



HEALTH WORKFORCE PROJECTIONS MODELLING 2009

RURAL NURSING WORKFORCE

*APPENDIX*

Prepared for Health Workforce New Zealand, Investment and Purchasing Group

By Health Workforce Information Programme  
(HWIP)

*A sector collaborative activity*

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## Appendix I – The team

### Background of Health Workforce Information Programme (HWIP) - Forecasting

This forecasting report is the first in a suite of nursing sub-specialities projections. The overall project is a national initiative comprising a series of forecasting and workforce modelling exercises on the nursing workforce in New Zealand. The project has developed in response to the widespread need to understand nursing workforce demand, supply and training requirements. This project will help us understand our national nursing workforce picture now and into the future.

The objectives of the programme are:

- To provide a global view of the current status of the nursing workforce.
- To produce nursing workforce projections based on differing scenarios to inform workforce planning and training decisions.
- To improve the quality of nursing workforce information within the Ministry and the health and disability sector.
- To provide a platform to improve the capability of the Ministry and the health and disability sector to undertake nursing workforce planning and funding allocation.

The projections will underpin future planning, as accurate workforce information is fundamental to the effective management and planning of health and disability services. It is also essential to adequately plan for undergraduate, post-graduate and post-entry clinical training.

The programme is part of the Future Workforce Nursing strategy initiatives and has been commissioned by Health Workforce New Zealand (HWNZ): Investment and Purchasing Group (formerly Clinical Training Agency). Initial work involved setting up a Stakeholder Reference Group that oversaw the development of the Current Status of the Regulated Nursing Workforce document. Each sub-specialty that is to be forecasted has an Expert Advisory Group (EAG), with a member who liaises between the stakeholders' reference group and the particular EAG.

### Future Workforce Nursing Strategy Group

Jim Green	Lead CEO, Nursing and Midwifery WSG, Chief Executive Officer (CEO) Tairāwhiti District Health Board (DHB)
Chiquita Hansen	Director of Nursing, Primary Healthcare, MidCentral DHB
Glenda Alexander	Council of trade Unions Representative
Heather Casey	Director of Nursing, Mental Health, Otago DHB
Helen Pocknall	Director of Nursing and Midwifery, Wairarapa DHB
Jan Adams	Chief Operating Officer, Waikato DHB
Kevin McFadgen	Employment Relations Specialist, District Health Boards New Zealand (DHBNZ)
Liz Manning	Project Manager, Future Workforce, DHBNZ
Lynne Collier	Clinical Services Manager, Well Dunedin Primary Health Organisation (PHO)
Marilyn Rimmer	Manager, Future Workforce, DHBNZ
Mark Jones	Chief Nurse, Ministry of Health
Mary Gordon	Executive Director of Nursing and Midwifery, Canterbury DHB
Suzanne Rolls	Professional Nursing Advisor, New Zealand Nurses Organisation (NZNO)

### Stakeholder Reference Group

Andrea McCance	Registrations Manager, Nursing Council of New Zealand
Andrew Potts	General Manager, Adult Health Services, Waitemata DHB
Anna Schofield	Nursing Leadership Manager, Te Pou
Daria Martin	Portfolio Manager, HWNZ (formerly Clinical Training Agency)
Heather Baker	Senior Lecturer, Nursing School of Nursing, University of Auckland

Jane O'Malley	Director of Nursing and Midwifery, West Coast DHB
Jocelyn Peach	Director of Nursing and Midwifery, Waitemata DHB
Karolyn Kerr	Project Manager, HWIP
Liz Manning	Project Manager, Future Workforce, DHBNZ
Maree Cassidy	Clinical Services Manager and Professional Nurse Advisor, Mercy Ascot Hospital
Maria Baker	Maori Workforce Champion Group
Mark Jones	Chief Nurse, Ministry of Health
Shona Wilson	HWIP consultant
Vicky Noble	Director of Nursing, Primary Health Care, Capital and Coast DHB

#### Expert Advisory Group (EAG) - Rural

Maria Baker	Project Leader, Te Rau Matatini (Maori Mental Health Workforce Development) Organisation
Anne Fitzgerald	Rural Nurse Specialist, Haast, West Coast
Leanne Samuel	Director of Nursing and Midwifery, Southland DHB and Otago DHB
Mia Carroll	Senior Lecturer, School of Nursing, Faculty of Medical and Health Sciences, the University of Auckland
Rose Lightfoot	Chief Executive Officer, Te Tai Tokerau, PHO
Kirsty Murrell-McMillan	Rural Nurse Specialist, Otago
Jane O'Malley	Director of Nursing and Midwifery, West Coast DHB

## Appendix II - Data Sources

### Nursing Council Registration, Annual Practising Certificate and survey database

A workforce questionnaire accompanies the Annual Practising Certificate (APC) application form sent by the Nursing Council of New Zealand (NCNZ) each year to nurses who are on the register of nurses and who need to update their APC to remain active. The APC workforce survey elicits individual data on a self reporting basis. This provides statistical information about the regulated nursing workforce. As the bulk of the nursing workforce information is within this NCNZ database, this was the major source for analysis. Mercury Project Limited, Wellington, has been recently commissioned by the NCNZ to redesign and implement a contemporary database management system for the nursing registration, annual survey, and APC processes. A copy of the NCNZ database of aggregated and anonymous data was supplied by Mercury Project Limited with permission from the NCNZ for analysis in this project. A contractual arrangement between HWIP and the NCNZ ensured security and anonymity of any data supplied to HWIP.

The NCNZ data collection is based on nurses' individual opinions with regard to their own working situation at the time of APC application using forced choice questions. The quality of the data relies upon the accuracy with which nurses report their situations and the nature of the survey form. In particular with regard to measurement of rural nurses:

- the survey form does not supply term definitions to support categorisation of practice areas (e.g. the categories that are used to describe nurses' practice offer selections of terms for different areas of nursing practice, but do not define the meaning and scope of each term)
- allocation of rurality of nurses depends upon accurate work and home addresses; work addresses are not always consistent with location of work (e.g. a nurse may put a DHB work address according to the DHB main office and work in a location elsewhere)
- rural nursing is not identified as a specific area of practice; therefore assumptions need to be made with regard to employer, employer address and practice area
- the categories for areas of practice do not concur with the Australian New Zealand Standard for Classification of Occupations (ANZSCO), categories, although they transfer quite easily
- numbers of nurses who work with ICT and telephone nursing services such as Healthline, the Well Child Telephone Advice Service and Private tele-nursing

services cannot be determined from within the data collection. Therefore these nurses who offer increasing services to rural populations (such as Swine Flu prevention and management) are not included in this forecasting model.

The NCNZ data is the primary data source for the supply estimates for nurses, the NCNZ data records data for over 40,000 individual nurses from 2001 through to the present. This dataset enables the calculation of the influence on entry and exit rates for variables such as age, gender, and ethnicity

### Statistics New Zealand Demographic Projections

Demographic projections by age, area unit (and thus rurality), ethnicity, and gender are used as a basis for forecasting. Demand for different population groups is based on population changes (weighted by the capitation Based Funding (CBF) formula and Primary Health Organisation (PHO) data on high needs groups). Note that the original Statistics New Zealand (SNZ) demographic projections are calculated on the basis of multiple ethnic groups and District Health Board New Zealand (DHBNZ) has redistributed the ethnic estimates for these and other demand estimates.

### Primary Health Care Data

Summary estimates of primary health care data provided by the DHBNZ PHO monitoring team are used to provide estimates of the proportions of patients according to the high-needs quintiles, high-user health card and Careplus groups that affect CBF. Within each age-group, rurality, ethnicity and gender based group the proportions of high-needs, high user health care (HUHC) and Careplus patients are assumed to be the same.

### Primary Care

The term 'Primary Care' is used within the NCNZ survey as a name for one area of nursing practice. 'Primary Care' has also been identified as a nursing sub-specialty for forecasting later in this project. Due to changes brought about by the Primary Health Care (PHC) strategy (2001) it is timely to examine the traditional definition with a view to developing a term or terms along with associated definitions to better describe and define what is meant by 'Primary Care'. It is intended to address this as part of the Primary Care forecasting project. Any reference to Primary Care in this document is as a reflection of the NCNZ use of the term.

## Capitation Based Funding Formula

The capitation based funding formula attaches a cost weight to patients of different age, gender, ethnicity, high-needs quintile, high-user health card and Careplus status. This provides an indication of the cost of meeting the health needs of the corresponding sub-group of the population.

## Consultations

Rural nursing services are provided by a number of providers including DHBs, PHOs, and others including independent nurses and private providers. In order to understand the distribution, educational needs, history and models of care telephone and face to face consultations were carried out. These included:

Rose Lightfoot            Chief Executive Officer, Te Tai Tokerau PHO

Mia Carroll                Senior Lecturer, School of Nursing, Faculty of Medical and Health Sciences, the University of Auckland

Associate Professor Judy Kilpatrick

Head - School of Nursing, Faculty of Medical and Health Sciences, the University of Auckland

Esther Docherty        Analyst, HWNZ (formerly Clinical Training Agency)

Jane O'Malley            Director of Nursing, West Coast DHB

Kirsty Murrell- McMillan Rural Nurse Specialist, Otago

Judy Harris                Practice Nurse Manager, Dargaville Medical Centre

Glenis Turner            Head: District Nursing Service, Whangarei

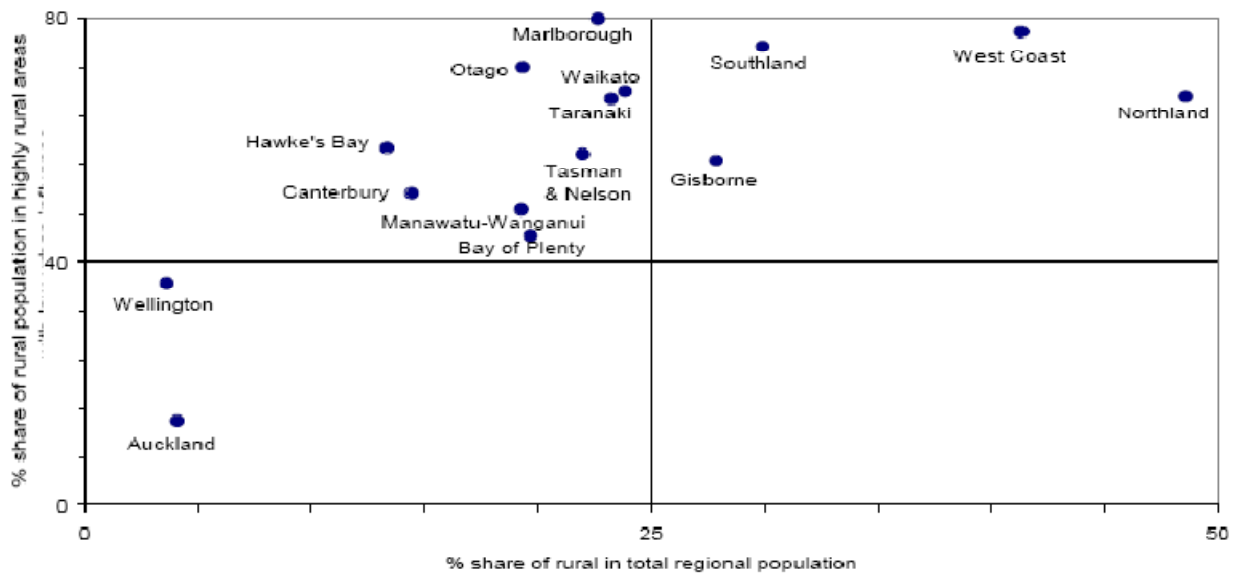
## Case Studies

The number of rural nurses within the regulated workforce is small at 527 rural-area nurses and an unknown proportion of 3997 Primary Health Nurses who function as rural-outreach nurses. The distribution of these nurses is throughout rural New Zealand. All regions with the exception of Auckland and Wellington have a degree of rural communities and areas within them. In an environment of little or no national population figures for demand

indicators, two regions were chosen for more in-depth study. These included Northland and the West Coast.

The rationale for choosing these two regions is that according to Jones, 2001 Northland and the West Coast have more than 25% of the population living in rural areas and more than 40% of those living in the rural areas are classified as either low urban influence or highly remote/rural. When examining degree of rurality in regional areas (by percentage share of rural population per regional population and deprivation indices) these two regions are considered the most rural regions in New Zealand.

Figure 1: Regional rural percentage share\* (Source, Jones, 2007)



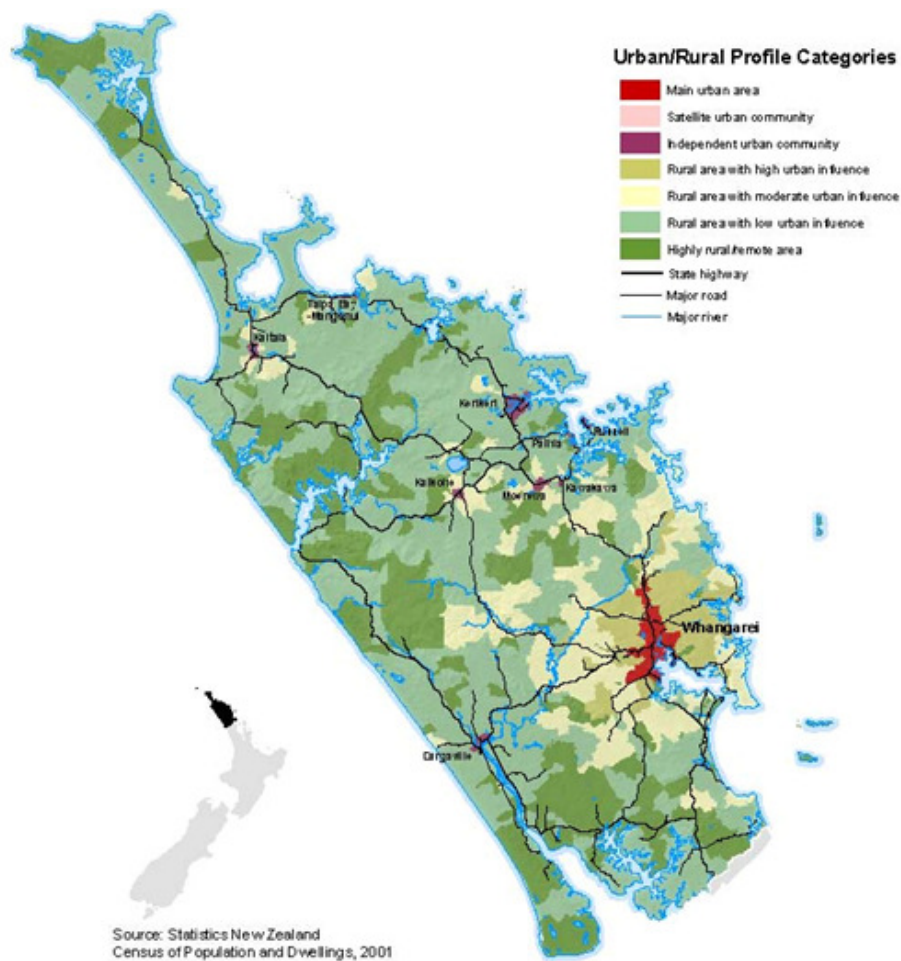
### Northland

Northland has one main urban area, Whangarei, no satellite urban communities, and nine independent urban areas. There are three highly rural/remote communities/areas, 29 in the low urban influence category, five with moderate urban influence and five rural areas that have high urban area influence. Most of the communities in the areas with least urban influence are throughout the region with areas of moderate urban influence around them. For

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\* Jones D., (2007). The role of agriculture and farm households in the rural economy: Main findings of a report prepared for the OECD Trade and Agriculture Directorate. Retrieved 20 September, 2009. Available at: <http://www.edskonference.com/content/docs/papers/Jones,%20D.pdf>

Figure 2: Urban/Rural Profile Categories – Source Statistics New Zealand, Census of Populations and Dwellings, 2001\*



### West Coast

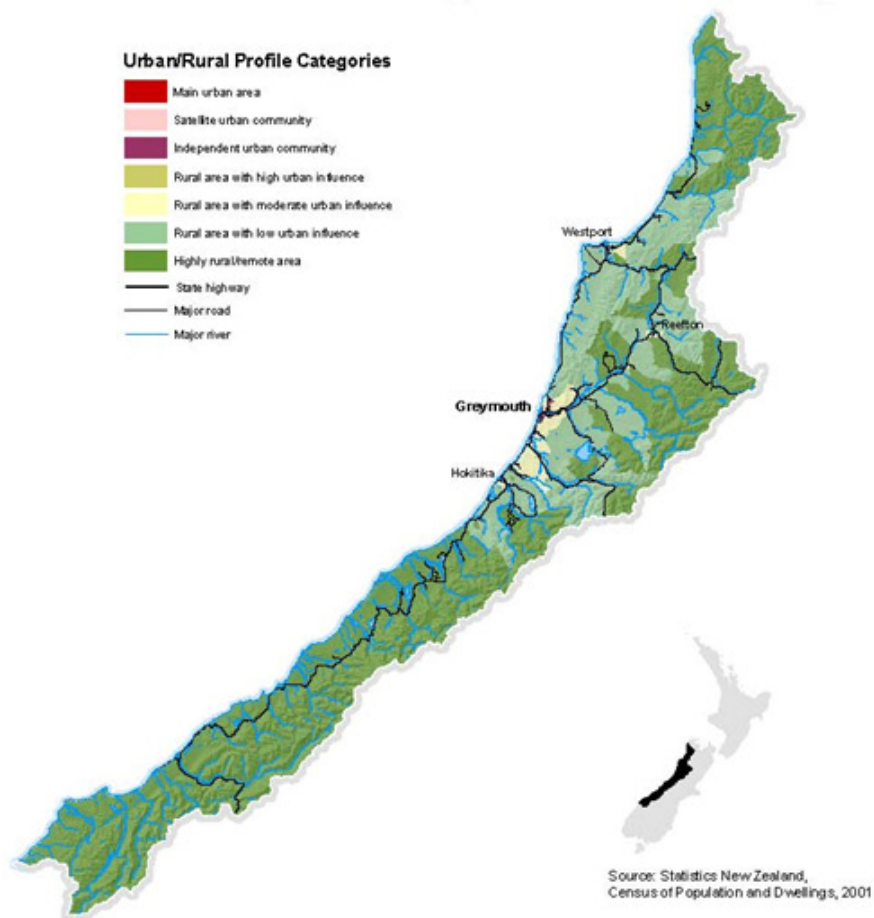
Unlike the Northland region the West Coast region has more highly remote/ rural areas, which are spread on the western (bounded by the Southern Alps) and southern parts, with communities/areas with moderate urban influence centred on a few independent urban areas. There are 15 highly rural/remote areas/communities and 20 rural areas with low

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\* Statistics New Zealand (2009) Rural/urban profile maps. Available at:  
<http://www.stats.govt.nz/Publications/BusinessPerformanceEnergyAndAgriculture/urban-rural-profile/urban-rural-profile-maps.aspx>

urban areas. The issue that the West Coast faces is that the rural remote areas extending to the south are replete with major rivers, increasingly icy roads and heavy snowfalls in winter time with possibilities of whole populations being ‘snowed-in’ at intermittent intervals. There are 12 independent urban areas, eight rural areas with moderate urban influence. There are no main or satellite urban areas in the West Coast region and no rural areas with main urban area influence.

Figure 3: West Coast Urban/Rural Profile Categories – Source Statistics New Zealand, Census of Populations and Dwellings, 2001\*



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\* Statistics New Zealand (2009) Rural/urban profile maps. Available at: <http://www.stats.govt.nz/Publications/BusinessPerformanceEnergyAndAgriculture/urban-rural-profile/urban-rural-profile-maps.aspx>

## Appendix III - Data cleansing, integrity and business rules

Where there is more than one questionnaire record for a nurse for a year, only the record with the latest questionnaire data was kept. This removed 27 duplicate questionnaire records (over all years).

Where there was more than one set of records for a nurse's employment, the set of records with the latest (highest) unique identifier was kept. Seventy two records were removed in this way. Note: There are multiple records for each nurse, as a nurse may have more than one workplace.

To be included in the definition the nurse must work more than zero hours in their primary employment and this work must not be coded as midwifery (survey codes 31-36) or non-nursing employment, such as work in another health profession (survey codes 71-74). Removing nurses working zero hours or not working in nursing removes another 4633 nurses leaving 41,648 working in nursing (out of 46,281). Note: Nurses working in education, research and nurse management roles are included.

Of the 41,648 nurses working in nursing, 1032 are working overseas\*. They are excluded from most of this analysis, leaving 40,616 nurses working in nursing in New Zealand.


To simplify analysis a small number of nurses with a missing gender have been recoded as female.

Estimates are made using the nurses' primary employment situation.

At the time the rural estimates were made nurses work address data was incomplete. Three stages of coding and estimation are used to derive the final estimates of rurality:

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\* Clinical Training Agency in New Zealand (2009) Current status of the regulated nursing workforce.  
Available at: [http://www.moh.govt.nz/moh.nsf/pagesmh/6795/\\$File/current-state-nursing.pdf](http://www.moh.govt.nz/moh.nsf/pagesmh/6795/$File/current-state-nursing.pdf)



work addresses are coded to rurality; each line of the nurses' workplace address is coded to a database containing place-names and their rurality, preference is given to the last address line, followed by the second to last line, third to last and so on since the more recent NCNZ records are more likely to have a work address attached, this address is back propagated to previous years records for the same nurse – as long as the employment code and work code for the nurse are unchanged at a summary level, the nurses that are still missing a rurality are allocated across ruralities in direct proportion to the nurses in each rural area.