

Issue Paper for Bundaberg Hospital Commission of Inquiry

Health Workforce

Paper 1

Medical Workforce

June 2005

1. Executive Summary

This paper is the first of a two part series looking at the future Queensland Health medical workforce requirement.

In 2002, Queensland had the lowest number of registered doctors per head of population of any state or territory. The number of Queensland doctors per 100,000 population decreased from 236 in 1997 to 220 in 2002. This is in contrast to the Australian average where numbers increased from 260 to 275 over the same period. At the same time, the number of registered doctors in Queensland increased in the 5 years from 1997 to 2002 by only 1.7% as opposed to an increase of 12.0% for the rest of the country. Essentially the numbers of doctors in Queensland has not kept pace with the population growth.

The demand for doctors in Queensland and within Queensland Health is forecasted to continue increasing for the foreseeable future. This paper shows that as well as coping with Queensland's low rate of doctors per head of population, our future requirements will not be met by recent increases in university medical student intakes. If the current models of care offered in Queensland were maintained, this increase will not cover Queensland Health's requirement for medical staff. This is based on the assumption that the rates of recruitment, terminations and health models over the last several years are continued into the future. It must also be noted that there is a considerable lag time between when medical student intakes are increased and when they can be capable of independent practice as doctors. For Specialists this lag can be as long as 12 years.

If current models of care are continued by Queensland Health the forecasted gap in medical staff will increase from 478 in 2006 to 993 by 2010. These numbers include Queensland Health's current reliance on overseas trained doctors.

Queensland Health is not alone in this medical shortage. Every state in Australia and most first world countries are facing the same problem and are dealing with it in different ways.

Options for reform in Queensland could include:

- alternative models of care across the lifespan and spectrum of interventions
- investigating new and expanded clinical roles and new ways of working
- alternatives to the current medical training model
- strategies to improve competitive advantage in the global market

The second paper in this series will expand on the analysis and options presented here and cover the following areas of the medical workforce:

- an analysis of issues including lead time from entry to productive practice/specialisation
- general practice and specialist numbers and projections
- specialist training positions – history and projections, strategies to increase and comparative performance with other jurisdictions

2. Introduction

The aim of this paper is to estimate the future overall medical workforce requirement for Queensland Health for the years 2006 through to 2011 and provide some preliminary options to be expanded on in a following paper.

A gap analysis has been performed based on the forecasted future medical workforce demand and supply. To derive this gap it was necessary to model both future demand and supply components. The gap is the difference between the forecasted demand for doctors and the number of graduates. The second part of the paper identifies potential solutions to the workforce gap detailed.

3. Current medical workforce

3.1 Australian medical workforce¹

Declining workforce growth is a function of the growing and ageing population. Over the next twenty-five years, growth in Australia's working age population is projected to slow significantly from an average net growth of around 170,000 per annum to an annual net growth of around 12,000 per annum or approximately 125,000 in total for the entire decade between 2020 and 2030. The impact for the health workforce means that there will effectively be fewer workers to care for more people. This is further exacerbated by existing workforce shortages.

The Australian Government controls the number of university places for medical degrees and the number of Medicare provider numbers. A report by the Australian Medical Workforce Advisory Committee (1998) considers that in the mid to late 1990's, a number of decisions were made by the Australian Government aimed at constraining the growth in medical and health expenditure. These decisions included:

- reductions in medical school intakes
- reductions in net additions to the workforce from immigration
- reductions in annual intakes for general practice training programs
- access to Medicare provider numbers for new graduates denied until they enter a recognised general or specialist training program.

These measures were coupled with earlier decisions to cap or even reduce numbers of medical school graduates. Until recently there have been no increases in medical school intakes, despite increases in both population and demand for medical services.

In response to the recognised national medical workforce shortage the Australian Government has funded the creation of two additional medical schools in Queensland – at the James Cook University in Townsville and at the Griffith University at the Gold Coast. The Bond University has also established a private medical school. The first graduates from James Cook will enter the workforce as interns in 2006, and the first graduates from the other new schools will enter the workforce in 2009. Over the next five years, the numbers of new graduates from medical schools in Queensland entering the workforce will increase from 232 in 2004 to 540 per year in 2010.

¹ *Queensland Health Initial Submission to the Bundaberg Hospital Commission of Inquiry, 16 May 2005*

However, additional graduates also place pressure on the existing workforce to support clinical placements and training.

The following presents an overview of the **Australian** medical workforce. The following details are graphically represented in Appendix 1:

- There were an estimated 59,023 registered medical practitioners in Australia in 2002. 53,991 were working in medicine, a rise of 12.0% from 1997.
- Of the clinicians, 43.7% were primary care practitioners (mainly general practitioners), 35.6% were specialists, 11.0% were specialists-in-training and 9.7% were hospital non-specialists.
- The average age of the medical workforce in 2002 was 46.6 years, continuing an ageing trend (average age in 1997 was 44.7 years).
- The proportion of female practitioners continues to rise, with 31.6% in 2002 compared with 27.2% in 1995.
- Medical practitioners worked an average week of 44.4 hours, a decline since 1997 when they worked an average of 47.6 hours. Clinical hours worked per week by clinicians have fallen from an average of 46.4 hours in 1997 to an average of 40.8 hours in 2002.
- The decline in average hours worked has been across all age groups, both male and female, and all major occupation categories that are specialist, primary care practitioner, specialist-in-training and hospital non-specialist.
- In 2001, 44.3% of practitioners worked more than 50 hours per week, a decline since 1997 (51.1%).
- The practitioner rate rose from 260 to 275 per 100,000 population between 1997 and 2002, but was unchanged between 2001 and 2002. Taking into account the hours worked, the outcome in 2002 was a decrease in the supply of full-time equivalent practitioners, which was 271 per 100,000 population (based on a 45 hour week). In 1996 it was 278 per 100,000 population (based on a 45 hour week).
- Across regions generally, the medical practitioner rate decreased and their hours increased as regional population lessened: the rate (per 100,000 population) ranged from 315 in 'major cities' to 140 in 'remote areas'.
- There is also a "mal-distribution" of health workers in that while 66.3% of Australia's population live in metropolitan areas, around three-quarters of health professionals work in the same metropolitan areas.

These statistics are illustrative of a number of factors about the Australian medical workforce, including the ageing of the medical workforce, changing patterns of workforce participation including the generational trend away from historical patterns of work in favour of a work-life balance. When coupled with other factors currently influencing workforce supply in Australia, the impacts are significant:

- Globalisation of the workforce means the well-trained Australian workforce is highly sought after in global markets. The United Kingdom, Canada and the United States all actively recruit international medical graduates.
- There is an increased length of time from entry to medical school to participation in the workforce as an independent practitioner.
- Professional indemnity insurance costs for particular specialities are rising, including obstetrics, anaesthesia, some surgery and general procedures.

- The majority of practitioners prefer to work in larger metropolitan centres.
- The change in patterns of workforce participation, including the declining trend in working hours and hence the reduction in full time equivalent numbers.
- The impact of a reduction in medical intake in the 1997-98 Federal Budget.
- Restrictions placed on Medicare provider numbers particularly for junior doctors in 1997.

3.2 Medical Workforce Issues for Queensland²

Queensland has the most widely distributed health system in Australia. Our population is the most geographically dispersed in Australia with 22.3% of our population living in outer regional areas compared to 13.5% nationally. The majority of population growth is concentrated in the State's south east corner. The growth in Queensland's medical workforce has not keep pace with our population growth.

The compounding effect of these demographic factors and the issues facing medical workforces globally result in even more critical workforce statistics for Queensland:

- There were an estimated 8,159 registered medical practitioners in Queensland in 2002 compared to 8,024 in 1997, an increase of 1.7% over the five years. In comparison there was an increase of 12.0% across Australia over the five years.
- Of these, 3,341 were primary care practitioners (mainly general practitioners), an increase of 0.5% from the 1997 figure of 3,324.
- In 2002, Queensland had the lowest number of registered doctors per head of population of any state or territory. The number of Queensland doctors per 100,000 population decreased from 236 in 1997 to 220 in 2002. This is in contrast to the Australian average where numbers increased from 260 to 275. See graph 5, below.
- In 2002 Queensland had the lowest number of full time equivalent practitioners (working medical practitioners) per head of population of any state or territory. The Queensland full time equivalent practitioner rate fell from 247 per 100,000 population based on a 45 hour week in 1997 to 217 in 2002. This was a fall of 30 FTE practitioners per 100,000 population based on a 45-hour week and is 54 FTE practitioners less than the national average. It was the biggest fall of all the states and territories. Across Australia the full time equivalent practitioner rate fell from 275 per 100,000 population based on a 45-hour week to 271.
- Queensland has the lowest number of primary care practitioners per 100,000 population, of all the states and territories. The full time equivalent practitioner rate for Queensland fell from 94 in 1997 to 82 in 2002, compared to the national figure of 101 primary care practitioners per 100,000 population.³

² *Queensland Health Initial Submission to the Bundaberg Hospital Commission of Inquiry, 16 May 2005*

³ *Source: Dr. Jeannette Young, Report to Dr. Mark Waters, 11 May 2005 (figures sourced from AIHW's Medical Labour Force 2002 Report and AMWAC Annual Report 2003/04)*

- The low numbers of medical practitioners impact on service delivery. The average annual Medicare benefit per capita for Queenslanders is \$376, compared to the national average of \$395. Access to benefits under the Pharmaceutical Benefits Scheme is also lower. The per capita benefit to Queenslanders is \$224 per annum, compared to the national average of \$234.
- Queensland is not meeting the Australian Medical Workforce Advisory Committee's recommendations for training numbers in a significant number of disciplines. If this were to continue Queensland will not be able to meet its future requirements for specialist staff from the specialist doctors able to be trained in this State.

The Australian Government investment in the private provision of medical services also serves to increase potential earnings for doctors in the private sector, with which the public sector cannot compete. The Australian Health Ministers' Advisory Council has noted that the availability of doctors within the private sector is not evenly distributed across the state, with inner metropolitan areas being the location of choice.

4. Queensland Health Medical workforce

The current Queensland Health medical workforce is ageing. As of April 2005, 952 or 20.4% of the doctors in Queensland Health were over 50 years of age as detailed in Appendix 1. The ageing of the workforce will have an effect on the future numbers of doctors required as retirements increase.

Within Queensland Health there is a slight widening gap between headcount and occupied FTE (full time equivalent⁴) workforce numbers. This indicates more staff are shifting towards less than full-time employment.⁵ Changes in future working hour scenarios will be modelled in the second paper of this series and could greatly increase Queensland Health's required medical workforce numbers⁶.

Full time medical specialist services are augmented through the use of Visiting Medical Officers (VMOs). Visiting Medical Officers work an average of 8-9 hours per week in Queensland Health facilities and make up approximately 2% of Queensland Health's wages bill. Although this is a small component of the Queensland Health medical workforce it is a vital one, with VMOs providing the sole speciality service, in a number of disciplines, in many rural and regional facilities. Without VMOs, many rural and major regional centres would be without specialist medical services.

'Super' specialities in public hospitals in the main are almost exclusively provided by VMOs. Speciality services such as ophthalmology, neurosurgery, ear nose & throat, plastic surgery, maxillo-facial and urology within the major metropolitan hospitals rely on VMOs for specialist services.

⁴ Occupied FTE is defined as: Current Occupant's Standard Hours ÷ Award Fulltime Standard Hours

⁵ This is shown in the graphs in Appendix 1.

⁶ The growing awareness of the importance of safe working hours for the medical workforce to ensure safety and quality in clinical services is another factor affecting workforce participation. This will be expanded and evaluated in the second paper.

One of the main reasons for this is that private specialists earn a far greater income in the private sector because the Commonwealth has, in recent years, increased the minimum fees under the Medicare Benefits Schedule.

4.1 Time series forecasting for Medical workforce growth in headcount and full time workforce

The forecasts for medical headcount and occupied FTE are based on the projection of historical growth rates of medical staff within Queensland Health which includes our current numbers of overseas trained doctors.⁷ Essentially there will be a significant growth in the requirement for medical staff. Table 1 details the gap between these levels of future demand and the incoming new graduates.

The required headcount and FTE of medical officers within Queensland Health is forecasted to continue increasing for the foreseeable future if the current models of care are continued.^{8,9} Since January 2003, Queensland Health's recruitment of medical staff has increased at a greater rate than its terminations.

5. Medical university numbers

To combat the perceived medical workforce shortfall increases have occurred in the number of medical school places nationwide. The intake numbers and projected graduates in the future is detailed in Appendix 3.

6. Future Gap in the Queensland Health medical workforce

The gap between the forecasted future Queensland Health medical workforce requirement and the graduate medical numbers is shown in Table 1. This workforce gap will need to be supplemented from a source other than new Queensland medical graduates.

Based on the modelling in this paper the gap between the required medical workforce and the number of new graduates is increasing at a substantial rate. The method for the forecasts in this paper is based on the status quo projection of the historical number of doctors required. It does not take into account the future burden of chronic disease, changes to medical workforce management like working hour limits or the ageing of the population and workforce. These scenarios will be modelled in the second paper in this series. This makes these future requirements very conservative as all of these factors will most likely increase workforce requirements.

⁷ The limitations of the forecasting model are detailed in Appendix 2.

⁸ Average working hours assumed for FTE workforce.

⁹ See Appendix 3.

Table 1: Future Gap in overall medical workforce

Year	Medical graduates (Qld)	Forecasted required recruitment	Gap in workforce (not filled by QLD graduates)
2006	312	790	478
2007	355	975	620
2008	355	1161	806
2009	518	1347	829
2010	540	1533	993

7. International comparisons

The ‘global market’ for the medical workforce is opening up, with fewer barriers for the movement of medical practitioners. Whilst many Australian-trained doctors spend some time in countries such as the UK, the USA and Canada, Australia is currently a net importer of doctors. The UK and Canada have both recognised that they have an undersupply of doctors, and therefore a level of competition exists internationally to attract doctors.¹⁰

Within Organisation for Economic Cooperation and Development (OECD) countries, the density of practising doctors per 1,000 population has increased from 1.2 to 1.8 between 1977 and 1999, an increase of 50%. However these increases are not sufficient to meet the demand, and a supply shortage exists for all health professions internationally.¹¹

8. Options for reform

The *Smart State: Health 2020 Directions Statement* outlined the Queensland Government’s vision for health and the management and development of the health system in Queensland to the year 2020. It drew attention to the need to address future pressures on the health system and many positive initiatives have flowed from this vision.

Queensland has increased its training places for medical students significantly in recent years; however this paper has shown that this increase will not meet the forecasted increase in demand for medical staff. Queensland Health is placing an increased emphasis on preventative healthcare measures in an attempt to reduce the demand for health services. These strategies will have a limited impact in the short term.

In recognising the impossibility of meeting this increased demand by the medical workforce, utilising current practice and within reasonable hours of work, alternative solutions should be sought for the maintenance of service delivery. Reform options focus on:

¹⁰Source: *The Australian Medical Workforce Advisory Committee, 2002, ‘Tomorrow’s Doctors.’*

¹¹Source: *World Health Organisation, 2002, ‘Imbalances in the Health Workforce’.*

- alternative models of care across the lifespan and spectrum of interventions
- investigating new and expanded clinical roles
- alternatives to the current training model
- strategies to improve competitive advantage in the global market

8.1 Alternative models of care

New ways of working can be developed that will reduce the call on medical staff working hours. The best practice examples here come from the National Health Service (NHS) in the UK¹².

The NHS has made a range of modernising changes to health service delivery, mainly due to the requirements of the European Working Time Directive (EWTD). The EWTD required, from August 2004, that no doctor should work in excess of 58 hours per week, reducing to 48 hours per week by 2009. This significantly reduced medical staffing resources across the country. One approach the NHS management has taken in response to this challenge is to introduce new models of care.

The most notable new model of care introduced in the NHS is the ‘Hospital at Night’ scheme. On-call services at night were traditionally managed by on-call teams for each specialty. ‘Hospital at Night’ schemes employ a single multidisciplinary team to cover all specialties, ensuring that an appropriate mix of staff is rostered on each occasion. Nurse practitioner roles are usually included. Some specialties may be excluded from this scheme, such as paediatrics or obstetrics.

The Canadian health service is facing many of the same challenges for service provision as Queensland, with its relatively small population dispersed over a wide geographical area. The province of British Columbia is developing Primary Healthcare Organisations, at which doctors work alongside other professionals to provide primary healthcare. Primary healthcare nurses and emergency nurses treat sprains, minor infections, and counsel patients on the management of their chronic disease, for example.¹³

The health service in Germany is examining similar options to the UK. It has trialled different shift-pattern options for surgical teams. These options were designed to prevent surgeons from working on the morning after a night-time on-call. It is also examining the benefits of working across specialisations for on-call work, as in the ‘Hospital at Night’ scheme.¹⁴

The increased focus on preventative healthcare is complemented by an increased focus on primary healthcare. For example, there may be potential to move some maternity care services into the community, in the medium to long term. Services

¹² www.modern.nhs.uk/workingtime/bulletin

¹³ British Columbia Ministry of Health Services, 2004, “Toward Better Health Care for British Columbians”.

¹⁴ Büchler, P. et al, 2003, “Labour legislation in the European Union has impact on workforce management in surgical centers”, *Surgery*.

have been proposed that provide ante-natal, birthing, and post-natal care with appropriate hospital back-up. Such ideas may warrant further investigation.¹⁵

Within Queensland, some alternative models of care have been trialled on a small scale. The recent 'Emergency Department Skill Mix and Work Analysis' project included trialling streamlined services for lower-priority patients, (ie. those who are not expected to require hospital admission). The 'See and Treat' clinic and the 'Fast Track' service used a separate space from the main department, with staff specifically dedicated to that service. Treatment was found to take place more efficiently in this way and overall waiting times were reduced. Another measure explored within this project was the 'Hospital in the Nursing Home' initiative, in which nursing home patients received care in the nursing home, for routine matters that would normally involve an emergency department presentation. This initiative involved training and supporting nursing home nurses in such routine interventions.¹⁶

8.2 New and expanded clinical roles

Many new models of care involve the introduction of new or enhanced roles, which relieve doctors of many routine and often time-consuming duties that can be safely and appropriately transferred to other professional groups. These strategies often allow services to be provided in a more timely fashion.

The NHS also provides good examples in this area. Local NHS services have developed a range of new roles suitable to their needs, including nurse practitioner roles and advanced practice roles open to professionals from any relevant discipline. Examples include orthopaedic and trauma nurse practitioners, first assistants in surgery, medical technical assistants who order and collate test results, anaesthesia practitioners, perioperative specialist practitioners.

There is also the potential to expand the use of existing roles for the same purposes. For example, the NHS has placed pharmacists within emergency departments and admissions wards, to undertake medication reviews. Other possibilities include expanding the role of radiographers to include reporting of X-rays within protocol guidelines, and employing physiotherapists in emergency departments as first contact practitioners. This latter initiative exists in a limited capacity in one Queensland Health hospital.

In addition to expanding the roles of nurses in primary healthcare settings, the British Columbians are increasing their training and use of nurse practitioners, particularly in the areas of geriatric/elder care and mental health care.¹⁷

The German study, as mentioned above, also advocates extending the roles of allied health professionals and increasing administrative support to medical staff, in order to relieve them of some of their current workload.¹⁸

¹⁵ Hirst, C., 2005, "Re-Birthing: Report of the Review of Maternity Services in Queensland".

¹⁶ Workforce Design and Participation Unit, 2005, "Emergency Department Skill Mix and Work Analysis Final Report", *Queensland Health*.

¹⁷ British Columbia Ministry of Health Services, 2004, "Toward Better Health Care for British Columbians".

Within Queensland, some new and expanded clinical roles have been implemented on a small scale. Such roles could be focused initially on areas of currently unmet need – for example, increasing the use of Rural Isolated Practice Registered Nurses. Another initiative – the ‘Fit for Surgery’ clinic for orthopaedics at one hospital - aims to assist in one of the longer waiting list specialties. These clinics employ multidisciplinary teams to assess and advise patients to ensure their fitness for surgery, meaning fewer surgical cancellations.

The emergency department skill mix and work analysis project as described above explored the benefits of expanding nurse roles to include activities such as ordering X-rays, pathology tests, taking blood samples, etc. In addition nurse practitioners in emergency departments would be able to perform initial assessments, interpret test results and order some medications, within protocol guidelines. These measures would further relieve doctors to attend to more critical tasks.¹⁹

The recent Productivity Commission Issues Paper examining the health workforce suggests that current job design and professional demarcations can inhibit workforce substitution. These rigidities reduce the scope to reallocate staff and can detract from productivity. There is clearly a range of strategies with which health workforce roles could be re-examined and redesigned for improved productivity.²⁰

8.3 Alternatives to the current training model

Queensland has increased its training places for medical students significantly in recent years; however this paper has shown that the expected increase in medical graduates will not meet the forecasted increase in demand for medical staff. Queensland Health is placing an increased emphasis on preventative healthcare measures in an attempt to reduce the demand for health services. Preventative healthcare measures will not off-set the problem of acute workforce shortages and should be seen as a longer term approach which are already being implemented through Health 2020.

The medical workforce required by Queensland Health depends on the service the organisation wishes to provide in the future and how that is structured and distributed. Currently the Queensland Health public medical workforce model is based on a training model.

In the current public health system resident medical officers (RMO’s) and Registrars are employed on twelve month contracts in which they rotate through different “terms” giving direct patient care. This structure is more aligned to the needs of the medical staff training and experience rather than quality service provision.

¹⁸ Büchler, P. et al, 2003, “Labour legislation in the European Union has impact on workforce management in surgical centers”, *Surgery*.

¹⁹ Workforce Design and Participation Unit, 2005, “Emergency Department Skill Mix and Work Analysis Final Report”, *Queensland Health*.

²⁰ Productivity Commission, 2005, “The Health Workforce – Issues Paper”, *Australian Government*.

The training model is an apprenticeship model and is based on doctors learning by experience and diffusion over time rather than being educationally based on predetermined competencies.

The current model requires RMO's and Registrars to develop their skill set by working long hours. The paradox is that many of these hours are now provided by overseas trained doctors (OTD's) who are not in training positions.

An alternate model, as used in Canada is for patients to be primarily seen, treated and operated on by fully trained specialists. Medical training is a separate but related issue and the RMO staff engaged are specifically employed as trainees. This fundamentally changes the issue of the number of RMOs required. The number of RMO's required would then be based on the number of doctors Queensland Health wishes to train, rather than the number we need to fulfil the hours needed under the current apprenticeship model.

This would impact on the requirement for OTD RMOs.

The difficulty with this model lies in having enough specialists and GPs to provide the 'consultant led service'. The implications of such a model need to be fully considered in the context of the distribution of the Queensland population and the distribution of specialists and GP's.

The re-examination of the medical model of service delivery provides an opportunity to reconsider medical training as one important priority, within a model that is primarily driven by the public need for good-quality healthcare services. This will allow Queensland Health to consider new approaches to current problems of clinical supervision, related to such areas as quality, safety and sustainability. This refers to clinical supervision and the associated assessment of performance, not only for medical students and post-graduate specialty trainees, but also to doctors who are new to Queensland Health and doctors returning after a break in service, as appropriate.

8.4 Strategies to improve competitive advantage in the global market

There are a number of considerations in relation to the competitive position of Queensland, and in particular Queensland Health, in the global market for medical practitioners including:

- employment conditions and incentives for full time medical practitioners in the public sector
- employment conditions and incentives for Visiting Medical Officers
- employment conditions, incentives, mentoring and supervision for specialty trainees
- system support including roles in decision making and clinical governance

A number of these will be explored further in the second paper in this series.

9. Conclusion

This analysis provides part one of a two part series looking at the future medical requirements for Queensland Health.

In 2002, Queensland had the lowest number of registered doctors per head of population of any state or territory. The number of Queensland doctors per 100,000 population decreased from 236 in 1997 to 220 in 2002. This is in contrast to the Australian average where numbers increased from 260 to 275.

The number of registered medical practitioners in Queensland increased in the 5 years from 1997 to 2002 by only 1.7% as opposed to an increase of 12.0% for the rest of the country.

The workforce models in this paper provide a snapshot of the how the forecasted increase in demand for service will require increases in the headcount and full time equivalent staff in the medical stream as well changes to the way health services are delivered in Queensland. The forecasts for staffing numbers provide an indication of Queensland Health's requirement for doctors if current models of service delivery and training are unchanged.

The expected increase in demand for doctors by Queensland Health over the period from 2006 to 2011, will far out strip the number of new graduates when terminations are taken into effect. The growing differential between the required medical workforce and the number of new graduates will need to be alleviated by means other than increasing graduate numbers.

This paper identifies potential options worth exploring under themes of alternative models of care, new and expanded clinical roles and alternatives to the current training model and recruitment practices.

The second paper in this series due will expand on the analysis presented here and cover the following areas of the medical workforce:

- An analysis of issues including lead time from entry to productive practice/specialisation
- General practice and specialist numbers and projections
- Specialist training positions – history and projections, strategies to increase; comparative performance with other jurisdictions

References

Queensland Health Info Bank for the years 1994/95 to 2000/01.

<http://qheps.health.qld.gov.au/hic/infobank/ib1.htm> section 'Particulars of Average Employment of Salaried Staff (FTE)'

Queensland Health Info Bank for the years 1994/95 to 2000/01. Admitted and non admitted patients and accrued patient days by Health District was obtained from Info Bank spread sheet: <http://165.86.8.41/hic/infobank/activity/activity.xls> for the years 1994/95 to 2000/01.

Ramanathan, R. 1998, 'Introductory Econometrics with Applications', 4th edition, Dryden, Sydney.

Young, J. 2005, 'Report Provided to Dr. Mark Waters describing the Australian Medical Workforce and more specifically the Queensland Medical Workforce', Queensland Health.

Australian Medical Association, 2005, 'Submission to the House of Representatives Standing Committee on Health and Ageing Inquiry into Health Funding'.

Forecasted Zonal Workforce Position Requirements: Prepared by: Queensland Health, Health Workforce Planning and Analysis Unit, April 2004.

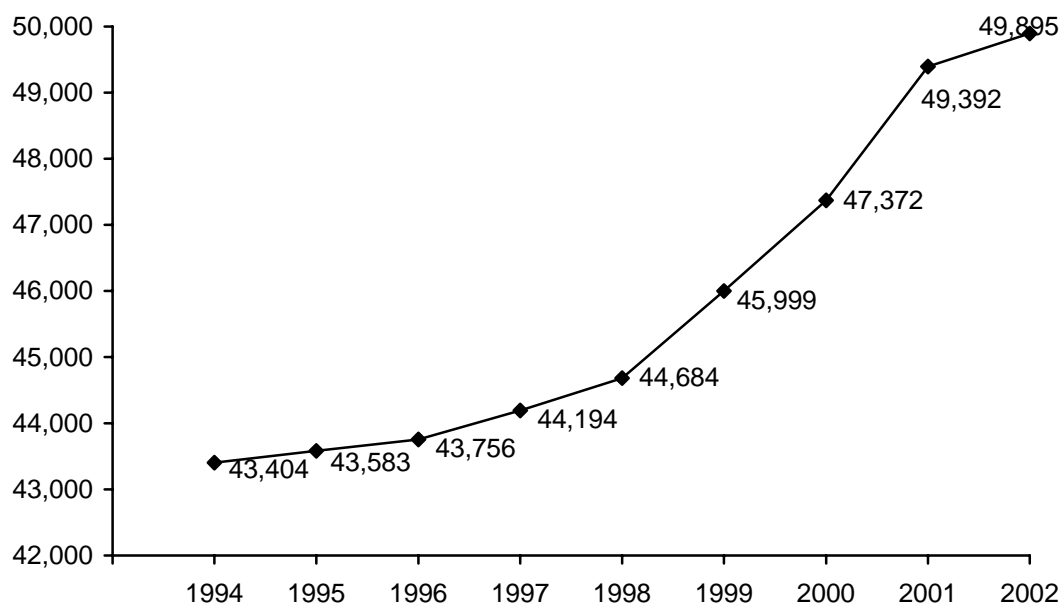
Health Advisory Unit, 2005, Forecasted intern numbers - information sourced directly from relevant Universities.

Appendix 1: Table 1 and 2 and graphs 1 through 8 provide an overview of trends across key aspects of the Australian medical workforce.

Table 1: Medical workforce, key characteristics, 1996 and 2002²¹

Characteristic	1996	2002	Change 1996-2002
Number of medical practitioners	43,756	49,895	+6,139
Practitioners per 100,000 population	246	275	+29
% Female	27.6	31.6	+4 %points
Average hours worked	48.1	44.4	-3.7 hours
-Male	51.1	47.4	-3.7 hours
-Female	40.2	37.3	-2.9 hours
% working >50 hours per week	53	44.3	-8.7 %points
Average age (years)	44.9	46.6	+1.7 years
% aged 35 to 45 years	53.1	54.8	+1.7%points
% aged >55 years	21.8	23.7	+1.9 %points
FTE participation rate (45 hours/week) per 100,000 pop	27	271	-7

Graph 1: Medical practitioners, employed practitioners, 1994-2002²²

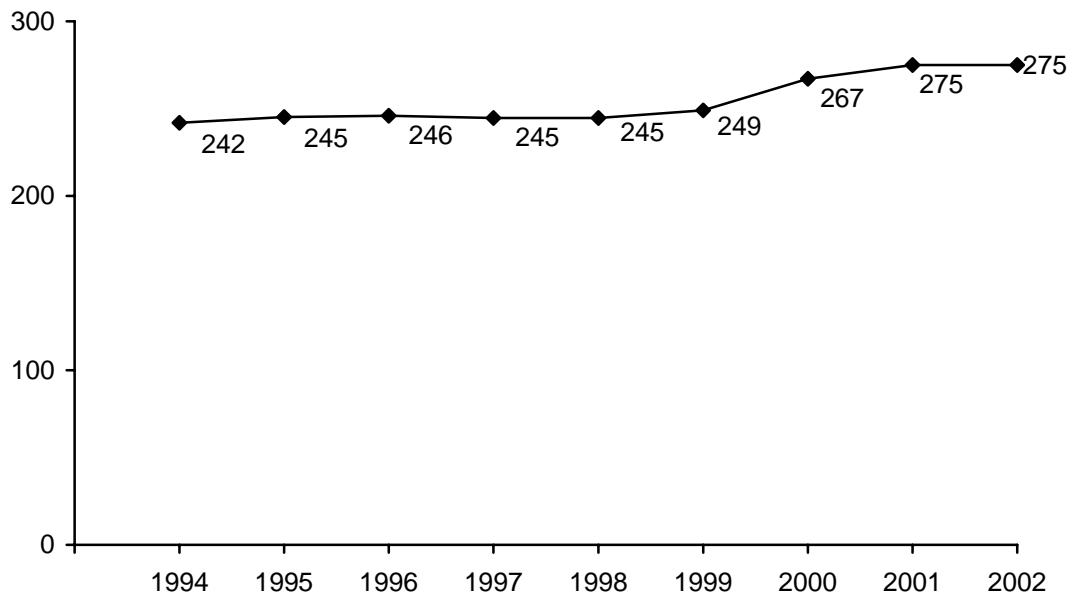


Source: AIHW Medical Labour Force Survey

²¹ Source: Dr. Jeannette Young, Report to Dr. Mark Waters, 11 May 2005 (figures sourced from AIHW's Medical Labour Force 2002 Report and AMWAC Annual Report 2003/04)

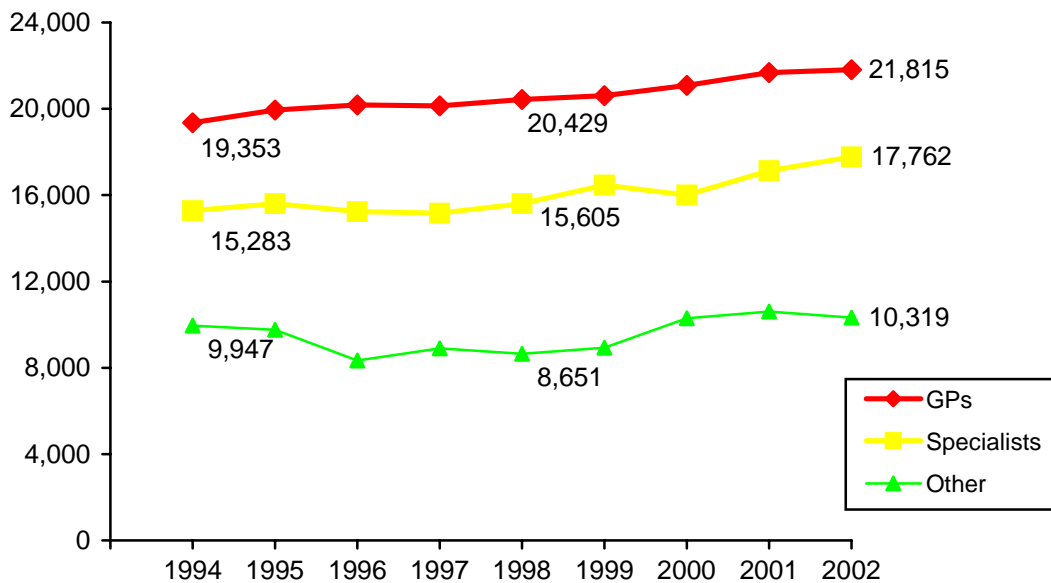
²² *ibid*

Graph 2: Medical practitioners, employed practitioners per 100,000 population, 1994-2002²³



Source: AIHW Medical Labour Force Survey

Graph 3: General practitioners, specialists, 1994-2002²⁴

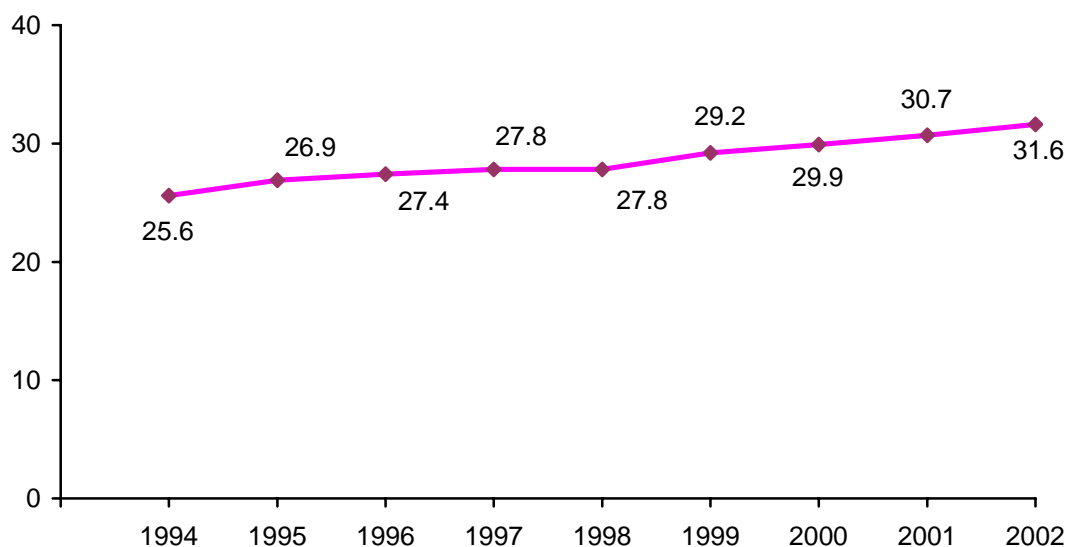


Source: AIHW Medical Labour Force Survey

²³ Source: Dr. Jeannette Young, Report to Dr. Mark Waters, 11 May 2005 (figures sourced from AIHW's Medical Labour Force 2002 Report and AMWAC Annual Report 2003/04)

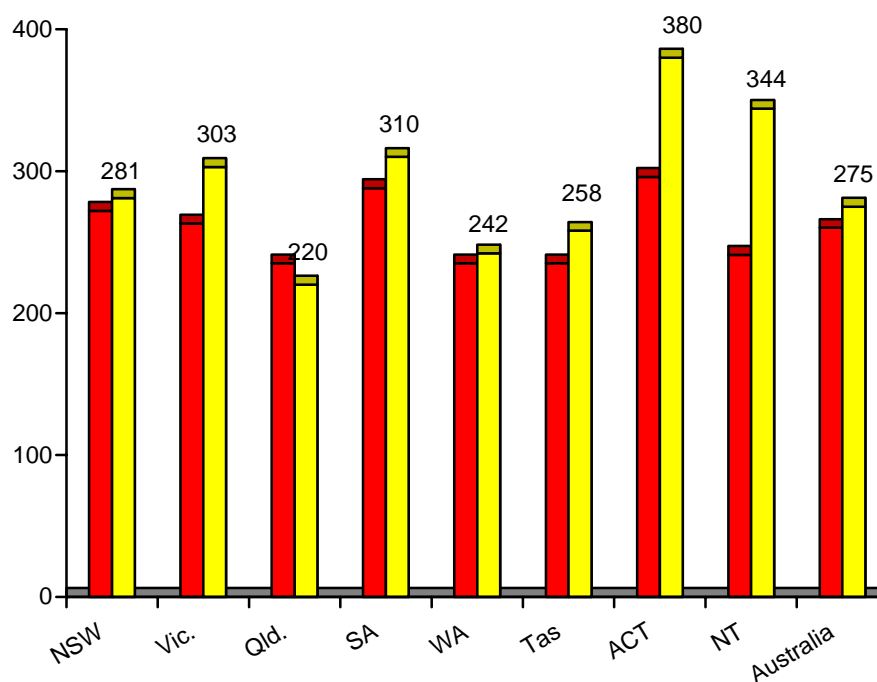
²⁴ *ibid*

Graph 4: Medical practitioners, employed practitioners, % female, 1994-2002²⁵



Source: AIHW Medical Labour Force Survey

Graph 5: Medical practitioners, employed practitioners per 100,000 population, by State/Territory, 1996 and 2002²⁶



Source: AIHW Medical Labour Force Survey

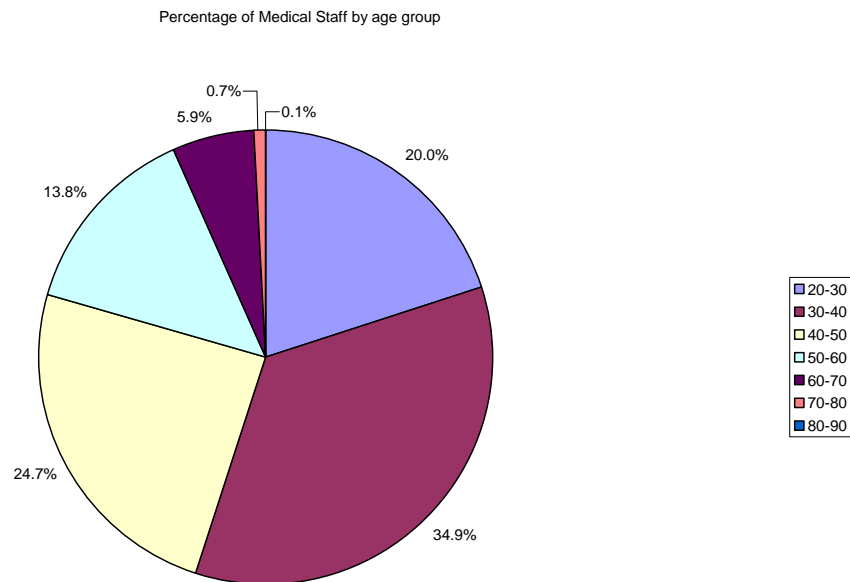
²⁵ Source: Dr. Jeannette Young, Report to Dr. Mark Waters, 11 May 2005 (figures sourced from AIHW's Medical Labour Force 2002 Report and AMWAC Annual Report 2003/04)

²⁶ *ibid*

Table 2: Medical age group breakdown for Queensland Health staff. (source: HRDSS)

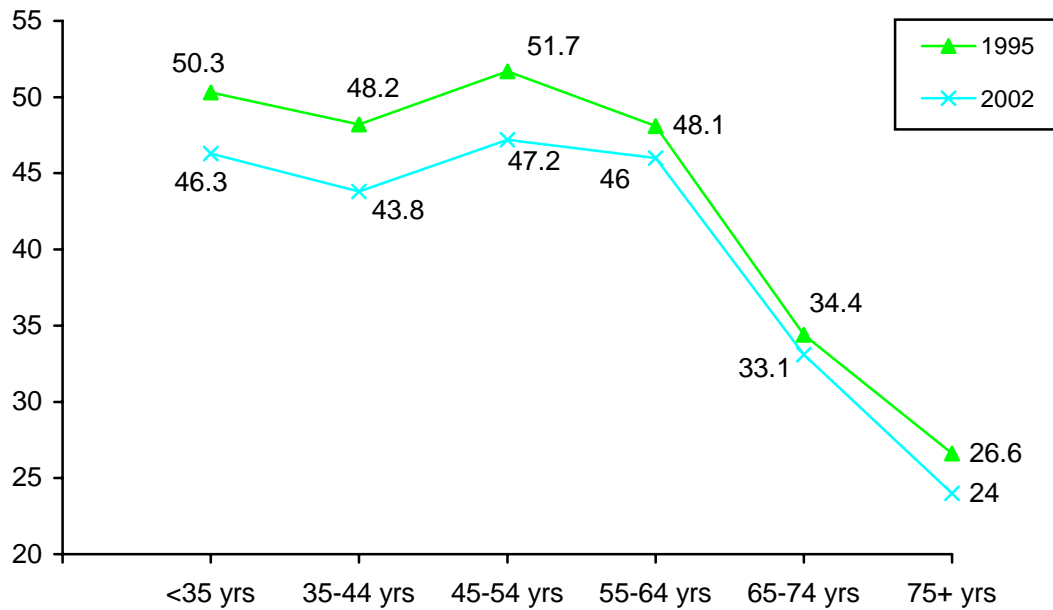
Count of AGE	
AGE	Total
20-30	929
30-40	1626
40-50	1149
50-60	643
60-70	273
70-80	33
80-90	3
Grand Total	4656

Graph 6: Graphical representation of the Medical age group breakdown for Queensland Health staff



Source: Workforce Design and Participation Unit June 2005.

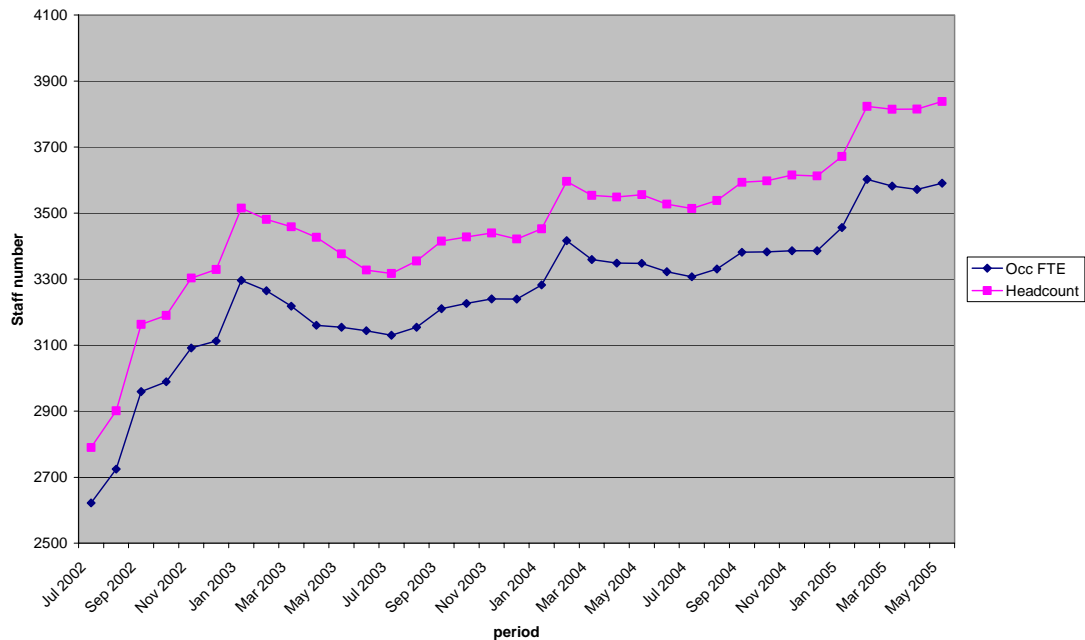
Graph 7: Medical practitioners, average hours worked, by age group, 1995 and 2002



Source: AIHW Medical Labour Force Survey

The substantial growth in both headcount and FTE can be seen in graph 8 below.

Graph 8: Comparison between the growth in Medical headcount and the growth in Medical FTE numbers.



Source: Workforce Design and Participation Unit June 2005.

Appendix 2: Limitations of the modelling methodology.

The method for the forecasts in this paper is based on the status quo projection of the historical number of medical headcount and full time equivalents in Queensland Health. The model was based on a dataset from the Human Resource and Management Information System and was a time series over 35 monthly periods.

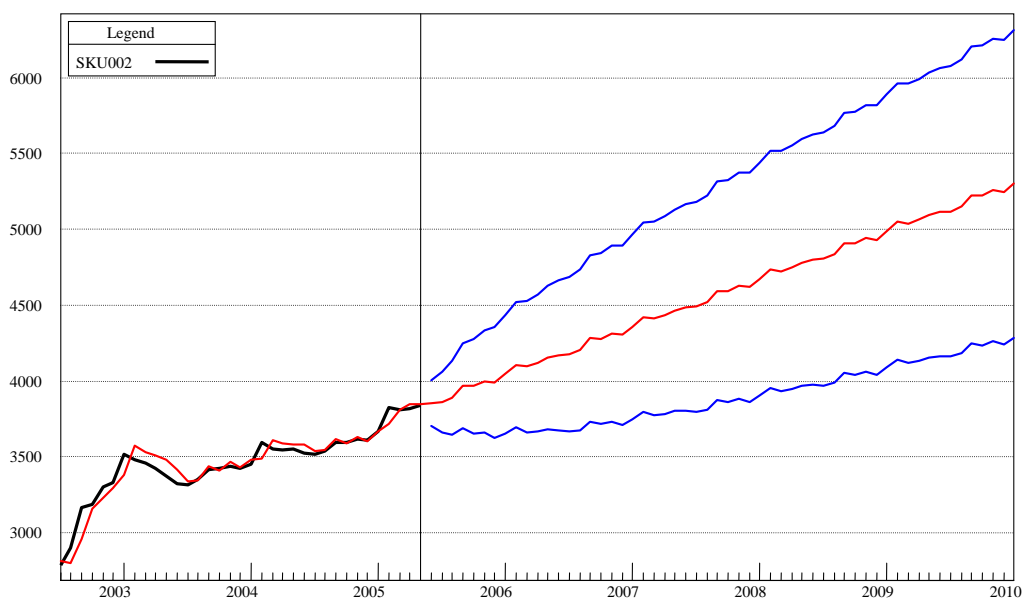
This modelling form suffers from its lack of ability to look at more than one variable namely medical staff numbers. As workforce is a derived demand underlying factors such as bed numbers, non-admitted patients and changes in future disease rates are not taken into account. Having said this any trends in these variables may impact on the forecasts but their individual effects are unknown.

The data was imported into an automated forecasting program called Forecast Pro Version 4.3 Extended Edition. This program determined by expert selection the most appropriate methodology to apply after interrogating the data set. In each of the cases it used exponential smoothing as the data set exhibited a trend-cycle and some seasonality. The series is too short to consider a Box-Jenkins method. The accuracy of the model was 91% (R-square 0.9153).

Appendix 3: Queensland Health Medical workforce forecasts.

The following graphs 9 through 14 and tables 3 through 7 show the forecasted future requirements for Medical workforce headcount, Medical workforce FTE, forecasted growth in part-time employment and the increasing growth in Medical appointments.

Graph 9: Medical workforce headcount forecasts for period 2005 to 2010.



Source: Workforce Design and Participation Unit June 2005²⁷.

* The black line represents the actual Medical headcount for Queensland Health. The red line is the forecast while the blue lines are confidence intervals for the forecasts.

Table 3: Medical workforce headcount forecasts for period 2005 to 2010

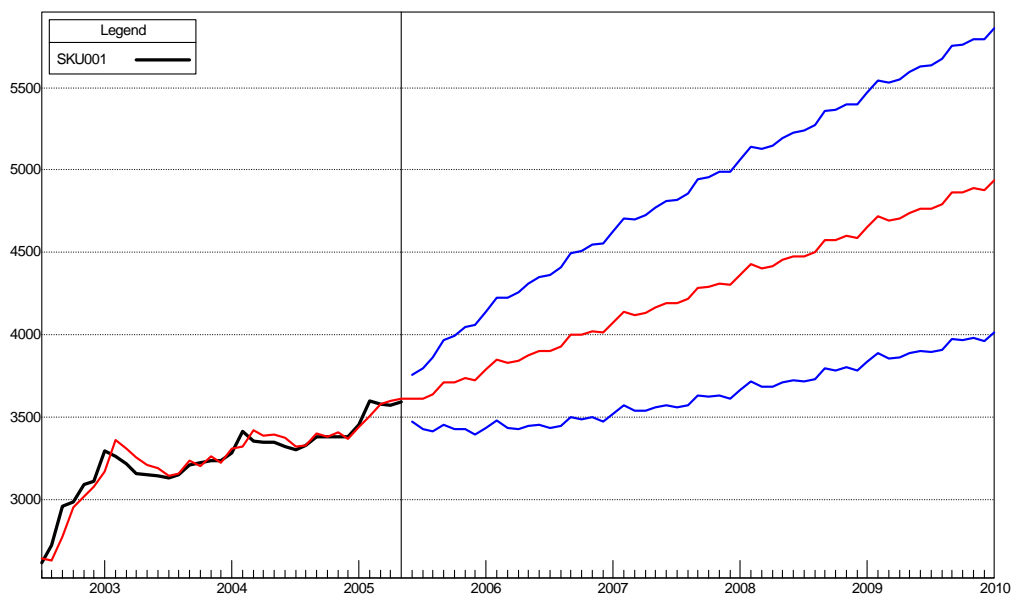
YEAR	FORECASTED HEADCOUNT
2006	4187
2007	4502
2008	4816
2009	5130

Source: Workforce Design and Participation Unit June 2005.

²⁷ The forecasting models developed in this paper use exponential smoothing of historic data set to forecast future variables.

The medical occupied FTE is also increasing but not at the same rate as the headcount. The actual number of occupied FTE required is shown in graph 10 and table 4 below.

Graph 10: Medical workforce Occupied FTE forecasts for period 2005 to 2010.



Source: Workforce Design and Participation Unit June 2005.

* The black line represents the actual Medical headcount for Queensland Health. The red line is the forecast while the blue lines are confidence intervals for the forecasts.

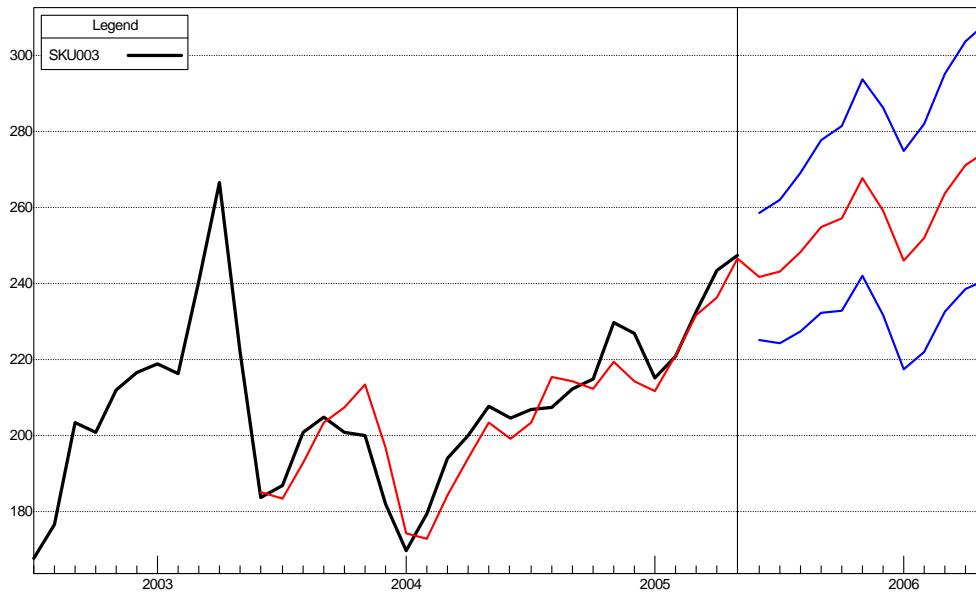
Table 4: Medical workforce Occupied FTE forecasts for period 2005 to 2010

YEAR	FORECASTED OCCUPIED FTE
2006	3914
2007	4202
2008	4490
2009	4778

Source: Workforce Design and Participation Unit June 2005.

Graph 11 shows the difference between headcount and FTE. This difference since 2004 has been positive indicating a trend towards part-time employment by Queensland Health medical staff. This is forecasted to continue as seen at the end of graph 11.

Graph 11: Forecasted growth in the headcount minus FTE for medical staff

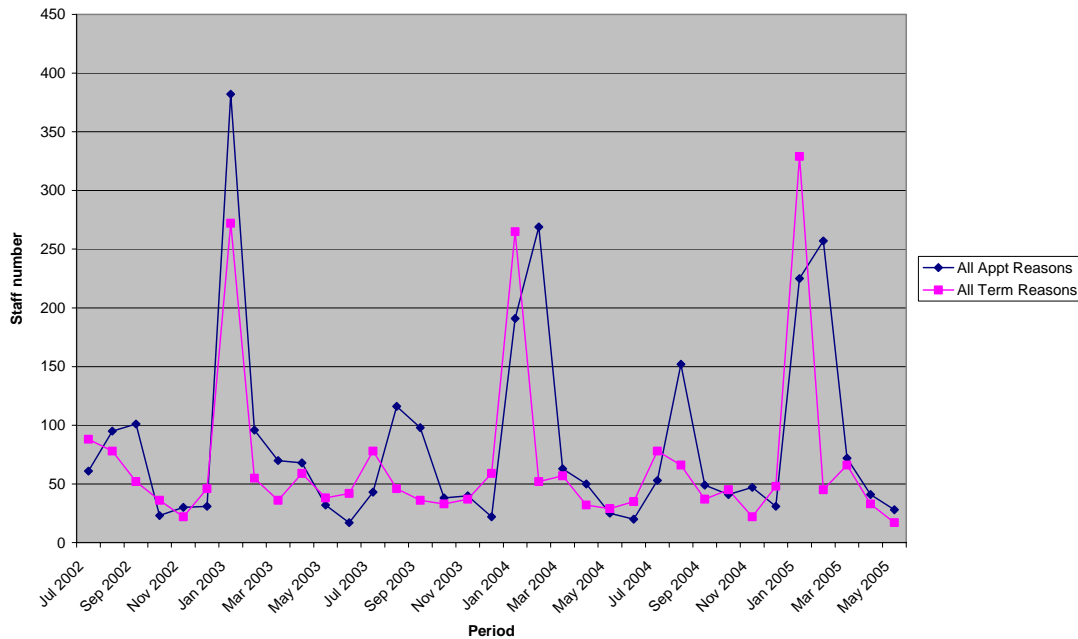


Source: Workforce Design and Participation Unit June 2005.

* The black line represents the actual Medical headcount minus FTE for Queensland Health. The red line is the forecast while the blue lines are confidence intervals for the forecasts.

Since January 2003 Queensland Health’s recruitment of medical staff has increased at a greater rate than its terminations. This is shown in graphs 12 and 13 below.

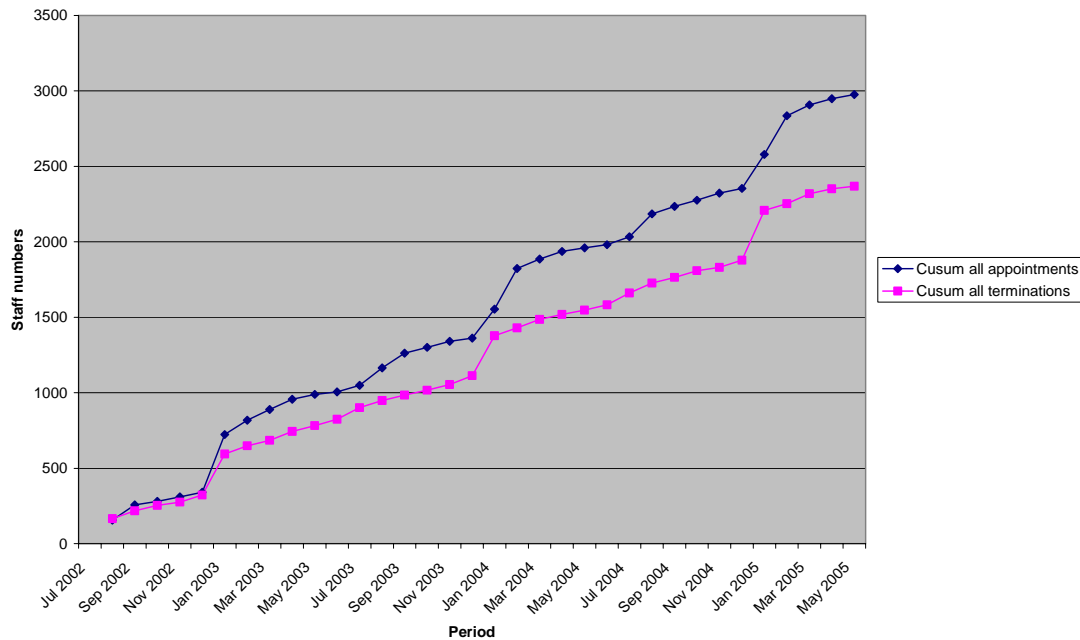
Graph 12: Medical recruitment and retention in Queensland Health



Source: Workforce Design and Participation Unit June 2005.

Taking the cumulative sum of all the recruitments and terminations clearly shows the increasing growth in Queensland Health's medical numbers.

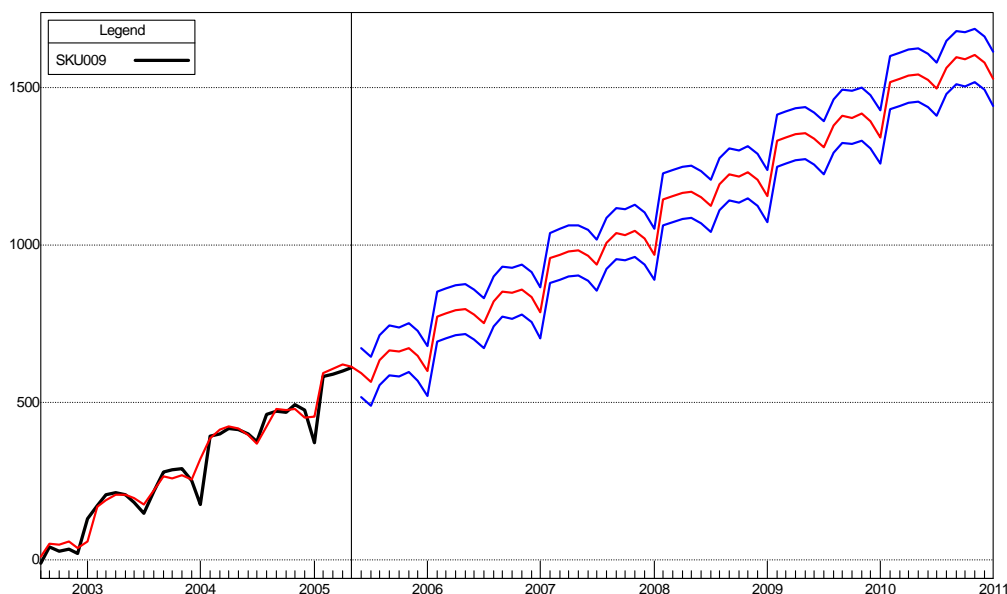
Graph 13: Cumulative sum of all the appointments and termination for medical staff.



Source: Workforce Design and Participation Unit June 2005.

Data on turnover for Queensland Health is difficult to obtain because of the crossover of medical staff particular junior doctors between Districts. To overcome this the following method has been produced which calculates the cumulative sum of the recruitment and termination for each month. For each month the net of recruitment minus termination is added to the previous total, this then becomes a cumulative sum of the net growth in Queensland Health medical workforce. The forecast of this is shown in Graph 14 and table 5 below.

Graph 14: Net recruitment per period and forecast (forecasted differential of the graph above)



Source: Workforce Design and Participation Unit June 2005.

* The black line represents the actual net recruitment for Queensland Health. The red line is the forecast while the blue lines are confidence intervals for the forecasts.

Table 5: Forecasted Medical headcount requirement to cover future loss of future Medical workforce for periods 2006 to 2010

YEAR	FORECASTED HEADCOUNT REQUIREMENT TO COVER INCREASED DEMAND AND FUTURE LOSS
2006	790
2007	975
2008	1161
2009	1347
2010	1533

5.4 Medical university numbers

To combat the perceived medical shortfall increases have occurred in the number of medical school places nationwide as seen in tables 6 and 7 below.

Table 6: First Year Medical Student Enrolment Numbers

Year	1999	2000	2001	2002	2003	2004	2005
University of Queensland	232	230	242	249	277	306	275
James Cook University	N/A	58	70	72	71	83	90
Griffith University	N/A	N/A	N/A	N/A	N/A	N/A	88
Bond University	N/A	N/A	N/A	N/A	N/A	N/A	65
Total	232	288	312	321	348	389	518
Yearly percentage increase		24.14%	8.33%	2.88%	8.41%	11.78%	33.16%
Total percentage increase 1999-2005							123.28%

Source: Organisational Development Branch

This means a projected rate of graduation for medical students as follows:

Table 7: Projected Queensland medical graduate numbers commencing internship - 2006-2010

University	2006	2007	2008	2009	2010
University of Queensland (4 year post-grad)	249	275	275	275	275
James Cook University (6 year under-grad)	63	80	80	90	90
Griffith University (4 year post-grad)	-	-	-	88	110
Bond University (5 year under-grad)	-	-	-	65	65
TOTAL	312	355	355	518	540

Note: Attrition rate unknown

Source: Organisational Development Branch