the respondents' demographic and professional characteristics. Members of the Working Group reviewed these results, and concluded that the professional and demographic characteristics of the respondent pool matched those of the population.

Cohorts for Subgroup Analyses

Three key variables were used for subgroup analyses of the competency ratings. As described earlier, five geographical regions (Atlantic, Quebec, Ontario, West, and North) were used to explore whether practice patterns of NPs differ across Canada.

One of the primary goals of the study was to explore whether NP practice differs based on the stream in which NPs are licensed. Accordingly, the 903 respondents who answered the question regarding practice stream were categorized into four groups: FAA/Primary, Adult, Pediatric, and those licensed in more than one stream. For purposes of these analyses, all NPs licensed in Quebec in the Nephrology and Cardiology streams were re-categorized as Adult. Table 10 shows the cohorts in each stream.

Table 10. Streams for subgroup analyses

	n	%
FAA/Primary	637	70.5%
Adult	205	22.7%
Pediatric	42	4.7%
More than 1 stream	19	2.1%
Total	903	100.0%

Because it would be difficult to determine any influence of the stream of practice on the ratings for those NPs licensed in multiple streams, later sub-groups analyses by stream did not use the results of these respondents to determine if there were differences in practice patterns by stream. Only the ratings of those licensed in one stream were used for these comparisons.

A subcommittee of the working group met virtually to consider various options for categorizing NPs as either entry-level or experienced practitioners. After discussing a number of potential approaches, the subcommittee established the cut-offs for "entry-level" NPs as those with up to 2 years of experience as an NP *AND* who were first licensed as an NP in Canada from 2012 through 2014. "Experienced" NPs would be those with 3 or more years of NP experience who were first licensed as an NP in Canada in 2011 or earlier. Of the 909 respondents to the survey, 888 answered both these questions and were categorized into subgroups as shown in Table 11.

Table 11. Experience levels for subgroup analyses

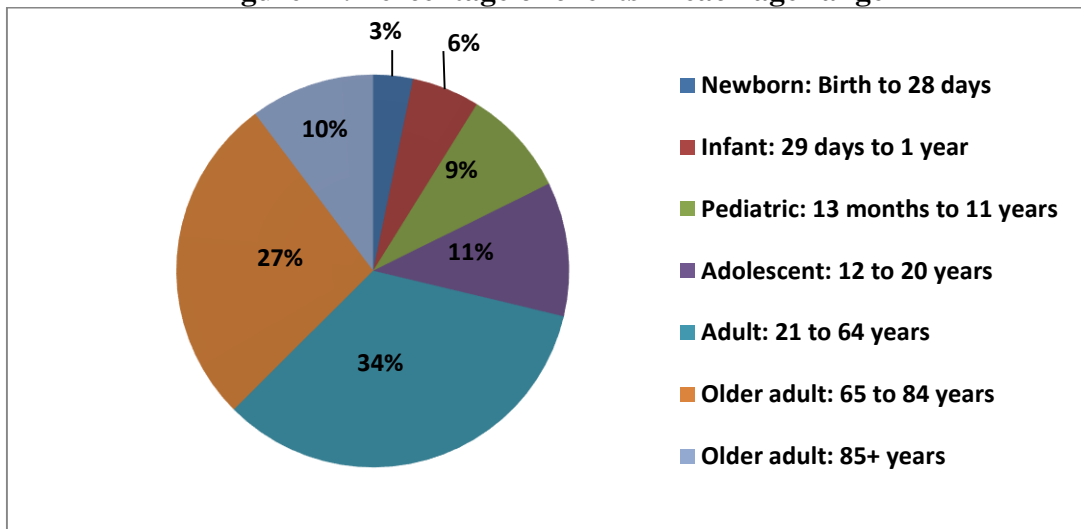
	n	%
Entry-level	165	18.6%
Experienced	723	81.4%
Total	888	100.0%

Sub-group analyses of the demographic and professional characteristics of survey respondents may be found in Appendix 10 **Error! Reference source not found.** For many variables, differences were seen when comparing some or all of the cohorts; in many cases, the reasons for these differences were apparent. For example, the mean years of NP experience varied across region, reflecting the fact that NP licensure occurred at different times across provinces. In other cases, for example, differences were found across region, stream and experience level. Educational background, years of experience as an RN before becoming an NP, primary clinical work setting, and geographic setting were additional variables where differences were found across one or more subgroup analyses, particularly when comparing across regions. However, except for the variables related to years of experience, the characteristics of entry-level and experienced respondents were more similar.

Client Characteristics

Figure 12 shows the percentage of clients in each age range. Approximately 34% are adults aged 21 to 64 years, and an additional 37% represent older adults (65 to 84 years and 85 years or older). The remaining 29% are those 20 years and younger.

Figure 12. Percentage of clients in each age range



As shown in Table 12, clients most often required follow-up for chronic conditions (62%) and, multiple co-morbidities (56%). More than 40% of clients required follow-up for both an acute illness/common health problem and health promotion/disease prevention. Since respondents could select all options that applied, it can be inferred that many clients required follow-up in more than one category.

Table 12. Percentage of clients requiring followup related to each category
Multiple responses permitted—respondents could select all that applied. Totals do not sum to 100%.

	%
Acute illness/common health problems	44.2%
Chronic condition	61.5%
Multiple co-morbidities	55.9%
Health promotion/disease prevention	41.2%

NPs treat clients presenting with a wide variety of symptoms and diagnoses. Respondents indicated the percentage (expressed in ranges) of their own clients who presented with the conditions listed in Table 13. Although approximately 20% of NPs' client populations did not present with specific symptoms and diagnoses (e.g. breast, oncology or obstetrics), this is most likely related to their stream of practice. By contrast, over 20% of NPs had more than half of their clients (51% –100%) presenting with cardiovascular, and multisystem symptoms and diagnoses or health promotion and disease prevention needs.

Table 13. Percentage of clients presenting with symptoms/diagnoses in each category

	0%	1%–10%	11%–25%	26%–50%	51%–100%	n
Breast	22%	64%	11%	3%	1%	841
Cardiovascular	3%	20%	25%	24%	28%	880
Endocrine	4%	27%	30%	23%	16%	869
Gastrointestinal/Liver/Gallbladder	5%	34%	33%	22%	7%	869
Genital/Urinary	6%	33%	32%	20%	10%	859
Gynecology	15%	32%	28%	18%	7%	861
Health Promotion and Disease Prevention	9%	32%	21%	17%	22%	858
HEENT - Ears, nose and throat	13%	33%	29%	18%	7%	858
HEENT - Eyes and lids	20%	58%	14%	6%	2%	850
Hematology	9%	59%	22%	7%	4%	870
Infectious Diseases	6%	39%	29%	17%	9%	869
Integument	7%	46%	29%	14%	5%	855
Multisystem	4%	18%	22%	25%	33%	874
Musculoskeletal	5%	23%	32%	28%	12%	864
Nephrology	8%	49%	24%	11%	8%	863
Neurology	6%	58%	19%	9%	8%	865
Obstetrics	38%	38%	15%	7%	2%	859
Oncology	23%	58%	9%	4%	6%	868
Psychiatry/Mental Health	6%	25%	31%	22%	17%	872
Respiratory	4%	20%	36%	27%	13%	869
Sexually Transmitted Infections	27%	47%	15%	7%	4%	864

Subgroup analyses of client characteristics by region, stream, and experience level may be found in Appendix 11 **Error! Reference source not found.** As might be expected, client characteristic variables differed by stream, but less so by region or experience level.

Results Related to Quantitative Ratings

Competency Area Ratings

As described previously, respondents rated the competency and sub-competency areas using the following two scales:

- What percentage of your work time did you spend in each competency (and subcompetency) area in the past 12 months?
- How serious would the consequences be to clients(s) if a newly-licensed NP in your practice setting failed to perform the activities in the area competently
 - Not serious (no harm to client(s))*
 - Minimally serious (causes inconvenience)*
 - Moderately serious (hinders or delays therapeutic progress)*
 - Highly serious (worsens condition/requires intervention)*
 - Critically serious (potentially life threatening)*

Respondents spent the majority of their work time in *Client Care* (76%), followed by *Education* (13%). NPs spent less time in the competency areas of *Leadership* and *Quality Improvement and Research* (6% and 5%, respectively), as shown in Table 14. Respondents spent less than 1% of their work time in *Other* competency areas, described as administration, supervision of students and staff, or tasks related to their individual organizations.

Table 14. Percentage of NP work time in each competency area in past 12 months

	%
COMPETENCY AREA I. CLIENT CARE	75.7%
A. Client Relationship Building and Communication	12.6%
B. Assessment	19.3%
C. Diagnosis	12.3%
D. Management	14.5%
E. Collaboration, Consultation, and Referral	8.6%
F. Health Promotion	8.4%
COMPETENCY AREA II. QUALITY IMPROVEMENT AND RESEARCH	4.8%
COMPETENCY AREA III. LEADERSHIP	5.9%
COMPETENCY AREA IV. EDUCATION	13.0%
A. Client, Community, and Healthcare Team Education	6.4%
B. Continuing Competence	6.6%
Other Competency Areas	0.5%

Ratings of the *seriousness* of consequences to clients within each domain varied. The most serious consequences were identified in the *Assessment, Diagnosis, and Management* sub-competencies within the *Client Care* competency. As shown by the standard deviations (SD), the greatest level of agreement among respondents' ratings of *seriousness* related to *Assessment* and *Diagnosis* — that is, respondents across all streams were consistent in how seriously they rated these areas. Respondents rated the areas of *Quality Improvement and Research* and *Leadership* as having lower potential for serious consequences if the activities in these areas were not performed competently.

Table 15. Seriousness of consequences to client(s) if newly-licensed NP did not perform activities in the area competently
Values used to calculate mean: 1=Not serious, 2=Minimally serious, 3=Moderately serious, 4=Highly serious, 5=Critically serious

	Not serious	Minimally serious	Moderately serious	Highly serious	Critically serious	Total		
	%	%	%	%	%	n	M	SD
COMPETENCY AREA I. CLIENT CARE								
A. Client Relationship Building and Communication	1%	9%	36%	38%	16%	737	3.6	(.9)
B. Assessment	0%	0%	8%	39%	53%	736	4.5	(.6)
C. Diagnosis	0%	0%	7%	40%	53%	727	4.4	(.6)
D. Management	1%	2%	13%	39%	44%	730	4.2	(.9)
E. Collaboration, Consultation, and Referral	0%	2%	22%	48%	28%	732	4.0	(.8)
F. Health Promotion	2%	14%	42%	32%	10%	725	3.3	(.9)
COMPETENCY AREA II. QUALITY IMPROVEMENT AND RESEARCH	10%	34%	40%	13%	3%	673	2.6	(.9)
COMPETENCY AREA III. LEADERSHIP	13%	34%	34%	16%	3%	674	2.6	(1.0)
COMPETENCY AREA IV. EDUCATION								
A. Client, Community, and Healthcare Team Education	6%	24%	43%	22%	5%	686	3.0	(.9)
B. Continuing Competence	2%	10%	30%	37%	21%	684	3.7	(1.0)
Other Competency Areas	37%	12%	15%	28%	9%	103	2.6	(1.4)

Subgroup analyses of the competency area ratings are found in Appendix 12. There were only minor differences across regions, streams, and experience levels with respect to percentage of time ratings, and seriousness ratings were almost identical across all subgroups.

Behavioral Indicators Ratings

As described previously, respondents used the following scales to rate the behavioral indicators:

- How serious would the consequences be to client(s) if a newly-licensed NP failed to perform the activity competently?

Not serious (no harm to client(s))

Minimally serious (causes inconvenience)

Moderately serious (hinders or delays therapeutic progress)

Highly serious (worsens condition/requires intervention)

Critically serious (potentially life threatening)

- How frequently did you personally perform the activity in the past 12 months?

Never

Rarely (less than once per month)

Monthly (at least once per month)

Weekly (at least once per week)

Daily (at least once per day)

Tables presenting the frequency distributions and summary statistics for responses from the total sample for each of these questions may be found in Appendix 13. Mean values were calculated for each rating scale to provide a snapshot of the results; these data are provided in

Table 16. Ratings of the seriousness of consequences to clients ranged from a low of M=2.4 (i.e., between minimally and moderately serious) for *Participate in research* (e.g., *identify questions for clinical inquiry, participate in study design and implementation, collect data, disseminate results*) to a high of M=4.9 (i.e., critically serious) for two competencies: *Identify urgent, emergent, and life-threatening situations* and *Initiate interventions for the purpose of stabilizing the client in urgent, emergent, and life-threatening situations* (e.g., *establish and maintain airway, breathing and circulation; suicidal ideation*). The lowest frequency rating received was M=2.5 (i.e., between rarely and monthly) for the same research competency that received the lowest seriousness rating. Eighteen competencies received a frequency rating at the highest level of M=4.9 (daily), and all of these were in the first four sub-areas of the *Client Care* competency area.

Table 16. Mean *Seriousness* and *Frequency* competency ratings

Values used to calculate mean Seriousness: 1=Not, 2=Minimally, 3=Moderately, 4=Highly, 5=Critically

Values used to calculate mean Frequency: 1=Never; 2=Rarely, 3=Monthly, 4=Weekly, 5=Daily

	Seriousness (1-5 scale)	Frequency (1-5 scale)
COMPETENCY AREA I. CLIENT CARE		
A. Client Relationship Building and Communication		
1. Clearly articulate the role of the nurse practitioner when interacting with the client	2.9	4.4
2. Use developmentally- and culturally-appropriate communication techniques and tools	3.4	4.6
3. Create a safe environment for effective and trusting client interaction where privacy and confidentiality are maintained	4.0	4.9
4. Use relational strategies (e.g., open-ended questioning, fostering partnerships) to establish therapeutic relationships	3.4	4.9
5. Utilize clients' cultural beliefs and values in all client interactions	3.5	4.7
6. Identify personal beliefs and values and provide unbiased care	3.7	4.7
7. Recognize moral or ethical dilemmas, and take appropriate action if necessary (e.g., consult with others, involve legal system)	4.2	3.9
8. Document relevant aspects of client care in client record	4.4	4.9
B. Assessment		
1. Establish the reason for the client encounter		
a. Review information relevant to the client encounter (e.g., referral information, information from other healthcare providers, triage notes) if available	4.0	4.9
b. Perform initial observational assessment of the client's condition	4.3	4.9
c. Ask pertinent questions to establish the context for client encounter and chief presenting issue	4.2	4.9
d. Identify urgent, emergent, and life-threatening situations	4.9	4.4
e. Establish priorities of client encounter	3.9	4.9
2. Complete relevant health history appropriate to the client's presentation		
a. Collect health history such as symptoms, history of presenting issue, past medical and mental health history, family health history, pre-natal history, growth and development history, sexual history, allergies, prescription and OTC medications, and comp	4.4	4.9
b. Collect relevant information specific to the client's psychosocial, behavioral, cultural, ethnic, spiritual, developmental life stage, and social determinants of health	3.7	4.7
c. Determine the client's potential risk profile or actual risk behaviors (e.g., alcohol, illicit drugs and/or controlled substances, suicide or self-harm, abuse or neglect, falls, infections)	4.3	4.7
d. Assess client's strengths and health promotion, illness prevention, or risk reduction needs	3.6	4.7
3. Perform assessment		

	Seriousness (1-5 scale)	Frequency (1-5 scale)
a. Based on the client's presenting condition and health history, identify level of assessment (focused or comprehensive) required, and perform review of relevant systems	4.2	4.9
b. Select relevant assessment tools and techniques to examine the client	4.0	4.9
c. Perform a relevant physical examination based on assessment findings and specific client characteristics (e.g., age, culture, developmental level, functional ability)	4.2	4.9
d. Assess mental health, cognitive status, and vulnerability using relevant assessment tools	4.0	4.6
e. Integrate laboratory and diagnostic results with history and physical assessment findings	4.5	4.9
C. Diagnosis		
1. Determine differential diagnoses for acute, chronic, and life threatening conditions		
a. Analyze and interpret multiple sources of data, including results of diagnostic and screening tests, health history, and physical examination	4.5	4.9
b. Synthesize assessment findings with scientific knowledge, determinants of health, knowledge of normal and abnormal states of health/illness, patient and population-level characteristics, epidemiology, health risks	4.2	4.8
c. Generate differential diagnoses	4.3	4.9
d. Inform the patient of the rationale for ordering diagnostic tests	3.7	4.9
e. Determine most likely diagnoses based on clinical reasoning and available evidence	4.4	4.9
f. Order and/or perform screening and diagnostic investigations using best available evidence to support or rule out differential diagnoses	4.2	4.8
g. Assume responsibility for follow-up of test results	4.5	4.8
h. Interpret the results of screening and diagnostic investigations using evidence-informed clinical reasoning	4.5	4.9
i. Confirm most likely diagnoses	4.4	4.8
2. Explain assessment findings and communicate diagnosis to client		
a. Explain results of clinical investigations to client	3.9	4.8
b. Communicate diagnosis to client, including implications for short-and long-term outcomes and prognosis	4.1	4.8
c. Ascertain client understanding of information related to findings and diagnoses	4.0	4.8
D. Management		
1. Initiate interventions for the purpose of stabilizing the client in urgent, emergent, and life-threatening situations (e.g., establish and maintain airway, breathing and circulation; suicidal ideation)	4.9	3.3
2. Formulate plan of care based on diagnosis and evidence-informed practice		
a. Determine and discuss options for managing the client's diagnosis, incorporating client considerations (e.g., socioeconomic factors,	3.8	4.7

	Seriousness (1-5 scale)	Frequency (1-5 scale)
geography, developmental stage)		
b. Select appropriate interventions, synthesizing information including determinants of health, evidence-informed practice, and client preferences	3.9	4.8
c. Initiate appropriate plan of care (e.g., non-pharmacological, pharmacological, diagnostic tests, referral)	4.3	4.9
d. Consider resource implications of therapeutic choices (e.g., cost, availability)	3.6	4.7
3. Provide pharmacological interventions, treatment, or therapy		
a. Select pharmacotherapeutic options as indicated by diagnosis based on determinants of health, evidence-informed practice, and client preference	4.3	4.8
b. Counsel client on pharmacotherapeutics, including rationale, cost, potential adverse effects, interactions, contraindications and precautions as well as reasons to adhere to the prescribed regimen and required monitoring and follow up	4.1	4.8
c. Complete accurate prescription(s) in accordance with applicable jurisdictional and institutional requirements	4.5	4.8
d. Establish a plan to monitor client's responses to medication therapy and continue, adjust or discontinue a medication based on assessment of the client's response	4.3	4.8
e. Apply strategies to reduce risk of harm involving controlled substances, including medication abuse, addiction, and diversion	4.3	4.0
4. Provide non-pharmacological interventions, treatments, or therapies		
a. Select therapeutic options (including complementary and alternative approaches) as indicated by diagnosis based on determinants of health, evidence-informed practice, and client preference	3.6	4.6
b. Counsel client on therapeutic option(s), including rationale, potential risks and benefits, adverse effects, required after care, and follow-up	3.8	4.7
c. Order required treatments (e.g., wound care, phlebotomy)	4.1	4.5
d. Discuss and arrange follow-up	3.9	4.7
5. Perform invasive and non-invasive procedures		
a. Inform client about the procedure, including rationale, potential risks and benefits, adverse effects, and anticipated aftercare and follow-up	4.1	4.2
b. Obtain and document informed consent from the client	4.1	4.2
c. Perform procedures using evidence-informed techniques	4.2	4.1
d. Review clinical findings, aftercare, and follow-up	4.0	4.4
6. Provide oversight of care across the continuum for clients with complex and/or chronic conditions	4.0	4.5
7. Follow up and provide ongoing management		
a. Develop a systematic and timely process for monitoring client progress	3.9	4.6
b. Evaluate response to plan of care in collaboration with the client	3.8	4.6
c. Revise plan of care based on client's response and preferences	3.8	4.6

	Seriousness (1-5 scale)	Frequency (1-5 scale)
E. Collaboration, Consultation, and Referral		
1. Establish collaborative relationships with healthcare providers and community-based services (e.g., school, police, child protection services, rehabilitation, home care)	3.4	4.2
2. Provide recommendations or relevant treatment in response to consultation requests or incoming referrals	3.8	4.2
3. Identify need for consultation and/or referral (e.g., to confirm a diagnosis, to augment a plan of care, to assume care when a client's health condition is beyond the NP's individual competence or legal scope of practice)	4.4	4.4
4. Initiate a consultation and/or referral, specifying relevant information (e.g., client history, assessment findings, diagnosis) and expectations	4.1	4.4
5. Review consultation and/or referral recommendations with the client and integrate into plan of care as appropriate	3.9	4.3
F. Health Promotion		
1. Identify individual, family, community and/or population strengths and health needs to collaboratively develop strategies to address issues	3.1	3.9
2. Analyze information from a variety of sources to determine population trends that have health implications	2.9	3.3
3. Select and implement evidence-informed strategies for health promotion and primary, secondary, and tertiary prevention	3.2	3.8
4. Evaluate outcomes of selected health promotion strategies and revise the plan accordingly	3.1	3.5
COMPETENCY AREA II. QUALITY IMPROVEMENT AND RESEARCH		
1. Identify, appraise, and apply research, practice guidelines, and current best practice	3.7	4.3
2. Identify the need for improvements in health service delivery	3.0	3.5
3. Analyze the implications (e.g., opportunity costs, unintended consequences) for the client and/or the system of implementing changes in practice	3.0	3.2
4. Implement planned improvements in healthcare and delivery structures and processes	2.9	3.0
5. Evaluate quality improvement and outcomes in client care and health service delivery	2.9	3.0
6. Identify and manage risks to individuals, families, populations, and the healthcare system to support quality improvement	3.2	3.2
7. Report adverse events to clients and/or appropriate authorities, in keeping with relevant legislation and organizational policies	4.0	2.7
8. Analyze factors that contribute to the occurrence of adverse events and near misses and develop strategies to mitigate risks	3.7	2.8
9. Participate in research (e.g., identify questions for clinical inquiry, participate in study design and implementation, collect data, disseminate results)	2.4	2.5
10. Evaluate the impact of nurse practitioner practice on client outcomes and healthcare delivery	2.8	2.8

	Seriousness (1-5 scale)	Frequency (1-5 scale)
COMPETENCY AREA III. LEADERSHIP		
1. Promote the benefits of the nurse practitioner role in client care to other healthcare providers and stakeholders (e.g., employers, social and public service sectors, the public, legislators, policy-makers)	2.8	3.4
2. Implement strategies to integrate and optimize the nurse practitioner role within healthcare teams and systems to improve client care	2.9	3.2
3. Coordinate interprofessional teams in the provision of client care	3.0	3.6
4. Create opportunities to learn with, from, and about other healthcare providers to optimize client care	3.1	3.6
5. Contribute to team members' and other healthcare providers' knowledge, clinical skills, and client care (e.g., by responding to clinical questions, sharing evidence)	3.1	4.0
6. Identify gaps in systems and/or opportunities to improve processes and practices, and provide evidence-informed recommendations for change	2.9	3.1
7. Utilize theories of and skill in communication, negotiation, conflict resolution, coalition building, and change management	3.0	3.6
8. Identify the need and advocate for policy development to enhance client care	2.8	2.8
9. Utilize principles of program planning and development to optimize client care (e.g., to develop role(s) of other healthcare providers, to improve practice)	2.7	2.8
COMPETENCY AREA IV. EDUCATION		
A. Client, Community, and Healthcare Team Education		
1. Assess and prioritize learning needs of intended recipients	3.1	3.9
2. Apply relevant, theory-based, and evidence-informed content when providing education	3.3	4.0
3. Utilize applicable learning theories, develop education plans and select appropriate delivery methods, considering available resources (e.g., human, material, financial)	2.9	3.5
4. Disseminate knowledge using appropriate delivery methods (e.g., pamphlets, visual aids, presentations, publications)	2.9	3.6
5. Recognize the need for and plan outcome measures (e.g., obtaining client feedback, conduct pre- and post-surveys)	2.8	3.0
B. Continuing Competence		
6. Engage in self-reflection to determine needs for continuing competence	3.7	4.0
7. Engage in ongoing professional development	3.8	3.6
8. Seek mentorship opportunities to support one's professional development	3.5	3.1

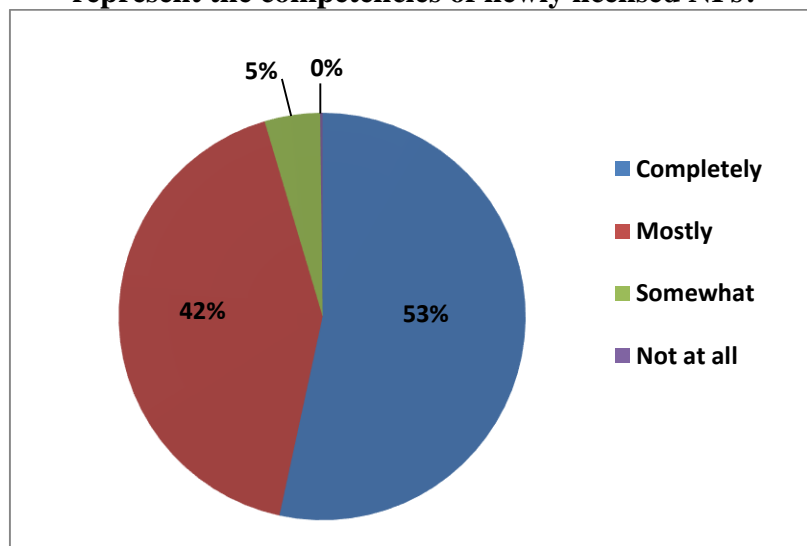
Subgroup analyses of competency ratings are presented in Appendix 14. A review of these find that there are few large or systematic differences in the ratings of sub-groups; in fact, most differences in mean ratings are less than 0.5 for either seriousness or frequency, with the differences in ratings of cohorts from different regions greater than the differences between ratings of cohorts in different streams or with different levels of experience.

Results Related to Qualitative Responses

Completeness of the Competencies

Respondents indicated whether they believed the competencies delineated in the survey represented entry-level NP practice. As shown in Figure 13, more than half of respondents (54%) believed the framework provided a complete listing of competencies, and another 42% indicated that they mostly described entry-level competencies. Only 0.2% (represented by 0% in the figure below) stated they believed the competencies did not represent the work of newly-licensed NPs at all.

Figure 13. How completely did the framework represent the competencies of newly licensed NPs?



Competencies of Entry-level NPs Missing from Survey

Respondents were given the opportunity to write in any additional competencies of newly-licensed NPs that they felt were missing from the framework. Their verbatim responses may be found in Appendix 15. After careful consideration, members of the Working Group concluded that no competencies were missing; rather, the suggestions were either specific examples of the competencies; were specific to the respondents own practice setting but not to all NPs; were already reflected in the competencies, or were not germane to NP practice.

Based on the validation evidence from the survey, and the RAC review of the verbatim responses, the Working Group concluded that the entry-level NP competency framework was complete. The final delineation of entry-level NP competencies may be found in Appendix 16.

Development of Test Specifications

Test Plan Competencies

The Working Group carefully reviewed the ratings of both the seriousness of consequences to clients and the frequency with which NPs performed the activities delineated by the behavioural indicators to determine which competencies should be tested on an entry-level NP examination. As a starting point, the Working Group closely examined all competencies that were performed less than monthly (M<3.0), or received a seriousness rating of less than 3.5 (on a 1-5 scale), indicating midway between moderately to highly serious consequences to clients if NPs did not perform the activity competently. As a preliminary test plan, the Working Group eliminated all competencies that did not meet either or both of these thresholds.

The Working Group considered additional factors in determining the inclusion of competencies in the final test plan list, including:

- if the competency was germane to *entry-level* NP practice (as opposed to activities that would be expected of NPs *beyond* entry-to-practice);
- if the behavioural indicator represented content that would already be expected to be in place as part of the registered nurse (RN) role; and
- if the competency would be best assessed using a regulatory examination or through some other mechanism (for example, during clinical training in education programs, or via a jurisprudence exam).

After this initial review, the Working Group determined that a number of competencies would be excluded from testing during the regulatory licensure examination, including all those in the *Leadership* as well as in the *Continuing Competence* section of the *Education* competency areas, and a number of competencies assessed in the *Client Relationship Building and Communication* sub-domain of *Client Care*. All rationales for including or excluding each competency were recorded.

However, the Working Group gave further consideration to the implications of eliminating competencies receiving ratings on the seriousness of consequences scale in the 3.0 – 3.4 range. Such ratings reflect moderately serious consequences to clients, defined as "hinders or delays therapeutic progress" if not performed competently. Because this level of potential harm may be significant, the threshold for inclusion in the test plan was set at 3.0 on the seriousness of consequences scale, and a number of competencies that had been previously eliminated were included in the final list of test plan competencies. Sixty-five behavioural indicators were ultimately included in the test plan competencies. Exhibit 2 presents the number of testable competencies in each competency area or sub-area. The final list of test plan competencies may be found in Appendix 17.

Exhibit 2. Test Plan Competencies

Competency Area or Sub-area	# of testable competencies
I. Client Care–A. Client Relationship Building And Communication	4
I. Client Care– B. Assessment	14
I. Client Care– C. Diagnosis	12
I. Client Care– D. Management	22
I. Client Care– E: Collaboration, Consultation, And Referral	4
I. Client Care– F. Health Promotion	3
II: Quality Improvement And Research	3
III. Leadership	1
IV. Education– Client, Community, And Healthcare Team Education	2
IV. Education–B. Continuing Competence	0
Total	65

Test Specifications

Ratings of percent of time spent and importance are typically used in the development of test content outlines or blueprints (Henderson & Smith, 2009). In the current study, the seriousness of consequences to clients functioned as the importance scale. As a starting point for consideration of exam specifications at the competency area and sub-area level, the following steps were implemented:

- In Step 1, the *% of Time* estimates of all respondents for the specifically delineated competency areas and sub-areas and for *Other* were recalculated so as to exclude time spent on *Other* competency areas from the proportional estimates of time spent in professional NP practice.
- In Step 2, the *% of Time* and *Seriousness* ratings for each competency area and sub-area were multiplied together to create area cross-products. For each respondent, the area cross-products were summed to form a respondent sum. Each area and sub-area cross-product was divided by the respondent sum to obtain respondent area and sub-area weights.
- Finally, all respondent weights were averaged to produce final area and sub-area weights.

Using this formula, empirically-derived hypothetical test specifications—that is, the percentage of the licensing examination that should focus on content related to each competency area or sub-area—were developed. The resulting hypothetical exam weights, or test specifications, are shown in Table 17.

Table 17. Empirically-derived hypothetical test specifications, total sample

	% of exam
COMPETENCY AREA I. CLIENT CARE	76.3%
A. Client Relationship Building and Communication	11.7%
B. Assessment	21.2%
C. Diagnosis	13.5%
D. Management	15.2%
E. Collaboration, Consultation, and Referral	8.1%
F. Health Promotion	6.6%
COMPETENCY AREA II. QUALITY IMPROVEMENT AND RESEARCH	5.3%
COMPETENCY AREA III. LEADERSHIP	5.2%
COMPETENCY AREA IV. EDUCATION	13.2%
A. Client, Community, and Healthcare Team Education	5.9%
B. Continuing Competence	7.3%
TOTAL	100.0%

Subgroup analyses by region, stream, and experience level for the empirically-derived hypothetical test specifications were conducted, and the results may be found in Appendix 18. Small differences were found between some sub-area weights in different streams of practice (for example, those in the pediatric stream had slightly more weight in the *Client Relationship Building and Communication* sub-area). In addition, some differences in percentage weights were found in the region comparisons (for example, in Quebec, the *Assessment* sub-area was weighted higher than in other regions, while *Management* was lower). There were only very small (less than 2%) differences in any area or sub-area between entry-level and experienced NPs. In general, however, the data show that practice across streams and regions was quite stable—that is, NP practice across Canada does not differ greatly, regardless of where the NP is practicing, or in what stream of practice.

One of the main objectives of the current study was to determine testing approaches for NP licensure exams in different practice streams. One approach might have been to develop exams with differing area weights based on practice stream if the data warranted this. Alternatively, if the data showed that NP practice is consistent across streams with regard to competencies, the same weights could form the basis for exams in all streams. The working group explored the pros and cons of five options for test specifications, including:

1. One core competency examination, with additional stream-specific examinations
2. A separate examination for each stream, using separate test plans and blueprints
3. A generic entry-level examination (RN model)
4. No written (didactic) examination, with the competencies assessed by other means

5. One common test plan and blueprint, but with separate examinations for each stream based on patient population and other key factors yet to be determined

The Working Group also developed a set of assumptions regarding the future of the NP entry-to-practice examination, which assumptions were expected to hold true regardless of the testing model chosen.

- There will be associated costs for developing and implementing any model chosen
- There will be national policy implications
- Regulatory and policy implications will need to be identified and addressed by each jurisdiction
- If legislative and/or regulatory changes are necessary, jurisdictional governments will have to be involved
- A consistent approach to NP examination in Canada will enhance mobility (AIT) considerations

After careful review of the data, the Working Group determined that the small differences in empirically-derived weightings between the practice streams did not rise to the level that would warrant using separate examination weights for each stream. Similarly, while some differences between regions were found, NP practice across Canada was consistent enough to warrant a single, nationwide examination. Therefore, the Working Group recommended that the NP examinations would be developed using common test specifications for all three streams, but that the examination for each stream would include tailored content specific to client characteristics (e.g. age, body systems, and both acute and chronic conditions) in each stream, and use clinical scenarios incorporating a “key features / critical elements” approach.

Best practices in developing test specifications require that specifications should be informed by the data; however, adjustments in empirically-derived exam weightings are permitted if the adjustments are supported by a sound, documented rationale. The Working Group considered a number of factors in developing its final recommendations for test specifications, including:

- The importance of the area or sub-area for the protection of the public. As regulators, this was of primary consideration.
- Whether the competencies reflected the behaviours of NP at entry to practice (as opposed to basic RN competencies or more advanced NP competencies).
- The number of competencies in the area or sub-area that were ultimately included in the final test plan.
- The clinical relevance of the competencies in the area or sub-area.
- Whether the competencies in the area were best assessed on a regulatory examination or through some other means.

Accordingly, the following adjustments were made:

- The sub-area in *Education* encompassing *Continuing Competence* was eliminated from the entry-to-practice test specifications, as this sub-area only represents behaviours that would be performed after initial licensure. The percentage in that area was mathematically re-distributed to the four clinical sub-areas in *Client Care*, because these are the areas of competence most critical to client protection.
- The weightings in two competency areas, *Quality Improvement and Research and Leadership*, and in the sub-area *Client, Community, and Healthcare Team Education* were reduced to reflect the limited number of competencies in each area included in the final test plan, and the percentages in those areas were also re-distributed to the four clinical sub-areas of the *Client Care* competency area.
- The percentage of the NP exam to focus on the sub-area *Client Relationship Building and Communication* was reduced to reflect the fact that a number of competencies in this area were eliminated from the final test plan, as well as the fact that this area includes some competencies that would be expected to be in place already for RNs. These percentages were also redistributed to the clinical sub-areas in *Client Care*.
- Final, minor adjustments were made to add one additional percentage point to *Collaboration, Consultation, and Referral*, to reflect that some *Leadership* competencies might be assessed in this area, and a slight increase was made in the weight of *Client Care: Management*. This is the sub-area with the greatest number of testable competencies in the final test plan; additionally, this area includes behaviours that most clearly distinguish the NP role.

The final recommendations for test specifications to guide the development of the licensure examinations in all three NP streams of practice are presented in Table 18.

Table 18. Recommendations for NP examination specifications

	% of exam
COMPETENCY AREA I. CLIENT CARE	92%
A. Client Relationship Building and Communication	8%
B. Assessment	28%
C. Diagnosis	18%
D. Management	22%
E. Collaboration, Consultation, and Referral	10%
F. Health Promotion	6%
COMPETENCY AREA II. QUALITY IMPROVEMENT AND RESEARCH	3%
COMPETENCY AREA III. LEADERSHIP	3%
COMPETENCY AREA IV. EDUCATION	2%
A. Client, Community, and Healthcare Team Education	
TOTAL	100%

The Working Group also developed the following principles to guide examination development initiatives:

Overarching Principle:

The approach to NP examination in Canada will protect the public.

Corollary Principles:

1. The approach to NP examination will be the same across Canada, which ensures compliance with labour mobility requirements.
2. The approach to NP examination in Canada will use the most feasible and cost-effective methods that do not compromise public protection.

Activities Performed by NPs

As part of the current study, an additional set of questions were presented in the survey regarding the activities NPs perform in practice. This section was included to gain an understanding of the reasons NPs may not be performing various activities that are within their legal scope in their jurisdiction or if they faced organizational or employer barriers that prevented them from doing so. The Working Group developed four distinct sets of items to be rated, including:

- commonly performed activities (e.g., taking a health history, prescribing pharmaceutical treatment, referring to a specialist);
- ordering tests (e.g., X-ray, echocardiogram, amniocentesis);
- commonly performed procedures (e.g., wound closure, incision and drainage, pap tests); and
- ordering medical treatment (e.g., oxygen, peripheral line).

Respondents were asked the following question, and were provided with the options listed below.

Do you perform each of the following activities? If you do perform the activity, indicate whether you perform it under your own authority or with physician approval. If you do not perform an activity, select the primary reason why you do not.

Yes, I perform the activity autonomously under my own authority

Yes, I perform the activity with physician approval

No–Not permitted by regulation/legislation

No–Due to employer or other organizational policies

No–Do not have clients that require service

No–Not funded by third-party insurance policies

No–I do not have the knowledge, skills, and ability to perform it

The percentage of the total sample of respondents selecting each option for each activity, test, procedure, or medical treatment may be found in Appendix 19. In general, more than 90% of respondents indicated that they performed the delineated activities autonomously. For example, *complete a health history* and *complete a physical exam*, both were performed autonomously by 99% of respondents, and *make* and *communicate a diagnosis*, were performed autonomously by 93% and 95% of respondents, respectively. For other activities, some respondents noted that physician approval was necessary (e.g., 35% of respondents indicated they order *Cardiac stress tests* with physician approval). Jurisdictional regulations or employer or organizational policies limited what some NPs were able to do (e.g., 35% of respondents cannot order *MRI* or *CT* scans). Some respondents did not perform other activities or procedures because their clients did not require the service (e.g., 39% did not perform *IUD insertion*). In other cases, NPs did not perform an activity or procedure because they did not have the knowledge, skills, or ability to do so (for example, 36% of respondents indicated they did not *reduce dislocations of joints/fractures*). In virtually no cases did respondents indicate they did not perform an activity due to its not being funded by insurance.

Respondents were also asked if there were any activities, tests, procedures, or medical treatments that they were legally permitted to perform or to order under their jurisdiction's scope of practice legislation, but that they were unable to perform based on employer or organizational policies or guidelines. Their verbatim write-in responses may be found in Appendix 20. A review of these responses suggest that there may be some confusion as to what is permitted or prohibited by either jurisdictional legislation and regulations versus what employers or organizations are permitting or prohibiting NPs to do in practice.

ProExam conducted subgroup analyses of activities performed by NPs by region, stream of practice, and experience level. The results of these analyses may be found in Appendix 21. Differences by region largely reflect those that would be expected due to jurisdictional regulations. Differences by stream were also related to the specific patients or work setting of that stream (e.g., pediatric NPs did not generally perform gynecological procedures or lesion removal).

The Working Group noted gaps in NP respondents' knowledge regarding their authority to perform specific activities autonomously and/or the sources of any restrictions to their practice (e.g. federal or jurisdictional regulation, requirement for physician approval, etc.). Specifically, some NPs indicated that they were able to perform certain activities autonomously that are not permitted under their jurisdictional legislation or regulation, while others indicated that they were not able to perform some activities for which they do have authority.

For these reasons, the Working Group completed a follow-up review to determine how each of the activities, tests, procedures, and treatments included in the survey are actually regulated in their individual jurisdictions. Nine Working Group members completed the review. Most items

in the *Activities* list are within NP authority to perform in the majority of jurisdictions, with the exception of admitting patients to hospital, involuntary mental health admission, and patient discharge from healthcare facilities. Two of the responding jurisdictions have yet to authorize NP controlled drugs and substances prescribing. Similarly, NPs are authorized to autonomously order most items in the *Orders Tests* list with the exception of magnetic resonance imaging and CT scans in some jurisdictions. Items in the *Perform Procedures* and *Order Medical Treatments* are permitted as part of autonomous NP practice in the majority, if not all nine responding jurisdictions. The differences for all activities across streams of practice reflect patient requirement for the procedure more so than differences in regulation across the streams. A notable exception is Ontario, where a majority of diagnostic tests are restricted by provincial scope of practice or health insurance laws; therefore, NPs obtain physicians' orders, including medical directives, to access these tests for clients. The results of the jurisdictional scan of activities, tests, procedures, and medical treatments may be found in Appendix 22.

Summary and Recommendations

The CCRNR NP practice analysis was conducted by ProExam, a recognized expert in the development, implementation, and evaluation of credentialing programs. This includes the conduct of practice analysis studies and the development of validated test specifications on which to base licensure and credentialing program activities. The practice analysis study and test specification development initiatives performed on behalf of CCRNR were designed in accordance with all testing industry standards and meet internationally recognized criteria (i.e., AERA, APA, NCME (2014); ISO/IEC 17024 (2012); NCCA (2014)).

The development of test specifications based on the results of a practice analysis study involves a considerable level of judgment. The key is to document a clear link between the findings of the validation survey and the examination specifications. Test specifications addressing both the nature and weighting of content for the examination should reflect findings from the validation survey.

Under the direction of the Working Group, in consultation with the Research Advisory Committee, and with the participation of subject matter experts in each of the three streams of practice, ProExam conducted a large-scale practice analysis study to the behaviors required by entry-level NPs in Canada for safe and effective practice. These behavioural indicators were organized into competency and sub-competency areas, which were subsequently validated by a nationwide sample of NPs. Based on the results of the validation survey, the Working Group developed recommendations for test specifications for a national examination for the licensure of entry-level nurse practitioners.

Subgroup analyses of cohorts representing geographical regions, streams of practice, and experience levels were conducted and confirmed the applicability of the competencies to NPs practicing across Canada and in all practice streams. Additionally, the majority of NP respondents from all three streams agreed that the competencies were a complete and accurate representation of entry-level NP practice in Canada.

The Working Group and Research Advisory Committee reviewed the results of the survey and developed recommendations for test specifications as well a final list of test plan competencies. They further recommended that the validated competencies that will not be included in the final test plan be retained as part of the competency framework for entry-level NP practice.

Following the conclusion of the practice analysis study, the Working Group was tasked with ongoing activities in support of examination test plan development. This includes further exploration of the best methods (e.g., examination modalities) to assess safe and effective practice for each competency. Such methods could include either computer-based or paper and pencil written examination (e.g., multiple choice, short answer, essay, etc.), OSCE, oral examination, or some other method (e.g., direct observation of clinical practice). Any assessment of the various examination modalities should include both psychometric considerations (e.g., validity, reliability, authenticity) and practical considerations (e.g., feasibility, cost effectiveness).

The study represents a considerable investment of resources and the results support wide-ranging changes in NP examination. ProExam recommends that CCRNR develop a comprehensive dissemination plan for results of the practice analysis study. While one primary goal of the study was to develop the test specifications and a content outline for an NP licensure examination, the potential usefulness of the results for diverse groups of stakeholders, including members of the profession, educators, regulators, legislators, employers, and members of the public should be considered.

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