



**VACANCY RATE:
A PROXY FOR STAFFING SHORTAGE?**

Final report 2003

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EXECUTIVE SUMMARY

The Ministry of Health and Long Term Care (MOHLTC) desired to obtain more accurate nursing vacancy rates for the province. Recognizing that there was no standard definition of *nursing vacancy* and that no research had been carried out on the topic, the Nursing Secretariat approached the Nursing Effectiveness, Utilization and Outcomes Research Unit to undertake a project to define *nursing vacancy*, and develop, pilot test and evaluate an instrument to quantify vacancies for Registered Nurse (RN), Registered Practical Nurse (RPN) and multi-purpose workers (HCA) employed in nursing. Creating a standardized tool for data collection would facilitate the creation of a database to provide insight into the extent of the nursing shortage and guide human resource planning.

Definition

The researchers created an operational definition of *vacancy*. Because funded vacancies varied in the hours of work they represented, it was decided to count full time equivalent (FTE) vacancies. Therefore, vacancy was defined as: a numerical value of vacant positions derived from the difference between budgeted and worked hours converted to FTE vacancies. Analysis of the data suggested that a more accurate evaluation of FTE vacancies could be achieved if data on the categorization and allocation of nursing relief hours was collected and included in the formula for calculating FTE vacancies.

Pilot test and evaluation of the instrument

Based on the new definition, different versions of the instrument were developed for the acute care and LTC sectors. The sample of 20 organizations used in the pilot test included representative acute care hospitals, teaching hospitals and LTC organizations from each of the seven health care regions in Ontario. The pilot study resulted in significant revisions of the survey instrument and modifications in order to improve data collection process in the future.

Main study

The revised definition and instruments were used in the main study. In order to have a representative data set, a sample from all regions of Ontario and each type of health care organization (acute care hospitals, teaching hospitals and long term care (LTC) organizations) was used. A total of 423 health care organizations were eligible to participate in this study. The sample was calculated using a confidence level of 95%, a confidence interval of 3 and an estimation of a 50% response rate. A total of 193 hospitals/organizations were available for analysis (overall response rate = 46%). Response rates were calculated by region and type of hospital/organization as well as for the sample as a whole.

Findings

The study identified a number of difficulties associated with sample selection, and the data collection processes. Sample selection was complicated by ongoing hospital amalgamations and difficulties encountered because hospital campuses were situated in different regions. Several problems were associated with data collection. First there is very little consistency in the way that hospitals in Ontario collect data. To some extent this is a result of variation in the way that delivery of care is organized. For example, the Ontario Ministry of Health, Management Information Systems (MIS) Guidelines categories are not used by all hospitals. In some hospitals, categories are combined. In small hospitals, there may be no differentiation among programs. The difficulties that hospitals experienced in completing the survey meant a low rate of return and a limited number of usable questionnaires. Descriptive analysis of the questionnaire identified characteristics of the hospitals/organization such as staffing allocation, number of budgeted, worked, agency/registry and overtime hours, and the proportion of full time (F/T) to part time (P/T) and casual staff. It was discovered that the proportion of F/T staff was highest in acute care and teaching hospitals, while the proportion of P/T staff for all staffing categories in the LTC organizations was found considerably higher than F/T. There were discrepancies between the total numbers of staff reported by organizations and numbers computed by totalling staff by service. Possible reasons for this

discrepancy include the way that hospitals/organizations collect their data and the way that they interpreted the questions. There were similar differences between the total number of budgeted hours reported by the hospitals/organizations and the total number of budgeted hours calculated by totalling the budgeted hours F/T, P/T and casual employees.

The report described reported vacancy rates by type of hospital/organization and health care category, and then identified differences between the reported number of vacancies and the calculated FTE vacancies. There was an extremely high number of reported vacancies in acute care and teaching hospitals in comparison to the number of calculated FTE vacancies. Vacancy rates varied widely among F/T, P/T and casual categories and between RNs and RPNs. This part of analysis was done using only questionnaires with usable data. The number of completed surveys with usable data varied from 36% to 81% depending on the question.

This survey clearly illustrates the need for standardized data collection methods and for carefully designed tools that capture the characteristics of hospital/organization nurse staffing and accurately enumerate vacancies. Prerequisites to accurate collection of data for human resource planning include deciding: a) what data should be collected (based on what is needed by planners and what data the diverse types of organization can supply), b) assisting organizations to collect and store data in standardized databases and, c) making use of a common definition of vacancy. Only then will it be possible for hospitals and other health care organizations to report vacancies to the Ministry in a consistent way.

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I. INTRODUCTION

➤ **The nursing shortage**

Canada is facing a severe nursing shortage. Nurses make up approximately two-thirds of all health professionals in Canada and play a unique role in maintaining a high-quality health care system. Statistics Canada predicts that by 2011, the nation's population will rise by 23%, significantly increasing the demand for health services. Reports from the Canadian Institute for Health Information (CIHI, 2002) and the Canadian Nurses Association (CNA, 2002) indicate a shortfall of 113 000 nurses by 2016. The demand for nursing services is expected to rise by as much as 46%. Today, 41% of RNs in Canada are over 45 years of age (Kazanjian, 2000). By 2011, many of these nurses will have retired. The situation in Ontario is similar to Canada as a whole. The number of RNs per capita employed in nursing in Ontario dropped from 74.4% in 1994 to 67.6% in 1999 (CIHI, 2002). According to a recent Canadian Nurses Association Committee (CNAC, 2002) report, the specific causes of the current shortage are: a) an absolute shortage caused by demographic change; b) a lack of funding for nursing positions; and c) human resources decisions made during restructuring in the 1990s.

The predicted shortfall of RNs depends on differences between supply and demand. Although they are related, these two elements are independent. Demand is influenced by population growth and social forces and is reflected, to some degree, by the number of vacant positions in the labour market; supply is dependent on individual career choices (CNA, 1990) and is reflected in number of job-seekers in the market, at any given time. Meltz and Marzetti (1988) point out that, from a labour-market perspective, a labour shortage occurs when demand exceeds supply.

➤ **Why do we need to know about vacancies?**

The present nursing shortage, like past shortages, has resulted in numerous reports and articles highlighting the problems and proposing solutions. (Buchan & O'May, 1998). Although these publications provide strong evidence for a deepening and potentially prolonged shortage, the absence of accurate numeric data to support their arguments makes it difficult to determine its extent, or plan corrective action. To be effective, strategies to deal with current and future shortages must be based on sound evidence. The Nursing Strategy for Canada Report, released in September

2002 by the Advisory Committee on Health Human Resources, argued that comprehensive health human resource planning must be based on complete and standardized data.

In general terms, vacancies indicate an inability to recruit people for, or retain them in, a position at the going wage rate. Vacancies are usually quantified as a proportion of all positions and reported as a vacancy rate (Meltz & Marzetti, 1988). Knowledge of vacancy rates is helpful to human resource planners because they indicate the extent to which demand exceeds supply. However, this is only so if *vacancy* is accurately defined and quantified (Meltz & Marzetti, 1988). The problem today is that there is no standard definition of vacancy. Vacancies are not counted in a consistent way and issues relevant to vacancies have not been researched. Even before restructuring, Meltz and Marzetti (1988) argued that the demand for nurses could not be accurately measured by counting vacancies because “recorded vacancy rates are based on full time RN positions that are often kept staffed by part time, casual and agency staff as well as through overtime”. They recommended a more rigorous analysis of internal policies and practices, in particular those related to staffing, in order to understand how vacancies were constructed. Since 1987 the Ontario Ministry of Health and the Ontario Hospital Association has used a formula for calculating vacancy rates. The number of positions vacant for more than 42 days (for hospital staff positions) are divided by the average number of total positions and then multiplied by 100 to obtain a percentage (Meltz, 1988). However, most health care organizations do not make use of this formula.

Attempting to understand the scope of the nursing shortage by consolidating the numbers of vacancies reported by individual institutions is of limited use. Nursing vacancy reports, in the *Nursing Plans* submitted to the Nursing Secretariat in late 2000 from Ontario hospitals, were difficult to interpret because vacancy was defined inconsistently. It was also difficult to identify vacancies either by service or employment category. It was decided that creating a standardized definition and constructing a tool to quantify nursing vacancies could lead to the construction of a database that would provide insight into the extent of the nursing shortage and facilitate human resource planning. In early 2001, the Nursing Secretariat of the Ontario Ministry of Health and Long Term Care approached the Nursing Effectiveness, Utilization and Outcomes Research Unit to conduct an analysis of nursing vacancies in the province. The study was to be conducted over a 24-month period.

II. STUDY PURPOSE AND OBJECTIVES

The purpose of this study was to define *vacancy* and to develop, pilot test and evaluate an instrument to quantify vacancies for Registered Nurse (RN), Registered Practical Nurse (RPN) and multi-purpose workers (HCA) employed in nursing services. The study had four objectives:

- developing a common operational definition of *vacancy*;
- constructing an instrument to collect information on nursing vacancies based on the revised definition and the needs of the Ontario Ministry of Health;
- pilot testing and evaluating the instrument; and
- conducting the main study.

III. METHODOLOGY

This project combined qualitative and quantitative methods and was conducted in three phases.

Phase I – Development of the Definition of Vacancy and Creation of Survey Instruments

Time frame: January, 2001-September, 2001

➤ Definition of vacancy

After consultation with senior nurse executives, human resources and financial managers in selected Ontario hospitals, a definition of vacancy was agreed upon. **Vacancy** was defined as **a numerical value of vacant positions derived from the difference between a total approved budgeted (TABHs) and total actual worked (TAWHs) hours converted to FTE vacancies.** A formula was developed based on the FTE vacancy definition:

$$\text{Vacancy} = (\text{TABHs} - \text{TAWHs}) / 1950 \text{ hrs}$$

TABHs=total approved budgeted hours

TAWHs=total actual worked hours

➤ **Instrument design**

Based on the new definition, two versions of the instrument were developed. The version for the acute care sector was developed using the Ontario Ministry of Health MIS Guidelines. The version for LTC sector was not subdivided by service/program because their services are categorized differently from those in acute care. Expert advice and extensive feedback were solicited to establish content validity of the instrument. Templates for both the acute care and LTC sectors contained four sections:

- Section A asked for information on the approved budgeted nursing care hours and actual nursing worked hours by F/T, P/T and casual staff. Information on the total number of nursing staff employed in F/T, P/T and casual positions was also requested.
- Section B collected information on vacancies for the organization as a whole, by speciality and by F/T, P/T and casual status.
- Section C collected information about current vacancies including how they are posted, length of posting, when they are filled and by whom.
- Section D consisted of a series of open-ended questions about the completeness, clarity and user-friendliness of the instruments.

Phase II - Pilot Testing and Evaluation of the Instruments

Time frame: October, 2001- February, 2002

After consultation with officials at the Nursing Secretariat, it was agreed that the second phase should involve a pilot study to test the instruments prior to undertaking the main study.

➤ **Sample and data collection**

A convenience sample of 20 Ontario health care organizations was selected for the pilot study. It included acute care hospitals (n=9), teaching hospitals affiliated with university teaching centres (n=4) and LTC organizations (n=7). In October, 2001 survey packages were mailed to the Chief Nursing Officer (CNO) of each of the 20

organizations. They included a covering letter from the Nursing Secretariat of the MOHLTC, the templates, the glossary of terms and detailed instructions for completing the instrument. The covering letter explained that the organization had been selected for the pilot test of the instrument, described the study and asked for co-operation in completing the survey. The CNOs were asked to fill in the survey questionnaires using data collected during the quarter January-March, 2001. A self-addressed stamped envelope for returning the completed surveys to the researchers was included. Two weeks after the first mailing, a research consultant contacted the CNO of each institution to ensure that he/she had received the survey package. This telephone contact provided assistance to participants in the study and reminded the CNO to reply within the designated time.

The pilot study resulted in significant revisions to the survey instrument (see Appendices 1 and 2). Problems with the completion of the sample questionnaires suggested that the following modifications should be made to the template:

- replace the MIS categories with more general categories because some hospitals from the acute care sector could not complete the section of the templates based on MIS categories;
- streamline the questionnaire to include only questions that will directly facilitate MOHLTC planning;
- remove all questions evaluating the questionnaire and the survey process;
- amalgamate questions requesting similar or related data with single questions;
- collect data prospectively or concurrently (April, 2001-March, 2002); and
- extend the survey completion deadline from one to two months.

Respondent feedback highlighted areas requiring further investigation. These included the allocation of nursing relief hours. However, it was agreed that this should be investigated in a separate study at a later date and plans were made for the implementation of a main study using the revised definition and instruments.

Phase III – Main study

Time frame: March, 2002 – December 2002

➤ Sample selection

Using a confidence level of 95%, a confidence interval of 3 and an estimation of a 50% response rate, a sample of 423 health care organizations was calculated for the main study¹. Two-stage stratification was carried out to ensure that the sample included representation from all regions of Ontario (Central East, Central South, Central West, East, North, South West and Toronto) and each type of health care organization (acute care hospitals, teaching hospitals affiliated with university teaching centres and LTC organizations). To achieve the representative numbers for each region, the individual percentage for each region was multiplied by the total sample (N=423). Then, the number was calculated for each type of health organization (see Appendix 3). Overall, 92 acute care hospitals, 8 teaching hospitals and 323 LTC organizations were included in the sample. The 20 health care organizations that participated in the pilot study were excluded from the main study.

Categories of health care organizations were defined based on the Guide to Canadian Healthcare Facilities, 2001 and the Public Hospital Act; Regulation 964.² The total number of hospitals and LTC organizations was obtained from the most recent list of hospitals, the list of provincially regulated LTC facilities (2002) provided by the MOHLTC, the Public Hospital Act; Regulation 964, and telephone interviews.

¹ The Survey System, <http://www.surveysystem.com/sscalc.htm>

² **Acute care hospitals** are hospitals providing diagnostic, general, preventive, mental health and/or rehabilitation services including specialized medical care and classified under the Public Hospitals Act.

Teaching hospitals are defined as general hospitals providing facilities for giving instruction to medical students of any university, as evidenced by a written agreement between the hospital and the university with which it is affiliated, and hospitals approved in writing by the Royal College of Physicians and Surgeons for providing post-graduate education leading to certification or a fellowship in one or more of the specialties recognized by the Royal College of Physicians and Surgeons.

LTC organizations are defined as government-regulated nursing homes, municipal homes for the aged and charitable homes for the aged. These are available for people who are unable to live independently in their own homes and who require a 24-hour nursing service to be available to meet their nursing and personal care needs.

➤ **Issues in sampling**

Sample selection was a challenge as there have been many changes in the health care system, particularly hospital amalgamations. Therefore, it was difficult to identify administratively discrete hospitals and allocate them to regions. Telephone interviews revealed that campuses of amalgamated hospitals could be located in different towns or even different regions. For example, the Scarborough Centenary hospital is in the Toronto region and Pickering/Ajax hospital is in Central East region but both are part of Rouge Valley Health System. The correct addresses and contact names for amalgamated hospitals were obtained. As new information was received, the sample classification was revised. As far as possible, only one questionnaire was sent to merged hospitals.

➤ **Instrument design**

The survey instruments were redesigned based on pilot study results and comments from the respondents. The MIS categories were replaced with broad categories that reflected the specialty areas in Ontario hospitals. Data was collected during the 2001/2002 budget year between April 1, 2001-March 31, 2002.

The final instrument for the acute care and LTC sectors requested the following information:

- organizational characteristics;
- numbers of F/T, P/T and casual nursing staff (RN, RPN, HCA);
- total approved budgeted and total actual worked hours at the F/T, P/T and casual levels of nursing staff (RN, RPN, HCA); and
- number of vacant positions for nursing staff (RN, RPN, HCA).

➤ **Data collection**

On June 10, 2002, the survey instruments, including a set of detailed instructions and a cover letter from the Nursing Secretariat were mailed to the CNOs of the sample organizations (see Appendices 1 and 2). The final deadline for return of the survey instruments was August 30, 2002. A modified Dillman approach was used to maximize the response rate (Dillman, 1978). Two weeks after the first mailing, a research consultant randomly contacted CNOs to ensure that they had received the survey packages. This telephone contact helped to maximize the response rate by improving compliance, providing assistance in completing the forms and reminding the CNO to

return the questionnaire in the designated time. Four weeks after the first mailing, a postcard reminder was sent to non-respondents. The research coordinator and a research consultant shared the management of the data collection process.

IV. ANALYSIS

➤ Data quality

Prior to entry into the database, the research coordinator and research consultant reviewed each survey.

Numerous telephone contacts were made to obtain completed surveys or clarify survey questions.

Types of response can be categorized as follows:

- questionnaires completed and surveys returned in the designated time;
- questionnaires partially completed and returned in the designated time; or
- survey not completed.

The deadline for return of the survey was extended to the end of September, 2002.

➤ Data processing

Data from completed surveys were entered into a database and analyzed using the Statistical Package for Social Sciences (SPSS) version 11.0. The analysis of the survey findings is arranged into three sections:

- Section 1 describes organizational characteristics: a) response rates by type of organization and region; b) total number of staff by employment category (RN, RPN, HCA) and status (F/T, P/T, casual); c) total number of budgeted and worked hours by type of organization and employment category; d) proportion of F/T to P/T and casual staff; e) agency/registry and overtime hours. Analysis was descriptive. Each variable was analysed individually including the response rate for the relevant question.
- Section 2 describes: a) the number of reported vacancies and vacancy rates; b) the estimated FTE vacancies by type of organization and health care category, and compares them to the number of vacancies reported by the respondents. Difficulties experienced by organizations in completing this section resulted in many surveys

being returned uncompleted. As a result, only completed surveys with usable data were selected for analysis.³

SPSS syntax was developed to filter out incomplete questionnaires.

- Section 3 provides discussion and conclusions.

V. RESULTS

Section I. Organizational Characteristics

➤ Response rate

The overall response rate was 46% (193/423). The response rate was calculated using the total sample for each type of health care organization as a denominator. The response rate varied across sectors with a very high return rate (88%) from the teaching hospitals to a very low return rate from the LTC organizations (37%). Figure 1 presents the proportion of the returned surveys by type of hospital/organization: 72% (66/92) were returned from acute care hospitals, 88% (7/8) were returned from teaching hospitals, and 37% (120/323) were returned from LTC organizations. Figure 2 presents the numbers of distributed surveys, the number of returned surveys and the number of returned fully completed surveys by type of health care organization. Overall, 50% (46/92 and 4/8) of the surveys were fully completed and returned from the acute care and teaching hospitals respectively and 18% (59/323) of the surveys were fully completed and returned from the LTC organizations.

³ Fully completed surveys were those supplying usable data in response to each question.

Figure 1. Response Rates by Type of Hospital/Organization

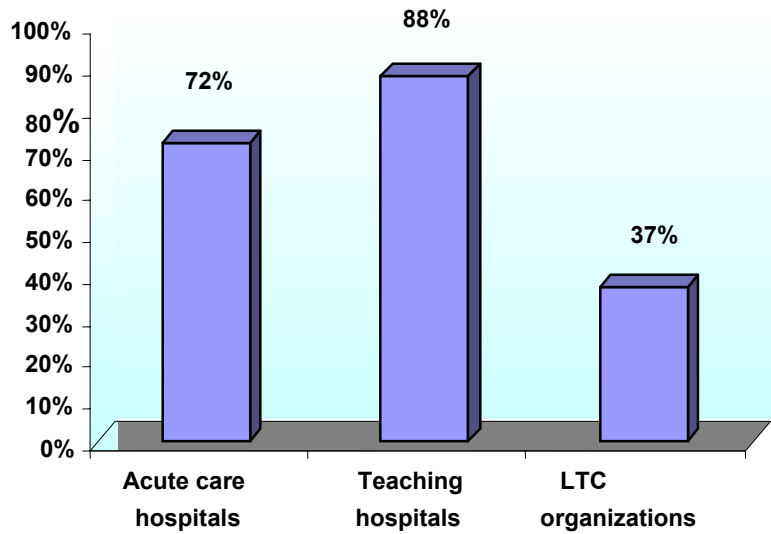
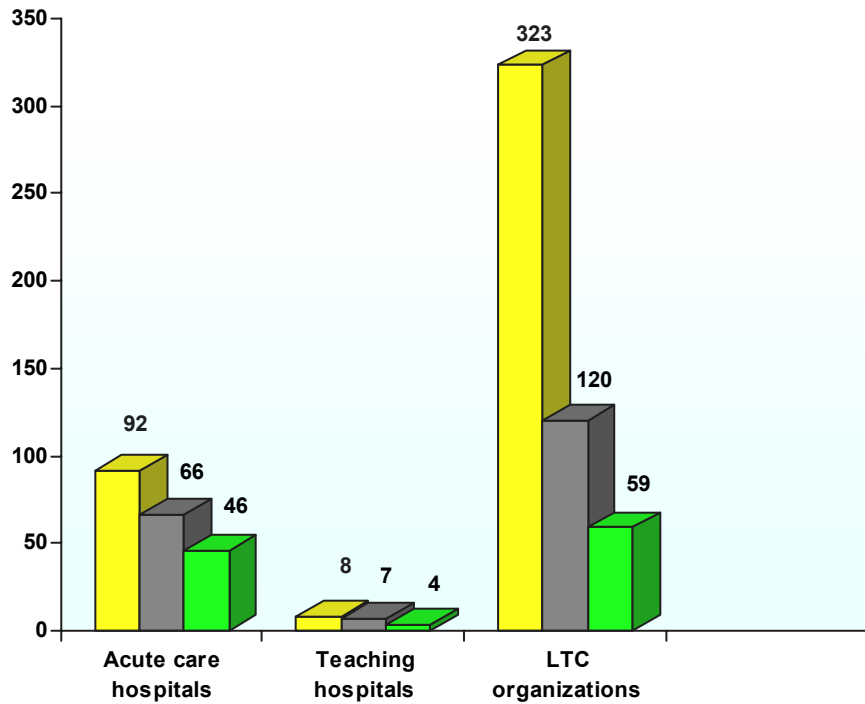


Figure 2. Total Number of Distributed Surveys versus Total Returned and Fully Completed Surveys by Type of Hospital/Organization



■ Distributed surveys
 ■ Total surveys returned
 ■ Returned surveys fully completed

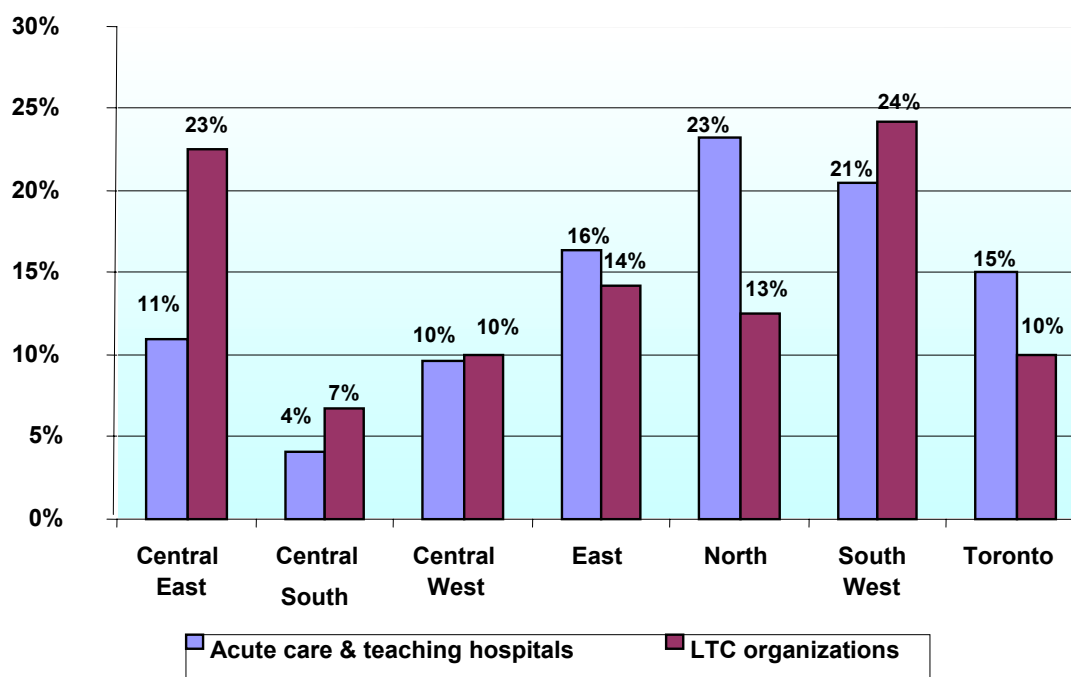
Tables 1 through Table 5 describe the organizational characteristics of the returned surveys. Those include hospital/organization type, total number of staff by employment category and region, descriptive statistics for budgeted and worked hours, distribution of agency/registry and overtime hours. Table 1 presents the distribution of the total number of returned surveys by type of organization and region.

Table 1. Hospital/organization type by region

Region	Hospital/ Organization Type					
	Acute care hospitals		Teaching hospitals		LTC organizations	
	Number of returned surveys	Percent of returned surveys	Number of returned surveys	Percent of returned surveys	Number of returned surveys	Percent of returned surveys
Central East	8	12.1%	n/a	n/a	27	22.5%
Central South	2	3.0%	1	14.3%	8	6.7%
Central West	7	10.6%	n/a	n/a	12	10.0%
East	10	15.2%	2	28.6%	17	14.2%
North	17	25.8%	n/a	n/a	15	12.5%
South West	13	19.7%	2	28.6%	29	24.2%
Toronto	9	13.6%	2	28.6%	12	10.0%
Total	66	100%	7	100%	120	100%

Response rates varied from region to region. Figure 3 describes the response rates of acute care and teaching hospitals and LTC organization by region. The highest response rate (24%) was from the LTC organizations in the South West region and (23%) from the acute care and teaching hospitals in the North region. The lowest response rate (7%) was from the LTC organizations in the Central South and (4%) from the acute care and teaching hospitals in the Central South.

Figure 3. Survey Response Rates by Ontario Regions



➤ **Total number of staff by employment category and status, type of hospital/organization and region**

Tables 2a, 2b and 2c present the total number of staff by employment category (RN, RPN, and HCA) and type of hospital/organization and region as reported for the fiscal year 2001. F/T employees are described in Table 2a, P/T employees in Table 2b and casual employees in Table 2c.

Table 2a. Reported number of F/T staff (percent in brackets)

Region	Hospital/ Organization Type						
	Acute care hospitals		Teaching hospitals		LTC organizations		
	RN	RPN	RN	RPN	RN	RPN	HCA
	Number of F/T staff	Number of F/T staff	Number of F/T staff	Number of F/T staff	Number of F/T staff	Number of F/T staff	Number of F/T staff
Central East	836 (10.5%)	222 (11.5%)	n/a n/a	n/a n/a	89 (18.9%)	98 (19.4%)	434 (18.3%)
Central South	540 (6.8%)	238 (12.3%)	1305 (19.6%)	174 (31.8%)	40 (8.5%)	70 (13.9%)	221 (9.3%)
Central West	1272 (16%)	259 (13.4%)	n/a n/a	n/a n/a	43 (9.1%)	29 (5.7%)	270 (11.4%)
East	411 (5.2%)	142 (7.3%)	1516 (22.7%)	65 (11.9%)	61 (12.9%)	73 (14.5%)	338 (14.3%)
North	722 (9.1%)	246 (12.7%)	n/a n/a	n/a n/a	52 (11.0%)	99 (19.6%)	236 (10.0%)
South West	1483 (18.7%)	413 (21.4%)	1638 (24.6%)	98 (17.9%)	99 (21.0%)	65 (12.9%)	456 (19.2%)
Toronto	2677 (33.7%)	414 (21.4%)	2208 (33.1%)	210 (38.4%)	88 (18.6%)	71 (14.1%)	415 (17.5%)
Total	7941 (100%)	1934 (100%)	6667 (100%)	547 (100%)	472 (100%)	505 (100%)	2370 (100%)

Overall across all regions, acute care hospitals reported a total of 7,941 F/T RNs and 1,934 RPNs based on an almost 99% response rate (see Table 2a). Ninety nine percent of the respondents reported a total number of 6,667 F/T RNs and 547 F/T RPNs from the teaching hospitals (see Table 2a). Discrepancies occurred between the reported total numbers of staff and calculated total number of staff by service. The way that hospitals/organizations calculated total numbers of F/T, P/T and casual staff by services depended on many factors including the way that they collect data and the way that they interpreted the questions. There are a total of 910 F/T RNs and 120 F/T RPNs whose employment status by service in acute care and teaching hospitals is unknown because they were included in the totals category only. Three percent of hospitals with under 50 beds (Red Lake Margaret Cochenour Memorial hospital, Manitowadge General hospital) did not break down the number of staff by service because nurses work on one floor providing several types of services. Some hospitals indicated that they had included managers and educators in the total number of staff.

Out of 120 returned surveys from the LTC organizations approximately 3% (N=3) of surveys were returned from the *Other* group. The *Other* category of LTC organizations was defined by respondents as a *Public hospital* with beds for both chronic and acute patients. Five percent of the surveys were from newly opened facilities. Almost 97% of respondents from the LTC organizations reported a total number of 472 F/T RNs, 621 P/T RNs and 75% of respondents reported a total of 555 casual RNs (see Tables 2a, 2b and 2c). Eighty five percent of respondents reported a total of 505 F/T RPNs (see Table 2a). Ninety one percent of respondents reported a total of 669 P/T RPNs and 71% of respondents reported a total of 184 casual RPNs (see Tables 2b and 2c). Ninety five percent of respondents reported a total number of 2,370 F/T and 2,860 P/T HCAs (see Tables 2a and 2b). Seventy five percent of respondents reported a total number of 692 casual HCAs (see Table 2c). Table 2b summarizes numbers of P/T staff by employment status, type of hospital/organization and region.

Table 2b. Reported number of P/T staff (percent in brackets)

Region	Hospital/ Organization Type						
	Acute care hospitals		Teaching hospitals		LTC organizations		
	RN	RPN	RN	RPN	RN	RPN	HCA
	Number of P/T staff	Number of P/T staff	Number of P/T staff	Number of P/T staff	Number of P/T staff	Number of P/T staff	Number of P/T staff
Central East	763 (10.8%)	297 (11.7%)	n/a n/a	n/a n/a	108 (17.4%)	136 (20.3%)	525 (18.4%)
Central South	678 (9.6%)	335 (13.2%)	906 (22.5%)	81 (17.3%)	27 (4.3%)	34 (5.1%)	166 (5.8%)
Central West	1240 (17.6%)	350 (13.8%)	n/a n/a	n/a n/a	79 (12.7%)	54 (8.1%)	345 (12.1%)
East	601 (8.5%)	259 (10.2%)	1348 (33.4%)	45 (9.6%)	70 (11.3%)	87 (13.0%)	416 (14.5%)
North	593 (8.4%)	315 (12.4%)	n/a n/a	n/a n/a	71 (11.4%)	105 (15.7%)	250 (8.7%)
South West	1427 (20.2%)	516 (20.4%)	871 (21.6%)	86 (18.4%)	164 (26.4%)	125 (18.7%)	714 (25.0%)
Toronto	1752 (24.8%)	459 (18.1%)	906 (22.5%)	256 (54.7%)	102 (16.4%)	128 (19.1%)	444 (15.5%)
Total	7054 (100%)	2531 (100%)	4031 (100%)	468 (100%)	621 (100%)	669 (100%)	2860 (100%)

Overall, 99% of acute care hospitals reported a total of 7,054 P/T RNs and 96% of respondents reported a total of 2,531 P/T RPNs. The teaching hospitals reported a total number of 4,031 P/T RNs based on a 100% response rate and 468 P/T RPNs based on an 86% response rate (see Table 2b). Table 2c summarizes the number of casual staff as reported by employment status, type of hospital/organization and region.

Table 2c. Reported number of casual staff (percent in brackets)

Region	Hospital/ Organization Type						
	Acute care hospitals		Teaching hospitals		LTC organizations		
	RN	RPN	RN	RPN	RN	RPN	HCA
	Number of Casual staff	Number of Casual staff	Number of Casual staff	Number of Casual staff	Number of Casual staff	Number of Casual staff	Number of Casual staff
Central East	523 (18.1%)	129 (19.6%)	n/a n/a	n/a n/a	84 (15.1%)	30 (16.3%)	126 (18.2%)
Central South	4 (0.1%)	0 (0%)	206 (7.8%)	115 (42.1%)	69 (12.4%)	27 (14.7%)	147 (21.2%)
Central West	597 (20.6%)	86 (13.1%)	n/a n/a	n/a n/a	66 (11.9%)	20 (10.9%)	100 (14.5%)
East	240 (8.3%)	121 (18.4%)	565 (21.3%)	52 (19%)	69 (12.4%)	37 (20.1%)	78 (11.3%)
North	152 (5.3%)	86 (13.1%)	n/a n/a	n/a n/a	87 (15.7%)	29 (15.8%)	79 (11.4%)
South West	372 (12.8%)	158 (24%)	713 (26.9%)	81 (29.7%)	78 (14.1%)	18 (9.8%)	54 (7.8%)
Toronto	1007 (34.8%)	77 (11.7%)	1166 (44%)	25 (9.2%)	102 (18.4%)	23 (12.5%)	108 (15.6%)
Total	2895 (100%)	657 (100%)	2650 (100%)	273 (100%)	555 (100%)	184 (100%)	692 (100%)

Ninety seven percent of acute care hospitals reported a total of 2,895 casual RNs and 91% reported a total of 657 casual RPNs. A total of 2,650 casual RNs based on 100% of response rate and 273 RPNs based on an 86% response rate were reported by teaching hospitals.

➤ **Proportion of F/T versus P/T and casual staff**

A total of 17,890 RN and 5,122 RPN staff were reported for the three employment categories (F/T, P/T and casual) by the acute care hospitals. Of the total staff, 44.4% RNs and 37.8% RPNs were F/T, 39.4% RNs and 49.4% RPNs were P/T, and 16.2% RNs and 12.8% RPNs were casual.

A total of 13,348 RN and 1,288 RPN staff were reported for the three employment categories by the teaching hospitals. Of the total staff, 49.9% RNs and 42.5% RPNs were F/T, 30.2% RNs and 36.3 % RPNs were P/T, and 19.9% RNs and 21.2% RPNs were casual.

A total of 1648 RN, 1358 RPN and 5922 HCA staff were reported by the LTC organizations. Data on health care aides (HCA) were collected from the LTC organizations only.

Figure 4 presents the distribution of F/T, P/T and casual RN and RPN staff in acute care, teaching hospitals and LTC organizations. Proportions of F/T, P/T and casual employees were calculated using the total number of staff reported for the three employment categories for each type of hospital/organization as the denominator. Each of the three employment categories in each type of hospital were divided by the total of the three categories and multiplied by 100:

- 44% of RNs in the acute care and 50% of RNs in the teaching hospitals were F/T; and
- 43% of RPNs in the teaching hospitals were F/T.

In contrast, a larger proportion of RPNs in the acute care hospitals were P/T than F/T(49% P/T versus 38% F/T).

The proportions of casual staff were:

- 16% of RNs and 13% of RPNs in the acute care hospitals; and
- 20% of RNs and 21% of RPNs in the teaching hospitals.

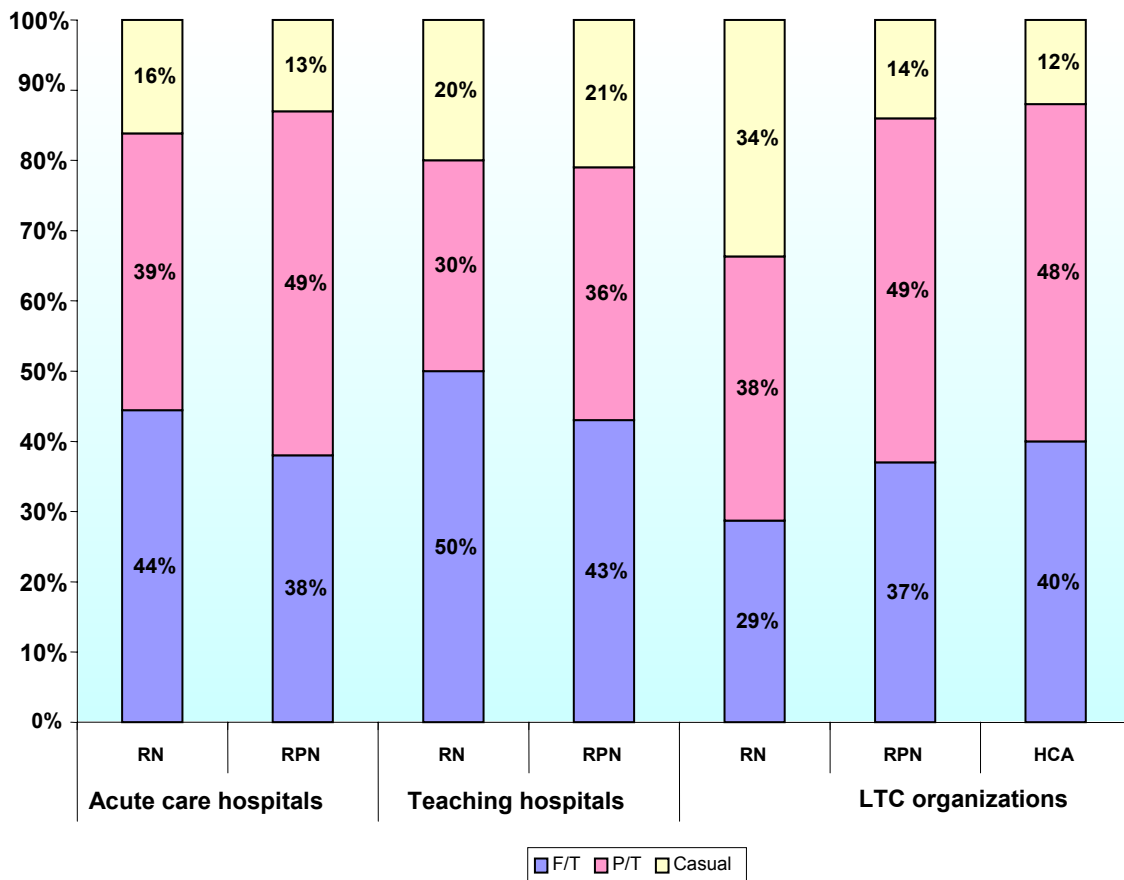
The distribution of staff in the three employment categories in the LTC organizations was:

- 29% of RN, 37% of RPN and 40% of HCA staff were F/T;
- 38% of RN, 49% of RPN and 48% of HCA staff were P/T; and
- 34% of RN, 14% of RPN and 12% of HCA staff were casual.

The proportion of P/T staff for all staffing categories in LTC organizations was considerably higher than F/T.

- RNs: 38% of P/T versus 29% of F/T.
- RPNs: 49% of P/T versus 37% of F/T.
- HCAs: 48% of P/T versus 40% of F/T.

Figure 4. Proportion of F/T Employees versus P/T/Casual by Hospital/Organization Type



➤ **Agency/registry and overtime hours worked by RN, RPN, HCA personnel**

Twenty seven percent (20/73) of the acute and teaching hospitals used agency/registry RN nursing personnel and 18% (13/73) used RPN nursing personnel during the designated time period. Eighty percent (16/20) of the hospitals reporting the use of agency/registry personnel had over 200 beds. The distribution of reported usage of agency/registry personnel between the acute care and teaching hospitals was:

- 80% (16/20) RNs and 77% (10/13) RPNs in acute care hospitals; and
- 20% (4/20) RNs and 23% (3/13) RPNs in teaching hospitals.

Appendix 4, Tables 1a and 1b describes the use of agency/registry hours by employment category and type of hospital/organization. Table 3 summarizes the reported agency/registry hours by employment category and type of hospital/organization.

Table 3. Total number of hours worked by agency/registry personnel in the acute care, teaching hospitals and LTC organizations.

Employment Category	Acute Care and Teaching Hospitals			LTC Organizations
	Acute care hospitals	Teaching hospitals	Total	
Total agency/registry RN hours	289887	392476	682363	9148
Total agency/registry RPN hours	95371	49774	145145	22907
Total agency/registry HCA hours	n/a	n/a	n/a	65729

Overall, 50% of the acute care hospitals reported 5,080 RN and 1,818 or fewer RPN agency/registry hours used for the twelve months period. Fifty percent of the teaching hospitals reported 60,834 RN and 16,523 or fewer RPN agency/registry hours (see Appendix 4, Table 1a). Teaching hospitals reported the use of more agency/registry RN hours (392,476) over the year than acute care hospitals (289,887) but agency RPN hours (95,371) were higher in the acute care hospitals.

Thirty one percent (37/120) of LTC organizations reported the use of agency/registry personnel. Sixty seven percent (80/120) did not use agency/registry personnel and approximately 3% (3/120) did not answer this question. Eighteen percent (21/120) of the respondents reported a total of 9,148 RN agency/registry worked hours for the designated time period. Eighty percent (96/120) entered a zero value for number of hours worked by agency/registry

RN personnel and 3% (3/120) did not respond. LTC organizations (18%) reported a much lower usage of agency/registry RN and RPN personnel than the acute care and teaching hospitals (27%). Their use of RPN agency/registry hours (22,907) was greater than their RN agency/registry hours (9,148) utilization. However, their use of HCA agency/registry hours (65,729) exceeded the total number of agency RN and RPN hours combined (see Appendix 4, Table 1c).

➤ **Overtime hours**

Eighty four percent (61/73) of the acute care and teaching hospitals reported a total number of 786,063 overtime hours worked by RN staff and 78% (57/73) reported a total of 182,868 overtime hours worked by RPN staff (see Table 3a). The teaching hospitals, constituting 11% of the respondents, reported a total of 365,218 RN overtime hours, while the remaining 89% of the respondents from the acute care hospitals used 420,845 RN overtime hours.

Table 3a. Total number of overtime hours worked by RN, RPN and HCA in the acute care, teaching hospitals and LTC organizations.

Employment Category	Acute Care and Teaching Hospitals			LTC Organizations
	Acute care hospitals	Teaching hospitals	Total	
Total overtime RN hours	420845	365218	786063	13583
Total overtime RPN hours	79928	102940	182868	22599
Total overtime HCA hours	n/a	n/a	n/a	35603

Overall, 50% of the acute care and teaching hospitals used 5,546 RN and 712 RPN overtime hours during the year (see Appendix 4, Table 1b). LTC organizations reported a total of 13,583 RN, 22,599 RPN and 35,603 HCA overtime hours for the twelve month period. Appendix 4, Table 1c gives details of agency/registry hours used by the LTC organizations.

➤ **Reported RN, RPN, HCA approved budgeted hours and actual worked hours**

Acute care and teaching hospitals:

Tables 4a and 4b present the total reported approved budgeted hours and the total reported actual worked hours by staff category (RN, RPN and HCA), staff status (F/T, P/T, casual) and type of health care organization. A total of

37,743,570 RN and 5,628,468 RPN approved budgeted hours were reported by the acute care and teaching hospitals (see Table 4a).

- 77% of respondents provided data on the total numbers of budgeted hours for F/T, P/T and casual RNs;
- 18% of respondents indicated that they could not breakdown the numbers of budgeted hours by employment categories; and
- 6% did not answer this question.

Seventy eight percent of hospitals reported total RPN budgeted hours. Twenty two percent of hospitals did not answer the question. The response rate for the individual variables of budgeted F/T, P/T and casual RPN hours was 74%.

It is important to note that 95% of respondents provided data on total budgeted hours and worked hours. However, there was wide variation between the total number of budgeted hours reported and the total number of budgeted hours calculated by totalling budget hours reported by service. The difference was an additional unspecified number of 7,763,034 budgeted hours reported by acute care and teaching hospitals (see Table 4a*). A total of 33,113,357 RN and 6,563,949 RPN actual worked hours were reported by respondents of the acute care and teaching hospitals (see Table 4a). Of the total RNs worked hours: 62% were FT hours, 31% were P/T hours, 6% were casual hours and 2% were agency hours. In the RPN category, F/T RPNs covered more than 56% of the reported worked hours and P/T RPNs covered 37% of these hours. The remaining worked hours were distributed between casual and agency RPNs.

Table 4a. Reported approved budgeted and actual worked hours for RN and RPN staff in the acute care and teaching hospitals.

Type	Reported Approved Budgeted Hours				Reported Actual Worked Hours				
	RNs				RNs				
	F/T	P/T	Casual	Total	F/T	P/T	Casual	Agency	Total
Acute & teaching hospitals	19359929	9267956	1352651	37743570*	20377337 (61.5%)	10260479 (31%)	1833876 (5.5%)	641665 (1.9%)	33113357 (100%)
	RPNs				RPNs				
Acute & teaching hospitals	3511560 (62.4%)	1912060 (34.0%)	204848 (3.6%)	5628468 (100%)	3681516 (56.1%)	2438881 (37.1%)	368549 (5.6%)	75003 (1.1%)	6563949 (100%)

* total budgeted hours **reported** by acute care and teaching hospitals.

Table 4a*. Reported approved budgeted hours for RN and RPN staff by category of employment and estimated total in the acute care and teaching hospitals (percentage in brackets).

Type	Reported RN Approved Budgeted Hours					
	F/T	P/T	Casual	Estimated Total	Reported Total	Difference
Acute & teaching hospitals	19359929 (64.6%)	9267956 (30.9%)	1352651 (4.5%)	29980536 (100%)	37743570	7763034

LTC Organizations:

A total of 1,202,388 RN; 1,191,210 RPN; and 6,834,211 HCA approved budgeted hours were reported by respondents from the LTC organizations (see Table 4b).

- 84% of respondents provided data on the number of total budgeted hours; and
- 16% of respondents did not reply.

However;

- 57% of organizations reported the numbers of budgeted hours for F/T RNs;
- 24% of organizations indicated that they could not break down the numbers of budgeted hours by employment category;
- 17% did not answer this question; and
- 3% indicated that RN staff did not work in their organizations.

The response rates on a number of RN budgeted hours for P/T and casual categories were, 50% and 59% respectively. The total number of budgeted hours reported by the LTC organizations was different from the total number of budgeted hours estimated by totalling the budgeted hours reported by employment status (F/T, P/T, casual); (see Table 4b*). The differences were 316,896 RN, 271,750 RPN and 1,839,144 HCA budgeted hours. The response rates for budgeted hours for F/T and P/T RPN and HCA personnel ranged from 52% to 56%.

- The response rate for number of budgeted casual hours was 48%. Forty percent entered a zero value for this variable;
- 24% of respondents indicated that they could not break down hours by employment status;
- 16% did not respond; and
- 12% indicated that casual nurses were not employed by their organization.

Table 4b. Reported approved budgeted and actual worked hours for RN, RPN and HCA staff in the LTC organizations.

Staff	Reported Approved Budgeted Hours				Reported Actual Worked Hours			
	F/T	P/T	Casual	Total	F/T	P/T	Casual	Total
RN	526810	345077	13605	1202388*	576410	400296	37003	1214304*
RPN	560309	344497	14654	1191210*	553024	368780	27719	1156335*
HCA	2990061	1888035	116971	6834211*	3209692	2325049	189819	6994716*

* total budgeted/worked hours reported by LTC organizations.

A total of 1,022,857 RN, 972,430 RPN and 5,790,289 HCA actual worked hours were estimated in the LTC organizations. Of the total RNs worked hours: 56% were FT hours, 39% were P/T hours, 4% were casual hours, and 1% was agency hours. Fifty seven percent of the worked hours were covered by F/T RPNs and 38% were covered by P/T RPNs. The rest of the hours were distributed between casual and agency employment. The distribution of the actual worked hours for the HCA staff was the following: 55% F/T, 40% P/T, 3% casual, and 1% agency (see Table 4b*).

Table 4b*. Reported approved budgeted and actual worked hours for RN, RPN and HCA staff and estimated total in the LTC organizations (percentage in brackets).

Staff	Reported Approved Budgeted Hours				Reported Actual Worked Hours				
	F/T	P/T	Casual	Estimated Total	F/T	P/T	Casual	Agency	Estimated Total
RN	526810 (59.5%)	345077 (39.0%)	13605 (1.5%)	885492 (100%)	576410 (56.4%)	400296 (39.1%)	37003 (3.6%)	9148 (0.9%)	1022857 (100%)
RPN	560309 (60.9%)	344497 (37.5%)	14654 (1.6%)	919460 (100%)	553024 (56.9%)	368780 (37.9%)	27719 (2.9%)	22907 (2.4%)	972430 (100%)
HCA	2990061 (59.9%)	1888035 (38.6%)	116971 (2.4%)	4995067 (100%)	3209692 (55.4%)	2325049 (40.1%)	189819 (3.3%)	65729 (1.1%)	5790289 (100%)

Section II. Estimated FTE Vacancies versus Reported Vacancies

As noted earlier, there was a different response rate for the question on budgeted and worked hours by employment category than the question on total hours and numbers of employees. Because the responses to the survey varied and questionnaires had not been completed as requested, we concluded that it was reasonable to use only surveys with usable data in further analysis. Fully completed surveys are considered to be those with data including a value for the number of staff, corresponding number of budgeted and worked hours and number of

vacancies. Given the data limitation, we selected a relatively small sample of the fully completed surveys, 50% of the acute care and teaching hospitals and 18% of the LTC organizations.

➤ **Vacancies by employment status**

Tables 5a, 5b and 5c present details on the number of vacancies reported by hospitals/organizations for each category of staff for the designated time period (April 1, 2001 – March 31, 2002)⁵.

A total of 3008 F/T vacancies were reported by the acute care and teaching hospitals. Eighty one percent (59/73) of the surveyed hospitals have experienced F/T vacancies. Fourteen percent indicated zero vacancies and 6% did not respond (see Tables 5a and 5b). Seventeen percent (10/59) of respondents indicated that they had more than 100 vacancies during the year. A teaching hospital reported a maximum number of 341 vacancies (see Table 5b).

Table 5a. The total number of F/T, P/T, casual RN and RPN reported vacancies occurred in the acute care hospitals during the designated time.

Statistics	RN Reported Vacancies			RPN Reported Vacancies		
	F/T	P/T	Casual	F/T	P/T	Casual
Valid number of cases	53	56	29	42	42	19
Mean	33.25	41.61	18.00	6.00	12.95	7.74
Median	13.00	20.50	8.00	5.00	10.00	3.00
Std. Deviation	44.701	54.258	23.183	5.570	11.963	10.170
Minimum	1	1	1	1	1	1
Maximum	200	335	94	26	57	42
Percentiles 25	5.00	6.25	4.00	2.00	4.00	1.00
50	13.00	20.50	8.00	5.00	10.00	3.00
75	42.00	63.75	23.00	8.25	21.00	8.00
Sum	1762	2320	522	252	544	147

⁵ These tables include data from all respondents.

Table 5b. The total number of F/T, P/T, casual RN and RPN reported vacancies occurred in the teaching hospitals during the designated time.

Statistics	RN Reported Vacancies			RPN Reported Vacancies		
	F/T	P/T	Casual	F/T	P/T	Casual
Valid number of cases	6	7	6	6	5	4
Mean	207.67	177.57	64.50	9.33	29.80	30.50
Median	239.50	154.00	37.50	7.50	22.00	10.50
Std. Deviation	121.922	126.382	71.935	7.916	27.004	46.694
Minimum	22	35	2	1	4	1
Maximum	341	384	193	22	74	100
Percentiles 25	89.50	62.00	13.25	2.50	9.50	2.25
50	239.50	154.00	37.50	7.50	22.00	10.50
75	304.25	308.00	123.25	16.75	54.00	78.75
Sum	1246	1243	387	56	149	122

Table 5c presents the distribution of reported vacancies for each category of staff in the LTC organizations. The number of vacancies varied among staff categories (RN, RPN and HCA) and employment categories (F/T, P/T and casual). Most vacancies were observed among the health care aides category (see Table 5c). Unfortunately, we were unable to compare the number of HCA vacancies with the same group of the acute care and teaching hospitals.

Table 5c. The total number of F/T, P/T, casual RN, RPN and HCA reported vacancies occurred in the LTC organizations during the designated time.

Statistics	RN Reported Vacancies			RPN Reported Vacancies			HCA Reported Vacancies		
	F/T	P/T	Casual	F/T	P/T	Casual	F/T	P/T	Casual
Valid number of cases	48	83	33	34	73	24	55	82	38
Mean	1.96	2.52	2.48	2.68	3.08	2.96	4.73	7.98	6.98
Median	1.00	2.00	2.00	2.00	2.00	2.00	3.00	5.50	4.00
Std. Deviation	1.398	1.837	2.002	2.972	3.174	2.717	6.637	8.089	6.451
Minimum	1	1	1	1	1	1	1	1	1
Maximum	6	10	10	16	19	13	37	44	25
Percentiles 25	1.00	1.00	1.00	1.00	1.00	1.00	2.00	3.00	2.00
50	1.00	2.00	2.00	2.00	2.00	2.00	3.00	5.50	4.00
75	2.00	3.00	3.00	3.00	4.00	4.00	5.00	9.25	10.00
Sum	94	209	82	91	225	70	260	654	262

➤ **Vacancy rate estimates**

Tables 6a, 6b and 6c present the total number of staff, the total number of vacancies reported by the respondents and the calculated vacancy rates for each category of staff. In order to calculate the vacancy rate for each category of staff and type of health care organization, surveys with usable data⁶ were used. Data for the vacancy rates

⁶ Only data provided by respondents who entered values for the number of staff and the corresponding number of vacancies are included in this table.

were considered usable if respondents entered a value for the number of RN, RPN and HCA staff (F/T, P/T and casual) and a corresponding number of vacancies occurred during the designated time. Also, the reported number of staff should be greater than zero and the reported number of vacancies should be greater or equal to zero. Vacancy rate estimates were calculated for each category of staff (RN, RPN and HCA) and job category separately, by dividing the sum of reported vacancies by the sum of established positions (see Tables 6a, 6b and 6c).

Table 6a presents the total number of RN and RPN staff, the reported number of vacancies and the vacancy rate estimates by job category in the acute care hospitals. Eighty two percent (54/66) of the completed surveys had usable data for the RN category and were selected for analysis. For the RPN category 68% (45/66) of completed surveys had usable data.

Table 6a. Vacancy rate estimates of RN and RPN positions in the acute care hospitals.

Job category	RNs				RPNs			
	Number of completed surveys with usable data	Total number of staff	Total number of annual vacancies	Vacancy rate (%)	Number of completed surveys with usable data	Total number of staff	Total number of annual vacancies	Vacancy rate (%)
Full Time	54	6541	1633	24.9%	45	5021	1284	25.6%
Part Time	54	5615	2079	31.9%	45	4508	1719	38.1%
Casual	53	2669	416	15.6%	43	2371	379	16.0%

As shown in Table 6a, vacancy rates varied widely among F/T, P/T and casual categories and between RN and RPN staff. RN and RPN employees had vacancy rates of 31.9% and 38.1% respectively for P/T jobs.

Table 6b presents the total number of RN and RPN staff, reported number of vacancies and vacancy rate estimates by job categories in the teaching hospitals. Eighty six percent (6/7) of completed surveys had usable data for the RN category and were selected for analysis. For the RPN category all 100% (7/7) of surveys had usable data.

Table 6b. Vacancy rate estimates of RN and RPN positions in the teaching hospitals.

Job category	RNs				RPNs			
	Number of completed surveys with usable data	Total number of staff	Total number of annual vacancies	Vacancy rate (%)	Number of completed surveys with usable data	Total number of staff	Total number of annual vacancies	Vacancy rate (%)
Full Time	6	5222	1246	23.9%	7	6667	1246	18.9%
Part Time	6	2765	935	33.9%	7	4031	1243	30.8%
Casual	6	2125	385	18.1%	7	2650	387	14.6%

Overall for RN and RPN staff, the P/T vacancy rates (33.9% and 30.8%) are higher than the F/T (23.9% and 18.9%) and casual (18.1% and 14.6%) categories.

Table 6c presents the total number of RN, RPN and HCA staff, reported number of vacancies and vacancy rate estimates by job categories in LTC organizations. Forty five percent (54/120) of completed surveys had usable data for the RN category. Forty one percent (49/120) and 36% (43/120) of the completed surveys had usable data for the HCA and RPN categories respectively.

Table 6c. Vacancy rate estimates of RN, RPN and HCA positions in the LTC organizations.

Job Category	RNs				RPNs				HCAs			
	Number of surveys with usable data	Total number of staff	Total number of annual vacancies	Vacancy rate (%)	Number of surveys with usable data	Total number of staff	Total number of annual vacancies	Vacancy rate (%)	Number of surveys with usable data	Total number of staff	Total number of annual vacancies	Vacancy rate (%)
Full Time	54	230	49	21.3%	43	259	44	17.0%	49	1044	152	14.6%
Part Time	54	275	78	28.4%	43	304	119	39.1%	49	1338	316	23.6%
Casual	54	486	65	13.4%	43	157	48	30.6%	49	585	203	34.7%

➤ **Annual vacancies for the designated year versus the vacancies remaining at the end of the year by employment status**

This part of the analysis is also based on fully completed surveys with usable data.⁷ Appendix 4, Tables 2a, 2b and 2c are divided into two sections. The first section presents the total number of vacancies occurring (annual) by employment status during the designated year; the second section presents a number of vacancies remaining at the end of the year. In each table, data on RNs and RPNs and HCA in LTC organizations are presented. Appendix 4, Table 2a presents data from the acute care hospitals.

Overall, the proportion of reported P/T RN vacancies (49%) and P/T RPN vacancies (56%) are higher than the proportion of reported F/T vacancies (40% and 28%, respectively) for the same group of employees. Proportions of F/T annual vacancies for the RN and RPN categories were 40% and 28% respectively, while annual vacancy proportions for casual RNs and RPNs were the lowest at 11% and 16%, respectively. The percentage for RN

⁷ Only data provided by respondents who entered values for the number of staff and the corresponding number of hours (budgeted and worked) and vacancies are included in this table.

vacancies remaining at the end of the year compared to the total annual vacancies were 8% (262/3304) for P/T, 4% (128/3304) for F/T and 3% (91/3304) for casual. Similar distributions of remaining vacancies were observed in the RPN category: 7% (51/772) for P/T, 4% (28/772) for F/T and 3% (26/772) for casual. Appendix 4, Table 2b describes the proportions of annual vacancies during the year and those that remained at the end of year in the teaching hospitals. Overall, in the teaching hospitals the highest proportion of RN annual vacancies was: 47% for F/T, 35% for P/T and 18% for casual (see Appendix 4, Table 2b).

Appendix 4, Table 2c presents similar data for the LTC organizations but includes the additional category of HCAs. In all three categories, rates for vacancies for P/T staff were about twice as high as for F/T staff. Figures 5 and 5a demonstrate the mean number of reported annual vacancies in the RN category at the F/T, P/T and casual levels that occurred during the year (April, 2001 – March, 2002) as compared to the remaining vacancies at the end of March 31, 2002. Overall, the mean number of RN vacancies in the teaching hospitals for F/T, P/T and casual levels are considerably higher than for the RN employees in the acute care hospitals:

- 212.75 F/T RN vacancies versus 28.72 F/T RN vacancies;
- 161.5 P/T RN vacancies versus 34.98 P/T RN vacancies; and
- 83.00c casual RN vacancies versus 8.11 casual RN vacancies, respectively.

The mean number of vacancies for RNs are also considerably higher than RPNs in the acute care and teaching hospitals:

- 28.72 and 212.75 F/T RN vacancies versus 4.67 and 10.25 F/T RPN vacancies;
- 34.98 and 161.50 P/T RN vacancies versus 9.41 and 28.00 P/T RPN vacancies; and
- 8.11 and 83.00 casual RN vacancies versus 2.70 and 30.50 casual RPN vacancies, respectively.

Figure 5. The mean number of total RN reported vacancies occurring during the year versus the mean number of RN reported remaining vacancies at the end of March 31, 2002 at each employment level in the acute care and teaching hospitals

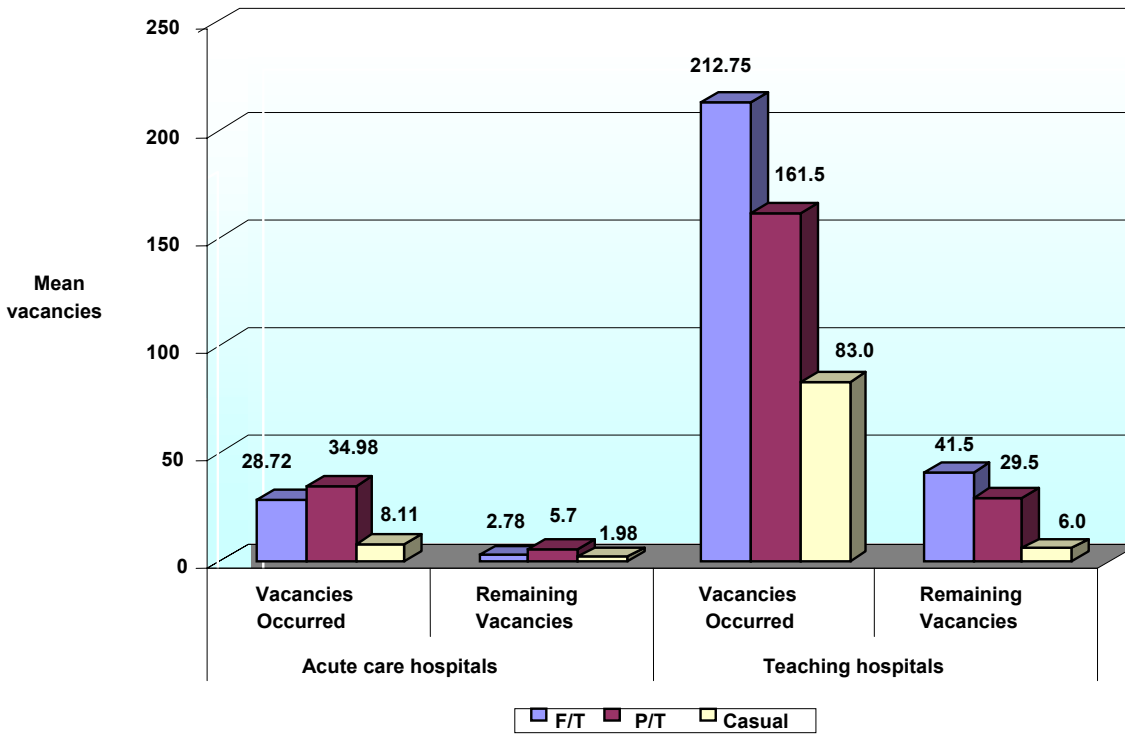
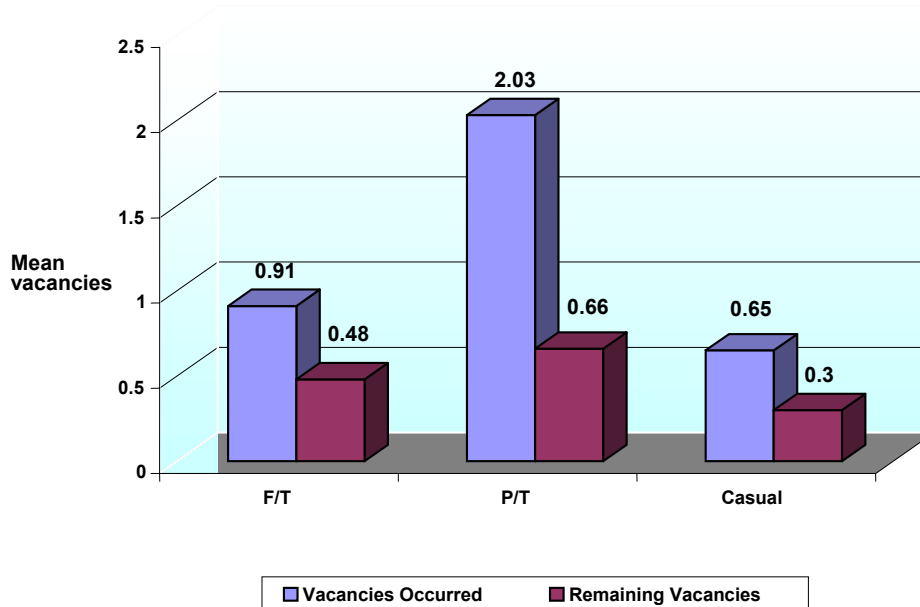


Figure 5a. The mean number of total RN reported vacancies occurring during the year versus the mean number of RN reported remaining vacancies at the end of March 31, 2002 at each employment level in the LTC organizations



➤ **Calculated FTE vacancies**

Tables 7a, 7b and 7c present data on mean calculated FTE⁸ vacancies by employment category and status type compared to mean reported vacancies in the acute care and teaching hospitals and LTC organizations. The tables have three sections. The first section presents the number of completed surveys with usable data, the second, the calculated FTE vacancies and the third, the number of reported vacancies for RN and RPN categories and job category (F/T, P/T and casual). This part of the analysis is based on usable data provided by the hospitals/organizations who entered a value for the number of budgeted and worked hours and the corresponding number of vacancies.

Table 7a. Calculated mean FTE vacancies versus mean reported vacancies for RNs and RPNs in the acute care hospitals⁹.

Job category	RNs			RPNs		
	Number of completed surveys with usable data	FTE Vacancies	Reported Vacancies	Number of completed surveys with usable data	FTE Vacancies	Reported Vacancies
Full Time	43	12.9	30.9	34	3.5	6.3
Part Time	42	12.8	38.2	33	-.5	13.3
Casual	11	7.4	13.6	6	-6.8	15.4

If we compare the two sections of the Table 7a, the means of reported vacancies are more than twice as high as the estimated FTE vacancies in each employment category of the acute care hospitals. Relatively large mean numbers of reported vacancies compared to the estimated FTE vacancies were observed for the RPNs (6.3 F/T reported vacancies versus 3.5 FTE vacancies; 13.3 P/T reported vacancies versus -.5 FTE vacancies; 15.4 casual reported vacancies versus -6.8 FTE vacancies); (see Table 7a).

Table 7b presents the estimated FTE vacancies versus reported vacancies in the teaching hospitals. The mean number of estimated FTE vacancies for P/T staff was much lower than the number of vacancies reported by the teaching hospitals (see Table 7b and Figure 6). *The number of surveys with usable data for casual RNs and RPNs

⁸ The FTE is derived from the calculation of the difference between approved budgeted hours and actual worked hours and by dividing the shortfall in hours by 1950.

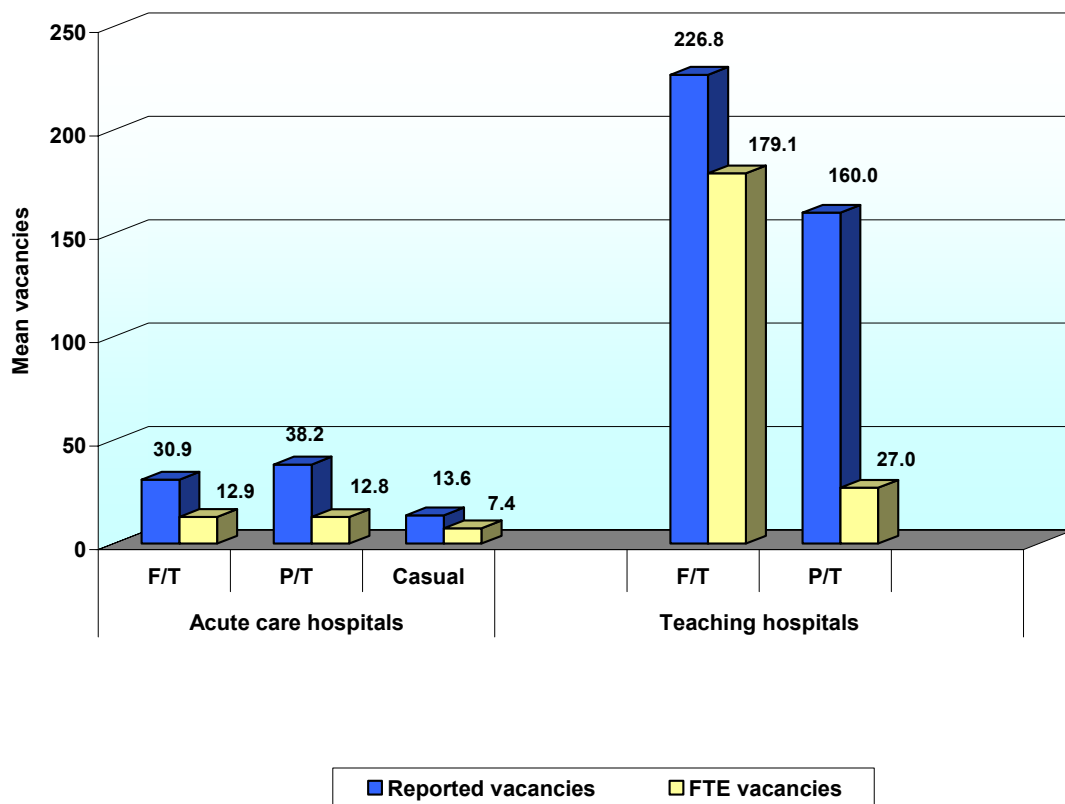
⁹ Only data provided by respondents who entered values for the budgeted and worked hours and the corresponding number of vacancies are included in this table.

were insufficient to make comparisons between means FTE vacancies and reported vacancies. Therefore, we included the results in Table 7b but not in Figure 6.

Table 7b. Calculated mean FTE vacancies versus mean reported vacancies for RNs and RPNs in the teaching hospitals¹⁰.

Job category	RNs			RPNs		
	Number of completed surveys with usable data	FTE Vacancies	Reported Vacancies	Number of completed surveys with usable data	FTE Vacancies	Reported Vacancies
Full Time	5	179.1	226.8	4	9.9	10.3
Part Time	5	27.0	160.0	3	-15.7	37.3
Casual*	2	17.1	107.5	2	15.7	74.0

Figure 6. The Mean Number of RN Reported Vacancies versus the Mean Number of FTE Vacancies in the Acute Care and Teaching Hospitals



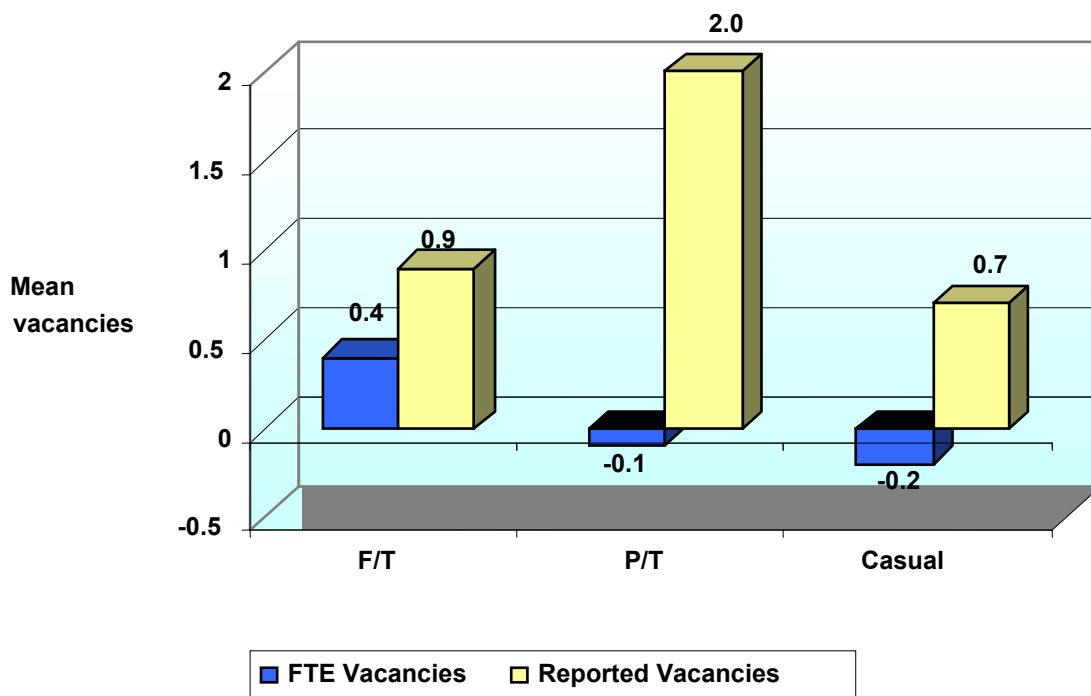
¹⁰ Only data provided by respondents who entered values for the budgeted and worked hours and the corresponding number of vacancies are included in this table.

Table 7c presents the distribution of the calculated FTE vacancies versus reported vacancies for each category of employees in the LTC organizations. The difference between the FTE vacancies and reported vacancies for RN staff is presented by Figure 6a.

Table 7c. Calculated mean FTE vacancies versus mean reported vacancies for RN, RPN and HCA in LTC organizations¹¹.

Job category	RNs			RPNs			HCAs		
	Number of completed surveys with usable data	FTE Vacancies	Reported Vacancies	Number of completed surveys with usable data	FTE Vacancies	Reported Vacancies	Number of completed surveys with usable data	FTE Vacancies	Reported Vacancies
Full Time	56	.4	.9	53	.7	1.2	56	-.1	2.8
Part Time	59	-.1	2.0	56	-.1	2.0	58	-.5	6.0
Casual*	51	-.2	.7	49	-.1	.7	48	-.5	2.9

Figure 6a. The Mean Number of RN FTE Vacancies versus the Mean Number of Reported Vacancies in the LTC Organizations



¹¹ Only data provided by respondents who entered values for the budgeted and worked hours and the corresponding number of vacancies are included in this table.

Section III. Discussion

The purpose of the study was to define *vacancy*, create and test an instrument for collecting data on vacancies in acute care, teaching hospitals and LTC organizations in Ontario. Four tasks were carried out: developing a common operational definition of *vacancy*; constructing an instrument to collect information on nursing vacancies based on the revised definition and the needs of the Ontario Ministry of Health; pilot testing and evaluating the instrument; and conducting the main study. In this section, the strengths, limitations and the significance of the principal study findings will be evaluated. Then, based on the team's experience, possible next steps will be explored.

➤ Strengths of the study

There are few studies on the meaning and extent of nursing vacancies. This study provides preliminary information about this complex area. The large sample size and the care with which participating organizations were identified were strengths of this study. The sample included representative acute care hospitals, teaching hospitals and LTC organizations from each of the seven health care regions in Ontario. In the course of selecting the sample, the research team systematically identified all amalgamated hospitals.

Data on members of two regulated nursing professions: Registered Nurses (RNs) and Registered Practical Nurses (RPNs) were collected from all participating organizations and data on Health Care Aides (HCAs) from LTC organizations only. Information included staffing allocation, approved budgeted hours, worked hours, agency/registry hours, and numbers of funded vacant positions. Details about the organization were also collected.

➤ Limitations of the study

• Data collection issues

It was difficult to obtain data on numbers of acute care hospitals because various sources identified and/or categorized them differently. The number of teaching hospitals varied from 14 to 20 depending on the source. Information from returns identified further variation. Seven percent of our sample included amalgamated hospitals making it difficult to identify administratively discrete hospitals and allocate them to regions. There may be limitations to the data due to the failure to detect some mergers. This would make our denominator (100 surveys)

inaccurate. While reviewing the data, it was found that some LTC organizations submitted the information collected at the start of the calendar year (January 1-December 31) rather than the fiscal year as we had requested.

Surveys forms returned from the hospitals indicate different patient care groupings and although these groupings are close to the Ontario Ministry of Health MIS Guidelines, they are not the same. Because each hospital has its own service structure, some data is not collected through the system. Neither the MIS categories nor our adaptation of them reflect the structure of services in some hospitals. It was impossible to isolate the number of employees and corresponding budgeted and worked hours in programs that covered more than one 'specialty area' or where the staff were cross trained and worked in more than one area. As well, some hospitals included managers and educators in the total number of employees. This practice increased the number of RNs and caused discrepancies between the reported total number of staff and the calculated total number of staff. The result was an *Unknown* category of employees (see details in Section I). There were similar differences between the total number of budgeted hours reported by the hospitals/organizations and the total number of budgeted hours calculated by adding together the budgeted hours for F/T, P/T and Casual employees. Accurate numbers in the casual staff category were also difficult to identify because casual staff do not work on a regular basis, may not be included in the budget, and may work in different areas. As well some hospitals included casual staff in the P/T category.

Almost 90% of respondents omitted using the codes provided in the instructions to explain why they were unable to give particular information. These deficiencies made it difficult to assess the problems involved in supplying the data and may affect the accuracy of our calculations. For example, 73% of respondents from the acute care and teaching hospitals entered zero value for a number of agency/registry hours worked by RN and RPN staff. Forty percent of respondents out of 48% entered zero value for the number of budgeted casual hours.

Because of the difficulties that respondents found in completing the questionnaire, a considerable number of incomplete surveys were returned and we had limited usable data. Because our data was not normally distributed, we were unable to use statistics to find correlations between FTE vacancies and reported vacancies to validate our findings. As a result, our analysis was restricted to descriptive statistics and only fully completed surveys were used for some parts of the analysis.

➤ **Significance of the study**

The study resulted in a number of findings that will facilitate the collection of better data on nursing vacancies in the future:

1. An operational definition of *vacancy*;
2. A method for quantifying *vacancies*;
3. Data on staffing characteristics of acute care, teaching hospitals and LTC organizations; and
4. Information about data collection in health care organizations.

• **The operational definition**

The study established an operational definition of nursing *vacancy* based on consultation with senior nurse executives, and human resources and financial managers. **Vacancy** was defined as **a numerical value of vacant positions derived from the difference between a total approved budgeted and total actual worked hours converted to FTE vacancies**. An operational definition of vacancy based on FTE vacancy rather than funded positions was chosen because it represents the difference between the hours budgeted for patient care and hours actually worked. It overcomes the problem that advertised positions include jobs with a wide range of worked hours.

• **A method for quantifying vacancies**

A formula was developed based on the FTE vacancy definition:

$$\text{Vacancy} = (\text{TABHs} - \text{TAWHs})/1950$$

TABHs=total approved budgeted hours

TAWHs=total actual worked hours

The research team is aware that FTE vacancy formula does not capture all the information needed to establish the extent of the nursing shortage. During the pilot study, we discovered that our preliminary formula for calculating FTE vacancies would be more precise if it included information about the categorization and allocation of nursing relief hours. This is a complicated process. F/T nurses are hired to cover basic staffing requirements in a given unit. Regular P/T nurses usually supply relief for the off-days, vacation time and planned leaves of the F/T staff. Temporary P/T and casual nurses usually supply relief for unplanned or episodic leave, such as sick leave,

bereavement leave, short-term leaves of absence, or resignations of F/T or regular P/T staff. They may also provide relief hours to cope with unexpected increases in the patient census and/or acuity or changes in staff, overtime by F/T staff, or use agency relief nurses. The need for and allocation of relief hours is constantly changing in the workplace to serve the needs of patients. In times of shortage, decisions about relief staffing become more complex. The team considered that vacancy is not yet an accurate proxy for shortage. The research team agreed that in the future the definition should be refined to include relief hours to make it more accurate. Data on the categorization and allocation of nursing relief hours should be collected and included in the formula for calculating FTE vacancies.

While it is useful to know the FTE vacancy rate, it should not be used alone. It does not allow distinctions to be drawn between short-staffing resulting from under-budgeting and staff-shortages resulting from a supply problem. As well, it does not address the issue of staffing practices. Organizations vary in their hiring policies for F/T, P/T and casual workers and in their attitudes to agency use and overtime. The number of nurses available to work may be a result of hiring practices rather than supply. For this reason, it is important to collect data about vacant positions as well as FTE vacancies.

- **Data on staffing characteristics of acute care and teaching hospitals, and LTC organizations**

The results provide data on staffing differences within and among the three types of hospital/organization. In acute care and teaching hospitals, the proportion of F/T nurses (44% and 50% respectively) was higher than that of P/T nurses (39% and 30%). For RPNs the proportion of P/T to FT employees is higher in acute care hospitals (see Figure 4). In LTC organizations, the distribution of F/T, P/T and casual is quite different. For example, the proportion of P/T staff for all staffing categories is much higher than F/T (see Figure 4). In acute care and teaching hospitals there are a high number of reported vacancies compared to the calculated FTE vacancies. Further investigation is warranted to discover why this is so. Despite the limitations of our data, we were able to show a difference between FTE and reported vacancies using our formula. We hypothesised that vacancy rates based on FTEs are a better indicator of shortage than vacant positions because they represent a constant (i.e. 1950 hours).

- **Data collection**

The most important finding from the study arose from the difficulties the team encountered in collecting the data. The team discovered that there was considerable diversity in the way that hospitals and health care organizations collect data on nurse staffing. Understanding these difficulties will facilitate the formulation of strategies to ensure the collection of more accurate data in the future.

- **The instruments**

As explained in the methodology, the instruments for acute care, teaching hospitals and LTC organizations were tested during a pilot study. The pilot study made the team aware of the extent to which health care organizations are structured in different ways and have different interests and resources (e.g.; centralized information systems, adequate staff for documenting). The size of a hospital makes a difference as to how data is collected stored and reported. For example, small hospitals do not have staff dedicated to data management. This diversity means that there is no consistency in the way that they collect human resources data. The templates were modified based on feedback and in response to difficulties encountered by organizations in completing them. But despite modifications made to the template for the main study, the instructions and terms used still required clarification and the research associate spent a great deal of time helping institutional representatives to complete the template. Some hospitals, particularly LTC organizations found it difficult to complete the template because they did not collect the data requested. The team finally concluded that it would be difficult to design a template that all healthcare organizations could complete until they had implemented common procedures for collecting, storing and managing data. They decided to recommend that the Ministry establish a working group to decide on the types of information that would be helpful in planning and work with health care organizations to assess what data it would be possible to collect. They also agreed that it would be important to request only essential information because small organizations, in particular, do not have the staff or resources to devote to detailed documentation.

➤ Next steps

A major difficulty for researchers in health human resources is the lack of standardization among hospital settings in the collection of data. Because hospitals vary in what they collect, how they collect it and the quality of their databases, it is currently impossible to design a useful template that all hospitals in Ontario would be able to complete. To supply the Ministry with accurate figures about vacancies, it will be necessary for all hospitals to use a standard database with data elements as well as a standard template.

The problem of creating relevant categories and designing appropriate databases is not unique to Ontario. A report for the US Department of Health and Social Services (2001) recommended the development of a uniform and minimum set of data elements that capture the characteristics of hospital nurse staffing. In recommending a system for routinely monitoring outcomes of patient care sensitive to nursing and nurse staffing, they suggested improving “the quality of nurse staffing data by adopting universal definitions of nursing categories and procedures to calculate full and part time equivalent employees for RNs LPNs, and aides”. To create an environment for good data management, it may be useful for the Ministry to take a facilitating role in providing assistance and training in data management and in particular to create standardized terms and procedures. Until we have accurate data and well-designed tools, it will not be possible to plan effective staffing policies.

VI. RECOMMENDATIONS

1. Establish a working group to decide on the type of information about vacancies the Ministry requires for strategic planning;
2. Organize training sessions and perhaps common software to all health care organizations in order to obtain standardized information;
3. Collect data on vacancies annually using a standardized instrument;
4. Create a template which can cope with the different structures and combinations of programs in Ontario hospitals and LTC organizations;

5. Collect FTE data on vacancies for the following job categories:
 - Director of Nurses
 - Registered Nurses with administrative duties (Administrative RNs)
 - Clinical Nurse Educators and Support
 - Staff Registered Nurses (Staff RNs)
 - Registered Practical Nurses
 - Health Care Aides by category; and
6. Investigate a way of creating a more precise definition of FTE vacancy by including allocation of nursing relief hours.

REFERENCES

- Advisory Committee on Health Human Resources. (2000). *The Nursing Strategy for Canada*. Ottawa, ON: Author.
- American Health Care Association Health Services Research and Evaluation. (2002). *Results of the 2001 AHCA Nursing Position Vacancy and Turnover Survey*. Washington, DC: Author.
- Buchan, J. & O'May, F. (1998). Nursing supply and demand: reviewing the evidence. *Nursing Times*, 94(26), 60-63.
- Canadian Institute for Health Information. (2001). *Supply and Distribution of Registered Nurses in Canada*. Ottawa, ON: Author.
- Canadian Nurses Association. (2002). *Planning for the Future: Nursing Human Resource Projections*. Ottawa, ON: Author.
- Canadian Nurses Association Committee. (2002). *Our Health, Our Future-Creating Quality Workplaces for Canadian Nurses*. Ottawa, ON: Author.
- Kazanjian, A., Rahim-Jamal, S., MacDonald, A., Wood, L., & Cole, C. (2000). *Nursing Workforce Study - Nursing Workforce Deployment: A Survey of Employers*. (Vol 4). Vancouver, BC: Centre for Health Services and Policy Research.
- Meltz, N. (1988). *Sorry No Care Available Due To Nursing Shortage*. Toronto: Registered Nurses Association of Ontario.
- Meltz, N., & Marzetti, J. (1988). *The Shortage of Nurses: An Analysis in Labour Market Context*. Toronto: Registered Nurses Association of Ontario.
- Needleman, J., Buerhaus, P.I., Mattke, S., Stewart, M., & Zelevinsky, K. (2001). *Nurse Staffing and Patient Outcomes in Hospitals*. Boston, MA: US Department of Health and Human Services Health Resources and Services Administration.
- Statistics Canada. (2001). *The Quest for Workers: A New Portrait of Job Vacancies in Canada* (Catalogue no 71-584-MIE.no 2). Ottawa, ON: Author.

APPENDICES

APPENDIX 1

Version of Templates for Acute Care and Teaching Hospitals

APPENDIX 2

Version of Templates for Long Term Care Organizations

APPENDIX 3
Statistical Sample Calculation According to Region & Type of Hospital/Organization

Type of Hospital/ Organization	Central East	Central West	Central South	Toronto	Northern	Eastern	South West	TOTAL
Acute Care Hospitals	17	15	11	17	44	22	25	151
Teaching	0	0	2	5	0	5	2	14
Long-Term Care	82	59	64	73	62	90	105	535
TOTAL	99	74	77	95	106	117	132	700
Percentage	14%	11%	11%	14%	15%	17%	19%	100%
Sample Number	59	47	47	59	63	72	80	423
Acute Care Hospitals	10	9	7	11	26	14	15	92
Teaching	0	0	1	3	0	3	1	8
Long-Term Care	48	37	39	45	36	55	63	323

APPENDIX 4

Table 1a. Total number of reported hours worked by agency/registry RNs and RPNs in acute care and teaching hospitals

Statistics	Acute care hospitals		Teaching hospitals	
	Hours worked by agency RN	Hours worked by agency RPN	Hours worked by agency RN	Hours worked by agency RPN
Valid number of cases	16	10	4	3
Mean	18117.91	9537.10	98119.00	16591.33
Median	5080.26	1818.00	60834.00	16523.00
Std. Deviation	24605.150	17834.610	106032.8	4464.892
Minimum	30	11	22460	12161
Maximum	74520	57495	248348	21090
Percentiles 25	815.75	201.50	22944.00	12161.00
50	5080.26	1818.00	60834.00	16523.00
75	26341.00	13667.00	210579.00	21090.00
Sum	289887	95371	392476	49774

Table 1b. Total number of reported hours worked by agency/registry RNs and RPNs and overtime hours in acute care and teaching hospitals

Statistics	Hours worked by agency RN	Hours worked by agency RPN	Overtime hours RN	Overtime hours RPN
Valid number of cases	20	13	61	57
Mean	34118.13	11165.00	12886.28	3208.21
Median	14141.00	4197.00	5546.00	712.00
Std. Deviation	57715.544	15857.086	20482.729	8597.579
Minimum	30	11	124	33
Maximum	248348	57495	106689	61233
Percentiles 25	1472.50	298.00	867.50	289.50
50	14141.00	4197.00	5546.00	712.00
75	49990.75	16656.50	12368.50	2226.50
Sum	682363	145145	786063	182868

Table 1c. Total number of reported hours worked by agency/registry RN, RPN, HCA and overtime hours in LTC organizations.

Statistics	Hours worked by agency RN	Hours worked by agency RPN	Hours worked by agency HCA	Overtime hours RN	Overtime hours RPN	Overtime hours HCA
Valid number of cases	21	19	19	79	71	76
Mean	435.60	1205.63	3459.42	171.93	318.29	468.46
Median	200.00	204.00	920.00	127.50	90.00	159.50
Std. Deviation	824.223	2908.350	8068.353	175.515	822.885	612.13
Minimum	8	23	33	2	2	1
Maximum	3840	12901	35602	1048	6165	2387
Percentiles 25	50.00	75.00	380.00	41.00	24.00	60.00
50	200.00	204.00	920.00	127.50	90.00	159.50
75	400.50	1150.00	3258.00	240.00	297.00	631.1
Sum	9148	22907	65729	13583	22599	35603

Table 2a. Number of reported vacancies occurring during the year and number of reported vacancies remaining at the end of the year in the acute care hospitals (percentage in brackets)

Category Staff	Vacancies Occurred April 1, 2001 – March 31, 2002				Vacancies Remaining on March 31, 2002			
	F/T	P/T	Casual	Total	F/T	P/T	Casual	Total
RNs	1321 (40%)	1609 (49%)	373 (11%)	3303 (100%)	128 (27%)	262 (54%)	91 (19%)	481 (100%)
RPNs	215 (28%)	433 (56%)	124 (16%)	772 (100%)	28 (25%)	56 (51%)	26 (24%)	110 (100%)

Table 2b. Number of reported vacancies occurring during the year and remaining at the end of the year in the teaching hospitals (percentage in brackets).

Category Staff	Vacancies Occurred April 1, 2001 – March 31, 2002				Vacancies Remaining on March 31, 2002			
	F/T	P/T	Casual	Total	F/T	P/T	Casual	Total
RNs	851 (47%)	646 (35%)	332 (18%)	1829 (100%)	166 (54%)	118 (38%)	24 (8%)	308 (100%)
RPNs	41 (15%)	112 (41%)	122 (44%)	275 (100%)	3 (9%)	17 (52%)	13 (39%)	33 (100%)

Table 2c. Number of reported vacancies occurring during the year and remaining at the end of the year in the LTC organizations (percentage in brackets).

Category Staff	Vacancies Occurred April 1, 2001 – March 31, 2002				Vacancies Remaining on March 31, 2002			
	F/T	P/T	Casual	Total	F/T	P/T	Casual	Total
RNs	53 (25.7%)	120 (58.3%)	33 (16.0%)	206 (100%)	28 (34.2%)	38 (46.3%)	16 (19.5%)	82 (100%)
RPNs	60 (30.5%)	105 (53.3%)	32 (16.2%)	197 (100%)	11 (23.9%)	22 (47.8%)	13 (28.3%)	46 (100%)
HCA's	144 (23.1%)	341 (54.6%)	139 (22.3%)	624 (100%)	1 (1.8%)	32 (57.1%)	23 (41.1%)	56 (100%)