21st Century Health Challenges in Australia

THE CONSEQUENCES OF DECLINING FERTILITY, IMPROVING MEDICAL TECHNOLOGY AND "FREE" MEDICINE IN AUSTRALIA

Hershey Conference 2000

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1 Introduction

1.1 All developed countries are struggling to develop policies that address the twin long term challenges of rapidly increasing per capita health and long-term care costs and the demographic changes arising from significant reductions in fertility rates. The purpose of this paper is to analyse these trends to determine the health and aged care financing policy issues that will have to be addressed by Australia. The twin trends of rising per capita health and long-term care costs, and fertility induced demographic changes have already caused significant health and aged care policy shifts in some countries.

1.2 Australia is different! Australia has a state funded “free”, at the point of service, medical and public hospital services called Medicare. Medicare has been sold to the public as a “right”. Medical fees and some hospital services have had to be “capped” to ameliorate the cost to governments of the growth in budgeted health costs arising from this “right”. Sixteen years later the result is a health system that appears to be out of balance with the demands being placed upon it. An even more serious disequilibrium is being created through the capping of Medicare fees with medicine rapidly globalising and regional demand for high quality “Western” medical services expected to increase rapidly.

1.3 There are three interlocking conclusions of this paper.
- “Free” at point of service health and long term care in Australia is not sustainable.
- Policy measures are required to address the growth in services resulting from the efficacy of many high technology medical and pharmaceutical innovations.
- Funding mechanisms for medical, hospital and pharmaceutical costs of elderly patients, in particular, have to be changed.

In short, Australians will soon have to learn that the state will not be able to afford to unblock all their diseased coronary arteries, replace their malfunctioning heart valves and arthritic hips and then provide them with unlimited nursing home and palliative care before they finally die. In 1997 the Productivity Commission recommended a “broad public inquiry into Australia’s health system”. The Australian Government refused to accept this recommendation because it would be seen as the enquiry that caused the demise of the extremely popular state funded Medicare scheme.

1.4 The projections developed in this paper are based on recent population projections produced by the Australian Bureau of Statistics using the high immigration, high fertility assumptions as well as the low immigration and low fertility assumptions. The Bureau specifically expanded these projections to 2060 for the author. These long-term projections enable one to fully gauge the effect on future population structures of the decline in fertility after the post Second World War baby boom.

1.4 Some of the techniques used in this paper were originally developed in a report entitled "Health Financing Options in the 21st Century" commissioned by the NSW Minister for Health and included on the agenda of the Commonwealth Health and Welfare Ministers Conference in September 1991. That paper produced projections that were concerning to the Australian health ministers. It is now evident, however, that the previous assumptions about future utilisation of medical and hospital services were overly conservative. Australia’s health service demands are currently growing at an unsustainable rate, particularly amongst the aged. While these trends are also evident in other “Western” countries, they are extremely pronounced in Australia. This may be due to Australians having unrealistic expectations of Medicare and Australian governments being unable to reduce the demand for high cost, high profile medicine without committing political suicide by dismantling the Medicare scheme.
2 Demographic Changes

2.1 The Australian Bureau of Statistics produced for the author two population projections of Australia through to the Year 2061. The projections are based on the optimistic high fertility, high immigration series and the more pessimistic (but probably more realistic) low fertility, low immigration Series. In the high series the total fertility rates are assumed to reduce slightly to 1.865 by the year 2000 and remain at that level thereafter. The annual net immigration rate is assumed to increase to 100,000 by the year 2000 and remain at that level thereafter. This population projection series goes 10 years further than the bureau have previously produced and this was requested so that the very long-term effect of the baby boom population bulge and the subsequent decline in fertility can be determined.

2.2 The second projection is based on the more pessimistic low fertility, low immigration Series. In the low series the total fertility rates are assumed to reduce slightly to 1.75 from the year 2000 and remain at that level thereafter. The annual net immigration rate is assumed to reduce slightly to 75,000 by the year 2000 and remain at that level thereafter. A total fertility rate of 1.75 is below that of the USA but considerably above that occurring in most European countries, Hong Kong, China and Japan.

2.3 The assumptions underlying the Low series population projection are probably more likely given the current trends in most other western countries. However, for the purpose of projecting Australia’s health costs in the future the High series has been used so that there can be no accusation of using an unduly pessimistic scenario based on the current conditions. Using the Low series just gives even more alarming results.

2.4 The projections show that even with constant 100,000 net immigrants per annum and a higher fertility rate the population of Australia will only increase to 29.5 million by the year 2061. By this date the population of Australia under the low assumptions will be 25.2 million.

2.5 The structure of the Australian population is already undergoing very significant changes due to the baby boom in the post Second World War years, the massive immigration in the 1950s and the reductions in fertility rates of the baby boomers and their children. Figures 1 to 6 show the projected Australian population age structure in population pyramid format for 1995, 2010, 2020, 2030, 2040 and 2060. The low series pyramids are superimposed on the high series pyramids so that the effect of the different assumptions can be gauged. These figures show the baby boom bulge moving through the age groups and the effect of below net reproduction rate fertility rates. As virtually all the so-called baby boomers will have deceased by 2060, subsequent generations and immigrants will have shaped the structure of the Australian population at that date.
Figure 3

POPULATION OF AUSTRALIA
IN 2020

Australian Bureau of Statistics - High (back) and Low (front) series

Figure 4

POPULATION OF AUSTRALIA
IN 2030

Australian Bureau of Statistics - High (back) and Low (front) series
In the following figures the working age group is taken as 19 - 64 and not 15 - 64 as often used in dependency projections. In the late 1990s it seems to be very difficult for a 15 or 16 year old to get a job in Australia. Most appear to stay on at school until age 18 and many then continue further training or study. Recent government policy initiatives
The dependency ratio is the ratio of youths (under age 19) plus retired people (over age 65) to the working age population. Australia's total dependency ratio is expected to remain virtually unchanged from the year 1990 to around the year 2020. However, the structure of the dependency ratio does change significantly. Figure 7 shows the projected dependency ratio in total, its breakdown into youths (0-18), young old (65-79) and old old (80 and over). It also shows a weighted ratio. The weights used are 1 for youths, 2 for the young old and 5 for the old old because of the additional health and aged care burdens generally generated by very old people and although these weights cannot be statistically substantiated, they fit quite well with current economic data. The weighted dependency ratio remains quite steady until the year 2010. It then starts to climb quite rapidly from the year 2010 to about 60% higher by the year 2055 after which it appears to stabilise.

![Dependency Ratios if Retirement Age stays at 65](image)

The assumptions behind the projection of the weighted dependency ratio should be questioned. If one assumed, for example, that the weights will remain constant over the period of the projection then, for reasons of maintaining inter-generational equity, the weighted dependency ratio should be kept roughly constant. To obtain this, the following should happen. Australia's normal retirement age should be increased by one year in 2015, 2020 and each 5 years thereafter until the retirement age reaches 75 in the year 2050. The boundary between young old and old old should be changed by 1 year each 10 years after 2010. In practice such changes would be implemented progressively.

Figure 8 shows the effect on the dependency ratios of making these assumptions. These assumptions effectively mean that Australians will manage to slow down their ageing and the old age dependency processes and hence health and long term care costs will be delayed effectively by 1 year in every 10 years after the year 2010. This could be achievable but if the weights are changing the processes involved in achieving inter-
Is it reasonable to assume that the weights will remain constant over the period of the projection? The analysis of health and long-term care costs and their trends in the following section of this paper suggests that the weights at older ages should be rapidly increasing at present.
3 Health & Aged Care Costs And Their Trends

3.1 The demographic changes that Australia has to face are causing a radical restructuring of the way Australians fund retirement incomes, and will also cause an equally dramatic impact on the way Australians fund health and long term care. Health care and long term care costs are the main reason why the very old have been allocated a cost weighting of 5 times that of youths in the cost weighted dependency ratio in Figures 7 and 8.

3.2 To get an indication of the current levels of health and long term care costs by age in Australia a model of these costs (Figure 9) was developed from various data sets.

AUSTRALIA'S PER PERSON AVERAGE HEALTH AND LONG TERM CARE COSTS BY AGE FOR 1995

The Medicare medical benefits paid by age group from July 1994 to June 1995 for Australia were obtained from the Annual Report of the Health Insurance Commission. Allowances were made for the hospital "gap" benefits paid by health funds, and ambulatory gap medical costs to individuals. Medicare does not meet the cost of in-hospital services to Medicare (public) patients in State public hospitals because the expenses are met by the State.

3.3 Hospital costs (excluding the medical component) were assumed to be in proportion to the bed-day utilisation figures for NSW shown in NSW Hospital Utilisation data for 1993/94. Costs were assumed to average $670 per bed day. Health fund data of costs for hospital and hospital ancillary services was also used to formulate the hospital cost model. Health fund benefits averaged only around $500 a day for private hospital treatment in 1995. The difference between the average hospital bed day costs and the experience of private health funds is mainly due to the combined Medicare payments for in-hospital medical services and the patients' co-payments being around 80% to 90% of the cost of these services to privately insured patients.

3.4 Health fund data on costs of ancillary services by age was incorporated into the model.
3.5 Nursing home data on the numbers of nursing home patients at each age, sex classification (for CAM funding) was provided by the Commonwealth Government at 1 March 1991. From this data proportions in nursing homes at each age group were determined and the costs determined assuming the 1995 NSW Care Aggregate Module (CAM) Commonwealth funding arrangements applied Australia wide.

3.6 Commonwealth legislation does not permit the linking of the Commonwealth funded Pharmaceutical Benefits Scheme (PBS) claim information with patients' Medicare numbers so no appropriate records exist in Australia that enable the determination of age related pharmaceutical claim rates. Therefore, a specific allowance was made for pharmaceutical costs by assuming that these were distributed in proportion to medical costs. The likely effect of using this assumption is to increase the allocation of these costs to younger persons and decrease the allocation of costs to older persons, that is to level out the pharmaceutical cost curve by age.

3.7 The model makes heavy usage of NSW costs and could be improved with better data on hospital and pharmaceutical costs. However, the shape of the model cost structure by age as shown in Figure 9, would not vary so significantly with changes in hospital or pharmaceutical assumptions as to change the conclusions of this report.

3.8 Figure 9 shows that in 1995 Australian health care and long term care costs increase rapidly at the older ages. The health care costs in Figure 9 include all health and long term care costs including those costs directly related to insurance administration, and research but not capital. If applied to the 1995 Australian population, the model distribution of health and long term care costs would have produced some $37 billion of costs. Estimated total health costs for 1995 are of the order of $39 billion. The approximate $2 billion difference is the costs estimated to relate to capital consumption in 1995.

3.9 How are health costs changing? Health costs as a percentage of GDP rose by almost 8% during the 1990-92 recession (i.e. from 7.7% to around 8.5% of GDP). This happened because health costs did not cease growing during the recession. Their growth did slow down though, from the 3.5% to 4.0% per annum prior to 1990 to about 2.5% per annum. Then at the end of the recession Australia's health costs recommenced growing more strongly. Currently the real growth in health costs is being kept at about the same rate as the growth in GDP. This "cap" on the growth in health costs appears to have been partially achieved through "capping" Medicare schedule fees and placing funding "caps" on various other government funded health programs.

3.10 Australian health costs are not rising at all ages, either in nominal terms or real terms, as figures 10 and 11 show. However, health costs do appear to be rising rapidly in the higher age groups. These are also the higher health cost age groups. Long-term care costs, however, do not appear to be rising significantly in Australia (also because of program funding "caps") so it would seem that hospital and medical costs of the aged are the main reason for the increases.

3.11 Health cost inflation has been taken to be 13.5% per annum for the five years from 1990 to 1995 in determining the real changes in health costs shown in Figure 11. This level of health cost inflation is in line with the calculations of the Australian Institute of Health and Welfare for the five year period to 1994/95.
AUSTRALIA'S HEALTH AND LONG TERM CARE COST  
% INCREASES BY AGE FROM 1990 TO 1995  
IN NOMINAL TERMS

![Figure 10](image1)

AUSTRALIA'S HEALTH AND LONG TERM CARE COST  
% INCREASES BY AGE FROM 1990 TO 1995  
IN REAL(CONSTANT PRICE) TERMS

![Figure 11](image2)

3.12 A Figures 10 and 11 show actual and not smoothed changes. Although not smoothed the changes between various age groups appear extraordinary. The first major "bump" is in the baby boomers age groups. The changes in hospital and medical utilisation over these periods give some indication of why the health cost changes are not smooth. The growth in hospital discharges for NSW are shown in Figure 12.
3.13 Hospital discharges of females appear to be growing significantly in the older age groups according to this comparison from 1989/90 to 1993/94 (four years). The growth is less significant for males. Discharges rather than bed days are shown because discharges currently give a better picture of activity in hospitals as average lengths of stay per hospital admission are falling quite rapidly (as they are in most advanced industrial economies).

3.14 What areas of hospital medicine are growing significantly? Is the greater throughput of patients due to procedural medicine and if so what kinds of procedural medicine? Figures 13 – 16 provide some answers. Figure 13 shows the growth from 1991/92 to 1993/94 (two years only – the 1989/90 data was in an inappropriate form for this analysis) in hospital discharges of NSW residents who have undergone a procedure. Figures 14, 15 and 16 show the growth for these two years of NSW residents who have undergone orthopaedic, cardiac and digestive system principal procedures.

3.15 NSW Health Department personnel believe that the changes between 1991/92 and 1993/94 are typical. They give an indication of the enormous growth that is occurring in procedural medicine (surgery and forms of invasive diagnostic services). Cardiac principal procedures appear to show the most growth. The number of coronary artery bypass principal procedures in 1991/92 was 4,952. By 1993/94 these had grown to 5,831 an increase of 18%. The number cardiac catheterisations as a principal procedure, on the other hand, were 12,158 in 1991/92 and 18,217 in 1993/94, an increase of 50%. In 1989/90 the total number of cardiac catheterisations procedures provided to NSW residents (whether a principal procedure or not) were only 9902.
INCREASES IN HOSPITAL DISCHARGES 1989/90 - 1993/94
NSW Hospital Utilisation Data

Figure 13

INCREASES IN HOSPITAL ORTHOPAEDIC PROCEDURES
1991/92 - 1993/94 NSW Hospital Utilisation Data

Figure 14
3.17 Discussions with officers of the NSW Department of Health indicate that there has been strong growth in total demand for procedures for more than a decade. Surgeons groups also suggest this. The Health Services Research Group of the University of Newcastle produced figures 17 to 22, which give another perspective. These figures also project the trends identified in Figures 12 to 16.
Figures 17 and 18 show the recent trends and the projections of admission rates to 2006 for overnight and day only admissions in NSW hospitals from 1988 to 2006. And Figure 19, on the next page shows the recent trend and projection of bed day utilization (for overnight admissions). The NSW government is clearly alarmed by implications to State Government costs by these projections particularly as the projected demand for inpatient services has always been significantly understated as Figure 20 shows.
Bed-days for overnight admissions by age category

Total Admissions: 1979 - 1996 & Past Projections

The relative trends in admissions by service related group indicate the growth in higher tech medicine. These are shown in Figures 21 and 22 while Figures 23 and 24 show the specific growth in new technology services over 20 years or so.
Figure 21

Percentage of overnight admissions by SRG: 1988 - 2006

Figure 22

Percentage of day only admissions by SRG: 1988 - 2006
Increase in Admissions for Procedures With ‘new technology’: 1979 - 1997

![Graph showing increase in admissions for procedures with new technology from 1979 to 1997.](image)

The Four Highest Volume DRGs in 1997 That Were Not a Major ‘Product’ in 1979

![Graph showing the four highest volume DRGs in 1997.](image)

Are the costs arising from the increases in procedural medicine, particularly to the older age groups, being offset by reductions in other forms of medical care? Figures 25 and 26 suggest that this is probably not the case. For the five years from 1990/91 to 1995/96 the nominal growth in Medicare benefits and services claimed on Medicare are highest in the older age groups. However figure 27 shows that the average increases in benefit per service are highest in the younger age groups.
INCREASES IN MEDICAL BENEFITS 1990/91 - 1995/96
In Australia - HIC Data

MALES
FEMALES

AGE GROUP

INCREASES IN MEDICAL SERVICES 1990/91 - 1995/96
In Australia - HIC Data

MALES
FEMALES

AGE GROUP
The above figures may however, be considerably distorted by the mix of hospital and ambulatory medical services. As Figure 28 (below) shows hospital admission (discharge) rates are around 5 to 10 times higher at the older age groups than at the younger age groups. However, younger and middle age groups are much more likely to be privately insured than older persons. Therefore, Medicare will record a higher proportion of the smaller number of in-hospital medical services for younger persons and a much smaller proportion of the larger number of in-hospital medical services for older persons.
4 Paying for Health Care

4.1 If individuals had to meet their own health care costs then, for many, a major medical intervention or the need for care on a long-term basis as the costs involved would prove financially devastating. For example, in Australia, a routine coronary artery bypass operation costs around $15,000, a bowel resection around $10,000 and a liver transplant perhaps as much as $150,000. A year of care in a nursing home costs $45,000 to $70,000 and 24 hour nursing care provided at home currently costs $3,500 a week ($150,000 for a year).

4.2 The Commonwealth and State Governments finance a large percentage of the health and long-term care provided in Australia. Health insurers also finance a small percentage (currently around 11%). Figure 29 shows the estimated percentage of total health care expenditure in 1994/95 met by Governments and the private sector. The private sector is made up of health funds, individuals, third party insurers and includes capital costs met by the private sector etc.

Figure 29

Percentage Of Commonwealth, State and Private Health Funding in 1994/95

![Diagram showing the percentage of Commonwealth, State, and Private Health Funding in 1994/95]

Source: Australian Institute of Health – Health Expenditure Bulletin No. 12

4.3 Of even greater significance is the way Australian health costs are met almost entirely from current revenue sources, that is, on a pay-as-you-go basis. Therefore the costs are predominantly met either directly or indirectly by the productive component of Australian society – generally considered to be the working age population.

4.4 Australia’s demographic changes in the next 65 years will have a considerable impact on total health and long-term care costs. To look at the effect of these changes in totality, the health and long-term care costs by age and sex in figure 9 have been applied to the
assumed to have a growth in GDP of 3.5% per annum while the health cost deflator maintains the ratio it had with the GDP deflator from 1989/90 to 1994/95 (113.5/109.6 for this five-year period). The resultant health cost figures for each age and sex in each 5th year have been accumulated and subdivided into the 3 groups of dependents plus the working age population and are then shown as an amount per head of the working age population. This approximately indicates the burden on the future working age population of health costs of themselves, their children and the two groups of the aged retirees assuming pay-as-you-go policies continue with Governments meeting most of the health and long-term care costs of the aged.

4.5 Figure 30 shows the result of the calculations. These demonstrate the likely cost increases brought about by the demographic changes given the continuation of the current trends in health and long-term care costs by age, reasonably optimistic growth in GDP and continuing trends in health cost inflation relative to overall price inflation in the economy. Figure 30 therefore, adjusts for health care inflation at recent historical levels, changes in health care preferences amongst population groups assuming current trends continue. This projection implicitly assumes indefinite continuation of Australian government policies of financially squeezing public hospitals and controlling medical costs through centralised control of the Medicare Benefits Schedule.

Figure 30

HEALTH CARE COSTS IN 1995 $ PER PERSON IN POTENTIAL WORKFORCE

4.6 Figure 30 shows how that the working age population and their children will consume relatively less health and long-term care over time (children's costs become minuscule) yet fund considerably more care for the aged. This is not at all realistic. The main reason why the working age population and their children get to consume relatively less care under this scenario is the implicit assumption that doctors' fees will gradually be squeezed downwards to very low levels. This is not an option that could be contemplated by Australia when high quality (western) medical care is likely to be in short supply in the Asian-Pacific region for the first few decades of the next century. With the developments in telemedicine the medical profession will become globalised in the same way as the actuarial, accounting and legal professions have already become.
Figure 31 shows the growth in the health component of the Australian GDP from the same projection that produced Figure 30. Under the current policies and trends the "health" component of GDP will only marginally increase for the next 10 years (assuming there is no recession), but by 2020 it will make up 10.7% of GDP, 13.2% by 2030 and an impossible 23.3% by 2060.

**HEALTH AND LONG-TERM CARE FUNDING AS A PERCENTAGE OF GDP (GDP Growth = 3.5% p.a.)**

![Graph showing health and long-term care funding as a percentage of GDP (GDP Growth = 3.5% p.a.)](image)

Figure 32 shows the same data as Figure 31 except the assumed rate of growth in GDP has been increased from 3.5% to 4% per annum. Higher economic growth will contain health costs as a constant proportion of GDP for the first 10 years of the projection. After that, as baby boomers start to retire in large numbers, health costs will still start to escalate as a proportion of GDP.
In 1994 the Australian Association of Surgeons (AAS) commissioned a study of the fees being charged by proceduralists in the Asia-Pacific region. This study showed that in 1993 the Medicare benefits for the 6 or 7 most common procedures in each of the 10 main branches of procedural medicine were considerably below the benefits being obtained from private insurers in other countries. For example benefits paid by the Southern Cross Health Society, New Zealand's largest health insurer were often at least twice those payable by Medicare. Singapore insurers and those operating on the West Coast of the USA tended to pay five or more times the benefits payable by Medicare. Hong Kong insurers often paid ten to twenty times the Medicare benefit for the equivalent procedure. The table below provides an example for each category of surgery.

### Regional Comparison of Medical Fees

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Singapore</th>
<th>Hong Kong</th>
<th>New Zealand</th>
<th>AMA</th>
<th>Medicare</th>
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<tbody>
<tr>
<td>Rhinoplasty</td>
<td>2,229</td>
<td>5,880</td>
<td>1,480</td>
<td>665</td>
<td>369</td>
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<tr>
<td>Disc Excision</td>
<td>4,459</td>
<td>12,294</td>
<td>1,480</td>
<td>1,120</td>
<td>689</td>
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<tr>
<td>Stapendectomy</td>
<td>3,567</td>
<td>6,949</td>
<td>1,315</td>
<td>1,225</td>
<td>786</td>
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<tr>
<td>Lens Extraction &amp; Insertion</td>
<td>3,567</td>
<td>7,485</td>
<td>2,413</td>
<td>2,295</td>
<td>879</td>
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<tr>
<td>Radical Prostatectomy</td>
<td>4,459</td>
<td>8,018</td>
<td>2,055</td>
<td>1,520</td>
<td>931</td>
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<tr>
<td>Appendicectomy</td>
<td>2,229</td>
<td>3,100</td>
<td>756</td>
<td>560</td>
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<tr>
<td>Bimaxillary Osteotomy</td>
<td>7,134</td>
<td>6,414</td>
<td>n.a.</td>
<td>5,655</td>
<td>998</td>
</tr>
<tr>
<td>Coronary Artery Bypass</td>
<td>7,134</td>
<td>21,347</td>
<td>3,083</td>
<td>2,435</td>
<td>1,477</td>
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<tr>
<td>Total Hip Replacement</td>
<td>5,350</td>
<td>11,225</td>
<td>1,644</td>
<td>1,810</td>
<td>951</td>
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<tr>
<td>Vaginal Hysterectomy</td>
<td>2,229</td>
<td>5,345</td>
<td>1,110</td>
<td>910</td>
<td>487</td>
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</tbody>
</table>

Notes: Singapore’s fees are recommended by the Singapore Medical Association (High Series). Hong Kong’s Fees are recommended by the Hong Kong Medical Insurance Association (High Series). New Zealand’s Fees are listed by the Southern Cross Medical Care Society and recognised for benefits. AMA’s Fees are suggested by the AMA and listed in the AMA List of Medical Services and Fees. Medicare Fees are listed in Medicare Schedule. The Medicare benefit is 75% of the fee shown.

Since the AAS study was completed, Australian proceduralists have had their Medicare fees cut for many common procedures and for other procedures they have had only minimal increases. In the meantime procedural fees have increased by 18% - 20% per annum in Hong Kong and at least 5% per annum in Singapore. The Australian dollar has also depreciated against the Hong Kong and Singapore dollars.

Australia’s medical schools and colleges of medicine are accepting high proportions of new students who have Cantonese or Mandarin as their first language. These are usually the most gifted students and therefore obtain the very high qualifications necessary for entrance into these university and advanced degree courses. It would seem unlikely that, after qualification, they will always overlook the differences in fees (and incomes) for highly qualified proceduralists in Australia and other countries in the Asia-Pacific region. Australia’s medical colleges are only just producing enough proceduralists to meet demands in Australia. A report into the supply of and the requirements for Medical Specialist Services in Australia, produced by Peter Baume in 1994, suggested that already there were shortages in some areas of specialist medicine.
4.12 This suggests that the trends that are so evident in procedural medicine will be self-limiting, not because the demand for such services will taper off, but the supply of such services will not be able to keep up with the demand. This already appears to be happening, as public hospital waiting lists are growing rapidly in most states of Australia.

4.13 If, as is implicitly implied in this research, Australia maintains centralised control over medical fees to the point where Australian specialists move their expertise to more lucrative markets, then what is the prognosis for the long-term trend in mortality rates in Australia? There is a recent precedent that gives some indication of the possible consequences. When the iron curtain fell many of Russia's medical specialists emigrated because their services were worth infinitely more in the West than in Russia. (Russian GP's were then being paid less than bus drivers and specialists generally only marginally more). The result was a Russian hospital system that became incapable of supplying many common procedures such as open-heart surgery. Life expectancies began to fall and recent reports suggest the average life expectancy of a Russian male at birth has now reduced to the low 60's. Some of the fall in life expectancy in Russia could be blamed on other factors and money would not have been the sole motivating factor for their specialists' emigration. However, there can be no doubt that the collapse of a country's medical system, for any reason, would have important implications for actuaries in that country.
5 Conclusions

5.1 The post second world war baby boom is having, and will continue to have, a substantial effect on Australia's population structure. But, even when the baby boomers are all gone, the "top heavy" population structure will remain. Because, of even more importance than the baby boomers, is Australia's declining fertility rates. If Australia's fertility rates declined to the levels now being experienced elsewhere in the world (1.3 in Hong Kong for example), they will cause considerably more difficulties in paying for retirement incomes and health than suggested in this paper. Increasing immigration levels will help but they will have to be increased very significantly to make a big difference. The projections in this research used the high immigration, high fertility series of population projections. The low series provide a worse prognosis.

5.2 As a result of the changing demographic profile of Australia, the financing of health and long term care for the aged will become a problem for future Australian Governments if they continue to finance most health and long term care costs out of tax revenues, that is on a pay-as-you-go basis. The current mainly tax-based financing of post-retirement health and long term care should not continue in Australia once governments realise the similarities between the provision of post-retirement incomes and the provision of post-retirement health.

5.3 Utilisation of procedural services, in particular, is increasing at an unsustainable rate in Australia. Part of this increase is presumed to be induced by "free at point of service" availability of these services to the population that is not privately insured. "Free at point of service" public medical and hospital care makes it virtually impossible for private health insurers, which have to effectively compete with the public sector, to use appropriate insurance measures to reduce their future outlays.

5.4 Current policy measures to reduce the cost of the growth in hospital services to governments include increasing public hospital waiting lists for Medicare patients, the Commonwealth encouraging more people to take up voluntary private health insurance, through the 30% rebate introduced in 1999 and encouraging the use of "evidence based medicine". Also there appears to be a policy of partly paying for the increases in utilisation of procedural medicine by cutting back on the fees of all doctors. This latter measure could eventually limit growth in procedural medicine, and in fact all medical services, if newer Australian trained doctors take their skills to other health markets. With the current developments in computerised robotic surgery and telemedicine many Australian trained specialists will soon be able to reside in Australia but provide their skills to a much wider patient base.

5.5 The demographic changes that will impact Australia in the first half of the 21st Century will significantly increase the costs of post-retirement health and long term care even if trends of reducing health costs in younger ages could be maintained. The well-known trends in full and part time work-force participation, taxation revenues and savings also indicate that fundamental changes will have to be made to the funding of post-retirement health and long-term care. These changes will have to be just as fundamental as the changes made to the funding of post-retirement incomes and will have to be made for principally the same reasons. Only in the area of long-term care has the Australian Government begun to develop policies that will eventually change the "entitlement" psychology of Australians.
5.6 None of the current policy provisions of the Australian Government appear to realistically address the long-term health cost trends identified and quantified in this research. A typical response is to denigrate this type of research on the grounds that major health costs of individuals are principally related to end of life costs. However, the trends in health costs clearly show the shift to costs of living and particularly the costs of living comfortably.

5.7 Turning to the theme of the session are actuaries going to be dinosaurs or players in the 21st Century health system, one thing we have to agree on is which projection technique is the dinosaur. Is it the technique, which is based on age/sex (and other characteristics) related contingencies or is it the technique, which is based on end of life events. One thing is clear – crude trend analysis based on service utilisation without adjustment for age and sex (at least) has repeatedly failed to project even close to what has eventuated. But are actuarial techniques going to do a better job?
References

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