

# Effects of increased private health insurance on hospital utilisation in Victoria

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## Abstract

The proportion of Victorians and Australians generally with private health insurance (PHI) increased from 31% in 1998 to 45% in 2001. We analysed a dataset containing all hospital separations throughout Victoria to determine whether changes in the level of private health insurance have had any impact on patterns of public and private hospital utilisation in Victoria.

Total utilisation of private hospitals grew by 31% from 1998–99 to 2002–03, whereas utilisation of public hospitals increased by 18%. Total bed-days have increased in both private hospitals and public hospitals by 12%. The proportion of all separations at private hospitals has remained relatively stable between these 2 years, with 33% of all separations being private patients in private hospitals in 1998–99, increasing slightly to 35% by 2002–03. Analysis of a number of specific DRGs shows that patients with more severe disease are more likely to be seen at public hospitals; notably this trend has strengthened between 1998–99 and 2002–03.

The number of patients treated in Victorian public hospitals has continued to grow, despite a rapid increase in the utilisation of private hospitals. Given the limited extent of the shift in caseload share between the two sectors, the effectiveness of the Commonwealth's subsidy of private health insurance as a mechanism to reduce pressure on the public sector needs to be carefully examined.

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## What is known about the topic?

There has been substantial debate about the impact of the private health insurance policy on the utilisation of public hospitals throughout Australia.

## What does this paper add?

This article suggests that between 1998–99 and 2002–03 the number of patients treated in Victorian public hospitals continued to grow, with the public hospitals also tending to treat patients with more severe diseases.

## What are the implications for practitioners?

This article adds to the debate, suggesting a need to review private health insurance policy.

THE RECENT HISTORY of health care financing in Australia is one of parallel systems. Private insurance rates began to decline in Australia with the introduction of universal public insurance coverage by Medibank in the 1970s. Before Medibank, more than 80% of Australians were privately insured, but by 1983 this had fallen to 63% (Connelly & Doessel 2000). The introduction of Medicare in 1984 further contributed to the declining rates, which reached a low of 30.1% in December 1998 (CDHAC 1999).

In January 1999 the Commonwealth Government of Australia instituted a 30% taxation rebate to improve the affordability of private health insurance for its citizens. Unlike previous targeted rebates, this rebate was not means-tested. The goals of this shift in policy were to reduce the demand on public hospitals that was believed to be caused by declining health insurance rates and to increase choice and affordability: “[a] balanced system will ease the burden on Medicare and the public health system and give more Australians greater choice and access to private hospitals” (CDHAC 1999). The subsidy was estimated to be \$2.19 billion in 2000–01 (Commonwealth Senate 2000) and is estimated to be \$2.4 billion in 2003–

04 (Commonwealth Government of Australia 2003).

In July 2000, the Commonwealth government introduced 'Lifetime Health Cover' which altered the community health rating for private health insurance. The new Lifetime Health Cover varied the price of private health insurance by age, so that there was an incentive to join before higher age-related premiums were introduced. In the three months before the introduction of Lifetime Health Cover, 11% of Australians took on private health insurance. In order to allow more people to purchase health insurance at the non-age-related rate, the commencement of Lifetime Health Cover was delayed by a further 45 days (Willcox 2001). By June 2000, the rate Australia-wide for private health insurance was 43%; a year later it was 45%. In Victoria, the rates of private health insurance paralleled these national rates (PHIAC 2002).

This article describes the utilisation patterns of Victorian hospitals in the financial years 1998–99 and 2002–03, comparing hospital use before and after the introduction of the Australian government's reforms to private health insurance had taken effect. A twelve-month lag from uptake of the insurance was included in the analysis to take account of those with pre-existing conditions. This article also discusses the effectiveness of these reforms in meeting the stated objectives — to improve choice and to relieve pressure on the public hospital system.

We restricted our analysis to admitted patient episodes. In Victoria, these data are subject to extensive quality control processes and regular audit and are regarded to be of high quality. Other hospital data such as outpatient attendances, emergency department attendances and waiting list statistics are of variable quality and often difficult to interpret.

The Victorian Admitted Episodes Dataset (VAED), maintained by the Victorian Department of Human Services, is based upon hospital data compiled by individual acute private and public hospitals in Victoria. The dataset contains demographic and clinical information on each separation within Victoria. Diagnostic and procedure

codes are available (from 12 to 25 of each, depending on the year) in the ICD-10-AM format for the financial years 1998–1999 and 2002–2003 (DHS 2000).

## Methods

### **Classification of separations**

Each separation was initially classified into the following categories:

- *Patient type*: Represents the insurance status of the patient and the type of hospital to which they were admitted. Patients admitted to private hospitals were considered 'private patient in private hospital', whereas patients admitted to public hospitals were sub-classified into 3 groups: 'public patient in public hospital', 'private patient in public hospital' and 'other patient in public hospital'. This last group, 'other patient in public hospital' includes Department of Veterans' Affairs, WorkCover, and Transport Accident Commission patients;
- *Care type*: Whether the admission was predominantly surgical or medical in character (AIHW 2001);
- *Urgency status*: Elective or emergency;
- *Length of stay class*: Same-day or multi-day.

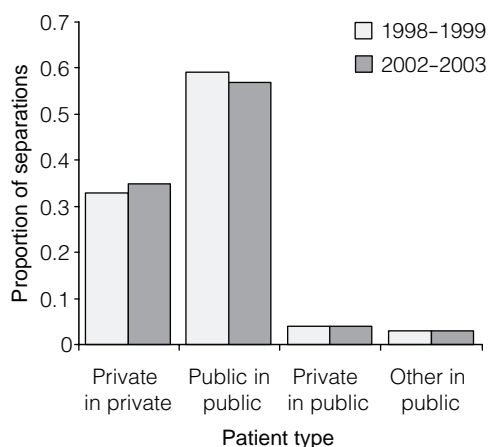
### **Selection of diagnostic and procedural types for further analysis**

Specific diagnosis related groups (DRGs) were selected in order to conduct further detailed analyses (Appendix). The DRGs were chosen pre-analysis based on two initial criteria: did the DRG represent a fairly common disease or procedure and did it contribute to the whole such that the specified DRGs could be seen to represent a wide spectrum of diseases and procedures at both private and public hospitals. The DRGs were grouped based on the number of levels of comorbidities and/or complications (CCs) possible within the DRG. For example, the DRG 'Alcohol or drug intoxication' was placed together with 'Cardiac catheterisation' because both of the DRGs have two levels of comorbidity and/or complication. There is no ordering of the groups otherwise.

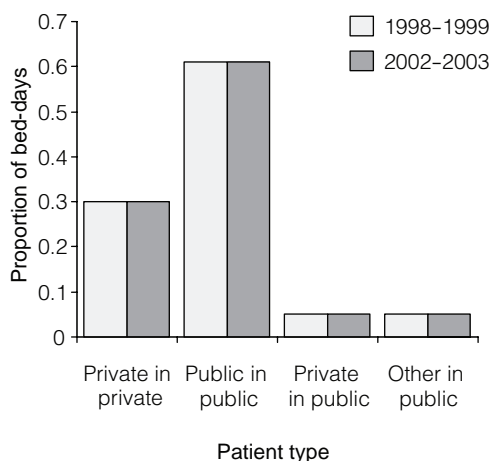
## I Hospital separations and bed-days by financial year

Patient type	Separations			Bed-days		
	1998–1999	2002–2003	% change	1998–1999	2002–2003	% change
Private in private	495 700	651 159	31%	1 634 054	1 828 881	12%
Public in public	891 227	1 053 995	18%	3 311 167	3 722 161	12%
Private in public	66 963	74 865	12%	246 545	279 562	13%
Other in public	49 387	55 197	12%	266 788	298 057	12%
Total	1 503 277	1 835 216	22%	5 458 554	6 128 661	12%

### 2 Proportion of separations by patient type



### 3 Proportions of bed-days by patient type



- *Group A:* This group of 54 DRGs had 2 subclasses, those 'with comorbidities/complications' and those 'without comorbidity/complications'.
- *Group B:* 3 subclasses, those 'with catastrophic CCs', 'with severe CCs', and 'without catastrophic or severe CCs'.
- *Group C:* Essentially two DRGs, 'caesarean delivery' and 'vaginal delivery', each with 4 subclasses, those 'with multiple complicating diagnoses, at least one severe', 'with severe complicating diagnosis', 'with moderate complicating diagnosis' and 'without a complicating diagnosis'.
- *Group D:* Consisted mainly of same-day procedures without subclassification.
- The final culling of the DRG list was based on subclassification of the DRGs such that their levels of comorbidity and complication were consistent within the subclassifications above.

### Data analysis

The aim of the data analysis was to understand the impact of the Commonwealth's private health insurance reforms on the distribution of hospital separations, and, potentially, to provide some further insights into the association between the levels of increased private health insurance rates and the two stated aims of the reform: to improve choice and to reduce the burden on public hospitals.

Initial counts and percentages of the distribution of hospital separations and bed-days among the 4 patient types were generated. The separation counts were then subclassified according to age group, care type, urgency status and length of stay class. These counts served to provide a general description of hospital utilisation patterns in the

financial year 1998–99 (pre-reform) and the financial year 2002–03 (post-reform), the first year after the reforms during which all new private insurance carriers had access to private hospital care, regardless of their pre-existing disease status.

To analyse these patterns more fully, the counts and distributions of the specified DRGs (Appendix) and their subclassification based on comorbidity and complications were assessed. These descriptions were limited to the two patient types which showed the most change post-reform: private patients in private hospitals (private patients) and public patients in public hospitals (public patients). Because distinct patterns in the severity (comorbidity/complication) of private patients compared with public patients were found, these relationships were further evaluated using multiple logistic regression.

Separate models were fitted for each group of disease/procedure DRGs using PROC LOGISTIC in SAS 8.2. The outcome in each model was the odds of being treated as a private patient compared with being treated as a public patient. The main predictors to be evaluated were the financial year (pre-reform 1998–99 or post-reform 2002–03) and the severity level of comorbidity and complications. Both main effects and interactions between the predictor variables were considered. Each model was adjusted for age and the specific disease/procedure DRGs.

For each of the models the reference group for the outcome was being treated as a public patient in a public hospital; the reference group for the severity predictor variable was the subclass with the least CCs. For example, in the model for DRGs in Group A (two subclasses), the odds of being a private patient for those having CCs in the pre-reform year is provided separately from the post-reform year, as there is an interaction between severity and the reform year in their relationship to the outcome, patient type. Each of these models was adjusted for the specific DRG within the group and for age. The motivation for including these adjustment factors was that it allowed us to compare, within a specific disease/procedure DRG and age, the impact of the financial year and the severity within the DRG on the odds of attending a

private hospital as a private patient. The tendency for over dispersion in these models (based on clustering within individual hospitals) was corrected by using the SCALE option in PROC LOGISTIC. This correction factor essentially served to increase the magnitude of the standard error of each predictor variable and reduce the probability of making a Type I error— that is, finding a significant difference where none existed.

## Results

### ***General characteristics of pre- and post-reform years***

In comparison with the pre-reform year of 1998–99 (Box 1), there was a 22% increase in total separations during the post-reform year of 2002–03 (1 503 347 to 1 835 216). In contrast, the increase in total bed-days was only 12%.

The number of admissions of private patients to private hospitals increased by 31%; public patients in public hospitals increased by 18%; private patients in public hospitals increased by 12%; and other patients in public hospitals increased by 12%. These increases were not matched by a comparable increase in bed-days: private patients in private hospitals accrued only 12% more bed-days; public patients in public hospitals accrued 12%; private patients in public hospitals accrued 14%; and other patients in public hospitals accrued 12% more bed-days.

When separations for each patient type were expressed as a percentage of the Victorian total, the proportion of private patients in private hospitals (private patients) increased from 33% to 35% (Box 2), with a comparable decrease in the proportion of public patients in public hospitals (public patients). The other two patient types showed no change. In comparison, the fraction of private patient bed-days did not change (Box 3).

The 20–59-year age group showed the greatest change in the private patient fraction, with a 4 percentage point increase post-reform (Box 4). Notably, the proportion of patients 60 years of age and over treated by private hospitals did not change.

The private patient in private hospital share of surgical patients went from 44% in 1998–99 to 50% in 2002–03. In comparison, the private patient in private hospital share of medical separations increased from 28% to 31% (Box 4). In terms of urgency status, there was a 3% increase in the proportion of elective patients treated as private patients, whereas the proportion of emergency patients did not change. Both same-day and multi-day patients were treated more frequently as private patients in the post-reform year.

#### **Association between individual Diagnosis Related Groups, reform year and patient type**

The 93 DRGs analysed further represented a total of 528 059 separations (35% of total separations) in 1998–99 and 655 715 (36%) in 2002–03. They

represented 27% of total bed-days in 1998–99 and 28% in 2002–03.

Within Group A, the DRG sets which showed a greater than 5% change in private patient fraction were: lung resection (+12%), cardiac catheterisation (+11%), mastectomy (+7%), cholecystectomy (+7%), upper endoscopy (+6%), hysterectomy — malignant (–6%) and alcohol or drug intoxication (–8%). In Group B, only two DRG sets showed this magnitude of change post-reform: hip replacement (+8%) and transient ischaemic attack (–6%). Finally, in Group C, both DRG sets showed a 6% increase in private patient fraction, and arthroscopy showed an increase of 14% in Group D. Box 5 shows these DRG sets in descending order of private hospital fraction, 1998–99. Separations for these specific DRGs followed the general pattern found for all separations, with elective surgical

#### **4 Characteristics of hospital separations, 1998–1999 and 2002–2003**

	Private patient in private hospital		Public patient in public hospital		Private patient in public hospital		Other patient in public hospital	
	1998–1999	2002–2003	1998–1999	2002–2003	1998–1999	2002–2003	1998–1999	2002–2003
<b>Age group (years)</b>								
≤19	34 503 (17%)	42 283 (20%)	152 380 (75%)	154 907 (72%)	14 842 (7%)	14 725 (7%)	2322 (1%)	2732 (1%)
20–59	249 405 (35%)	336 910 (39%)	423 424 (59%)	475 073 (55%)	27 370 (4%)	30 551 (4%)	12 341 (2%)	15 323 (2%)
60+	211 792 (36%)	271 966 (36%)	315 423 (54%)	424 015 (56%)	24 751 (4%)	29 589 (4%)	34 724 (6%)	37 142 (5%)
<b>Care type</b>								
Medical	299 854 (28%)	418 283 (31%)	691 146 (65%)	858 358 (63%)	39 698 (4%)	46 979 (3%)	37 886 (4%)	44 887 (3%)
Surgical	185 882 (44%)	230 603 (50%)	198 615 (47%)	195 609 (42%)	27 031 (6%)	27 884 (6%)	11 368 (3%)	10 306 (2%)
<b>Urgency status</b>								
Elective	452 340 (44%)	602 101 (47%)	496 252 (49%)	602 458 (47%)	45 403 (4%)	52 813 (4%)	24 977 (2%)	27 597 (2%)
Emergency	42 743 (9%)	47 713 (9%)	388 727 (82%)	439 229 (82%)	21 299 (4%)	21 692 (4%)	23 785 (5%)	26 445 (5%)
<b>Length of stay status</b>								
Multi-day	220 434 (29%)	248 185 (31%)	473 869 (62%)	492 538 (61%)	35 201 (5%)	36 221 (4%)	29 768 (4%)	30 496 (4%)
Same day	275 266 (37%)	402 974 (39%)	417 358 (56%)	561 457 (55%)	31 762 (4%)	38 644 (4%)	19 619 (3%)	24 701 (2%)

DRGs showing the greatest changes from the pre- to the post-reform year.

### **Association between severity, reform year and patient type**

In Group A, patients without CCs were nearly two times more likely to be private patients than were patients with CCs (Box 6). This association

between less severe separations and private patient status became stronger in the post-reform year.

In the three levels of severity within DRGs of Group B, the association between severity and patient type continued, as did the strengthening of this pattern in the post-reform year: whereas 58% of separations without catastrophic or severe CCs were treated as private

## **5 Distribution of specific DRGs among private patients in private hospitals and public patients in public hospitals**

DRG description	Severity	Medical/ Surgical	Emergency/ Elective	Same day/ Multi-day	Number of separations		Private hospital fraction (%)	
					1998– 1999	2002– 2003	1998– 1999	2002– 2003
Colonoscopy	Group B	Medical	Elective	Same day	47 277	67 907	72	76
Cataract	Group D	Surgical	Elective	Same day	18 714	27 592	67	68
Mastectomy	Group A	Surgical	Elective	Multi-day	5987	5299	62	69
Upper endoscopy	Group A	Medical	Elective	Same day	57 239	61 280	61	67
Knee replacement	Group A	Surgical	Elective	Multi-day	3409	5448	60	65
Transurethral resection prostate	Group A	Surgical	Elective	Multi-day	5789	5859	54	58
Arthroscopy	Group D	Surgical	Elective	Same day	2670	2460	53	67
Hip replacement	Group B	Surgical	Elective	Multi-day	5295	6987	52	60
Angioplasty	Group D	Surgical	Elective	Multi-day	5003	7551	52	54
Cardiac catheterisation	Group A	Medical	Elective	Multi-day	12 025	14 541	51	62
Cystoscopy	Group D	Medical	Elective	Same day	7794	10 706	51	51
Hysterectomy-malignant	Group A	Medical	Elective	Multi-day	1024	1124	49	43
Colon or rectal resection	Group A	Surgical	Elective	Multi-day	5168	5693	43	47
Chemotherapy	Group D	Medical	Elective	Same day	56 788	80 840	42	45
Coronary artery bypass graft	Group A	Surgical	Elective	Multi-day	3568	3344	39	43
Depression	Group A	Medical	Elective	Multi-day	7526	8216	38	38
Cholecystectomy	Group A	Surgical	Elective	Multi-day	9748	10 405	36	43
C-section	Group C	Surgical	Emergency	Multi-day	12 359	15 893	34	40
Lung resection	Group A	Surgical	Elective	Multi-day	1317	1318	31	43
Pulmonary embolism	Group A	Medical	Emergency	Multi-day	1158	1321	29	26
Transient ischaemic attack	Group B	Medical	Emergency	Multi-day	2881	3065	29	23
Congestive cardiac failure	Group A	Medical	Emergency	Multi-day	9421	9594	26	26
Vaginal Delivery	Group C	Medical	Emergency	Multi-day	45 928	42 071	24	30
Pneumonia	Group B	Medical	Emergency	Multi-day	13 920	16 240	23	22
Chronic obstructive airways disease	Group A	Medical	Emergency	Multi-day	9570	12 135	22	20
Septicaemia	Group A	Medical	Emergency	Multi-day	2269	2896	21	20
Alcohol or drug intoxication	Group A	Medical	Emergency	Multi-day	2945	3494	16	8
Unstable angina	Group A	Medical	Emergency	Multi-day	9027	7716	16	13
Diabetes	Group A	Medical	Emergency	Multi-day	3741	6311	14	19
Acute myocardial infarction	Group B	Medical	Emergency	Multi-day	4870	5643	13	16
Asthma	Group B	Medical	Emergency	Multi-day	11 620	9323	13	11
Dialysis	Group D	Medical	Elective	Same day	136 875	187 375	13	9
Seizure	Group A	Medical	Emergency	Multi-day	5134	6068	7	6

patients in the pre-reform year, this proportion increased to 65% in the post-reform year of 2002–2003. In comparison, only 25% of separations with catastrophic CCs, the most severe subclass, were within the private patient type in the pre-reform year, decreasing to 23% in the post-reform year.

Group C is composed of only 2 DRGs — caesarean section and vaginal delivery. There was no clear association between severity and patient type.

Group D DRGs are not subclassified into levels of severity, so no comparisons are made. Notably, when all DRGs but dialysis within this group are considered, the private hospital fraction is 48% in the pre-

## 6 Distribution of comorbidity and complications among private patients in private hospitals and public patients in public hospitals

		Number of separations		Private patient fraction*	
		1998–1999	2002–2003	1998–1999	2002–2003
Group A	Without CCs	117 802	132 132	49%	53%
	With CCs	36 048	37 051	30%	31%
Group B	Without catastrophic or severe CCs	61 704	84 460	58%	65%
	With severe CCs	16 614	16 997	31%	31%
	With catastrophic CCs	7401	7587	25%	23%
Group C	Without a CCs	41 349	40 786	26%	35%
	Moderate CCs	3671	3691	33%	23%
	Severe CCs	9837	9055	23%	30%
	Multiple CCs, at least one severe	2959	4127	23%	23%
Group D	All cases	230 674	319 559	27%	26%

\* Private patients are private patients in private hospitals.  
CCs = comorbidities and complications.

## 7 Odds of admission as a private patient to a private hospital compared with a public patient at a public hospital, by level of comorbidity/complication of DRG\*

		1998–1999	2002–2003
		Odds ratio (95% CI)	Odds ratio (95% CI)
Group A	Without comorbidities/complications	1	1
	With comorbidities/complications	0.43 (0.42–0.45)	0.37 (0.36–0.39)
Group B	Without catastrophic or severe CCs	1	1
	With severe CCs	0.62 (0.60–0.65)	0.52 (0.49–0.54)
	With catastrophic CCs	0.57 (0.53–0.61)	0.38 (0.35–0.40)
Group C	Without a complicating diagnosis	1	1
	With moderate complicating diagnosis	1.45 (1.34–1.56)	0.55 (0.51–0.60)
	With severe complicating diagnosis	0.74 (0.70–0.79)	0.70 (0.67–0.74)
	With multiple complicating diagnosis, at least one severe	0.69 (0.63–0.76)	0.46 (0.43–0.50)

\* For each group, the results are from a multiple logistic regression model which adjusted for age and the specific disease/procedures. The odds ratios for the predictors of interest (financial year and level of complication and comorbidity) were developed using both of their main effects and interactions.  
CCs = comorbidities and complications.

reform year and 50% in the post-reform year. The private fractions for dialysis are 13% and 9%.

### **Multivariable models on the association between severity, reform year and patient status**

To further investigate this apparent association between severity, reform year and patient type, we fitted three multiple logistic models (one for each group with more than one severity level). The outcome is patient type, the predictor variables of interest are severity and PHI reform year and the covariates are age and the specific DRG set.

In Group A (Box 7), separations in the pre-reform year of 1998–99 with CCs are 57% less likely to be private patients than are separations without CCs (OR, 0.43; 95% CI, 0.42–0.45); in the post-reform year of 2002–03 this gap widens to 63% (OR, 0.37; 95% CI, 0.36–0.39). Notably, the confidence intervals for the two years do not overlap, indicating that there is a statistically significant difference between the pre- and post-reform years. In Group B, this same trend is apparent: separations with catastrophic CCs are 43% less likely to be private patients than are separations without CCs in the pre-reform year and 62% less likely in the post-reform year. A similar pattern is found in Group C, with the most severe separations 31% (pre-reform) and 54% (post-reform) less likely to be treated privately.

## **Discussion**

Hospital utilisation patterns are influenced by many factors including health status, hospital capacity, workforce supply and practices, and availability of other related services (for example, after hours primary medical care). However, the magnitude of the growth in private health insurance from 2000 to 2001 could be expected to translate into measurable changes in hospital utilisation patterns.

Our analysis shows that although total separations for private patients in private hospitals grew 31% between the financial years 1998–99 and 2002–03, the fractional proportion of private patients in private hospitals showed a modest increase of 2%. Comparatively, the number of bed-days for private patients in private hospitals

increased by 12%, whereas the fractional proportion of private bed-days was 30% in both 1998–99 and 2002–03. The greatest contribution to volume growth in private hospitals has been the increase in surgical and elective separations. In contrast, emergency separations were treated at private hospitals at a rate of only 9 per 100 in both the pre- and post-reform years.

With modelling techniques allowing for comparison within specific sets of DRGs and for age adjustment, we found a significant association between lower severity separations and the likelihood of treatment as a private patient in a private hospital. This trend increased between the pre- and post-reform years. Severe separations within a DRG set were at maximum 57% less likely to be private patients in private hospitals in 1998–99, and in 2002–03 they were 63% less likely to be treated at private hospitals.

While private health insurance rates have increased from 31% to 45%, the private hospital share has gone from 33% to 35%. This growth in the private sector does not appear to have significantly changed underlying differences between the sectors — the public sector continued to provide the bulk of emergency and medical care, with a higher proportion of these patients having severe disease levels in comparison to the private sector.

The major impact of the increase in private health insurance rates may be the addition of discretionary elective surgical care in the private sector. The implications of increasing specialisation between public and private hospitals, with the majority of discretionary elective surgical procedures conducted in private hospitals and the majority of emergency and medical patients treated in public hospitals, will require further evaluation. With increasing specialisation between sectors, the role of government in subsidising the private sector becomes increasingly subject to concerns about equity and equality of access for all members of Australian society.

The relationship between the supply of and demand for hospital care is uncertain. Traditionally, waiting list statistics have been used to measure demand for services. However, these data are difficult to interpret. One common finding is that as hospital activity increases, additions to the list also increase, often resulting in an increase in the num-



bers of people waiting. An explanation for this effect is that the availability of health services changes the decision making process of clinicians, that is, if a service is seen as readily available it is more likely to be recommended to the patient. If elective surgery is seen as readily available, then clinicians are more likely to recommend surgery than a less aggressive treatment regime, or even adopting a 'wait and see' approach. Under such a hypothesis it is even possible that, in the longer term, the increased use of private hospitals by the privately insured may result in increased pressure on the public sector.

Although it is not uncommon for important changes in the health sector to have unpredictable effects, the patterns reported here were predicted by several analysts. For example, in a discussion of the likely effects of the 30% rebate it was predicted that public hospitals would "... continue to experience increases in the number of admitted patients as a consequence of many factors including increased efficiency, growing expectations, and demographic changes." There would continue to be "... considerable unmet need and therefore, if spare capacity emerged, it would quickly be filled by those who had been in waiting (whether on formal waiting lists or not)" (Hindle 2000). Others have noted that any shift to care provided under private insurance, whether in private or public hospitals, could cause a decline in the equity of care-provision (see for example Duckett & Jackson 2000; Palmer 2000; Butler 2002; Thwaites 2002).

Finally, our analyses may provide insight into the question of whether the PHI reforms have achieved their stated intentions of improved choice and an alleviation of public hospital burden. Regarding choice, the private and public hospital systems appear to be functioning in parallel. There is choice on where to have an elective admission, such as colonoscopy, arthroscopy, and cataract surgery, but there appears to be little choice for acute myocardial infarction, asthma or diabetes. Choice of hospital in an emergency may largely be limited to public hospitals. In 1998–99, 44% of public patients in public hospital separations were emergency; this dropped to 42% in 2002–03. Emergency separations have an impact on waiting lists, with cancellation of scheduled procedures when emergency admissions increase. With more than 90% of all emergency admissions being treated in the public

sector, this burden on public hospitals appears not to have changed much between the years studied here. Additionally, severe disease appears more likely to be treated in the public sector, with this trend increasing between the study years. Finally, while the private hospital share of separations has increased by 2%, the private hospital share of bed-days did not change between 1998–99 and 2002–03. Analysis of these factors of urgency, severity and bed-days suggests that the burden on the public hospital system may not have been reduced. In fact, a case may be made that it may have increased, with public hospitals shouldering the burden of severe disease more in 2002–03 than in 1998–99.

## Competing interests

None identified.

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## Appendix Diagnosis Related Groups chosen for further analysis

Group	Diagnosis Related Group general description	Australian Refined DRG (NCCH 1998)
Group A	Alcohol or drug intoxication	V61A, V61B
	Cardiac catheterisation	F41A, F41B, F42A, F42B
	Cholecystectomy	H03A, H03B, H04A, H04B
	Chronic obstructive airways disease	E65A, E65B
	Colon or rectal resection	G01A, G01B, G02A, G02B
	Congestive cardiac failure	F62A, F62B
	Coronary artery bypass graft	F05A, F05B, F06A, F06B
	Depression	U63A, U63B
	Diabetes	K60A, K60B
	Hysterectomy-malignant	N60A, N60B
	Knee replacement	I04A, I04B
	Lung resection	E01A, E01B
	Mastectomy	J06A, J06B
	Pulmonary embolism	E61A, E61B
	Seizure	B76A, B76B
	Septicaemia	T60A, T60B
	Transurethral resection prostate	L05A, L05B, M02A, M02B
	Unstable angina	F72A, F72B
	Upper endoscopy	G40A, G40B, G41A, G41B, G42A, G42B, G45A, G45B
Group B	Acute myocardial infarction	F60A, F60B, F60C
	Asthma	E69A, E69B, E69C
	Colonoscopy	G44A, G44B, G44C
	Hip replacement	I03A, I03B, I03C
	Pneumonia	E62A, E62B, E62C
	TIA	B69A, B69B, B69C
Group C	C-section	O01A, O01B, O01C, O01D
	Vaginal Delivery	O60A, O60B, O60C, O60D
Group D	Alcohol or drug intoxication	V60Z
	Arthroscopy	I24Z
	Cataract	C08Z
	Chemotherapy	R63Z
	Colonoscopy	G43Z
	Cystoscopy	L40Z, L41Z
	Dialysis	L61Y, L61Z
	Angioplasty	F10Z, F15Z, F16Z