

**NURSING RESOURCES IN BRITISH COLUMBIA:
TRENDS, TENSIONS AND TENTATIVE SOLUTIONS**

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An earlier version of this report was prepared as a background document for the Royal Commission on Health Care and Costs, February, 1991, which made several recommendations specific to nursing resources. These recommendations were not directly related to the material in this report.

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I. Describing the Current Situation

In the last decade, there have been several studies and reports discussing, describing, or analyzing issues related to nursing resources in British Columbia. Invariably, the focus has been on an impending problem (or two, at most) or a recent crisis, but never on providing a comprehensive understanding of the context in which these minor and major problems keep recurring. The reason for this gap in knowledge is partly explained by the complexity of the health system; the study of its component parts has been the most practical approach to gaining any type of understanding of the whole. However, this field of research has now attained sufficient maturity to be able to tackle the more intellectually challenging tasks of understanding and improving such complex systems. This study was designed as a first step in describing human resource problems in the context within which they occur and in discussing the broader implications of the issues underlying the problems.

The purpose of this study is to provide a general understanding of nursing resource issues in B.C., gleaned primarily from published data on this subject; however, the intent here is not simply to be descriptive. The descriptive detail is provided, along with a discussion of data limitations, in order to develop the analytic framework which can contribute to our understanding of the broader context. Finally, the synthesis of this information leads to the delineation of policy implications for the various stakeholders.

1. Sources of Data & Limitations

Information for a socio-demographic profile of the three nursing groups in B.C. is drawn from the membership data collected by the two membership associations (The Registered Nurses Association of B.C. - RNABC - and the Registered Psychiatric Nurses Association of B.C. - RPNABC), which also function as licensing bodies for those two professional bodies, and the data available from the Council of Licensed Practical Nurses of B.C. (CLPNBC), which governs the licensing of that group of nurses. Each of these organizations requires that membership and the right to practice conveyed by such membership be renewed yearly, and information necessary to the determination of status and right-to-practice is collected from the renewing members each year, along with other items essential to registration renewal. In addition, data are gathered about employment status and conditions, and about educational preparation. These data belong to the member organizations and licensing bodies; access to the information is given to Health Human Resources Unit (HHRU)

researchers (at The University of British Columbia) for particular research purposes; therefore, in this report, we are restricted to the discussion of such previously published data except in situations when primary data from other in-depth studies are under discussion. The Unit has a well-established protocol regarding the use of such administrative data in the descriptive analyses found in the ROLLCALL series and Place of Graduation. The most recently published information available about Registered Nurses (RNs), Registered Psychiatric Nurses (RPNs) and Licensed Practical Nurses (LPNs) can be found in ROLLCALL 91, PRODUCTION 91, and Place of Graduation 1991, and it will be to those documents that we will refer below.

It should be noted that the information presented in this report about employment characteristics is drawn entirely from the self-reported data collected in annual membership renewal procedures. Member information about basic nursing education is collected upon initial registration and is verified at that time; out-of-province registration, re-activation of membership, and movement from non-practising status to practising status are membership procedures which also entail data checking by the licensing bodies. The renewal and initial registration forms ask members for information about three general employment characteristics: place of employment (its kind), area of service, and employment position. Each nursing group has a different array of possible options for each of those categories; the member is expected to choose the option that best describes his or her experience. Information of that type is also collected about post-basic education.

The reliability of the personal data collected by the registering bodies - birthdate, name, sex, address, basic education - is not in question, and there is no reason to believe that substantial error is attached to the data pertaining to employment, but it is important to establish the limitations of what research can be done with the available and accessible data. The registering bodies' pre-selection of employment options within each category imposes upon the member pre-formulated structures supposedly descriptive of aspects of employment. By and large, the options provided to the members function as an acceptable outline of the possible constituents of practice. However, it is of some concern that, not surprisingly, the options do not remain fixed over time but may be entered and retired at the request of member sub-groups, such as nurse administrators, or other professional agencies such as the Canadian Nurses Association (CNA), as well as in recognition of changing conditions of practice. The member may find, from one year to the next, that his or her area of service has disappeared, having been subsumed within another option, or that it is being disaggregated for better analysis. As alternative occupational opportunities expand for nursing groups, the number of options which are provided to

more accurately reflect the employment experiences have also increased. But there is limited space on a renewal/registration form, and the licensing bodies are wary of testing the limits of membership patience with an overly long and/or complex registration form.

From the perspective of researchers, the employment information thus compiled is one of only two or three sources of such information, and linked as it is to data about educational preparation, age, and membership status, can be of great value. But the fluctuations of the imposed structure and the lack of a mandate establishing the necessity of consistently complete data collection make longitudinal analysis of employment data almost impossible. As well, shifting conditions of practice make it difficult for even the well-intentioned member to know how to characterize or classify his or her work. In addition to the problems of data comparability within nursing groups, there is the lack of consistency in the use of options and descriptors across nursing groups. Part of this difficulty of comparison arises from the differences in function peculiar to each type of nurse, so that RNs require a wider variety of possible places of employment than do LPNs, and RPNs require different options than either of the others. But it is also true that no concerted effort has been made to attempt to reduce the extent of the discrepancies through agreement on employment descriptors which can be shared. As a result, it is difficult to assess, among types (specialties) of nurses, the appropriateness of job definitions and areas of service, let alone to compare the distribution across nursing categories and options.

2. Socio-demographic Profiles: RNs, RPNs, LPNs

Despite these limitations, we have attempted to construct a socio-demographic profile of nurses as a whole, with reference to nurses in groups, using the employment data discussed above. The most recent year for which there is published data is 1991. In that year, there were 27,477 nurses registered as members of the RNABC, of whom 25,782 were practising members employed in nursing and 2,642 were non-practising. In the same year, 2,223 registered psychiatric nurses were practising and 441 were non-practising, and 4,842 practical nurses were licensed and employed in nursing. Figures reflecting the absolute numbers of nurses of each type, their number per 10,000 population, and the rates of change of those numbers over time are given in Table 1 (a, b, c). In addition, the numbers per 10,000 population and the rates of change considered in terms of urban and non-urban regional hospital districts are given. These figures reveal that the rate of change in the ratio of personnel-to-population for registered nurses has grown faster than the rate of change in the population, both in

Table 1

Numbers, (Numbers Per 10,000 Population) for Nursing Personnel

(a)	1985	1986	1987	1988	1989	1990	1991
Registered Nurses, Practising and Employed in Nursing							
Total Number	21126	21398	22130	23037	23763	24716	25782
Urban	13065	13291	13840	14347	15219	15657	16228
Non-urban	8061	8107	8290	8690	8544	9059	9554
Ratio per 10,000 Population	73.58	72.83	75.69	77.60	77.83	78.95	80.49
Rate of change in Number (1)							
Urban	5.28	1.73	2.92	3.66	4.86	2.88	3.26
Non-Urban	4.39	0.57	1.41	4.83	1.51	6.03	5.75
Rate of Change in Personnel to Population Ratio (2)							
Urban	3.93	0.69	1.47	1.49	0.56	0.14	0.40
Non-Urban	2.82	-0.87	1.48	3.97	3.57	4.06	3.80
Percent Distribution Across Urban/Non-Urban Districts							
Urban	61.84	62.11	62.54	62.28	64.04	63.35	62.74
Non-urban	38.16	37.89	37.46	37.72	35.96	36.65	37.06
(b)							
Registered Psychiatric Nurses, Practising Only							
Total Number	1978	N/A	1959	1864	2074	2143	2223
Urban	1328	N/A	1310	1233	1450	1478	1528
Non-urban	650	N/A	649	631	624	665	695
Ratio per 10,000 Population	6.82	N/A	6.70	6.28	6.90	6.84	6.94
Rate of change in Number (1)							
Urban	5.88	N/A	-0.68	-5.88	5.21	1.93	2.62
Non-Urban	-1.44	N/A	-0.08	-2.77	-1.94	6.57	5.54
Rate of Change in Personnel to Population Ratio (2)							
Urban	4.57	N/A	-2.08	-7.85	0.90	-1.06	-0.22
Non-Urban	-2.87	N/A	-0.01	-3.56	0.04	4.60	3.60
Percent Distribution Across Urban/Non-Urban Districts							
Urban	67.14	N/A	66.87	66.15	69.91	68.97	68.74
Non-urban	32.86	N/A	33.13	33.85	30.09	31.03	31.26

(1) $[(\text{Personnel } 1991 / \text{Personnel } 1989)^{1/2n} - 1] \times 100$, where n = number of months separating the two sets of data

(2) Rate of change (in percent) in the number of personnel relative to change in population
 $(((\text{Personnel } 1991 / \text{Personnel } 1989) \times (\text{Population } 1989 / \text{Population } 1991))^{1/2n} - 1) \times 100$, where n = number of months separating the two sets of data

Table 1 (continued)

Numbers, (numbers Per 10,000 Population) for Nursing Personnel

(c)	1985	1986	1987	1988	1989	1990	1991
Licensed Practical Nurses, Employed in Nursing Only							
Total Number	4579	4425	4390	4334	4584	4758	4842
Urban	2139	2076	2055	1998	2232	2239	2275
Non-urban	2440	2349	2335	2336	2352	2519	2567
Ratio per 10,000 Population	15.78	15.06	15.02	14.60	15.25	15.20	15.12
Rate of change in Number (1)							
Urban	-2.91	-2.95	-1.98	-2.77	4.22	0.31	1.41
Non-Urban	-1.36	-3.73	-2.18	0.04	0.36	7.10	4.03
Rate of Change in Personnel to Population Ratio (2)							
Urban	-4.15	-3.94	-3.37	-4.81	-0.05	-2.63	-1.40
Non-Urban	-2.85	-5.11	-2.11	-0.77	2.40	5.12	2.12
Percent Distribution Across Urban/Non-Urban Districts							
Urban	46.71	46.91	46.81	46.10	48.69	47.06	46.98
Non-urban	53.29	53.09	53.19	53.90	51.31	52.94	53.02
Percent Distribution of B.C. Population							
Urban	52.58	51.34	53.32	53.64	56.39	56.74	57.03
Non-urban	47.42	48.66	46.68	46.36	43.61	43.26	42.97
Total Number	2871304	2938042	2923595	2968769	3005834	3130448	3203184

(1) $[(\text{Personnel } 1991 / \text{Personnel } 1989)^{1/2n} - 1] \times 100$, where n = number of months separating the two sets of data

(2) Rate of change (in percent) in the number of personnel relative to change in population
 $[(\text{Personnel } 1991 / \text{Personnel } 1989) \times (\text{Population } 1989 / \text{Population } 1991)^{1/2n} - 1] \times 100$, where n = number of months separating the two sets of data

urban and non-urban locations. Overall, the same is true of registered psychiatric nurses although their rate of change was lower than that of the RNs, and their rate of increase was lower than the rate of population increase in the 1980's. Until recently, the number of licensed practical nurses was also shrinking, relative to the provincial population. The differences between the annual average rates of change in personnel to population for each type of nurse, when considered in terms of non-urban and urban growth, are striking. The average annual rate of change in personnel to population ratio is lower for RNs in metro (urban) locations than in non-metro (non-urban) settings; while the ratio of registered psychiatric nurses to population increased more rapidly in urban than in non-urban areas in 1989, a decline in urban regions and an increase in non-urban regions followed subsequently. Similarly, the ratio of licensed practical nurses to population is declining in urban regions and increasing rapidly in non-urban areas. The relative distributions of the three groups of nurses between urban and non-urban locations are quite different. Registered nurses and registered psychiatric nurses are more concentrated in urban areas (RPNs to a larger extent than RNs), while licensed practical nurses are found more often in non-urban settings.

Tables 2a and 2b summarize, in a different format, information about place of employment for all three types of nurses. The figures presented for registered psychiatric nurses are aggregate groupings because RPNs report employment in a number of settings not seen among RNs and LPNs. Most of these have been added to the Table in the "Other" category in order to maintain comparable categories. The ratios per 10,000 population illustrate the relative numbers of each nursing group. RNs show the greatest discrepancy between the ratios for urban and non-urban populations; LPNs show a higher ratio for non-urban settings than for urban. The ratios also reveal the small numbers of LPNs and RPNs who are employed in the non-hospital sector, relative to the population.

For all three groups of nurses, the largest proportion work in hospitals (in 1991: 75.0% of RNs, 77.9% of LPNs, 42.7% of RPNs), and the largest proportions of hospital-based RNs and LPNs work in acute care and general hospitals (90.3% of RNs, 76.5% of LPNs). The majority of registered psychiatric nurses work in psychiatric hospitals (63.3%). Registered nurses are the most numerous in all settings except psychiatric hospitals, but it is interesting to note that LPNs are more likely to be working in the hospital sector than either of the other two groups (see Table 2b). RNs are slightly more often found in areas other than the hospital when they are resident in non-urban areas than when they work in urban settings (75.5% of urban nurses work in

Table 2a

Numbers, (Numbers per 10,000 Population) by Place of Employment for
Registered Nurses, Licensed Practical Nurses, and Registered Psychiatric Nurses, 1989

	Acute Care Hospital	Rehab. Hospital	Extended Care Hosp.	Psychiatric Hospital	Hospital Sub-Total	Long-Term Care	Home Care	Community Health	Drs. Ofc./ Family Prac	Education	Self- Employed	Other	Totals
RNs													
Urban	10291 (60.7)	240 (1.4)	836 (4.9)	248 (1.5)	11615 (68.5)	920 (5.4)	428 (2.5)	824 (4.9)	283 (1.7)	422 (2.5)	133 (0.8)	592 (3.5)	15217 (89.8)
Non-urban	5832 (44.5)	11 (0.1)	418 (3.2)	51 (0.4)	6312 (48.2)	645 (4.9)	280 (2.1)	597 (4.6)	251 (1.9)	172 (1.3)	32 (0.2)	254 (1.9)	8543 (65.2)
Total	16123 (53.6)	251 (0.8)	1254 (4.2)	299 (1.0)	17927 (59.6)	1565 (5.2)	708 (2.4)	1421 (4.7)	534 (1.8)	594 (2.0)	165 (0.5)	846 (2.8)	23760 (79.0)
LPNs													
Urban	1189 (7.0)	135 (0.8)	313 (1.8)	28 (0.2)	1571 (6.8)	285 (4.7)	69 (0.4)	33 (0.2)	62 (0.4)	18 (0.1)	- (-)	100 (0.6)	2232 (13.2)
Non-urban	1579 (12.0)	12 (0.1)	408 (3.1)	5 (0.04)	2004 (15.3)	185 (1.4)	26 (0.2)	10 (0.1)	65 (0.5)	4 (0.03)	- (-)	58 (0.4)	2352 (17.9)
Total	2768 (9.2)	147 (0.5)	721 (2.4)	33 (0.1)	3669 (12.3)	470 (1.5)	95 (0.3)	43 (0.1)	127 (0.4)	22 (0.1)	- (-)	158 (0.5)	4584 (15.2)
RPNs													
Urban	188 (1.1)	- (-)	- (-)	450 (2.6)	638 (3.8)	155 (0.9)	- (-)	349 (2.1)	- (-)	8 (0.05)	- (-)	300 (1.8)	1450 (8.6)
Non-urban	125 (0.9)	- (-)	- (-)	150 (1.1)	275 (2.1)	124 (0.9)	- (-)	82 (0.6)	- (-)	5 (0.04)	- (-)	138 (1.0)	624 (4.8)
Total	313 (1.0)	- (-)	- (-)	600 (2.0)	913 (3.0)	279 (0.9)	- (-)	431 (1.4)	- (-)	13 (0.04)	- (-)	438 (1.5)	2074 (6.7)

Table 2b

Numbers, (Numbers per 10,000 Population) by Place of Employment for
Registered Nurses, Licensed Practical Nurses, and Registered Psychiatric Nurses, 1991

	Acute Care Hospital	Rehab. Hospital	Extended Care Hosp.	Psychiatric Hospital	Hospital Sub-Total	Long-Term Care	Home Care	Community Health	Drs. Ofc./ Family Prac	Education	Self- Employed	Other	Totals
RNs													
Urban	10937 (59.87)	226 (1.24)	848 (4.64)	248 (1.36)	12259 (67.10)	954 (5.22)	461 (2.52)	914 (5.00)	294 (1.61)	458 (2.51)	54 (0.83)	736 (4.03)	16228 (88.83)
Non-urban	6445 (46.83)	18 (0.13)	472 (3.43)	51 (0.37)	6986 (50.76)	736 (5.35)	342 (2.48)	632 (4.59)	243 (1.77)	212 (1.54)	152 (0.39)	349 (2.53)	9554 (69.42)
Total	17382 (54.26)	244 (0.76)	1320 (4.12)	299 (0.93)	19245 (60.08)	1690 (5.28)	803 (2.51)	1543 (4.83)	537 (1.68)	670 (2.09)	206 (0.64)	1085 (3.39)	25782 (80.49)
LPNs													
Urban	1229 (6.73)	150 (0.82)	271 (1.48)	19 (0.10)	1669 (9.14)	293 (1.60)	67 (0.37)	39 (0.21)	64 (0.35)	21 (0.11)	- -	122 (0.67)	2275 (12.45)
Non-urban	1661 (12.07)	24 (0.17)	415 (3.02)	4 (0.03)	2104 (15.28)	217 (1.58)	53 (0.39)	16 (0.12)	71 (0.52)	4 (0.03)	- -	102 (0.74)	2567 (18.65)
Total	2890 (9.02)	174 (0.54)	686 (2.14)	23 (0.07)	3773 (11.58)	510 (1.59)	120 (0.37)	55 (0.17)	135 (0.42)	25 (0.08)	- -	204 (0.70)	4842 (15.12)
RPNs													
Urban	217 (1.19)	- -	- -	436 (2.39)	653 (3.57)	182 (1.00)	- -	317 (1.73)	- -	20 (0.11)	- -	352 (1.93)	1524 (8.34)
Non-urban	137 (0.95)	- -	- -	164 (1.19)	301 (2.19)	133 (1.03)	- -	92 (0.67)	- -	3 (0.02)	- -	171 (1.24)	694 (5.04)
Total	348 (1.09)	- -	- -	600 (1.87)	948 (2.96)	315 (0.98)	- -	409 (1.28)	- -	23 (0.07)	- -	523 (1.63)	2218 (6.92)

hospitals; 73.1% of non-urban nurses); the opposite is true of LPNs (73.3% of urban LPNs work in hospitals vs. 82.0% of non-urban), and RPNs are no more likely to be hospital-based in urban or non-urban areas, although RPNs are more often found in general hospitals in non-urban areas (33.2% of urban RPNs work in general hospitals; 45.5% of non-urban RPNs) than in urban areas. Only RNs report self-employment as nurses; in addition, very few RPNs and LPNs work in educational institutions. Long-term care and community health agencies are other principal employers for RNs and RPNs. Among all employed RNs, 6.6 percent work in long-term care and 6.0 percent in community health, and 14.2 percent of the total RPN group work in long-term care and 18.4 percent work in community health agencies. Ten percent of LPNs work in long-term care, but very few are employed in community health.

It is interesting to note that the proportion of LPNs who reported work in hospitals decreased appreciably between 1989 and 1991 (90.2% in 1989, 77.9% in 1991), while the proportions of hospital-employed RNs and RPNs decreased only slightly. However, of the hospital-based RNs and LPNs, the percentages working in acute care institutions increased a little for RNs (89.9% in 1989, 90.3% in 1991) and to a much larger extent for LPNs (66.9% in 1989, 76.5% in 1991). In consequence, the proportions of LPNs working in hospitals in non-urban and urban areas dropped significantly (87.4% to 73.3% for urban LPNs; 93.1% to 82.0% for non-urban LPNs), although it remained more likely that non-urban LPNs would report hospital employment than would urban LPNs. There was a smaller but similarly significant proportionate change for the RPNs; while in 1989 29.5 per cent of urban RPNs worked in hospitals, by 1991, that figure had increased to 33.2 per cent (a percentage increase of 12.5).

With area of service (Tables 3a, 3b, 3c, and 3d), comparisons between types of nurses become more difficult. Only RNs and LPNs share a significant number of areas of practice in common, and because the RNABC registration form provides the members with a wider variety of choices for description-of-work area, Tables 3a and 3b are confined to those areas that are common to both groups and no totals are included. The ratios per 10,000 population show that, as might be expected, the number of RNs relative to the population is higher than that of LPNs in all areas of service for both 1989 and 1991. The dominance of the RNs, relative to the other two nursing categories, is especially strong among the critical care/medical-surgical specialties and in administration and teaching. LPN personnel-to-population ratios are higher in non-urban areas for medical-surgical nursing, geriatrics, paediatrics, and the float pool; RN personnel-to-population ratios are higher in urban

Table 3a

Numbers, (Numbers per 10,000 Population)
in Direct Patient Care, Administration, and Teaching, for RNs and LPNs, 1989

	Medical/ Surgical	Critical Care	Maternity/ Newborn	Psychiatry	Paediatrics	Geriatrics	Several Areas (1)	Admin.	Teaching
RNs									
Urban	4277 (25.2)	2842 (16.8)	1104 (6.5)	694 (4.1)	684 (4.0)	1902 (11.2)	1097 (6.5)	828 (4.9)	684 (4.0)
Non-urban	1945 (14.8)	1473 (11.2)	648 (4.9)	321 (2.5)	268 (2.0)	1118 (8.5)	1509 (11.5)	470 (3.6)	280 (2.2)
Total	6222 (20.7)	4315 (14.4)	1752 (5.8)	1015 (3.4)	952 (3.2)	3020 (10.1)	2606 (8.7)	1298 (4.3)	966 (3.2)
LPNs									
Urban	669 (4.0)	138 (0.8)	72 (0.4)	50 (0.3)	60 (0.4)	676 (4.0)	155 (0.9)	15 (0.1)	9 (0.05)
Non-urban	903 (6.9)	60 (0.5)	53 (0.4)	33 (0.3)	62 (0.5)	634 (4.8)	381 (2.9)	5 (0.04)	5 (0.04)
Total	1572 (5.2)	198 (0.7)	125 (0.4)	83 (0.3)	122 (0.4)	1310 (4.4)	536 (1.8)	20 (0.1)	14 (0.05)

Table 3b

Numbers, (Numbers per 10,000 Population)
in Direct Patient Care, Administration, and Teaching, for RNs and LPNs, 1991

	Medical/ Surgical	Critical Care	Maternity/ Newborn	Psychiatry	Paediatrics	Geriatrics	Several Areas (1)	Admin.	Teaching
RNs									
Urban	4488 (24.6)	3101 (17.0)	1184 (6.5)	738 (4.0)	692 (3.8)	2037 (11.1)	986 (5.4)	862 (4.7)	754 (4.1)
Non-urban	2195 (15.9)	1655 (12.0)	747 (5.4)	371 (2.7)	327 (2.4)	1271 (9.2)	1445 (10.5)	521 (3.8)	343 (2.5)
Total	6683 (20.9)	4756 (14.8)	1931 (6.0)	1109 (3.5)	1019 (3.2)	3308 (10.3)	2431 (7.6)	1383 (4.3)	1097 (3.4)
LPNs									
Urban	740 (4.0)	149 (0.8)	65 (0.4)	51 (0.2)	52 (0.3)	637 (3.5)	134 (0.7)	17 (0.09)	12 (0.07)
Non-urban	1001 (7.3)	68 (0.5)	54 (0.4)	34 (0.3)	68 (0.5)	683 (5.0)	309 (2.2)	10 (0.07)	4 (0.03)
Total	1741 (5.4)	217 (0.7)	119 (0.4)	85 (0.3)	120 (0.4)	1320 (4.1)	443 (1.4)	27 (0.08)	16 (0.05)

(1) Includes float, small hospital.

Table 3c

Numbers, (Numbers per 10,000 Population) in
Selected Areas of Service for RPNs, 1989

	Acute Adult Psych	Chronic Adult Psych	Child Psych	Mental Retardation	Geriatric/ Psycho- Geriatric	Corrections/ Forensic	Adult/ Drug	Vocational	Education	Counselling	Admin.	General
Urban	295 (1.7)	206 (1.2)	16 (0.09)	245 (1.5)	263 (1.6)	99 (0.6)	25 (0.1)	8 (0.05)	12 (0.07)	32 (0.2)	39 (0.2)	66 (0.4)
Non-Urban	144 (1.1)	93 (0.7)	3 (0.02)	52 (0.4)	129 (1.0)	50 (0.4)	10 (0.08)	3 (0.02)	7 (0.05)	17 (0.1)	19 (0.1)	27 (0.2)
Total	439 (1.5)	299 (1.0)	19 (0.06)	297 (1.0)	392 (1.3)	149 (0.5)	34 (0.1)	11 (0.04)	19 (0.06)	49 (0.2)	58 (0.2)	93 (0.3)

Table 3d

Numbers, (Numbers per 10,000 Population) in
Selected Areas of Service for RPNs, 1991

	Acute Adult Psych	Chronic Adult Psych	Child Psych	Mental Retardation	Geriatric/ Psycho- Geriatric	Corrections/ Forensic	Adult/ Drug	Vocational	Education	Counselling	Admin.	General
Urban	314 (1.7)	220 (1.2)	18 (1.0)	196 (1.1)	267 (1.5)	92 (0.5)	26 (0.1)	22 (0.1)	22 (0.1)	35 (0.2)	47 (0.3)	75 (0.4)
Non-Urban	151 (1.1)	97 (0.7)	7 (0.05)	47 (0.3)	146 (1.1)	62 (0.4)	5 (0.04)	11 (0.08)	6 (0.04)	27 (0.2)	34 (0.3)	26 (0.2)
Total	465 (1.4)	317 (1.0)	25 (0.08)	243 (0.8)	413 (1.3)	154 (0.5)	31 (0.1)	33 (0.1)	28 (0.1)	62 (0.2)	81 (0.3)	101 (0.3)

locations for all areas of service except the float pool. LPNs show relatively high personnel-to-population ratios, regardless of location, in medical-surgical nursing and geriatrics. Areas of service specific to RPNs are illustrated in Tables 3c and 3d. RPNs appear to be most frequently employed in adult-oriented psychiatric services, along with geriatric/psycho-geriatric nursing. Few RPNs are involved in education or administration. The distribution of area of service among RPNs seems to have been fairly stable over time; the only change of interest is the increase in the number of RPNs per 10,000 population working in vocational areas. RPN employment in the principal areas of service (acute and chronic adult psychiatry and geriatric/psycho-geriatric services) has remained essentially the same during the past few years.

Employment positions can be compared only between RNs and RPNs (Tables 4a and 4b). Position descriptors were grouped this time for RNs, whose membership form includes a greater number of options. However, the categories are analogous across the two types of nurses. Among RNs and RPNs, personnel-to-population ratios have remained essentially equal across urban and non-urban locations for the more senior positions, although there is a continuing divergence for head nurse/clinician positions, which may result from the relative dearth of jobs for clinical specialists in non-urban hospitals. The greatest discrepancy between urban and non-urban personnel-to-population ratios for both groups is seen among the general duty nurses. Instructors are also more common in urban areas for RNs, although RPNs show no such difference. Overall, RPNs are much less frequently working in positions of leadership than RNs, and are rare as community nurses and instructors. The most evident change over time has been a decrease in personnel to population ratio for urban RN supervisors from 2.1 in 1989 to 1.7 in 1991. LPNs describe themselves by job title; their personnel-to-population ratios are higher in non-urban than in urban areas for the titles of LPN and Long-Term Care Aide, but essentially equal for Orderly (Tables 4c and 4d). There have been very slight decreases in the personnel to population ratios for most job titles used by LPNs over the past few years; unfortunately, it is not known what specific titles are being used in their place since that information is aggregated as "other".

Educational production and labour force activity are the general categories within which we can discuss the various elements that are necessary for an assessment of the supply of nurses. As noted before, information about basic education is required from every nurse prior to licensing, and the information provided is verified. In addition, on their registration renewal forms, the RNABC and the RPNABC ask their members for their

Table 4a

Numbers (Numbers per 10,000 Population) for
Selected Employment Positions, RNs and RPNS, 1989

	Director (1)	Supervisor (2)	Head Nurse (3)	Gen. Duty Nurse	Community (4)	Instructor
RNs						
Urban	332 (2.0)	337 (2.0)	1047 (6.2)	11016 (65.0)	941 (5.6)	471 (2.8)
Non-urban	202 (1.5)	280 (2.1)	542 (4.1)	6167 (47.0)	681 (5.2)	165 (1.3)
Total	534 (1.8)	617 (2.1)	1589 (5.3)	17183 (57.2)	1622 (5.4)	636 (2.1)
RPNs						
Urban	28 (0.2)	55 (0.3)	173 (1.0)	954 (5.6)	86 (0.5)	10 (0.06)
Non-urban	30 (0.2)	34 (0.3)	67 (0.5)	366 (2.8)	34 (0.3)	5 (0.04)
Total	58 (0.2)	89 (0.3)	240 (0.8)	1320 (4.4)	120 (0.4)	15 (0.05)

Table 4b

Numbers (Numbers per 10,000 Population) for
Selected Employment Positions, RNs and RPNS, 1991

	Director (1)	Supervisor (2)	Head Nurse (3)	Gen. Duty Nurse	Community (4)	Instructor
RNs						
Urban	358 (1.9)	306 (1.7)	1106 (6.0)	11700 (64.0)	1063 (5.8)	523 (2.9)
Non-urban	237 (1.7)	322 (2.3)	564 (4.2)	6890 (50.0)	737 (5.3)	213 (1.5)
Total	595 (1.9)	628 (1.9)	1680 (5.2)	18590 (58.0)	1800 (5.6)	736 (2.3)
RPNs						
Urban	36 (0.2)	655 (0.4)	154 (0.8)	946 (5.2)	112 (0.6)	17 (0.09)
Non-urban	31 (0.2)	44 (0.3)	73 (0.5)	377 (2.7)	47 (0.3)	8 (0.06)
Total	67 (0.2)	109 (0.3)	227 (0.7)	1323 (4.1)	159 (0.5)	25 (0.08)

(1) Includes Director and Assistant Director

(2) Includes Supervisor, Assistant Supervisor, and Coordinator

(3) Includes Head Nurse, Assistant Head Nurse, Team Leader, and Clinical Specialist

(4) Includes Community Occupations, Home Care and Community Worker

Table 4c

Numbers (Number per 10,000 Population) for
Selected Job Titles, LPNs, 1989

	Long-Term			
	LPN	Care Aide	Orderly	Other
Urban	1657 (9.8)	180 (1.1)	51 (0.3)	286 (1.7)
Non-urban	1833 (14.0)	239 (1.8)	45 (0.3)	186 (1.4)
Total	3490 (11.6)	419 (1.4)	96 (0.3)	472 (1.6)

Table 4d

Numbers (Number per 10,000 Population) for
Selected Job Titles, LPNs, 1991

	Long-Term			
	LPN	Care Aide	Orderly	Other
Urban	1695 (9.3)	192 (1.05)	48 (0.3)	259 (1.4)
Non-urban	1958 (14.2)	288 (2.1)	41 (0.3)	182 (1.3)
Total	3653 (11.4)	480 (1.5)	89 (0.3)	441 (1.4)

highest completed level of post-basic education, both in nursing and in non-nursing fields. Two of the same limitations exist with these data as did with the employment data previously described: the structure is imposed and, beyond the level of basic education, the information is not verified for the membership data record. However, these are the only sources of our knowledge about patterns of educational preparation of individual nurses.

Registered nurses can be educated in two to three year programs at community colleges and graduate with a diploma in nursing. They are then eligible to write the standardized Canadian Nurses' Association examinations, which, if passed, enable them to practise as registered nurses. Some nurses choose to obtain their basic education at the University of British Columbia (UBC), where they receive a baccalaureate degree in nursing and are eligible to write the registration exams. Other nurses with diploma preparation also enter post-basic programs at UBC or the University of Victoria from which they obtain baccalaureate degrees after a two year period. Registered nurses who have been out of practice for some length of time, usually at least five years, or who have been working very infrequently over a number of years, may enter refresher programs at several community colleges and, after six weeks to one year of retraining, may be eligible for practising status again. One such program is designed for nurses for whom English is an alternate language. Lastly, practical nurses and psychiatric nurses may enrol in the nursing access programs given at five community colleges, and, after a further year or sixteen months of education, be prepared to write registration exams. In addition, registered nurses increasingly obtain specialty certification through courses taken primarily through The British Columbia Institute of Technology. These courses range in length from six to twenty-two months. Such courses, along with the post-basic baccalaureate programs, can be taken part-time, and, in the specialty courses, some proportion of entrants will complete the clinical course work but not the academic component essential to the achievement of certification. All these programs, basic and post-basic, may expand and contract in size in relation to funding, course demands, and student demand. The availability of part-time status and the promise in university programs of an extended period for completion, taken together, allow some students to move in and out of educational institutions as they need. Thus, matching the number of entrants to the number of graduates for a particular year can be difficult, and attempting to assess the real rate of attrition from nursing education programs of any type is futile unless it becomes possible to trace the progress of individual students through the educational stages.

Registered psychiatric nurses are educated at Douglas College in a two-year program which allows them to practise in psychiatric settings in a manner equivalent to registered nurses after their psychiatric nursing preparation. Thus, RPN training is an instance of specialty preparation at the basic level of education.

Registered psychiatric nurses, should they wish to practise in another specialty area, must complete their general nursing education by going through an access program. Registered psychiatric nursing programs also operate in Alberta and Manitoba, but the training and the professional status are unavailable in Central and Eastern Canada.

Licensed practical nurses are trained in ten month programs which, when completed, permit them to sit for licensing examinations. They are prepared to give basic nursing care, but are not expected to perform a full range of nursing functions. A practical nursing refresher program is offered for nurses who have not practised for some time or who are unable to meet the requirements for licensure. Practical nurses are also able to enter the registered nursing access programs, after which they are eligible to write the registration examination.

The figures presented in Table 5 are drawn from the biennial publications called the Production series. Every two years, the institutions responsible for the training of a wide variety of health professional groups are surveyed about the number of their current entrants and graduates, and for estimates of the following years' projected intake and output. The totals included in the table are erratic because of fluctuations in program size and they also reflect changes in program venue. The numbers for nursing certification programs are especially unstable, as the enrolment in those short-term courses can vary widely over time, and because at the beginning of the period shown in the table, some certification programs, then supported at UBC, were moved to BCIT, necessitating a reduction in intake. What is of interest is that the number of graduates from basic programs (including access) remained between 650 and 800 until 1990-91, despite the concern over a perceived shortage of nurses which peaked in 1990. The last year for which we have data, 1990-91, shows an increase of 18.6% over the previous year. The number of graduates who obtained post-basic baccalaureates remained relatively static until 1989-90, when it increased by 62.9% (from 116 in 1988-89 to 189 in 1989-90). The figures shown in this table should be treated with caution; until 1988-89, those for even-numbered years (or academic years ending in even-numbers) are projections, reported in the previous year. The figures from 1988-89 onwards were collected retrospectively, and should be more reliable.

The multiplicity of programs for the education of registered nurses (more than twenty colleges and universities offer some kind of nursing training) points to one of the central issues facing licensing bodies and

Table 5

Production of Nurses in British Columbia, 1984 - 1989

	Entrants							Graduates						
	1984	1985	1986/87	1987/88	1988/89	1989/90	1990/91	1984	1985	1986/87	1987/88	1988/89	1989/90	1990/91
Registered Nurses														
Basic Education														
Baccalaureate	113	80	79	84	86	133	120	68	90	88	62	62	62	63
Diploma	882	833	871	965	510	507	700	537	-	546	696	457	491	591
Access	75	70	83	127	66	75	78	66	60	86	123	71	67	81
Post-Basic Education														
Baccalaureate	210	151	257	332	335	391	475	101	124	141	152	116	189	186
Refresher	214	223	281	230	133	125	151	176	174	202	211	114	114	110
Certification	326	161	136	174	719	693	670	192	63	174	196	32	32	45
Master's	37	35	22	26	93	103	131	7	15	10	8	21	19	25
Registered Psychiatric Nurses														
Basic Education														
Diploma	100	106	114	120	95	92	104	73	-	71	80	69	44	55
Licensed Practical Nurses														
Basic Education														
Certificate	276	235	243	243	170	149	163	192	196	233	205	123	113	113
Post-Basic Education														
Refresher	-	-	40	40	19	21	27	-	-	38	38	19	17	21

Source: PRODUCTION series, Health Human Resources Unit (formerly Health Manpower Research Unit), University of British Columbia.

human resource planners, which is the existence of three distinct educational routes which lead into registered nursing practice. Multiple methods of entry-to-practice are not typically found among members of other professional occupations (physiotherapy, occupational therapy, medicine, law, public school education), although certain of the helping professions can be entered at either a baccalaureate or a graduate level (e.g. social work). While post-basic education outside the professional domain does occur with other professions, it is less common among members of the more established health occupations than among registered nurses.

Table 6 illustrates the breakdown of basic and post-basic educational attainment among practising members of the 1988 nursing population. The first two groups include only RNs who were practising and who had no further degree-level education. The third comprises three groups of diploma-educated nurses: those who had completed some level of post-basic, degree-level nursing education, most of whom had baccalaureate degrees, and a smaller percentage with master's and doctoral degrees; those who had post-basic nursing degrees and post-basic degrees in fields other than nursing; and those nurses whose post-basic education was confined to non-nursing fields. The fourth group contains those nurses with basic baccalaureate nursing degrees and advanced degree-level preparation in nursing, some of whom also had degrees in other fields, and those baccalaureate-educated nurses who only had post-basic baccalaureate or advanced degrees in non-nursing areas. As can be seen from the table, some 84 percent of practising nurses in 1988 had no degree-level education beyond the diploma level, while 5.6 percent received basic baccalaureates. Approximately 10 percent of the nurses had diploma and further degree-level education, and 1 percent were baccalaureate-prepared nurses with further degrees in nursing and/or other fields. This is to be compared with the 12.4 percent of registered nurses who had degree-level education beyond the diploma level in 1980 (Kazanjian, 1982). For the total of practising nurses of working age, the percentage distribution of education type is very similar to that of the entire nurse population, but among nurses between the ages of 25 and 49, a total of 17.5 percent were educated beyond the basic diploma level. Among younger nurses, the proportion with basic baccalaureate or diploma and post-basic degrees is even larger.

A diploma in nursing is as yet the principal route for entry into practise for registered nurses; the basic baccalaureate remains the choice of a relatively small proportion (as the numbers in Table 6 demonstrate). However, the proportion of diploma nurses who have returned to obtain baccalaureates and further degrees is growing. Undoubtedly, these nurses have been encouraged by the development of more programs which offer

Table 6

Practising Registered Nurses, Educational Preparation by Age, 1988

	Ages 25 - 49	Ages 18 - 64	Ages 18 - 99
Baccalaureate Only	1222 (6.1)	1445 (5.6)	1447 (5.6)
Diploma Only	16531 (82.4)	21608 (83.7)	21707 (83.7)
Diploma Plus Further Degree(s)	2086 (10.4)	2503 (9.7)	2518 (9.7)
Baccalaureate Plus Further Degree(s)	221 (1.1)	269 (1.0)	271 (1.0)
TOTAL	20060	25825	25943
Percent	(100.0)	(100.0)	(100.0)

Source: HHRU Cooperative Database

post-basic degrees; the most recent is one to be offered through BCIT and the Open Learning Agency, which is unique in that it depends upon achieved credit in specialty certification programs for the bulk of its course work. This program will meet a particular demand of diploma-educated nurses seeking further degrees, which is that there should be some academic recognition of specialty preparation. As yet, The University of Victoria does not acknowledge specialty certification as contributing towards academic credits, and UBC only recently changed its policy to allow for advance credit for some types of post-basic certification.

3. Labour Force Behaviour in the Last Decade

A discussion of the labour force activity of nurses can draw on membership data, as well as published research and some forms of administrative data. Because the concerns about nursing shortages were concentrated on the acute care sector, the patterns of labour force activity characteristic of registered nurses have been the focus of most of the research, especially in Canada. Nursing labour market behaviour or labour force participation can be described in any one of three ways (Laing and Rademaker, 1990). First, it is possible to summarize the quantity of labour supplied in a particular year by measuring annual hours worked. A second method attempts to study labour force participation longitudinally and descriptively. The third takes the yearly decision to work or not to work, as expressed in the registration renewal process, and treats it as a question of probability estimates. The routinely collected membership data of the RNABC are especially amenable to the third method of analysis, because a five-year membership history variable is included in the member file, thereby enabling the researcher to trace back over a six-year period the decisions of individual nurse members and non-members regarding yearly labour force participation. Inactive members can be included because the RNABC keeps on file all individuals registered at any time with the association. This inactive file does not correspond to the actual number of non-registered nurses who are willing to work as nurses and who are eligible for registration in the province. That figure is unknown. However, the decision to remain registered to practise, to remain registered but become a non-practising member, or to abandon registered status (by non-payment of fees), as well as the decision to return to practising or non-practising status, can be tabulated for all members and non-members, if the limitations of the probability methods are taken into account.

The first attempt of the HHRU to describe nursing labour market participation occurred in 1982 (Kazanjan and Wong, 1982). This report was essentially descriptive in nature; percentage distributions of socio-

Table 7a

RNABC Population, Estimated
and Actual, 1981 - 1984

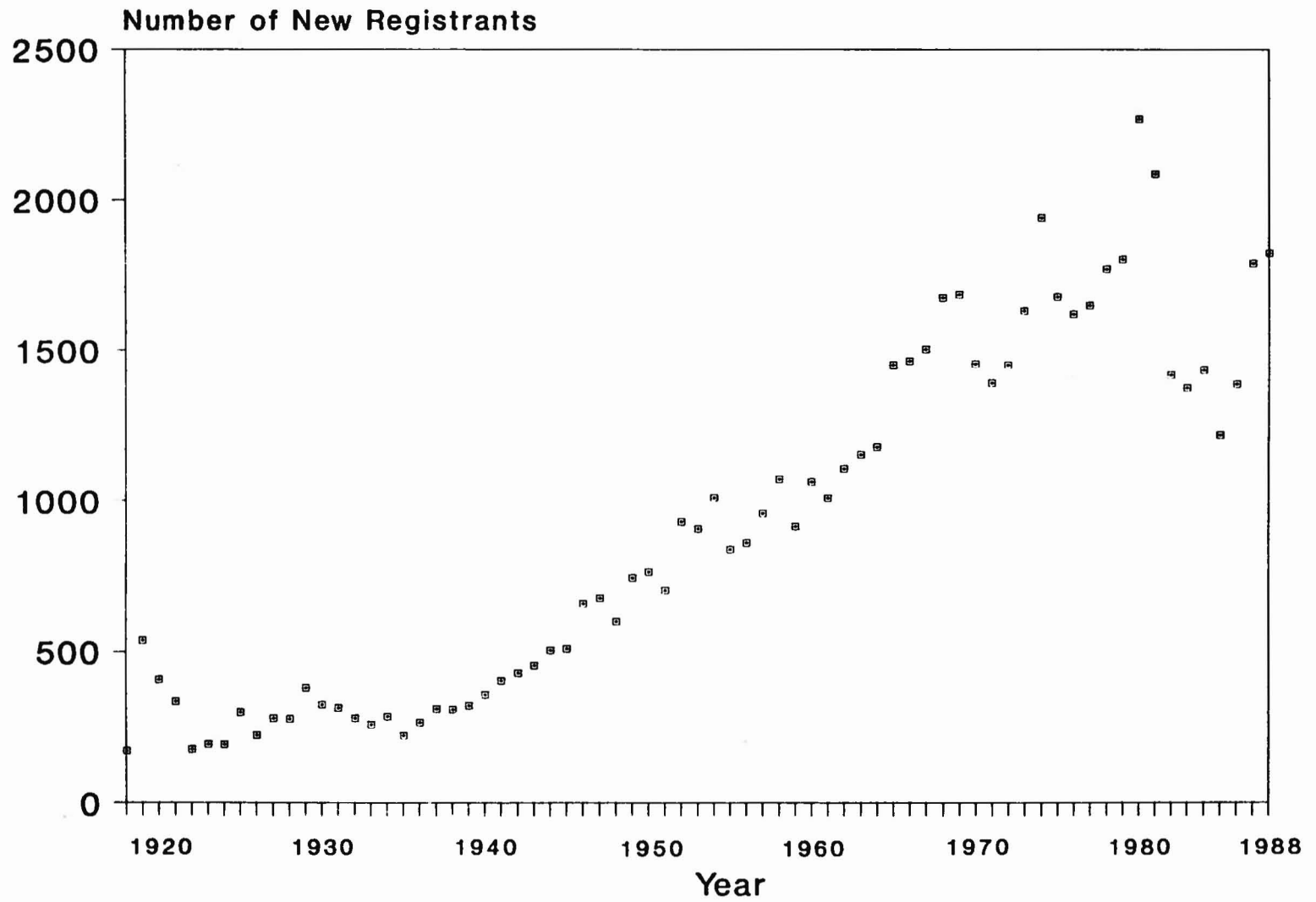
	1981	1982	1983	1984
Kazanjian and Wong, 1982				
Practising	21223	21804	22419	23065
Non-Practising	4115	4271	4426	4581
Total	25338	26075	26845	27646
Kazanjian, Brothers, Wong, 1985				
Practising	21557	22444	23341	24250
Non-Practising	4233	4497	4738	4957
Total	25790	26941	28079	29207
Actual RNABC Figures, 1985				
Practising	21959	22187	22042	22891
Non-Practising	4213	4518	4702	4374
Total	26172	26705	26744	27265

Table 7b

RNABC Population, Estimated, 1989-1993

	1989	1990	1991	1992	1993
Kazanjian, 1989					
Practising	27054	28175	29294	30334	31283
Non-Practising	4373	4651	4933	5219	5511
Total	31427	32826	34227	35554	36794

Figure 1
Historical Data on New Registrants



demographic variables and supply-side factors were detailed for the 1980 RN population. In addition, the future supply of nurses (1981 to 1985) was projected, using a model based on Markovian transition probabilities, which provided estimates of the numbers of nurses who would be non-registered, non-practising, and practising, according to five-year age groups, for each of the next four years.

Table 7a summarizes the total projected supply of practising and non-practising members for the period 1981 to 1984, and compares it with the actual RNABC figures. It is clear that the initial use of the Markov model, which entails the estimation of the number and age distribution of future registrants, under-estimated the intake of nurses until 1983, and then over-estimated it for 1983 and 1984. The errors resulted from the larger-than-expected yearly intakes of new registrants in the late 1970s and especially 1980. A graph of the number of new registrants from 1918 to 1988 demonstrates the degree of fluctuation in absolute numbers of new registrants since 1965. It suggests that simple methods of nurse supply estimation, and thus of human resource planning, might be inadequate, based as these often are upon assumptions about steady growth, unchanging age distributions, and uniform career patterns (see Figure 1).

Projections of future supply were repeated for the 1981 to 1984 period in 1985 and 1986, using a regression sub-model to estimate new registrants (Kazanjian, et al., 1986). The re-calculated figures also show some degree of over- and under-estimation of total population figures (see Table 7a). The lack of correspondence in the estimates owes something to the instability of the new registrant intake for the years between 1981 and 1983, wherein 1981 registered a record high, and 1983 saw an unprecedented decline in actual numbers. In addition, the 1986 report adopted a more sophisticated approach to the study of nursing labour force participation. The 1980 data were used to model nursing life-cycle activity patterns through the construction of transition probabilities. These were then used to calculate professional life expectancy, measured as the total number of years expected in a membership state given current membership status. These professional life expectancies were calculated for the 1980 membership group along with estimates of the continuous number of years in one membership state, given that an individual nurse began as a practising member.

The likelihood of movement between membership states was seen to vary with age (see Table 8). Within the 1980 nurse population, it was shown that 5.8 percent of the 18 to 29 year-olds might move from registered to non-registered status in a given year, a percentage that would drop to a low of 2.0 percent at age 50 and rise

abruptly (and not unexpectedly) to 14.8 percent at age 64. The probability of a 25 year-old nurse taking non-practising status was 0.085, and the probability that he or she would remain in practice was 0.857, indicating that out of every 1000 practising nurses aged 25 years, 857 would continue as practising members, 85 would take non-practising membership, and 58 would become non-registered. The highest probability of remaining in practice from one year to the next was seen among 50 to 54 year olds; 945 out of every 1,000 would continue to practise.

The model used in 1985-86 was employed again with 1988 data to yield new estimates of future supply and to construct new projections of nurse life-cycle activity patterns (Kazanjian, 1989). In order to increase accuracy, future supply was estimated using the Markovian probabilities and a moving average of the previous five years for new registrants. The projected totals for practising and non-practising nurses for the years 1989 to 1993 are shown in Table 7b. The HHRU has elsewhere published data for June 30, 1989, but the actual data quoted in Table 7a are based on RNABC figures from December 31 of each year, these being the more complete year-end datasets. Due to the discrepancy in dates of record, a valid comparison of the projections with actual totals is not possible for 1989, 1990 & 1991.

Estimates for the likelihood of movement between membership states for nurses of different ages, as indicated by the transition probabilities, are shown for 1988 data in Table 8, along with the transition probabilities associated with the 1980 study population. The probability of movement from practising to non-registered status dropped markedly for all ages except the 64 year-olds; whereas in 1980, 35 of 1000 practising 35 year-old RNs would become non-registered in one year, in 1988 only 11 of 1000 would be expected to drop their professional affiliation and right to practise. The percentage of non-practising nurses at ages 25 to 50 was also lower for the 1988 nurses than for their predecessors, but in 1988, the 55 year-old nurses were more likely to take non-practising status than were their counterparts in 1980. There were appreciable gains in the likelihood of continuing in practice for the 1988 nurses aged 18 to 64 as well, after which age the 1988 nurses appear to have been much less likely to retain practising status.

The comparison between 1980 and 1988 suggests that the labour force participation of registered nurses in B.C. is increasing, at least when measured as a single, annual decision to renew registration. Over a 13 year period (the data used in 1985 described the membership between 1975 and 1980), RNs appear to have become more likely to remain in practice and less likely to let lapse their professional affiliations when they leave the

Table 8

RN Transition Probabilities, Selected Ages, 1980 and 1988

Age	From Practising To:	1980 (1)			1988 (2)		
		Non-Registered	Non-Practising	Practising	Non-Registered	Non-Practising	Practising
25		0.058	0.085	0.857	0.018	0.049	0.933
30		0.048	0.075	0.876	0.016	0.044	0.940
35		0.035	0.050	0.915	0.011	0.035	0.954
40		0.024	0.035	0.940	0.010	0.025	0.965
45		0.022	0.036	0.942	0.008	0.023	0.969
50		0.020	0.035	0.945	0.007	0.027	0.966
55		0.027	0.050	0.923	0.012	0.045	0.943
60		0.070	0.088	0.842	0.035	0.095	0.870
64		0.148	0.108	0.744	0.136	0.243	0.620

(1) Kazanjian, Brothers & Wong, 1985.

(2) Kazanjian, 1989

workforce. Such changes in behaviour might be attributable to economic conditions or to socio-cultural factors, or to changes in the practice of nursing and in the education and socialization of nurses which have in turn altered nurses' perceptions of professional adherence. The type of analysis described above cannot determine such attributions.

The study previously mentioned (Laing and Rademaker, 1990) examines the question of nurses' labour force participation from a different perspective. These researchers surveyed a sample of members of the Saskatchewan Registered Nurses Association who had been registered at any time between 1980 and 1985 and who had been married when registered, to see what relationship might exist between a selected group of variables and the labour force behaviour of married nurses (since most nurses are married, the effect of marriage on participation patterns is an important issue when considering rational human resource planning). Regression analysis was undertaken using variables such as sex role attitude, position, interruptions (when nurses ceased to work for some period), children of different ages, spouses' salary, shift rotations, and educational preparation. The researchers found that sex role attitude was the most important variable to be associated with labour force participation. Nurses whose orientation was more "egalitarian" were more likely to work a larger number of hours each year, and to work full- or part-time continuously over a five-year period. Position, a variable indicative of achieved job status, and therefore expressive of commitment, was the second most important variable, followed by number of interruptions. This variable, denoting the occurrence of fewer work stoppages over the study period, was positively associated with a greater likelihood of remaining in the work force and was therefore also taken to represent commitment. The presence of children between the ages of two and five was clearly negatively associated with labour force participation, and spouses' salary was important as well, indicating that economic need played some part in decisions to continue working.

There are few Canadian studies which have taken as their subject nurses' labour force participation. The Markovian analyses done by the HHRU yield information about age-specific probability of membership status, and in future studies, may be used to forecast nurse supply in terms of educational preparation or marital status. The importance of sex role attitude in Laing and Rademaker's paper can be laid alongside the increase in the likelihood of continuing in practice which was observed in the Kazanjian, et al. reports. Changing attitudes towards marriage and career may partly explain the higher percentage of 1988 nurses of all ages who chose to

remain in practice.

To enlarge our understanding of the factors involved in the participation of nurses in the labour force, more work needs to be done, both of the modelling type (useful for forecasting and planning), and of the descriptive type. So far we have described some aspects of the supply of registered nurses who are practising and employed in nursing. The membership of the three nursing organizations is affected by the yearly addition of new registrants, by the re-activation of former registrants, and by the attrition of current registrants. Additional members are gained through local production and by immigration. Tables 9a and 9b detail the pattern of place of graduation for the membership of practising registered nurses and psychiatric nurses, and for the entire population of licensed practical nurses, for 1989 and 1991. Approximately fifty percent of RNs received their basic education in B.C., 34.7 percent received theirs from other provinces in Canada, and the remaining 15.6 percent from outside Canada. Non-urban areas are more likely to have graduates from other provinces, but graduates from outside Canada are even more likely than B.C.educated RNs to be living in urban areas. About 64 percent of RPNs obtained their basic education in B.C., and about 17 percent from other provinces, and about 18 percent come from outside Canada, chiefly from Great Britain. Seventy percent of all RPNs live in urban areas; graduates from other provinces in Canada are more likely to be living in non-urban areas than RPNs with diplomas from B.C., but RPNs with degrees from outside Canada are concentrated in urban areas, as with their RN counterparts. Among the LPNs, 70 percent are B.C. graduates, and of these, nearly 57 percent reside in non-urban areas, and the distribution across non-urban and urban areas is similar for graduates of other Canadian provinces. Most of the LPNs who received their diplomas from outside Canada reside in urban areas. Tables 9a and 9b show clearly that while B.C. is highly dependent upon immigration for its registered nurse recruitment, most of the RPNs and LPNs working here were educated in the province.

Reliable data on nurse attrition, reactivation, and initial registration are available only for registered nurses. Attrition occurs when a registered nurse fails to renew his or her membership by the close of the current calendar year. Attrition figures reflect emigration and loss of license in addition to work stoppages, which may be short-term as well as enduring. When a nurse who has let her registration lapse applies to the RNABC to renew her membership, the re-instatement is counted as a re-activation. Re-activation also reflects immigration,

Table 9a

Place of Graduation for RNs, RPNs, LPNs, 1989*

	B.C.	Other Canada	Other	Total
Registered Nurses (1)				
Urban	7527	4899	2783	15209
Non-urban	4269	3341	929	8539
Total	11796	8240	3712	23748
Registered Psychiatric Nurses (2)				
Urban	952	217	261	1430
Non-urban	363	136	116	615
Total	1315	353	377	2045
Licensed Practical Nurses (3)				
Urban	1871	670	272	2813
Non-urban	2263	748	82	3093
Total	4134	1418	354	5906

* Source: PLACE OF GRADUATION 1989, Health Human Resources Unit,
The University of British Columbia.

Table 9b

Place of Graduation for RNs, RPNs, LPNs, 1991†

	B.C.	Other Canada	Other	Total
Registered Nurses (1)				
Urban	7927	5264	3029	16220
Non-urban	4876	3690	985	9551
Total	12803	8954	4014	25771
Registered Psychiatric Nurses (2)				
Urban	950	198	266	1414
Non-urban	384	140	111	635
Total	1334	338	377	2049
Licensed Practical Nurses (3)				
Urban	1755	667	274	2696
Non-urban	2289	846	86	3221
Total	4044	1513	360	5917

† Source: PLACE OF GRADUATION 1991, Health Human Resources Unit,
The University of British Columbia.

- (1) Practising and employed in nursing.
- (2) Practising
- (3) All Registrants

as nurses who were once registered in B.C., having moved elsewhere, sometimes return and renew their registration. Since 1988, the right to re-instatement has been monitored by the Association and has been determined partly by the total number of hours spent in nursing employment during the past five years; thus, nurses who decide not to practise for extended periods of time may experience increasing difficulty in re-entering the nurse labour force. New registrants are counted as individuals who have registered to practise for the first time in B.C.; some are nurses who were registered for the first time as nurses elsewhere in Canada. Others may have once been registered and practising in other countries.

The figures in Table 10 show some marked fluctuations in re-activation, attrition, and new registrations between 1981 and 1991. Since 1981, the absolute number of nurses entering into membership has been greater than the number leaving, although the imbalance created by the large number of attritions between 1981 and 1983 was just counteracted by the numbers of re-activations and new registrants, both unusually low during this period. The percentage distribution of re-activations between urban and non-urban locations remained essentially stable at about 56 percent and 44 percent respectively until 1987-1989, when the urban proportion rose to 63 percent, after which it increased again slightly, to 64%. The proportion of urban attrition has grown during the same period, from 61 percent in 1981-1983, to almost 66 percent in 1987-91. The percentage of new registrants located in urban locations also rose between 1981 and 1987, from 65 percent in 1981 to nearly 70 percent in 1987, and then dropped to 65 percent in 1989 and to 62% in 1991. What implications the shifting urban proportions may have had on the distribution of urban and non-urban nurses would appear to have been slight, although it might be that the percentage of nurses working in non-urban areas has not been growing to the same extent as the corresponding urban percentage.

One other element contributing to the supply of nurses is the number of nurses of each type who are receiving unemployment insurance at any time. These data are provided to the HHRU by the Regional Office of Employment and Immigration Canada. Table 11 lists the total number of UI recipients who are characterized by Employment and Immigration Canada as belonging to the general CCDO categories of "Graduate Nurses" and "Registered Nursing Assistants". Registered nursing assistants are equivalent to licensed practical nurses, as are graduate nurses to registered nurses and registered psychiatric nurses, although the element of "registration" - the right to an exclusive use of title for each of the three B.C. groups - is absent from the federal definitions. Thus

Table 10

**Practising Registered Nurses, Number of Re-Activations,
Attrition and New Registrants, 1981-1991 (1)**

	1979-1981	1981-1983	1983-1985	1985-1987	1987-1989	1989-1991
Re-Activations (1)						
Urban	1119	887	1033	891	1054	991
Non-urban	890	695	809	672	623	540
Total	2009	1582	1842	1563	1677	1531
Attrition						
Urban	1356	2070	1605	1840	1927	1744
Non-urban	906	1328	968	1105	1011	917
Total	2262	3398	2573	2945	2938	2661
New Registrants						
Urban	2357	1486	1523	1739	1989	2018
Non-urban	1977	742	740	752	1062	1135
Total	3627	2228	2263	2491	3051	3153

(1) Numbers quoted are two year totals.

Source: ROLLCALL SERIES, 1979 - 1991, Health Human Resources Unit,
The University of British Columbia.

Table 11

Unemployment Insurance Claimants - Nursing Groups, 1986 to 1991

	March	June	September	December
1986				
Nurses, General Duty	668	638	586	585
Nurses, Psychiatry	43	41	34	36
Registered Nursing Assistants	278	276	255	268
1987				
Nurses, General Duty	601	562	571	658
Nurses, Psychiatry	38	42	43	52
Registered Nursing Assistants	277	253	235	247
1988				
Nurses, General Duty	648	638	660	678
Nurses, Psychiatry	48	45	50	49
Registered Nursing Assistants	254	258	242	262
1989				
Nurses, General Duty	673	610	580	574
Nurses, Psychiatry	57	56	48	48
Registered Nursing Assistants	231	207	211	201
1990				
Nurses, General Duty	492	508	513	601
Nurses, Psychiatry	53	45	43	43
Registered Nursing Assistants	205	179	166	184
1991				
Nurses, General Duty	676	714	706	776
Nurses, Psychiatry	33	41	43	42
Registered Nursing Assistants	192	176	185	208

Source: Employment and Immigration Canada, B.C. Regional Economic Analysis Dept..

Table 12

Total Difficult-to-Fill Positions,
RNs, RPNs, LPNs, 1986 to 1991

	March	June	September	December
1986				
RNs/RPNs	-	-	-	193
LPNs	-	-	-	6
1987				
RNs/RPNs	188	188	198	168
LPNs	6	2	3	4
1988				
RNs/RPNs	178	317	322	314
LPNs	1	2	0	4
1989				
RNs/RPNs	388	476	353	375
LPNs	15	5	2	1
1990				
RNs/RPNs	307	301	230	164
LPNs	2	12	8	0
1991				
RNs/RPNs	90	73	91	68
LPNs	0	2	0	0

Source: DIFFICULT-TO-FILL VACANCIES REPORTS, December 1986 to
December 1991, Health Human Resources Unit,
The University of British Columbia.

the federal categories probably include persons who are not "registered" or "licensed" in B.C., and may indeed include persons who may not be eligible to become members of any of the professional bodies in this province.

The figures in Table 11 are the monthly totals for March, June, September, and December, for the period beginning in March 1986 and ending in December 1991. Until recently, the numbers for graduate nurses in general duty and psychiatry, as well as for nursing assistants, have fluctuated within relatively narrow limits, although there was a steady decline for all three groups after June of 1989, which shifted to a steady increase for general duty nurses and nursing assistants after December 1990. The number of psychiatric nurse claimants has remained about the same since June of 1990. When comparing the totals to the total of difficult-to-fill positions for the same period (see Table 12), it becomes apparent that the unemployment levels do not appear to be greatly affected by the increases in the number of nursing vacancies, although the dramatic decrease in the number of nursing vacancies which is shown after September 1990 did occur at the same time as a rise in the number of unemployment insurance claimants. While the figures recorded in Table 11 show graduate nurse unemployment at above 600 for each month cited between December 1987 and June 1989, the count of difficult-to-fill positions remained at a stable level below 200, before jumping by 78 percent between March and June 1988 and continuing above 300 until September 1990. If the unemployment rate does respond to increased demand, then there must be a considerable time lag in the expression of its response. But it does seem more sensitive to downward shifts in demand, as has occurred in B.C. since the fall of 1990, when acute care budget shortfalls have been met with bed closures and hiring freezes.

It is difficult to account for the phenomenon of stable numbers of unemployed nurses of all three types. The figures in Table 11 do not include individuals on maternity or disability leave. Some portion of the total may be the result of migration; the nurses represented in Table 11 may be short-term recipients who are enroled only to cover a inter-provincial move. It is also possible that some proportion are nurses with specialty training (or who lack such training) who are looking for employment in regions where skills they possess are not in demand. This would include nurses who wish to be employed only in certain areas or under certain conditions. Lastly, certain of these nurses may be individuals who have decided to leave the nursing labour force; they seek work in another field, but are registered with Employment and Immigration by their original professional designation.

4. Career Opportunities and Wage Structure

The discussion of labour force behaviour becomes more meaningful when presented from the context of career opportunities. Several routes exist for nursing career development. The most common is also the least like a conventional "career"; a large number of nurses, usually with diploma education, take staff-level positions and work for a few years, have children, and work part-time or casual until the children are older, when they may or may not return to full-time employment for a number of years in middle age. These nurses will pass through sections of the salary increment system, but often spend much of their working life at the lower levels, because after their childbearing they are less likely to be working in regular positions that permit steady increment. Other diploma-educated nurses will obtain post-basic baccalaureates, which they will use to move out of staff positions into positions as head nurses or into employment in community health. Baccalaureate-educated nurses often begin in clinical positions and move into community health or head nurse positions. Employment at the higher levels of nursing management is more or less restricted to individuals with more advanced preparation. The position of clinical nurse specialist can be reached by a nurse with extensive clinical experience and a baccalaureate degree, but master's degrees are becoming necessary in tertiary-care hospitals. Educators almost all have baccalaureate preparation, and, increasingly, master's and doctoral degrees. These last are still infrequently found; almost all the PhD degrees that are held by nurses were taken in non-nursing areas and those who hold such degrees are usually employed in academia.

Registered psychiatric nurses operate in a parallel system; those with diplomas are to be found mostly in institutions, where some head nursing and senior nursing management positions are also open to them. A small number with further education, usually advanced degrees, can work in community mental health centres. Licensed practical nurses cannot expect much advancement; their increment system is limited, and it is only with further education that it is possible for LPNs to move beyond the performance of delegated nursing tasks.

Preparation and function are not entirely consonant with one another in nursing practice. Diploma- and baccalaureate-prepared nurses are both employed as general duty nurses, and specialty certification is not always necessary for employment in specialty areas. Practical nurses can be employed to perform a specific set of nursing functions as designated by registered nurses in certain settings. The complete range of tasks and roles which define basic nursing practice can be performed by graduates of both diploma and baccalaureate programs,

and psychiatric nursing practice is open to those graduates as well, although individuals trained only in psychiatric nursing predominate. Roles in advanced nursing practice, community health nursing, and administration are more or less available only to nurses who have preparation at the baccalaureate level (basic or post-basic) or with master's degrees, and specialty certification added to basic preparation is increasingly required for complex clinical nursing functions. These trends are especially obvious in urban locations, whereas diploma-prepared nurses in non-urban areas are still better able to move up the nursing hierarchy even when they have not acquired additional nursing credentials. Teaching is most circumscribed; diploma-prepared nurses can still be found in diploma education programs, but, increasingly, those nurses are obtaining bachelor's degrees. Master's degrees are required in university programs and most community college programs, and, to provide further advanced education, a doctoral program in nursing is now established at The University of British Columbia.

In general, career ladders in nursing are controlled by educational preparation, and traditionally, the career ladder has led away from "hands on" nursing. Indeed, it would not be unfair or inaccurate to say that the baccalaureate degree, whether basic or post-basic, was and still is a way to move away from direct bedside nursing. Community health and nursing administration offer nurses more autonomy and often more respect from other health professionals, as well as an escape from shift work and general working conditions that are more amenable to family life. For those who are interested in acute care nursing, the role of the clinical nurse specialist, of recent provenance and likely to remain localized in urban, tertiary care centres, is the only route to a similar level of autonomy. The problem with traditional nursing career ladders is that they are essentially unavailable to general duty nurses working in community or non-urban hospitals, or to nurses who do not seek or find it difficult to obtain post-graduate qualifications. It has been proposed that some kind of vertical grid should be established to meet the need for staff nurses to advance in accordance with their clinical competencies, one that would offer monetary as well as structural rewards for remaining in practice and gaining clinical expertise. In addition, some argue that opportunities for horizontal movement should be enlarged, so that experienced nurses would be able to move across specialties and general services to offer their expertise to less-experienced nurses, and so that they could expand their fields of practice.

The earnings structure in place for general duty nurses does not promote either the acquisition of

additional nursing education, degree-level or certificate, or the development of vertical grids. The academic bonus which is paid to baccalaureate prepared nurses was \$70.00/month in 1980 and only rose to \$100.00/month in 1990. Specialty certification was worth an extra \$25.00/month in 1980 and is still at that level. Moreover, a nurse who is qualified to receive both of these bonuses can only obtain one of them - they are not cumulative. In addition, the increment structure in place for general duty RNs and RPNs has only six steps, so that after six years of work, a nurses' wages will not increase again except through ordinary scheduled increases.

The wage figures in Table 13 reveal some interesting aspects of earnings and nursing career ladders. The six-step increment system that has been in place for general duty RNs for the last ten years has preserved a 15.5 to 15.7 percent difference between entry-level and maximum-level hourly wages for all classifications since 1981. Despite arguments from those concerned about retention, the range of possible earnings for general duty registered nurses has not been expanded. For registered nurses in the head nurse category, the range has also remained around 15.6 percent since 1981. The head nurse classification was split into two tiers in 1986; no difference in the range of the increments was available to those nurses either. Supervisors, the nurses classified in the highest category, saw their range decrease in extent to 13.2 percent between 1982 and 1985, after which time it returned to 15.6 percent. Registered psychiatric nurses and registered nurses working for government-run facilities have seen their originally more extensive increment range drop from 18.1 percent in 1980 to a low of 17.1 percent through to 1991, when it jumped to 20.4 percent. Again, there was no real difference over time for those RPNs in government facilities between the ranges of nurses working at the general duty level and those working in a head nurse classification. For LPNs, the number of steps was limited to four until 1984, when it increased to five, but the last step disappeared after 1989. The extent of the difference between the lowest and highest steps for LPNs was at its highest in 1980 at 10.6 percent; in 1991 it has reached its lowest point at 6.8 percent.

The percent difference between hourly wages of an entry-level general duty nurse and his or her head nurse counterpart has remained steady at 15.0 percent over the ten year period. The differential between head nurses and supervisors was 8.7 percent in 1980 and 8.0 percent in 1990. For RPNs in government facilities, the percent difference between general duty nurses and head nurses was 14.9 percent in 1980; it dropped to 13.6 percent in 1984 and has reached 16 percent in 1991. Thus, the percent difference between the minimum and maximum earnings for general duty nurses actually exceeds the percent difference between entry-level staff and

Table 13

Hourly Wage Rates, 1980 - 1991
Registered Nurses, Registered Psychiatric Nurses, Licensed Practical Nurses

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Registered Nurses												
Basic												
Min	8.89	10.42	11.64	12.59	12.85	13.11	13.43	14.21	14.78	16.02	17.52	18.23
Max	10.34	12.04	13.46	14.55	14.85	15.15	15.53	16.42	17.09	18.53	20.27	21.08
Head Nurse												
Min	10.22	11.98	13.39	14.47	14.77	15.07	15.44	16.33	16.99	18.42	20.16	20.96
Max	11.89	13.85	15.47	16.72	17.07	17.42	17.85	18.88	19.64	21.29	23.30	24.23
Head Nurse 1												
Min							15.75	16.66	17.33	18.78	20.56	21.38
Max							18.2	19.26	20.04	21.71	23.76	24.71
Supervisor												
Min	11.11	13.03	14.55	15.73	16.06	16.38	16.79	17.76	18.48	20.02	21.90	22.78
Max	12.93	15.06	16.82	18.18	18.56	18.93	19.40	20.53	21.36	23.15	25.33	26.34
Registered Psychiatric Nurses												
Basic												
Min	9.66	11.04	11.94	13.15	13.45	13.53	13.81	14.15	14.46	14.90	15.83	17.11
Max	11.41	13.04	14.11	15.38	15.73	15.84	16.15	16.56	16.92	17.43	18.52	20.60
Head Nurse												
Min	11.09	12.68	13.71	14.97	15.32	15.42	15.73	16.12	16.48	16.97	18.03	19.85
Max	13.11	14.99	16.21	17.54	17.94	18.06	18.42	18.88	19.34	19.88	21.12	23.91
Licensed Practical Nurses												
Min	7.76	9.05	9.78		9.98	10.17	10.60	11.02	11.35	12.06	13.03	13.21
Max	8.58	9.75	10.53		10.74	10.95	11.38	11.82	12.17	12.94	13.92	14.12
Max 1					11.02	11.24	11.67	12.12	12.48	13.26		

Sources: Master Agreement between Hospital Employee's Union and Hospital Labour Relations Association, 1982-1986, 1986-1989, 1989-1991; Master Collective Agreement between the BCNU and the HLRA, 1980-1991; Government of B.C. Personnel Division 1980-1991 (personal communication).

head nurses. This does suggest at least a static view of the notion of providing monetary incentives to staff nurses both to remain in practice throughout a working life-time, and to aspire to greater responsibility in leadership positions. The efforts of some employers to move head nurses out of union membership and into salaried management categories may have some effect on this situation; nursing management salaries might be expected to be higher than earnings tied to staff positions. Of course, such an alteration may or may not have any effect on the range of increments for general duty nurses.

Another aspect of the issues surrounding nurse compensation which has been thought to have an influence on human resource factors is the relationship between registered nursing wages and those of licensed practical nurses. The ratio between basic earnings for the two groups was 1.14 in 1980 and it has increased to 1.4 in the intervening period. The recent gains in RN compensation have expanded this difference between the two groups, and if cost is an important element in decisions about staff mix, then it may be that LPNs will become more attractive to employers as RNs become relatively more expensive. However, the historical evidence does not support this. It is of interest that wages for registered psychiatric nurses working in government facilities were higher than those of registered nurses in the public hospital system until 1986, when the RNs overtook the RPNs. The absolute difference was small; the salary ratio was 1.1 (for the RPNs) in 1980, 1.03 in 1986, and .87 in 1990. This relationship has not been thought to be an important factor in the determination of nurse-mix ratios by employers.

The relationship between career development and remuneration is a complex one. As has been noted, while problems with the retention of staff nurses in acute care institutions are generally considered to be heavily implicated in the "shortage" of nurses, and tying wages to experience is thought to encourage retention, the wage structure is flattened and static. While entry-level salaries have risen by about 105 percent over the past ten years, with concomitant increases for the increment structure and the levels of advancement, the emphasis still appears to be upon recruitment rather than retention. "Career development" does not yet appear to be a priority for employers of general duty acute care nurses, although recent contractual provisions like the Educational Leave Fund and the arrangements for Bridging of Service point to some increased employer sensitivity to the needs of nurses for further education and to their willingness to return to work after childbearing when there is due recognition of their previous service.

There is some disagreement within nursing groups about the meaning of increments and career ladders.

Unions tend to take the position that the absence of vertical grids in male-dominated occupational categories points to an essentially sexist use of step frameworks to under-value the work of women. The progression from entry-level to maximum levels of earnings as periods of service lengthen implies that the employee is not performing at an adequate level at the beginning. The underlying notion may be that nurses as a group should be considered to be initially competent to practise and worthy of an appropriate wage, and that monetary advancement be available to the group as a whole, not just to select individuals who have been able to remain in a particular position for an arbitrary length of time or who have conformed to the employer's standard of adequate practice. In other words, the standard of practice and the relationship between practice and remuneration should rest with the practitioner, not with the employer. After all, medical practitioners are permitted to set their own standards of practice and to determine the framework of remuneration that is appropriate to that practice. From another standpoint, the concept behind career laddering and step increments takes monetary incentive to be of paramount importance in encouraging and rewarding advanced skill and preparation as well as loyalty and experience. Professional ethics would suggest that the fostering of individual skill and a commitment to life-long learning should be natural to the practitioner, who should always wish to improve herself so as to serve her client as best as possible. The career ladder concept suggests that professional socialization does not provide for incentives sufficient to ensure commitment to either the profession as a whole or to the maintenance of standards of professional practice, while step increments function as a reward for job longevity rather than for excellence in practice or professional development.

Part of the problem is no doubt related to nursing's lack of control over its definition of practice. So long as scopes of practice, conditions of practice, and actual performance are all within the power of the employer to determine, it may not be so surprising that unions prefer to keep the grid fixed and static, and that they are concerned about differentials based on unit assignment or length of service. To maintain that all nursing practice within job categories is of equal value may appear to be more supportive of the membership than to give the employer even more power over employees by tying remuneration to the attributes of individual nurses. Given some employers' past attitudes towards nurses - that they are a renewable resource: versatile, undifferentiated, and pre-eminently flexible - it may be that the resistance of nurses' labour representatives is not entirely without merit. Control over definitions of practice -- so-called "working conditions" -- is thus involved in the debate over career ladders and remuneration. Job definitions, staffing responsibilities, level of care, and

workload assessment are all determined by employers. The 1989-91 British Columbia Nurses' Union contract mandates the establishment of Professional Responsibility Committees to allow for the resolution of concerns relating to nursing practice conditions, the safety of patients and nurses, and workload. Information about how many of these committees are in place and how well they function is not available.

5. Autonomy, Expertise, and Social Value

Status relationships between groups of nurses can be described as articulated through assessments of autonomy, expertise, and social value. Licensed practical nurses rank lowest on the nursing status hierarchy because they are least likely to be working with even a small degree of independence and they have the shortest period of educational preparation. Since the currency of expertise is increasingly education, the experienced and skillful LPNs are often seen as unusually personally gifted, rather than as contributing to specific nursing practices with particular LPN expertise. In addition, basic bedside nursing - the bed-pan emptying, bathing, feeding, etc. - is the area to which LPNs are restricted, and these activities are the parts of nursing practice which most conform to the stereotype of "women's work". Indeed, they are the stuff of home-making and childrearing - the unpaid labour of women - and thus particularly destitute of social value.

Insofar as RNs and RPNs are employed in parallel acute care and community care systems, their status relations are essentially collegial, so long as the intra-group status gradations which have formed around education are respected. Each type of nurse then works in an approximately similar environment, and has an equal opportunity to exercise autonomy and to develop expertise. There is perhaps some different social valuation of psychiatric nursing because of the frightening images of institutional life with which we are all familiar, but then equally demeaning and critical images of general nursing are also traditional. However, because the overwhelming majority of Canadian nurses are educated to be generalists, the restricted focus of psychiatric nursing practice probably results in assumptions on the part of registered nurses that the expertise of RPNs is too narrow. As the parallel work world of the psychiatric nurse begins to contract with the shift to community-based living for the chronically mentally ill, registered psychiatric nurses may find themselves with less status. Already, employers in acute care general hospitals are said to prefer to hire registered nurses to work in acute care psychiatry because those nurses can move elsewhere within the hospital without concern.

Community health nursing is the preserve of the baccalaureate-educated nurse; RPNs will be expected to

acquire further degree-level education in order to make the transition to community mental health work. To some degree, the autonomy of the RPN is constrained by the limits that generalist registered nurses are able to place upon their practice. (There is anecdotal evidence to suggest that RPNs who have been trained solely for the traditional institutional setting experience difficulty in adjusting to the more self-directed style of practice expected in community settings. This would tend to support the contention that more extensive, non-institutional education is necessary for nurses who may find themselves employed in non-acute care non-institutional settings.) Moreover, acute care hospital nursing has the highest social value; public concern about waiting lists makes that clear. The public's perception that hospital nursing is all medical and surgical specialty nursing that is also technologically complex has given a real boost to the RNs in the past few years, so much so that there is a growing tendency even among nurses to place special value upon the most technically difficult nursing task.

Using the framework of autonomy, expertise, and social value is also useful in the consideration of status relations between nurses and other health occupational groups. Like nursing, physiotherapy, occupational therapy, medical social work, dietetics, and speech-language pathology are professions with overwhelming majorities of female members; for each of these other groups, its status position in relation to nursing is more secure. To begin with, members of the other professions have greater autonomy than nurses because they have well-defined and specific fields of practice and are considered to be more knowledgeable about those practices than anyone else. Nurses have particular problems with the well-defined fields of practice of other professions because nursing roles often cross over into several other disciplines. Nurses have a much less clearly defined field of practice, one that incorporates skills from a number of other disciplines and which is often directly concerned with the coordination of the care delivered by other professionals. However, nurses lack the authority conferred by clear autonomy and expertise to exercise the coordinating role to its fullest extent. The concept of "continuity of care" depends for its implementation on the existence of a sufficiently powerful figure with the authority to organize the disparate elements that come together into a continuous-care situation. Nurses wishing to take on the task of developing real continuity of care are handicapped by their lower status position among the health professions. Nurses also suffer in status position in relation to the other groups by reason of their more limited educational preparation. As described before, all the other health professions require at least a baccalaureate degree for entry-to-practice. Two- or three-year diplomas do not carry the same weight in health care delivery settings. Due to their greater autonomy and their perceived expertise, deriving in part from the

baccalaureate requirement, the other professional groups enjoy more control over working conditions than nurses do.

Nurses have struggled against physician-dominated definitions of autonomy, expertise, and social value for the last twenty years, but despite some improvement in doctor-nurse relations, it can still fairly be said that "while physicians encourage a form of 'team work' in which nurses are subordinate, nurses seek mutual collegiality with physicians" (Campbell-Heider and Pollock, 1987). After all, physician identity and practice provide the ideal against which concepts of autonomy, expertise, and social value are measured for all health occupations, perhaps for all of society. Nurses have attempted to determine a field of practice that incorporates non-medical roles and tasks, and have advocated for the development of an expanded scope of practice in the position of the nurse practitioner as primary care giver. However, they have been unsuccessful in the development of nurse practitioner roles, having been stymied by the legislative barriers, the resistance from physicians, and inaction by government.

In the redefined field of practice described above, nurses find themselves contesting the ground in psycho-social care with social workers and psychologists, and, at the same time, some nursing administrators and sections of the membership appear to continue to give precedence to the medical model of illness and cure. The growing tendency among some nurses to elevate technically difficult cure-oriented nursing tasks over the more socially and emotionally challenging task of helping patients with demanding psycho-social problems reflects both our society's interest in the technologically sophisticated and medicine's thrust to become more scientific. There exists a 'glamour' hierarchy in nursing (as in medicine); highly technical life-saving surgical nursing is at the top, with critical care of any kind and emergency nursing following close behind, while long-term care is probably at the bottom. Some appear to see the increasing delegation to nursing of technically demanding tasks (c.f. critical care) as providing greater legitimacy to the claims of nurses that they deserve improved social, inter-professional and financial recognition. But it could be argued that tying nursing practice more closely to machinery will also anchor it even more firmly to the doctor's side and under his control. To some extent, the tendency to glamourize the technical is balanced by the response of nursing leaders to increased public concern about health promotion and disease prevention. In two recent discussion papers, the RNABC asserts that nurses, by virtue of their training and outlook, are especially well-suited to the promotion of the health of the general population, given the importance of patient teaching and "holistic" care in nursing education.

Some observers see "the doctor-nurse game" - the role-playing and managed interactions integral to the maintenance of an uncontested hierarchal relationship - as altering in the present day (Stein, et al., 1990). In the past, open disagreement between doctors and nurses could not be tolerated, and while nurses could have opinions and could be consulted, their advice could never be given or taken as authoritative. It is argued that nurses are now seeing benefits from the effects of the women's movement, as well as from the push towards increased education and self-definition that has come from within the profession, and are more and more willing to regard certain areas of patient care as within their field of expertise. Nurses are said to be more willing to question, complain, and confront. Such changes in behaviour are not universally welcomed by doctors; they can sometimes be heard to remark that nurses no longer seem to want to "be nurses", which for the doctors seems to mean willing to carry out orders without question or comment. A recent proposal by the American Medical Association (AMA) to create a new class of health care worker, the "registered care technician" is, in part, an expression of physician discontent with developing nursing practice. The registered care technician would be trained for about a year in hospital and would be largely responsible for implementing doctors' orders. These technicians were likened directly by the AMA to the hospital-trained diploma nurses of the past. The American Nurses Association was quick to recognize the proposal for what it was -- an attempt to re-establish an out-dated, inefficient and repressive regime that would primarily function as a prop to physician authoritarianism.

II. Explaining the Current Situation

Human resource requirements in general, and nurse requirements in particular, are influenced by the complex interaction of many economic, political, and social factors. Therefore, research efforts can not hope to quantify and fully measure all the variables concerned. Alternative methodologies for estimating requirements are available to planners and policy-makers, but no one method has been identified as being superior to others. All methodologies are tools for research and the quality of the product is as much a reflection of the insight and good judgement possessed by the researchers as of the excellence of the instrument used.

1. Net Requirements

It has been suggested that the ideal way to undertake supply/demand research is to study both sides simultaneously (Mejia and Fulop, 1978). A major drawback, however, has been the reluctance of researchers to proceed from studies of supply alone to those which combine supply and requirements in an analytic framework that does not make a priori assumptions of "shortages" or "surpluses". Usually, the deceptively simple-appearing task of enumerating health personnel proves to be a major undertaking which comes to an abrupt end after the count is completed. Another drawback has been the tendency of researchers to focus narrowly on the traditional "economic demand" model, which is of somewhat limited value in studies of the public sector, particularly when the bulk of the workforce is female.

In B.C., a study of nurse requirements was undertaken some years ago (Kazanjian and Chan, 1984). Four major questions were raised:

- i) What is the level of utilization (the effective demand) of nursing services? Does it vary appreciably over time?
- ii) Is there any substitution among nurse categories? Does this vary over time or accross geographic areas?
- iii) What are the major factors that affect nurse requirements?
- iv) What are the inter-relationships among the major quantifiable factors that affect nurse requirements?

The report contains large quantities of information analyzed in a systematic fashion; it provides a detailed overview of the six-year period from 1976 to 1982. While the specific findings from that study may be considered obsolete, nevertheless, some of these are of a general nature and have remained valid over time. The

Table 14

Representative Annual Salaries of Selected Personnel as a Percentage of Registered Nurses' Salaries, 1976-1982

Year	Registered Nurses (1)	Practical Nurses (2)	Nurses Aides (3,4)	Health Record Admin. (5)	Medical Social Workers (5)	All Teachers (6)	Savings & Credit Workers (7)	Food Canners (7)
1976	100.0	85.7	78.5	95.9	108.9	75.3	83.1	81.3
1977	100.0	86.0	80.3	96.3	109.4	76.9	83.0	75.7
1978	100.0	85.8	80.3	96.3	109.4	78.4	85.4	74.2
1979	100.0	86.6	81.1	97.5	110.7	79.8	86.5	79.5
1980	100.0	88.6	79.7	89.4	105.4	74.2	80.7	69.8
1981	100.0	83.2	74.8	91.8	103.3	74.0	84.9	74.2
1982	100.0	83.6	75.2	94.1	105.9	80.6	90.8	79.4

(1) Data provided by BCNU (for General Duty RN, Step 1).

(2) Data provided by Health Labour Relations Association of B.C. (for minimum starting salary rates). The 1980 rate includes January and August increases; the 1981, 1982 rates are as of August of the respective years.

(3) Canada Department of Labour, "Wage Rates, Salaries and Hours of Labour", 1970-1973, unpublished data for 1974-1977 period provided by Canada Department of Labour. Annual salaries estimated from average monthly salaries.

(4) Increases estimated according to 1978-81 Master Agreement between Hospital Employees Union and Health Labour Relations Association of B.C.

(5) Data provided by Health Sciences Association (Grade 1, 1st year salaries).

(6) Data provided by B.C. Teachers' Federation (minimum basic salary).

(7) Statistics Canada, "Employment, Earnings and Hours", Cat. 72-002. Annual Figures estimated from average weekly wages.

data were obtained from the central payroll system of B.C. Info Health and the other payroll systems of several major hospitals. All hospitals funded by the Care Services branch of the Ministry of Health were included in the analysis.

A brief discussion of such findings provides some insights. When RN starting salaries were compared to those of other health personnel and other service personnel, RNs fared well relative to both subgroups (Table 14). The salary differential between RNs and the more highly paid medical social workers decreased over time, and that between RNs and LPNs increased. Although teachers and bank tellers had obtained much higher salary increases than had RNs during the study period, these groups had appreciably lower salary scales.

A study of actual relative wages indicated that the average RN wage was 22 percent higher than the average LPN wage in 1979, 20 percent higher in 1980, 28 percent higher in 1981, and 27 percent higher in 1982. While RN relative wages increased in 1981 and remained high in 1982, the ratio of registered to practical nurse paid hours steadily increased from 2 to 3 during the study period. The vast majority of RN paid hours were for regular staff, but when this proportion decreased in the two later years, part-time and casual hours compensated for the drop in regular hours. When hospital budget cut-backs occurred in 1982, however, the impact was absorbed mainly by reductions in the casual RN hours.

A regression model was developed that defined nurse requirements as a function of bed stock, supply of physicians, relative supply of other nurse categories, relative wages of nurses, health expenditures and patient variables. The unit of analysis or observation was the Regional Hospital District. In general, physician supply and bed stock jointly accounted for almost 80 percent of the variation in nursing paid hours. With all seven operationalized variables included, the model had very high predictive value (approximately 90% of the variation was explained).

The four specific research questions raised earlier in this discussion were addressed by the study:

- i) The data provided clear indications to guide the preferences of employers for nurse personnel mix and for the deployment of regular/casual, full-time/part-time personnel within each of the two categories, RN and LPN. For both of these groups, the proportion of "regular" hours steadily decreased over time, although absolute hours increased until 1982, when total hours decreased for both groups (with a steeper decline for LPNs than RNs). Thus, RN utilization patterns during the study period appeared fairly stable for regular and part-time nurses until 1982, with appreciable

variation reported for casual nurses. The largely unanticipated fluctuation of 1982 was absorbed by the decreasing requirements for casual RNs. The LPN picture was much less stable pre-1982, as well as during that year, and yet the LPN services market appeared to be parallel to that for RNs;

- ii) There did not appear to be substitution of RNs by LPNs, at least not in that direction. Both the direction and the degree of substitution was shown, surprisingly, to be counter-intuitive. When relative wages (RN/LPN salaries) declined, the RN/LPN ratio increased by only five percent. When relative wages increased appreciably in 1980-81, the RN/LPN ratio increased by seven percent, followed by an increase of 12 percent in 1981-82 when relative wages had remained stable. An attempt to explain this type of trend can only be made after a close examination of the changing roles and functions of each of the nursing categories and of the political environment within which nursing and hospital management make staffing decisions; this examination should be made within a broader context of the changing nature and complexity of the health care delivery system;
- iii) There is always some positive correlation between available supply and effective demand, and the highly regulated and largely non-profit nature of the hospital sector determines the parameters of capital input availability; given that premise, major factors that have impact upon the requirements for nurses have been examined. It is not surprising that the per capita physician supply was shown to be the most important predictor variable for RN requirements; for LPNs, it was per capita bed stock. The latter was the second most important predictor of RN requirements, whereas budget per patient day ranked second for LPN requirements;
- iv) The study findings indicated complex inter-relationships even among the minimum of three explanatory variables which accounted for the optimum variation in the dependent variable. For example, the direct influence of physician supply - mostly due to the variability in specialist stock - on RN requirements varied more than three-fold between the earlier years and later years under study. Thus, simply calculating physician supply will not yield as accurate an estimate of RN requirements as knowing physician supply and total bed capacity. The interaction effect of these two factors was clearly quantified by the analysis.

One general conclusion that can be drawn from this study is that the most important factors needed to estimate RN requirements are neither patient- nor budget-related. That patient-related factors are less important is, perhaps, not so surprising, since RNs are not the gate-keepers to the delivery system. The relationship of these factors to physician numbers in the provision of nursing care was clearly quantified there, with some indication as to the strength of the statistical relationship, given the influence of other variables considered in the study.

The discussion of the factors that influence nurse requirements in B.C. has never been an impassioned debate or even a reasoned argument. It has simply been upstaged by the controversy about nursing vacancies. The upstaging probably results from the policymakers' preferences (for a variety of reasons) to address short-term rather than long-term issues. To monitor nursing vacancies, data are compiled from the reports of 122 acute care institutions around the province which count their vacant positions at the end of each quarter. The HHRU survey counts only difficult-to-fill vacancies; these are positions that have been vacant for at least one month for which there has been active recruiting. This excludes temporary and casual postings, and relies on institutional definitions of area of service. Because the numbers are collected on a quarterly basis, vacancies that may occur between the time of the previous report and the current one are not counted. No distinctions are made between registered nurses and registered psychiatric nurses when the positions are reported, so none can be observed in this analysis. The "demand" which can be inferred from the number of difficult-to-fill vacancies cannot be taken as expressive of the real extent of nurse requirements, either in total or by specialty. Demand would best be assessed in terms of population disease and treatment needs, evaluated according to a schedule of necessary tasks and the standards of nursing practice. Shortages arise from variations in acuity, workload, utilization, deployment, and appropriateness of care, as well as from vacant positions. The number of difficult-to-fill positions can be used as a very rough measure of the perimeter of demand, but it is not a substitute for accurate measures of patient need and the capacity of professional practice.

The figures in Tables 12 and 15 illustrate the main point to be made about "shortages" - that they are recurrent but not cyclical; that shortages will be observed repeatedly, but not with predictable regularity. Thus the totals for four consecutive September end-of-quarter periods show a rise and fall, but are not consistently high or low. The differing percentage distributions of the specialty areas (Table 15) are especially indicative of

Table 15

Difficult-to-Fill Vacancies, September 30, 1987-1991

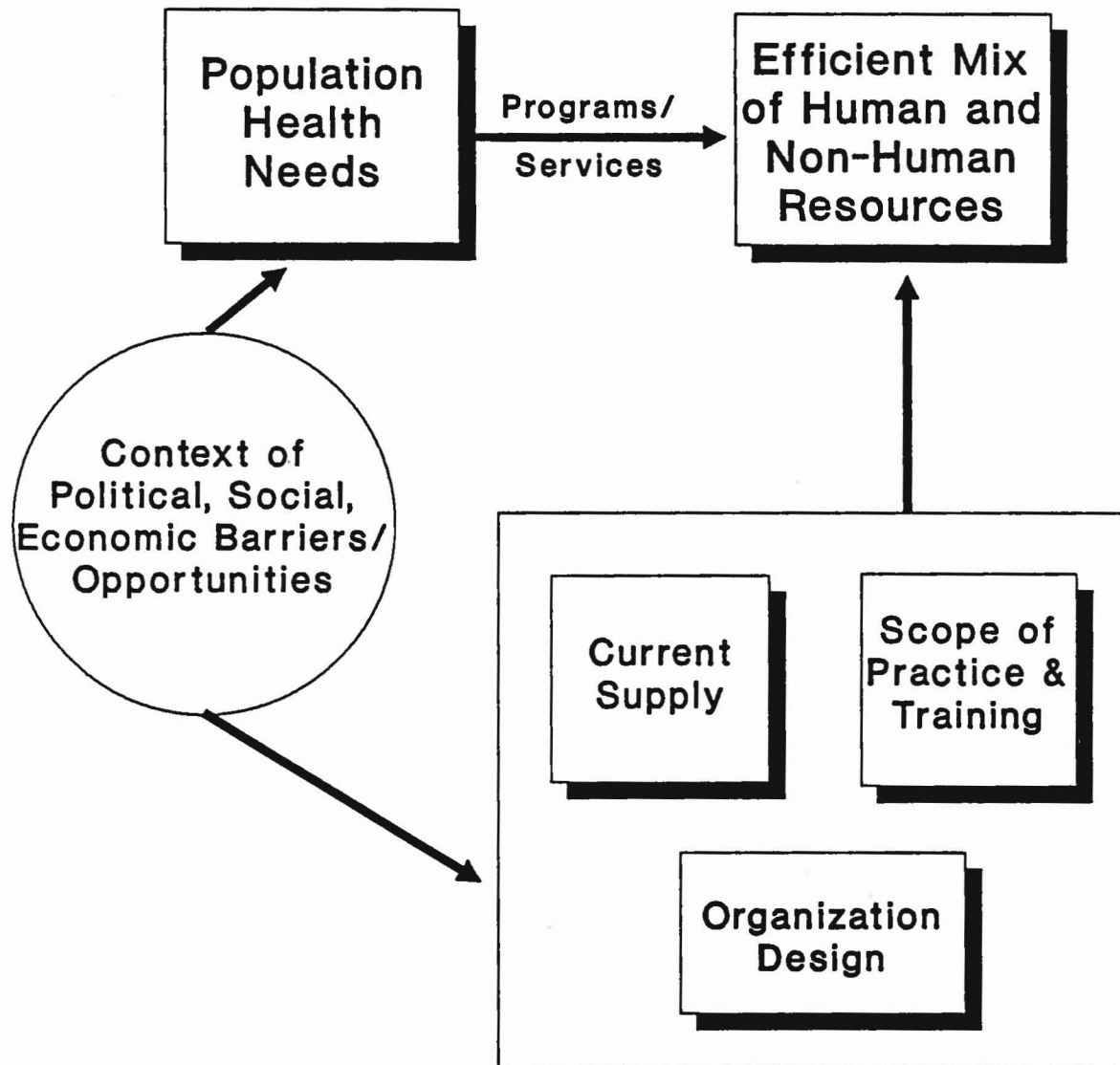
	1987		1988		1989		1990		1991	
	Urban	Non-Urban	Urban	Non-Urban	Urban	Non-Urban	Urban	Non-Urban	Urban	Non-Urban
Registered Nurses and Registered Psychiatric Nurses										
General	8 (5.6)	16 (29.6)	7 (3.2)	32 (30.5)	38 (14.3)	49 (55.7)	20 (11.3)	16 (30.2)	-	2 (22.2)
Medicine	12 (8.3)	-	24 (11.1)	4 (3.8)	16 (6.0)	3 (3.4)	7 (4.0)	1 (1.9)	1 (1.2)	-
Surgery	8 (5.6)	-	27 (12.4)	-	23 (8.7)	-	19 (10.7)	1 (1.9)	1 (1.2)	-
Paediatrics	14 (9.7)	-	36 (16.6)	3 (2.9)	16 (6.0)	8 (9.1)	8 (4.5)	2 (3.8)	1 (1.2)	-
Obstetrics	2 (1.4)	4 (7.4)	1 (0.5)	6 (5.7)	14 (5.3)	2 (2.3)	3 (1.7)	3 (5.7)	-	2 (22.2)
ICU/CCU	79 (54.9)	13 (24.1)	34 (15.7)	26 (24.8)	65 (24.5)	15 (17.0)	38 (21.5)	16 (30.2)	12 (14.6)	1 (11.1)
Psychiatry	-	2 (3.7)	57 (26.3)	4 (3.8)	30 (11.3)	-	22 (12.4)	-	52 (63.4)	1 (11.1)
ECU	11 (7.6)	1 (1.9)	12 (5.5)	15 (14.3)	54 (20.4)	7 (8.0)	24 (13.6)	6 (11.3)	3 (3.7)	1 (11.1)
OR	2 (1.4)	3 (5.6)	3 (1.4)	9 (8.6)	1 (0.4)	3 (3.4)	7 (4.0)	5 (9.4)	5 (6.1)	-
Emergency	1 (0.7)	-	3 (1.4)	6 (5.7)	8 (3.0)	-	13 (7.3)	1 (1.9)	5 (6.1)	2 (22.2)
Administration	-	-	1 (0.5)	-	-	1 (1.1)	1 (0.6)	2 (3.8)	1 (1.2)	-
Other	7 (4.9)	15 (27.8)	12 (5.5)	-	-	-	15 (8.5)	-	1 (1.2)	-
Sub-Total	144	54	217	105	265	88	177	53	82	9
Percentage	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
TOTAL	198		322		353		230		91	
LPNs/Orderlies	-	3	-	-	1	1	2	6	-	-
TOTAL	3		0		2		8		0	

the recurrent but non-cyclical nature of the vacancies. Vacancies in ICU/CCU services for urban areas, expressed as a proportion of the total urban vacancies, has ranged from a low of 15.7 percent to a high of 54.9 percent. General nursing has had a higher vacancy rate over time in non-urban areas rather than in urban areas, a reflection of the type of care given by such hospitals. Psychiatric vacancies are almost all concentrated in urban areas because the primary employing institutions are located there. ECU difficult-to-fill positions appear to be of increasing importance in both urban and non-urban locations, where ICU/CCU shows consistently elevated numbers over time as well.

In contrast to the persistent fluctuation of RN and RPN difficult-to-fill vacancies is the low number of LPN vacancies. Only in 1990 was that number worth noting, and these were almost all located in non-urban areas. Given the concentration of LPNs in non-urban areas, this increase in difficult-to-fill positions for LPNs may indeed have been indicative of a shortage of that type of nurse. What might account for such a shortage cannot be deduced from the DTF reports themselves; a survey of institutions which concentrated upon LPN utilization, staff mix, recruitment policies, and patient acuity would be necessary to begin to address such a problem.

There are, of course, different approaches to the measurement of net requirements. Those discussed here follow the Health Services Research tradition, using an utilization-based definition of requirements. The needs-based approach (Figure 2) is often called the epidemiological approach because it has traditionally drawn on epidemiological techniques to assess the prevalence of disease and the burden of illness in the target population. But the process should not end with the identification of conditions that have an impact on health status and the measurement of their prevalence. It should involve consideration of the appropriateness of the care used in managing those conditions. Then, health deficits can be converted to health care service or task requirements and alternative mixes of inputs (human and complementary non-human resources) that can be used to meet these task requirements should be identified. Human resource requirements set against available skills will determine net requirements. This approach was recently identified as the preferred method by a national panel of experts (Kazanjian and Friesen, 1990).

Figure 2
Framework For Establishing
Research Priorities



Workshop on Priorities in Health Human Resources Research
September 27 & 28, 1989
Vancouver, B.C.

2. Efficiency in Deployment

Among the most difficult problems of measurement is the matching of estimated demand to actual supply; supply is enumerated through registration statistics - a person count - whereas demand is usually measured in terms of paid hours, budgeted FTEs, etc. These latter are financial measures and are therefore more likely to be accurately documented and available for research purposes. A number of serious limitations are imposed on research that is based on incompatible units of measurement for solving the supply/requirements equation. For that reason, information about demand or requirements for nurses in this province is sketchy. For instance, the total number of RNs who are prepared and willing to participate in the nurse labour force is unknown. Similarly, it is not known whether nurses available for employment will meet the level of preparation and specialty required by the vacant positions. Detailed supply data on specialty and sub-specialty qualification do not exist, and hence net requirements for these cannot be estimated. This is a major drawback from a planning perspective since, as discussed previously, the number and duration of vacancies vary not only by region but also by specialty. Lastly, while supply statistics provide a person-count at one point in time, estimates of requirements include the total services needed to fill demand over a given period (usually a year).

Thus, while the 1984 study on requirements (Kazanjian and Chan, 1984) provided baseline information about nursing hours consumed during the years examined, it but did not estimate net requirements measured as the number of nurses required to provide that many hours of nursing services. Paid hours information is available at the national level through Statistics Canada; provincial disaggregated data are derived from the Annual Hospital Returns (HS1 and HS2 data), which are required by the Statistics Canada Act. Table 16 provides the most recent statistics for B.C. As indicated in the table title, these data pertain to all nurses; different nursing categories cannot be distinguished. As well, the reporting system was changed by Statistics Canada in 1986; in the new reporting format, the most recently published data were for 1986-87. It is difficult to draw any conclusions regarding the utilization of nurses in B.C. from these data. One conclusion that can be made, however, is that in the absence of a comprehensive nursing resources planning database, research in this area will be limited to narrowly-focused questions regarding short-term problems.

Research intended to update and build on the knowledge gained from the 1984 requirements study was undertaken as part of a larger study about nurse shortages (Pulcins, Kazanjian, Kerluke, 1988). This study was commissioned by the Deputy Minister of Health in 1987, and a three-volume report was produced in 1988. In

this study (Volume II of the report), an attempt was made to convert paid nursing hours to the number of nurses required to generate these hours. These estimates were based on actual "observations" from the B.C. Info Health 1985-86 payroll data, and included an extensive data clean-up and development effort in order to ensure that the "observations" were of unique nurses (to eliminate multiple counting). The employment behaviour of individual nurses was quantified along three dimensions: the proportion working full-time, part-time, and casual; the average number of paid hours per status category; and, movement in to and out of the workforce. This research provided, for the first time, information about productivity (including the movement of nurses), as well as about the "wastage" of nursing resources in B.C.

The data demonstrated the considerable degree of motility experienced by registered nurses, in terms of attrition from the labour force, movement of nurses between hospitals in different regional hospital districts, and change of employment status. Using data for the Greater Vancouver Regional Hospital District, it was shown that a reduction in motility greatly affects requirements by reducing the number of persons needed to provide a given number of nursing hours. While this did not measure turnover per se - a complex calculation which entails the monitoring of positions to count the number of persons required to fill the same position in a given period of time - this measure provides a clear sense of the extent of the movement in and out of the workforce and between jobs, and the switching back and forth between full-time, part-time, and casual employment.

The greatest amount of movement was shown to occur in the casual sector, and hence the most "wastage". It is in this sector that the least average number of hours are worked and the largest proportion of non-continuous employment is observed. Conversely, although part-time employees comprise a relatively small proportion of the nurse labour force, it is in this sector that the least motility is evidenced. The measurement of "wastage" involved the examination of data for two different situations: employment statistics for all payroll records, and employment records for those who had worked continuously throughout the year under study but who had not changed employment status during that time. This latter group, referred to as the "ideal" group, was considered the gold standard against which the employment behaviour of the "real" group was examined. This analysis provided detailed descriptive information on productivity; as expected, average paid hours decreased with increased motility. The existence of this inverse relationship was ascertained by comparing the "ideal" and "real" groups. As well, regional statistics were compared to provincial averages to establish relative degrees of "wastage".

Table 16

**Total Number of Paid Nursing Hours,
by year, for Public Hospitals in British Columbia (1)**

Year	Total Number of Paid Nursing Hours (2)
1981 - 1982 (3)	34,966,477
1982 - 1983 (3)	33,904,387
1983 - 1984 (3)	36,490,905
1984 - 1985 (3)	37,309,077
1985 - 1986 (4)	35,809,552
1986 - 1987 (5)	36,524,442

(1) Includes all nurses; excludes medical staff, interns, residents, and all students.

(2) Calculation: Total Services of Public Hospitals x (Percentage Distribution of Paid Nursing Hours / 100)

(3) Source: Statistics Canada. "Hospital Annual Statistics". Ottawa: Minister of Supply and Services Canada, (Catalogue: 83-232), 1984, 1985, 1986.

(4) The format was changed by Statistics Canada in 1986.

(5) Source: Statistics Canada. "Health Reports". Ottawa: Minister of Supply and Services Canada, Catalogue: 82-0035), 1990.

This study was further extended to develop a new analytic tool for the examination of issues pertaining to the efficient management of nursing human resources (Kazanjian, Pulcins, Kerluke, 1990 and 1992). The purpose of this project was to demonstrate that investment in the "front-end" of the management process is the best approach to solving the shortage problem. That is, preventing human resource problems by optimizing regular (full- and part-time) staff deployment through increased retention and productivity is more cost-effective than reacting repeatedly to shortages of qualified personnel through casual or agency staffing.

A management model to optimize the deployment of existing nursing resources was developed. Optimal deployment was defined as the smallest number of nurses required to provide a given quantity (expressed as hours) of nursing services. Indices were developed for the three dimensions of employment behaviour discussed above: a stability index to quantify movement and "wastage", an employment mix index to denote proportion of full-time employees, and a productivity index quantifying average hours paid per status category. These indices were calculated for nine different groupings of "peer hospitals", and patterns of nurse deployment were analyzed.

Interesting differences by peer-grouped hospitals were delineated (Table 17). The urban group of hospitals displayed a markedly higher utilization of full-time staff (79%) than the other groups, as well as a more restricted use of casual (13%) and especially part-time staff (8%). Conversely, hospitals in which more than 40 percent of the beds are extended care displayed a tendency to show a relatively high proportion of part-time nursing staff (23%) and a correspondingly low proportion of full-time staff (60%). In contrast, the measure of average hours was quite different. The highest proportion of casual staff (18%) in the smaller hospitals in GVRHD provided the lowest average hours of any casual group. In fact, substantial fluctuations in these indices among the various hospital groupings was very clearly shown. While full-time staff in urban hospitals worked the lowest average number of hours, the smaller hospitals in GVRHD obtained the highest number of average hours from their full-time nursing staff. The analysis showed that if deployment practices like those of Table 17 persist (given average annual paid hours and the distribution of full- and part-time and casual staff), a manager who wanted to generate 200,000 hours of nursing care (the average amount per year in a community hospital) would have to have a staff of between 158 and 176 nurses.

Overall, lower wastage levels were exhibited by those facilities with a high proportion of extended care beds, as well as non-metropolitan hospitals, hospitals with fewer than 500 beds, and non-teaching hospitals in GVRHD. The highest level of wastage occurred in urban hospitals, closely followed by teaching hospitals.

Table 17

Personnel Deployment Indices in Selected Hospitals
in British Columbia, 1985-1986

Hospital Group	Employment Status Ratio			Average Hours		
	Full-Time	Part-Time	Casual	Full-Time	Part-Time	Casual
Metropolitan	0.681	0.168	0.151	1632.8	1137.6	602.2
Non-Metropolitan	0.640	0.183	0.177	1666.2	1173.0	619.2
GVRHD, > 500 Beds	0.667	0.178	0.155	1582.6	1145.4	625.2
GVRHD, < 500 Beds	0.603	0.213	0.184	1709.0	1165.1	527.6
GVRHD Non-Teaching	0.636	0.195	0.169	1601.6	1122.4	605.0
GVRHD Teaching	0.698	0.161	0.141	1564.7	1176.1	652.8
> 40% Extended Care Beds	0.599	0.232	0.169	1629.4	1174.9	552.7
Suburban	0.624	0.209	0.167	1640.7	1140.2	607.0
Urban	0.791	0.082	0.127	1540.9	1132.8	608.1

Source: Kazanjian et al., 1992

Wastage was much higher in the casual sector for all groupings. This suggests a greater sensitivity of the market to fluctuations in the supply of casual rather than regular RNs, since every position staffed by casuals will bring an appreciably greater number of individual nurses through the system than will positions staffed by regulars. A heavy reliance on casual or agency staffing as a stop-gap measure in response to local nursing shortages is obviously not the most appropriate solution; and in fact, it leads to a large increase in the total number of nurses employed in a facility in one year, since more of them work fewer hours and have discontinuous employment patterns.

The impact of optimal staffing and scheduling on net nurse requirements cannot be underestimated. While much attention has been focused on reducing overall nursing hours to deal with shortages (e.g. by bed closures), the absence of any serious discussion about maximizing existing resources through optimal deployment is distressing. Research on nurse turnover indicates that the organizational context - that is, each hospital "culture" - may be the key to otherwise apparently similar working conditions between facilities. For example, if shifts are less negotiable in one hospital than another, the pattern of rotating shifts will be more likely to cause dissatisfaction in the first facility than in the second. Thus, the key for a manager is to monitor deployment patterns and to assess the magnitude of the problem along the dimensions discussed, in order to achieve the appropriate mix of regular (full- and part-time) and casual staff for the specific hospital. Finally, the optimal deployment of nursing resources invariably implies that appropriate specialty and skill mixes are in place. Unfortunately this is one area for which data are so totally lacking that it is impossible to draw even a broad brush picture of the situation.

III. Principal Factors Underlying Perceived Shortage of RNs

Regardless of the extent of the imbalances in nursing resources or public perceptions of such imbalances, consideration of three principal factors which are generic to all health systems provides a better understanding of recurring nurse shortages. During 1987-89 seven different provinces studied their respective nursing resources situations. While all of these studies and others discuss particular issues and situations specific to each province or country, three major themes common to all can be delineated. These are service delivery issues, system structure issues, and professionalization issues. Each will be discussed in detail.

1. Service Delivery Issues: Shift Work, Rotating Schedules, Workplace Conditions

Our health care system, like those in other jurisdictions, is based mainly on sick care; institutionalized services comprise the bulk of the delivery system. Nurses are the single most important category of health personnel, both in numbers and role, for the provision of hospital-based care; patients are hospitalized because they require nursing care. All nursing care (but only some medical care) is provided 24 hours of the day and hospitals are staffed around the clock. This is a universal phenomenon and applies to all countries regardless of payment systems, cultural values, or levels of economic development.

To provide twenty-four hour coverage, hospitals rely on staffing through shift work. While collective agreements specify the length and sequences of shift work, most nurses will work the early shift, the afternoon shift or the night shift for a defined period of time, but will still have to rotate to another shift for a subsequent cycle. Thus, two problems arise for the hospital-employed nurse: first, that of working shifts, and second, the rotation of those shifts. Many other industries rely on shift work and yet do not appear to have staffing difficulties of the scale that nursing seems to experience. The reason for the problem in hospitals is twofold. First, and foremost, family responsibilities (invariably assigned to women in most societies) can be incompatible with late shifts. Nursing is still a female-dominated occupation; furthermore, fewer younger women have been entering the profession in recent years. While there is some evidence of change in traditional family roles, it is more likely to occur in societies where structural changes are also underway so as to accommodate changing societal values. Thus the participation of women in the labour force is higher in countries where social programs exist to support it. In the absence of such facilitators, society can not expect to benefit from increases in the

labour market participation of women with family responsibilities.

A second reason for the problem with shift work is the lack of sufficiently attractive financial incentives to work the "less desirable shifts" (Aiken and Mullinix, 1987; Friss, 1988). Whereas collective bargaining sets shift differentials, it is clear that these have not been significant enough to attract the number of nurses required for "permanent" late shifts. Shift premiums for registered nurses were \$0.40/hour in 1980; they rose to \$0.50/hour in 1981 and \$0.60/hour in 1987. In 1991, RNs received \$0.70/hour when working evening shifts, \$1.00/hour for night shift, and \$0.50/hour for weekend work. LPNs receive the same shift compensation, while RPNs are paid \$0.55/hour for evening work and \$0.65/hour for nights. No weekend differential is paid to RPNs. For the individual nurse, the problem is further aggravated by the rotation of her shifts. It is hard enough to secure affordable reliable child care during regular working hours; it must be almost impossible to secure such services on a rotating basis!

While night shifts and rotating shifts have been part of hospital work since that sector was created and have always been regarded as problematic, the difficulty associated with them has taken on a new dimension in recent years. The rapid escalation of the problem with shift work is partly explained by another general societal phenomenon - that of increased career opportunities for women. As they gain access to occupations other than those traditionally permitted to women (the ones usually described as fostering "nurturing" roles), dissatisfaction with conditions of work in traditional settings is more clearly and emphatically articulated; because women now can have a choice of occupation, they have acquired the self-confidence to express their discontent with shift work and rotating schedules.

There has been a flurry of activity in the most recent years to improve what have been termed "workplace conditions" in nursing; the RNABC has compiled a volume on retention that has bibliographic references to recent studies of related issues, and a Nurse Scheduling Committee funded by the federal and provincial governments has been active since 1990. The consultant's report commissioned by this group made some suggestions in the form of pilot projects that need to be evaluated, such as self-scheduling, the 10-hour day, automated scheduling, job sharing, flex-hours and cost-analysis of part-time work. The workplace is an area particularly lacking in systematic documentation and study; the first such work in this province was undertaken in 1987 (Layton, 1988). While other provinces are equally uninformed, there is ample evidence from U.S.

studies, which are often only indirectly applicable to the Canadian setting (for a discussion of such literature, see Kazanjian, Pulcins, Kerluke, 1990).

Workplace conditions appear to coalesce into variable combinations of factors which culminate in the creation of a hospital culture that is perceived as hostile to staff nurses. Other than the harsh realities of shift work and rotating shifts, situations over which the individual nurse has very little control, the reliance on large numbers of casual staff on specific wards contributes to stress and burn-out for both the regular and casual staff. High turnover rates indicate the magnitude of such problems. More mundane - but no less tangible - factors such as the lack of on-site child care facilities, designated parking, staff rooms, and representation on hospital committees, to name a few, contribute to the general dissatisfaction with workplace conditions. In short, the list of factors involved with job dissatisfaction can be described as issues of management and organization which may be amenable to policy intervention.

What has been most striking so far has been the reaction of hospital and nursing management to nurse shortages. Typically, hospital management has been critical of government funding levels, expressed concerns with numbers trained in the province, relied heavily on casual staffing, and concentrated on the recruitment of new personnel. One apparent reason for the failure of management to initiate more innovative practices to increase the retention of nurses has been the lack of competition among hospitals. Given that the hospital sector is the major employer of nurses (a monopsony market), and that wage levels are uniform throughout the province due to a collective agreement that is negotiated at the provincial level, there is no incentive for hospitals to compete for nurses. This is the opposite of the situation in the U.S., where the existence of a private hospital sector and a different labour union situation encourage some competition among hospitals for nurses. While nurse shortages occur periodically in the U.S. as well, the factors contributing to the American shortages are slightly less likely to be of the organizational and managerial kind. A copious literature exists which documents the organizational factors and evaluates the management initiatives that have been developed to solve these problems, such as self-scheduling, permanent shifts, dedicated float pools, job sharing, etc. In the light of such information, it is interesting that hospital management in Canada has not been more creative in their approach to nursing resources management.

Ironically, a currently popular system for the delivery of nursing care, approved by almost all registered nurses, may be contributing to the unfavourable working conditions. The Primary Care nursing model

establishes individual nursing responsibility and accountability for specific patients. Its central concept is that care of a specific patient is under the continuous guidance of one registered nurse from admission to discharge. This is the model being used in more and more hospitals which have switched from either the Total Patient Care model or the Team approach. The former is somewhat similar to Primary Care nursing in that the registered nurse is responsible for total care of a patient but only for the hours that the specific nurse is present. Conversely, the Team approach provides care to a group of patients by coordinating the RNs, LPNs, and aides under the supervision of one nurse, the team leader (Hegyvary, 1977).

Under current market conditions, where perceptions of registered nurse shortages persist, the adoption of the Primary Care nursing model does not appear to be an efficient management practice. Furthermore, the virtual disappearance of LPNs and aides from the tertiary care settings, in part because of adherence to this model of nursing care, frequently leads to articulated disapproval by registered nurses because they are then expected to perform non-nursing duties. The lack of a logical basis to this complaint does not diminish the problem: if registered nurses already take on heavy workloads, can it be expected of them that they will happily assume other, non-nursing responsibilities?

Finally, the funding system for B.C. hospitals has created a perverse incentive to rely on recruitment rather than retention to meet staffing requirements. Initiatives to increase retention yield mainly longer-term returns on dollars invested, and, therefore, are not favoured by hospitals that are on the brink of incurring deficits. Ironically, hospitals in that situation often close beds as a cost-saving measure and cite nurse shortages as their reason for doing so.

2. System Structure Issues: Occupational Stratification, Professional Governance, Health Care Financing

The elaborate stratification of health occupations - a salient characteristic of our system - has historic roots, but is maintained and expanded as our system continues to become more complex and as the number of categories of health care workers continues to increase. Nursing is not among the handful of dominant professions. Especially in the hospital sector, medicine dominates in all aspects of the delivery of care. What is interesting (and peculiar) in this regard is that there is ample evidence to suggest that, in certain settings and at

particular levels of care, nurses provide better care than doctors (Spitzer, 1984). Yet the system is structured so that nurses are not allowed to provide care independent of physicians. This lack of congruence between what nurses are trained to do and what they are allowed to do culminates for nurses in feelings of powerlessness and various degrees of role stress. The position of powerlessness is reflected in the historically subordinate and subservient relationship they occupy in relation to physicians, one that is still maintained in modern times without much serious questioning of its validity. Various degrees of role stress are experienced when a new nurse, inculcated with the professional ethic to provide full nursing practice, is confronted with the realities of a hierarchical system and employer- and physician-regulated scope of practice.

Feelings of powerlessness and role stress experienced by nurses are also reflected in their relationship to health care executives and high-level hospital managers. Most nurses have almost no direct involvement in management and administrative decisions, despite their pivotal role in the delivery of care. For example, most hospital boards do not have nursing representatives, few formal mechanisms exist in hospitals for input from nurses regarding organizational decisions, and staffing levels are rarely determined by nursing diagnoses of patient care requirements. Again, evidence of the merits of the involvement of nurses in these areas does exist (Halloran & Halloran, 1985), but the involvement is rarely considered to be necessary by management; feelings of powerlessness in the face of such workplace conditions are thus often expressed by staff nurses. Furthermore, the bureaucratic ethic that prevails in most hospital settings conflicts with the nurses' professional ethic, leading to role stress among new (and sometimes not so new) nurses. In fact, this is the type of situation most often described - in the popular press - as the frustration of nurses at not being able to offer more "empathy" time to their patients, because they are too busy providing clinical care.

Equally important is the relationship of nurses with government in general, and the Ministry of Health in particular. In the absence of formal structures or mechanisms for communication between providers and policy-makers, such communication, even if it did exist, would be less effective and more subject to variation. The creation of the Senior Nursing Consultant position and the Provincial Nursing Advisory Committee are recent developments, only undertaken in reaction to persistent expressions of concern from the professional association. The Committee is concerned only with registered nurses; this limits appreciably the Committee's potential for long-term rational planning for nursing and greatly undermines the importance of breadth of vision to understand and address what are often problems with health systems rather than health personnel.

Most nurses are employed in the public sector and are, therefore, subject to conditions and trends regulated by public policy. The total absence of a private market for nurses contributes to unfavourable economic conditions for nurses; the supply of and requirements for nurses' labour are not regulated by market forces so that a point of equilibrium is reached at the price consumers are willing to pay for such services. In health care systems where public and private health sectors co-exist side-by-side, differences in levels of nurse shortages are indicative of varying conditions of employment in the different sectors. This does not imply that the solution lies in creating a private sector in health care; rather, that the inevitability of this structural impediment should be compensated for by ensuring maximum resolution of other barriers. In short, many structural barriers and impediments appear to exist that set the underlying conditions within which nursing resource imbalances continue to exist and perhaps even to increase.

These structural barriers are sometimes formidable because they are often entrenched in legislation and other public policy. Provincial statutes give to physicians the power to define and control their exclusive scope of practice, and also the power to define the standards and scope of practice of their "ancillary" groups. Thus, while the Nursing Statutes Amendment Act of 1988 restricts the practice of nursing to individuals registered with one of the three nurses' associations, nurses do not have formally defined exclusive scope of practice. Nurses can not diagnose, prescribe or initiate technical procedures even if such tasks would come within the bounds of nursing practice. It is somewhat paradoxical, a "reverse Cinderella syndrome", that those restrictions are lifted somehow, (although only implicitly), during the night shift. Thus, professional governance policy that was formulated with an objective to protect the public from incompetent medical practitioners has, in effect, vested the latter with monopoly power; through scope-of-practice clauses, physicians have control over the conditions within which care can be delivered, as well as control over the roles of and relationships between other health personnel. This is particularly restrictive to registered nurses.

Another barrier to change in employment conditions for nurses is the Hospital Insurance and Diagnostic Services Act of 1957. An unintended consequence of this Act has been the creation of an unfavourable situation for salaried hospital personnel. As previously discussed, hospitals have a comparative advantage in their negotiations with salaried personnel. Within the confines set by this Act, other provincial public policies also have direct impact upon employment conditions for nurses. When the intent is to curtail rising medical expenditures, and only indirect measures such as freezes or roll backs of hospital budgets (as was the case in

mid-eighties) are used, nursing employment is greatly affected. The adverse effects of such budget constraints include reduced nursing staff, higher reliance on casual staffing, less accommodating rotation of schedules, more overtime for regular staff, etc.

A more recent provincial policy to encourage hospital-community partnership had allocated 0.5 percent of hospital budgets to community-based programs. That proportion of the total hospital budget was held back and hospitals were encouraged to submit proposals in conjunction with community agencies for such partnership projects. This policy is aligned with other activities undertaken by the Ministry of Health in order to shift the current structure of the delivery system to one that is more community-based. There are, however, serious implications for nursing (and nurse requirements) in such a move. If the shift to community-based care is successfully implemented, the level of acuity of patients receiving hospital-based care will be much higher, on average, than it is right now, given the broad range of patients currently admitted to acute care hospitals. In order to train adequately prepared nurses for the new delivery system, rational planning of future human resource requirements has to take place now. A health systems perspective is needed to coordinate seemingly unrelated policy areas - physician supply, hospital funding, delivery system structure - all of which will, obviously, have serious effects upon nursing resource requirements.

As previously mentioned, the changing role of women in society provides the perspective from which to interpret nurses' feelings of powerlessness. While nurses may always have felt this way, the recent gains of feminism and the women's movement in the promotion of gender equality permits a better articulation of nurses' dissatisfaction with their status in the hierarchy of health professions.

3. Professionalization Issues: BN for Entry-To-Practice, An Expanded Role, Role Stress

Historically, there has been a continuing trend toward the professionalization of registered nurses, partly as a way of differentiating and defining this group as distinct among a number of other "auxiliary" occupations such as nursing assistants and orderlies, and also as a way of defining nurses vis á vis other health professionals in medicine, in rehabilitation, etc. (Brown et al., 1987; Wuthnow, 1986; Fagin and Diers, 1983). The literature defines professions as intellectual, learned, and practical; professions have techniques that can be taught, they are guided by altruism and deal with matters of great human significance. Also, their members are organized into

associations (McGlothlin, 1964). Registered nurses in this province appear to have only some of these attributes. They do not have one of the most essential professional characteristics: exclusive scope of practice.

However, they do have control over entry-to-practice. The Nurses (Registered) Act (RSBC, 1979, Chap. 302), under Section 13 charges the association with the authority to approve all nursing education programs that prepare nurses for registration. Since much of the control over a profession's ideology accrues from control over the education process (Olmsted and Paget, 1969), entry-to-practice restrictions tend to be defined in terms of stringent educational qualifications. In 1982, the Canadian Nurses Association (CNA) resolved to require that nurses have a Baccalaureate in Nursing degree (BN) to enter practice by the year 2000. National and provincial efforts to meet this objective have since been underway; activities in this regard are part of a larger effort to improve the status of nursing among the health professions. Ten years ago, prior to the CNA resolution, only 12 percent of the B.C. nurses were baccalaureate-trained - a slightly higher proportion than the national average; that proportion in 1989 was estimated at 16 percent.

Questions about the BN for entry-to-practice have caused concern about the problem of clinical preparation for entry-to-practice. Nursing education was traditionally conducted in hospitals; indeed, until the Great Depression, most acute care institutions depended almost entirely upon their student population to staff their facilities, and graduate nurses were employed in private duty nursing (Bramadat and Chalmers, 1989). For a long time, basic education for baccalaureate nurses consisted of training in the hospital for a diploma in nursing, with the addition of two years of university-level science courses. The clinical aspects of training were not under the direction of the university. After World War II, it became customary for hospitals to employ their own graduates and thus it was rare for nurses to require orientation or additional preparation to be capable of competent practice. With the advent of non-hospital based nursing education in the 1960s, hospital administrators (and physicians) began to express concern about the (more limited) extent of the clinical preparation evidenced by the college-trained nurses. It should be noted that, until the 1980s, most nursing managers were themselves diploma graduates who had risen through the ranks, often remaining in the same institutions. The concerns of employers have not been relieved with regard to the problem of clinical readiness, although the distinction between institutional familiarity and competence has been recognized, and more extensive and appropriate orientation programs are now routine in most acute care facilities.

The problem arose with the replacement of apprentice-style training with a more academic approach; the

catchword in the early 1970s was that one did not need to make a thousand beds in order to learn to make one. But even as the new programs at the colleges and UBC were beginning, it was already becoming apparent that more specialized areas of nursing practice required extra training. As the technological complexity of nursing practice has increased and patient acuity has intensified, the need for special clinical preparation for competent practice in areas like critical care, cardiac care, obstetrics, and paediatrics has become more and more widely accepted. At the same time, the graduate nurse is prepared as a generalist; she is expected to be prepared to practise with an appropriate, if minimal, degree of clinical competence in the five areas defined by the registration exams - namely, surgery, medicine, obstetrics, paediatrics, and psychiatry.

This is the context for the debate about basic baccalaureate education and the length of diploma education. Baccalaureate preparation takes in a wider range of academic options than diploma education; the social sciences are especially favoured, although some universities require basic science credits as well. The extent of clinical preparation is determined by the registering body which has the legislative right to approve educational qualifications at the basic level. Theoretically, all registered nurses are prepared to work in acute care settings, but it is still felt by some observers that baccalaureate programs are better at preparing nurses for work in community health than in acute care institutions. At the same time, many of the colleges are extending the length of their diploma programs, both with clinical courses and by adding preceptorships, in order to allow for better development of clinical skills and organizational coping skills. (The preceptorships and the intensive, short-term "real world" courses are designed, in part, to acquaint presumptive graduates with the realities of acute care employment in terms of workload and shift work.)

A recent doctoral thesis addressed the issue of the expectations held by five groups: educators, employers (nurse administrators), nursing leaders (RNABC), physicians, and government in relation to the content of registered nursing education (Frissell, 1989). The author asked representatives of each of these groups to describe and rank in importance those skills and subjects that were necessary to competent nursing practice. The average ranking of each group was then tested for its degree of similarity or difference from each of the others. Physicians were least in sympathy with educators, employers, and leaders about what was appropriate nursing education; the doctors appear to have preferred an approach emphasizing technical ability, less focused on decision-making skills, autonomous practice, or the exercise of inter-personal skills. Educators and administrators were in general agreement about the basic areas to be covered and skills to be acquired, but

nursing leaders were less likely to value the same items as representatives of other nursing groups. Nursing leaders were apt to be more concerned with promoting professional behaviour and goals. Government officials appeared to be supportive of the status quo, opposed to more education and, in general, protective of public funds.

The study population was also asked to advise on the proper length of nursing education, and an outline of a new program for basic education in nursing, one that would accommodate the perceived need for increased clinical sophistication, was compiled based on this advice. Frissell suggests a four year baccalaureate in which the first three years would include some basic science and social science, along with a concentration on general adult medical-surgical nursing. She had observed that most new graduates are employed initially in those areas, and she argues that basic nursing skills can be acquired with intensive exposure to those services. The last year should allow for specialization in one of the other major clinical areas.

In 1990/91, three nursing programs were part of what the B.C. Ministry of Advanced Education, Training and Technology has called "bridging" college to university education. Students from certain programs within these colleges can earn baccalaureate degrees from the partner university while remaining enrolled at the college; the university is thus responsible for the curriculum and instruction of the last two years of study. As well, the last of the hospital schools of nursing (at the Vancouver General Hospital) has joined the UBC School of Nursing, and VGH graduates will now receive Baccalaureates of Science in Nursing. These efforts will accelerate the rate of increase of baccalaureate-prepared nurses. Another area of activity is control over the registration process. Registered Nurses, Registered Psychiatric Nurses and Licensed Practical Nurses have just recently gained control over their own licensing process (The Nursing Statutes Amendment Act, 1988), restricting the practice of nursing to only those registered with their respective association.

These developments in the areas of education and professional governance indicate that the nursing profession is undergoing a transition in role definition; that is, the profession is giving serious reconsideration to its social role. An initially undifferentiated picture of nursing appears to be fading with the recent emphasis upon the need for more specialization in acute care settings, and the higher levels of competence required for the use of complex medical technology. Discussions of the expanded role of nurses indicate potential for conflicting definitions of nursing roles.

The greater the congruence of the norms, values, and behavioural expectations among members of a profession, and between its educators and the realities of the work setting, the smoother the transition of the neophyte nurse to full-fledged professional. Given that the definition of the role of nursing is in a state of flux, it is perhaps not surprising that neophyte nurses become quickly disenchanted with the realities of the workplace. Reality shock (Kramer, 1974) occurs when the new nurse experiences conflict at work. Hospitals have to be bureaucratic structures in order to run efficiently, especially with the recent emphasis on cost-containment. This bureaucratic ethic is in conflict with the professional ethic acquired by the nurse in school and becomes a source of structural stress. The extent of the incompatibility of the goals of hospital administrators and professionals partly depends on the type of organization. In organizations where the professionals function primarily as experts and final authority rests with the administration, the degree of incompatibility will be greatest, thus resulting in role stress. Also, to the degree that the educational organization is out of touch with the realities of the workplace, the neophyte nurses's level of role stress will vary. Nurses in hospitals have traditionally been regarded as "semi-professionals" whose work is less autonomous than that of "real" professionals. Yet, the more recent efforts towards professionalization greatly increase the potential for role stress in the workplace. In addition to the disjuncture between the bureaucratic and professional ethic, the disjuncture of the latter with the service ethic which the nurse feels towards the patient intensifies the reality shock.

Thus, two aspects of professionalization affect nurses' disenchantment with work conditions. To begin with, the higher entry-to-practice qualifications and expanded roles which are key attributes of professionalization are difficult to reconcile with the realities of acute care employment; unless hospital structures are changed to be less bureaucratic, and patient expectations of service are reduced, increased professionalization will lead to greater incongruence between the professional, bureaucratic, and service ethics that nurses must espouse simultaneously. Secondly, some educational institutions appear to be out of touch with the exigencies of the workplace, especially those of the small or remote hospitals. Unless job-specific training requirements are established for all types and levels of care so as to prepare the new nurse for the realities of the work situation, the degree of reality shock will likely continue to increase.

Undoubtedly, the complexity of medical technology, the explosion of knowledge, and the shift to community-based care warrant advanced qualifications for some nurses. A central question must be addressed

by public authorities before a rational plan for nursing can be developed: What types of nursing personnel and what mix are required to deliver care to meet the nursing needs of the health care system? Effective nurse human resources planning efforts should also take into consideration the changing opportunity structure in the labour force for women with equivalent education and similar career aspirations. Whereas in the past this was limited to "a few female" occupations, the choices are more numerous today and ever increasing.

The problems encountered in nursing human resources are inextricably tied with those of gender inequalities brought to the public's awareness by the women's movement during the previous decade. An analysis of the education and income of health personnel is indicative of a historic gender bias, where there has occurred the superimposing of a gender hierarchy onto an occupational hierarchy characteristic of the health labour force. The non-competitive, complementary aspect of the traditional division of labour in the family is reflected in the health labour market in the form of non-competing gender groups, where "feminine" occupations are placed in supportive roles and "masculine" professions in dominant roles (Kazanjian, 1993). To the degree that macro-social forces are reducing the inequalities between men and women, the micro-social situation of the health human resources market will require concomitant adjustment to meet these and other environmental exigencies. To be sure, the traditional nurse-doctor game with all its elements reflecting stereotypical roles of male dominance and female passivity will no longer appear as quaint as before.

IV. Policy Implications and Options

The purpose of any human resources planning activity is to make the most efficient use of resources; that is, to have in place the optimal number and mix of health care personnel. Three policy areas which have impact upon this goal are professional governance and regulation, human resource supply policy, and system structure and financing (Lomas and Barer, 1986). Existing health human resource problems are as much a result of failures within each of these areas as they are a result of the failure to coordinate efforts among these three areas. These crucial inter-relationships have not, heretofore, been fully investigated and certainly are rarely, if ever, considered when planning and policy decisions are made. Furthermore, a failure to coordinate planning and policy formulation for all health personnel, rather than for each group in isolation from others, is in part responsible for the group-specific human resource problems of long duration. Thus, while the following discussion of policy implications and future options is focused on nursing personnel, in an ideal world these would be integrated into policy regarding all health personnel.

Table 18 summarizes the issues and identifies the key stakeholders; only those directly responsible for policy are identified here. This table clearly shows that responsibility over nursing human resources policy is fragmented, spread among governments, educational institutions, professional associations and employers.

1. Education and Training

Training of nurses at the basic level takes place in numerous colleges and one university; the latter is funded on a global basis whereas the former have a more program-specific funding formula and are accountable to the Ministry of Advanced Education, Training and Technology (MAET&T). Thus, numbers and mix of nursing specialties is not negotiable at UBC; colleges, on the other hand, have a strict protocol for developing new programs and making submissions for funding.

The Health Human Resources Working Group (HHRWG) is the official body responsible for such planning for the province; it is chaired by the Ministry of Health and has representatives from the Ministry of Advanced Education, Training & Technology, and the Ministry of Finance. A staff member of the HHRU also participates, as the Unit provides research support for this group. The Working Group provides a forum for inter-ministerial communication regarding matters of concern. For example, when MAETT tables a new

Table 18

Policy Issues and Responsible Stakeholders

Policy Areas & Issues	Stakeholders
Human Resource Supply Education/Training Enrollments Curriculum Practicum Collective Agreement - Wages Foreign Recruitment	Colleges and Ministry of Advanced Education Training & Technology; Universities Professional Associations and Colleges; Universities Educational Institutions and Hospitals Employers (HLRA) and BCNU Employment & Immigration Canada; Employers
Professional Regulation Registration/Licensure Scope of Practice	Professional Associations, Ministry of Health (Legislation) Professional Associations; Ministry of Health (Legislation)
Funding and System Structure Delivery Models Remuneration Methods	Ministry of Health Ministry of Health

program, they also request protocols and seek input from the members of the HHRWG on the implications of the program with regard to the health care delivery and costs. There is more discussion and more co-ordination for fields which require clinical placements. Ultimately, it is MAETT that makes the funding decision for education programs.

Despite the existence of this forum, there are many instances when a policy formulated by one Ministry is in conflict with a policy from another Ministry. For example, MAETT's college/university bridging programs (which include more than just nursing) will have serious implications for baccalaureate training for nurses; Ministry of Health's official position has been not to support the baccalaureate as entry-to-the practice of nursing. While this is an issue of national importance, neither Provincial governments nor the Federal government are co-ordinating their policies in this regard. There is a Federal position statement that does not support the CNA resolution; however, unofficial provincial positions may be contradictory. Prince Edward Island, for example, has not in the past trained nurses; in 1990, the first and only school of nursing was funded at the university level. Nurse educators and nursing associations appear to be more organized and better coordinated in their activities to achieve the "BN for the Year 2000" goal. At a national symposium in Manitoba in November, 1990, the nursing community showed a collective purpose. In contrast, there is no policy action on the part of public authorities despite the fact that inaction is usually interpreted as a supportive position.

There are several options ranging between the two extreme ones of active rejection or full support for the CNA resolution. Only the full support position requires no policy action; all other options will necessitate new policy development in the form of new legislation.

Three different models for basic nursing education could be considered for their value to the health care system. The first, suggested by Frissell and discussed in Chapter III, would be a four-year baccalaureate in which the first three years will include basic sciences and social sciences and a concentration on general adult medical surgical nursing. The last year would allow for specialization in one of the other major clinical areas. Another model for basic nursing education is the pattern preserved in engineering faculties. In this case, students would choose general specialty areas after one or two years of introductory course work, and would be restricted in practice to the area in which their undergraduate training occurred. This model could also be used as a framework for the implementation of the Frissell design described above. It would adapt well to current methods of registered psychiatric nurses' training, and would probably be attractive to employers, although the length of

the program - four years - is considered, as always, to be an impediment. However, nursing leaders argue that, in order to preserve as many options as possible for career practice, undergraduate nursing education should remain generalist, although they would prefer that some degree of concentration be integrated into a four-year basic curriculum. That third model would be rather like undergraduate education in the humanities, where students major in a discipline and take courses that cover a range of subjects providing for a basic introduction to some circumscribed area of the discipline. Specialist training would continue to be post-basic, and would remain at the certificate level for general duty nurses, although clinical specialists would be expected to obtain master's degrees.

Indeed, the length of training is a particular concern of employers and government, both of which fear that the volume of nurse graduates will decrease as education is extended, thus precipitating a crisis in recruitment. In addition, human resources planners worry about extended training as a disincentive to prospective workers. Current nursing students are drawn from groups of women who expect to enter the work force at a fairly high level wage after a relatively brief educational period - a smaller investment of time and money than is required from future teachers, physiotherapists, or social workers (to name a few). It is possible that some substantial proportion of this pool may be unwilling to make a larger investment in their education; those who do may expect a better return of their investment in terms of increased wages. There are also implications for the nurses' union. The majority of British Columbia Nurses' Union members are diploma nurses and their future promotion and tenure become more uncertain, even if they are all "grandfathered" in when the BN policy is implemented. Neither the CNA resolution nor RNABC's endorsement statement provide any detail as to the effect of the BN entry-for-practice on seniority and job mobility.

Higher education and better remuneration to attract and retain a more dedicated professional work force will not provide sure solutions to nurse supply problems if workplace conditions do not change as well. Unless the problems of scheduling and rotating shifts, availability of support in the workplace, more decision-making responsibility, and improved doctor-nurse relations are resolved, the expectations of nursing practice developed in nursing school will seem even more inconsistent with workplace conditions than they are now. Higher education leads to heightened expectations; it means that "reality shock" comes sooner in the work experience of nurses and creates more disappointment and frustration for the individual. In short, attrition may stay the same, perhaps

even increase, thus augmenting existing shortages.

Conversely, longer education is also believed to increase professional adherence, so that nurses who invest more time in their basic education may be more likely to survive the reality shock and to stay and work to improve conditions. There is increasing evidence which suggests that nurses are beginning to speak up to doctors, to participate in administrative decision-making, to be permitted to experiment with alternative models of shift rotation, etc. It is not unlikely that some of this less passive and subordinate behaviour is related to the more extensive education which is typical of head nurses, nurse managers, nurse educators, and an increasing number of general duty nurses.

2. Recruitment and Retention

Whereas recruitment has traditionally attracted more attention from all stakeholders - and it involves employers, public authorities, unions, and educational institutions - retention has been almost ignored. This is partly a result of the hospital financing system. Less than satisfactory and sometimes downright poor management practices remain unchecked because there is no mechanism to create incentives for better management. Inefficient practices are counterbalanced by continuous recruitment efforts and, when an employer incurs a deficit, bed closures ensue and recruitment efforts cease (vacant positions are frozen). Government is blamed for not training a sufficient number of nurses, since attrition rates always surpass production rates.

However, with cost-constraint in the early '80s, the need for efficient management of nursing (and other) human resources has come into focus. Despite that trend, in many hospitals new nurses (recent graduates) are employed only as casuals so they will get their orientation to the hospital at no cost to the employer. These new nurses are assigned to float pools and move between wards as needed without any support from a more senior mentor or a group of peers. That some survive this experience and obtain a regular position is against all odds. Most will seek another employer and some will leave nursing altogether. A common fallacy exists among human resource planners regarding the willingness of nurses who have left the workforce to return to nursing at some point in the future. The evidence is clear and to the contrary; the vast majority will never return. Some do, and more should be encouraged by efforts to make available more refresher courses at appropriate levels.

Recruitment without proper orientation is not cost-effective for the neophyte or more experienced nurses, and, as well, the province relies heavily on nursing personnel trained outside the province. Often nurses migrate

as part of family units, and broader socio-economic factors enormously influence these migration trends.

Employers cannot predict about the pool of candidates from which they will be recruiting. When this pool shrinks in some years, shortages are announced. If nurses did not work reduced hours and/or did not quit jobs, and/or did not leave nursing at the rates they do, the number of nurses registered annually with the Association would be sufficiently large to meet the needed amount of nursing services.

Improved retention is the key factor in reducing shortages; it is the cost-effective option. It can be achieved with improved workplace conditions which require some commitment from nursing and hospital management. Among their options, increasing the proportion of part-time workers (who have been shown to be a more stable work force) is not particularly difficult to implement; providing good orientation programs to new nurses and establishing dedicated float pools have only minimal cost implications. Automated scheduling models that accommodate individual nurses' shift preferences, provision of on-site child care, and job-sharing opportunities all have some cost-implications. These, however, have been proven to be more cost-effective in terms of increased retention and quality of care, as well as reduced recruitment costs.

Until such time as the impact of poor retention on shortages has been assessed through efforts at increased retention, the assumption of causally linking production and shortage rates cannot be justified. Only when retention is not considered a problem any longer can shortages then be attributed to insufficient production of trained personnel.

More power at the workplace and a sense of appreciation can be achieved by nurses also through innovative management practices. The appointment of nurses to hospital committees and the allocation of more planning responsibility to Head Nurses involve organizational changes that seem to be more difficult to implement immediately. An important consideration should be: can the hospitals afford to ignore these problems?

3. Collective Agreement

While career ladders - to the extent that these are possible - are controlled by educational preparation, earnings are controlled by a stepwise grid that has remained quite static since 1981. The minimum and maximum points of the increment have remained in the same range for a decade. This range has been low for all nursing groups, but particularly unfavourable for the LPNs.

Nurses' lack of control over the definition of practice is in large part responsible for the incongruities of the vertical grid of wage increments. It reinforces the "a nurse is a nurse is a nurse" mentality. Yet, from the nursing unions' perspective, it provides one of the few levers of bargaining power, since most other levers, such as definitions, level of care, workload assessment, etc. are controlled by the employer. There are also some incongruities in reconciling professionalism and career ladders established by the terms of collective agreements.

Given the current wage structure, shortages in high stress specialty areas such as ICU/CCU and Emergency are often attributed to the lack of remunerary incentives, based on comparisons with the private health sector in the U.S. As well, regional imbalances, it is argued, could be corrected by financial incentives such as higher wages, isolation bonuses, etc. There is the physician model, with northern and non-urban practice incentives; in areas where a physician cannot expect to maintain a viable medical practice, his earnings are supplemented to a level commensurate with the average for his peers. However, nursing difficult-to-fill vacancies are often highest in the lower mainland, indicating that regional discrepancies are not simply a function of the degree of isolation.

Finally, the suggestion to compensate casual nurses at a higher rate for being available on very short notice has received support from human resources planners. Once again, this appears contradictory to the image of professionalism that organized nursing is attempting to promote. This type of incentive would probably work in reverse: more nurses would work on a casual roster, thereby creating more instability and wastage.

4. Registration/Licensure and Scope of Practice

Legislation exists to regulate entry to the practice of nursing, and that function rests with the two professional associations (RNs, RPNs) and the licensing body (LPNs); in order to practise as a nurse in B.C., an individual must hold current membership in one of the above-mentioned organizations. The RNABC exercises its legislated responsibilities to the public and its members through a constitution and by-laws. The organization's 26-member Board of Directors is the governing body which sets rules and policies. Five among the members of the Board are not nurses; two are appointed by the provincial government, the others represent consumer groups.

However, nurses almost always work for an employer, and, therefore have to abide by the employer's definition of nursing care (in conformance with policies set by the agency). Nursing does not enjoy the type of

self-regulation that medicine, dentistry, and pharmacy enjoy. Where necessary, the professional association will evaluate the adequacy of individual nurse performance and may take disciplinary action. New legislation would be required to provide a mandate to the professional association for self-regulatory functions.

While all three nurse groups have professional autonomy of some degree or another, they do not have exclusive scope of practice. Furthermore, the delegation to nursing of medical tasks increases nursing activities, but the responsibility for care remains with the ordering physician and the agency. As nurses move towards professionalization in its full sense, these restrictions will have to be overcome, presumably by new legislation. Legislative change is difficult to initiate and slow to develop. It is unclear whether there would be public support for such efforts. It would all be justified, however, because it would clearly delineate the roles of the three types of nurses and empower them with a sense of mission. As well, if baccalaureate-level education becomes preponderant - regardless of how the entry-to-practice issue is resolved - an expanded role for nurses may be more cost-effective for meeting population health needs. Of course, new legislation to increase scope of practice will have to be coordinated with new policies to introduce alternative delivery models and to finance nursing care.

5. Delivery Models and Remuneration

The human resource implications of changing delivery models are often the last of the problems to be considered. In B.C., past efforts - small as they may have been - to shift to a community-based delivery system have been met with general approval by all stakeholders. The changes will have serious implications for nursing resources, and it would serve the public better if these policies were coordinated with those in the area of nurse supply.

In the community sector, nurses would be expected to function more independently and will need new skills in decision-making and case management. At the same time, acute care hospital nurses will need higher skills to care for the high-acuity patient population. With the increasing use of more complex technologies, nurses will be expected to practice to more stringent standards of care that require better knowledge of both technology and disease. The planning and policy development for alternative models of service delivery should be coordinated with the similar activities involved in introducing alternative payment methods to providers of care.

If nurses are to function more independently, should they not be paid in other than wages? It has been shown that nurse practitioners cannot expect to have a viable career if they can only work as salaried staff in a medical group practice. Fee-for-service remuneration has traditionally been an attribute of professions and presumably provides better incentive for labour-market participation. This option may increase the currently narrow range of options which allow intelligent, motivated, and dedicated nurses to remain in the field while pursuing a rewarding career. As a small scale demonstration project, it may prove to be an astute investment: to put savings realized from the provision of cost-effective care, and from improved quality of life, towards the creation of improved career opportunities for nursing professionals. After all, the costs incurred by society at large and by the health care system for an unstable nursing workforce are much more than the immediate costs incurred by reducing nurse shortages.

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