



COUNCIL FOR MEDICAL SCHEMES

Research Brief

Number 2 of 2008

Prepared by the
Office of the Registrar
of Medical Schemes

Trends in Medical Schemes Contributions, Membership and Benefits 2002–2006

May 2008



COUNCIL FOR MEDICAL SCHEMES

Research Brief

Number 2 of 2008

Prepared by the
Office of the Registrar
of Medical Schemes

Trends in Medical Schemes Contributions, Membership and Benefits 2002-2006

May 2008

OFFICE OF THE
REGISTRAR OF
MEDICAL SCHEMES

1267 Pretorius Street
Hadebfields Block E
Hatfield, Pretoria
Private Bag X34
Hatfield 0028

Telephone: 012 431 0500

Telefax: 012 430 7644

www.medicalschemes.com

Contents

	Glossary	7
	Executive summary	9
1	Introduction	13
2	Study objective	15
3	Methodology	17
4	Results	21
5	Contributions and claims	33
6	Trends in average contributions, claims and claims ratios adjusted for inflation and membership	37
7	Contributions and claims by benefit design	39
8	Utilisation of healthcare services	45
9	Expenditure on healthcare services	51
10	Conclusions	57
11	Appendices	61
12	References	65
13	Acknowledgements	67

List of Figures

Figure 1:	Number of registered medical schemes 2002–2006	21
Figure 2:	Changes in the sizes of registered schemes.....	22
Figure 3:	Number of benefit options in registered schemes	23
Figure 4:	Average number of beneficiaries in registered schemes	23
Figure 5:	Trend in the total number of restricted medical schemes and benefit options.....	26
Figure 6:	Trend in the total number of open medical schemes and benefit options.....	26
Figure 7:	Stratification of benefit options in restricted schemes.....	27
Figure 8:	Stratification of benefit options in open schemes	27
Figure 9:	Trend in average age of beneficiaries.....	28
Figure 10:	Age distribution of beneficiaries in medical schemes (2002 and 2006)	29
Figure 11:	Age distribution of beneficiaries by age in open schemes (2002 and 2006)	29
Figure 12:	Age distribution of beneficiaries by age in restricted schemes (2002 and 2006).....	30
Figure 13:	Dependency ratio	31
Figure 14:	Pensioner ratio	31
Figure 15:	Distribution of medical scheme beneficiaries by province.....	32
Figure 16:	Trends in medical scheme nominal and real gross contributions and claims	33
Figure 17:	Trends in medical scheme nominal and real net contributions and claims	34
Figure 18:	Comparison of gross contributions and claims	36
Figure 19:	Trends in medical schemes contributions and claims adjusted for inflation per average beneficiary per month.....	37
Figure 20:	Trends in medical scheme gross claims ratios	38
Figure 21:	Contributions adjusted for inflation and membership by type of benefit design.....	39
Figure 22:	Gross claims incurred adjusted for inflation and membership by type of benefit design	40
Figure 23:	Claims ratios by type of benefit design.....	42
Figure 24:	Contributions adjusted for inflation and membership by benefit design.....	42
Figure 25:	Gross claims incurred by benefit design	43
Figure 26:	Claims ratios by type of benefit design.....	44
Figure 27:	Average utilisation of GP services per annum	45
Figure 28:	Average utilisation of dentist services per annum	46

Figure 29: Utilisation of GP services at least once a year (per 1 000 average beneficiaries)	46
Figure 30: Utilisation of dentist services at least once a year (per 1 000 average beneficiaries)	47
Figure 31: Utilisation rates for medical specialists (per 1 000 average beneficiaries per annum)	48
Figure 32: Utilisation rates for dental specialists (per 1 000 average beneficiaries)	49
Figure 33: Utilisation rates for supplementary and allied health professionals (per 1 000 average beneficiaries per annum).....	49
Figure 34: Utilisation rates for private hospitals (per 1 000 average beneficiaries per annum)	50
Figure 35: Total benefits paid (in Rand) to GPs and dentists.....	51
Figure 36: Total benefits paid per average beneficiary (in Rand) to dental specialists.....	53
Figure 37: Total benefits paid per average beneficiary (in Rand) to supplementary and allied health professionals.....	53
Figure 38: Expenditure on private hospitals.....	54
Figure 39: Expenditure on day clinics	54
Figure 40: Total benefits paid in real terms	55
Figure 41: Comparative analysis of utilisation and expenditure on healthcare services	55

List of Tables

Table 1: Distribution of beneficiaries across open and restricted scheme options in 2002	24
Table 2: Distribution of beneficiaries across open and restricted scheme options in 2006	25
Table 3: Distribution of membership by gender and type of medical scheme.....	30
Table 4: Total benefits paid (in Rand) to medical specialists	52

List of Appendices

Appendix 1: Description of benefit design configurations	61
Appendix 2: Multivariate and univariate actual claims value semi-log regressions	61
Appendix 3: Benefit option configuration frequency table for open and restricted scheme benefit options	62-63

Glossary

- Beneficiary** — a member of a medical scheme or a person admitted as a dependant of a member
- Benefit design** — a benefit option holding a basket of healthcare benefits arranged in a unique configuration, distinguishing it from other benefit options in terms of the scheme rules
- Benefit option** — healthcare benefits applicable to a specific group of members who have selected such benefits in terms of the rules of the scheme
- Dependant** — a dependant of a member of a scheme who is registered as entitled to healthcare benefits
- Dependency ratio** — the ratio of members enrolled in a scheme or benefits option relative to all dependants of the scheme or benefit option
- Gross claims incurred** — all incurred claims before savings account claims
- Gross contribution(s) income** — contributions payable by members to the scheme in terms of its rules
- Healthcare benefits** — entitlements to healthcare services in terms of the scheme rules and the Medical Schemes Act 131 of 1998
- Medical scheme** — a medical scheme registered in terms of section 24(1) of the Medical Schemes Act 131 of 1998
- Member's portion** — the amount paid to a supplier of healthcare services for which the member is responsible in terms of the rules of the scheme
- Net claims incurred** — all claims related to purchases of healthcare services during the scheme's specific reported financial or operating period (this excludes all claims defrayed from medical savings accounts)
- Net contribution income** — contributions for which the medical scheme is liable (fund income flows used for defraying risk claims in terms of the matching principle)

Executive summary

This study covers the period 2002 to 2006. It analyses contribution changes, benefit changes through using proxies such as claims expenditure and utilisation data, and membership changes for the period. The findings are also discussed in the context of how market structures evolved in terms of demographic profiles, schemes and options over the period.

In 2002, there were 143 registered medical schemes in South Africa. By 2006, the number had fallen to 124. The decline was more pronounced in restricted schemes than in open medical schemes. The number of benefit options offered by medical schemes also fell to 392 in 2006 from 409 in 2002.

Average membership increased by 3,9% to just more than 7 million beneficiaries during this period. There were more members in open schemes than in restricted schemes. For open schemes, there was a movement of beneficiaries from schemes with few options to schemes with more than five options. Nevertheless, there was a decline in the number of schemes and options.

The growth in beneficiary numbers in restricted schemes was in schemes with 3-5 options. Also noted was the increase in the number of options with such a classification. There was a movement of beneficiaries from schemes offering more than five options to schemes with 3-5 options.

This period also saw a slight aging of beneficiaries to 31,5 years in 2006 from 2002's average of 31 years. Members of restricted schemes were generally older than those of open schemes. There were generally more female than male beneficiaries during the study period.

Open medical schemes had a higher dependency ratio than restricted schemes. The dependency ratio declined in open schemes from 1,6 to slightly more than 1,5 dependants. In restricted schemes, the dependency ratio was 1,4 in 2002 and remained unchanged by 2006. Restricted schemes had a higher pensioner ratio than open medical schemes and this trend was maintained for the duration of the study.

Gross contributions paid to medical schemes by members increased in nominal terms from R42,7 billion in 2002 to R57,6 billion in 2006. This represented an overall increase of 34,7%, an average annual increase of 7,8%. Nominal net contributions income increased by 33,7% from R38,4 billion in 2002 to R51,4 billion in 2006. The amount of claims paid by schemes to healthcare providers increased in nominal terms by 45,4% from R35,2 billion in 2002 to R51,1 billion in 2006. This represented an average annual increase of 10,7%. The increase in claims payment was higher for open (54%) than for restricted (39,8%) schemes. The average annual rates of increase for open and restricted schemes were 11,5% and 8,8% respectively.

Gross contribution income increased in real terms by 11,2% from R51,8 billion in 2002 to R57,6 billion in 2006 for all registered schemes, representing an average year-on-year increase of 2,7%. The increase for open schemes was 14%, from R36,6 billion in 2002 to R41,8 billion in 2006, representing an average

annual increase of 3,4%. Gross contributions for restricted schemes rose by a smaller magnitude, increasing by 4,3%, from R15,1 billion in 2002 to R15,8 billion in 2006.

Gross claims incurred increased in real terms by 20,1% from R42,6 billion in 2002 to R51,1 billion in 2006, representing an annual average increase of 4,7%. In open schemes, gross claims incurred increased by 22,1% from R29,7 billion in 2002 to R36,3 billion in 2006, representing an average annual increase of 5,2%. A lesser level of increase of 15,5% was observed in restricted schemes where gross claims incurred rose from R12,8 billion in 2002 to R14,8 billion in 2006, representing an average annual increase of 3,7%. The rate of increase in claims was higher for both scheme types when compared with contributions, even though in Rand terms contributions were still higher. A similar trend was noted when net contributions and claims were analysed.

After adjusting for membership, monthly contributions increased in real terms by 8,3% from R642,50 in 2002 to R673,10 in 2006 for registered schemes. Contributions were consistently higher for open schemes. The increase in monthly contributions in open schemes was 6,8%, while that in restricted schemes was 0,2%. The average annual rate of increase in open schemes was 1,7% compared to 0,1% in restricted schemes.

The claims ratios, which represent the total benefits paid relative to the contributions received for a financial period, were 89,1% in 2002 and fell to 88,2% in 2004 before increasing to 88% in 2006 for open schemes. The claims ratio remained at around the levels of 88% to 89% from 2002 to 2006.

Restricted scheme claims ratios were higher than that of open schemes for the comparable period — they hovered around the levels of 91% to 92% .

The degree of risk aversion was consistent throughout the period for beneficiaries covered by different benefit configurations in open schemes. In declining order, the most risk-averse in terms of claims experience were co-payment, major medical, traditional, partial cover, and capitation options. This trend is derived from the claims expenditure performance of these benefit options.

In terms of gross monthly contributions for open schemes, the hierarchy of most expensive to cheapest was as follows: i) co-payment options, ii) traditional and major medical options (which were more or less similar to 2003), iii) partial cover options and iv) capitation options. Co-payment plan contributions were relatively higher than the other benefit options premiums.

The underwriting performance (measured by claims ratios) of open scheme benefit options converged following legislative changes pertaining to prescribed minimum benefits (PMBs) and the Chronic Diseases List (CDL), but tended to diverge slightly in subsequent periods. Throughout the period the claims ratio magnitudes maintained the same relative size relationship to contributions and claims trends.

Restricted scheme benefit options experienced a different pattern in terms of the relative magnitudes of contributions and claims. The co-payment, traditional and major medical plans were more closely clustered together in comparison to the capitation and partial cover plans. The relative magnitudes of contributions and claims were, however, consistent with the experience in open schemes. The claims ratios for the benefit configurations had a constant trend pattern, with that

of capitation being relatively lower than the other benefit options. Claims ratios for traditional, partial cover, major medical and co-payment plans were relatively similar for restricted schemes.

The study also explored utilisation and expenditure trends on various healthcare services during the period. The average rate of utilisation of the services of general practitioners and dentists declined over the study period. However, the number of visits by beneficiaries using these services at least once a year increased for general practitioners, medical specialists and some of the supplementary and allied healthcare services. The rate of utilisation of medical specialists services in 2002 was high for pathologists, radiologists, physicians, paediatricians, gynaecologists, and anaesthetists. All these medical specialists experienced annual utilisation of more than 100 visits per 1 000 average beneficiaries. By 2006, the utilisation of services of pathologists had increased by 33,7%, followed by paediatricians (16,6%) and physicians (14,7%). The utilisation of healthcare services of radiologists and anaesthetists increased by 7,4% and 0,9% respectively from 2002 to 2006. Generally, the utilisation of medical specialists services was higher in open schemes than in restricted schemes.

There was a general increase in expenditure on medical specialists for both open and restricted schemes. Expenditure on anaesthetists increased in nominal terms by 89,3% per average beneficiary, from R73,20 per annum in 2002 to R138,60 in 2006. Expenditure on pathologists increased by 87%, from R160 in 2002 to R299,20 in 2006 per average beneficiary per annum. Expenditure on radiologists rose by 51,8%, from R198,10 per average beneficiary per annum in 2002 to R300,80 in 2006.

These trends were maintained when the figures were adjusted for inflation, even though the difference between nominal and inflation-adjusted expenditure figures reflected the apparently significant effect of inflation.

The increases in claims payments to private hospitals and medical specialists were significantly greater than those paid to other service providers. Expenditure on ward and theatre fees increased in real terms consistently during the study period by 34% and 32,1% respectively. The study also revealed opposing trends between the utilisation of and expenditure on private hospitals. In general, there were increases in the utilisation (number of visits) and expenditure for general practitioners, dental specialists, medical specialists, and the supplementary and allied health professions. The study also revealed a declining trend for the utilisation of and expenditure on dentists.

1 Introduction

The Medical Schemes Act 131 of 1998 envisages a regulatory environment in which access to healthcare is enhanced by the pooling of health risks in a community-rated environment. As the guardian of members' interests, the Regulator fulfilled this objective in part through the annual registration of scheme rules. The governing principles behind the approval and registration of scheme contributions and benefits are enshrined in the Act and its regulations. Through the process of assessing and registering scheme rules, data on how benefits and contributions have changed at specific points in time has been accumulated. However, an understanding of how trends have evolved is necessary for the monitoring and implementation of policy.

This study entailed the extraction and analysis of pertinent information from five years of historical data in the medical schemes industry. The collected data was used to describe and explain contribution changes, benefit changes, and membership and beneficiary changes. An understanding of these key variables of medical underwriting performance is sought from the year-on-year measurement and analysis of existing trends. This was done to enhance knowledge that has already been gained from a periodic monitoring of the descriptive statistics of the aforementioned key variables from a cross-sectional perspective. The outcome should inform policy governing the norms and undesirable outcomes in underlying market activity as well as provide an appreciation of the inherent risks in the performance of key variables in the medical schemes industry.

It is expected that an understanding of the nature of existing trends in terms of the key variables' measures of central tendency and dispersion expressed over a time horizon will provide information on the inherent risks to the stability and sustainability of enrolled community-rated groups.

2 Study objective

Objective

The objective of the study was to assess trends in contributions, membership and benefits in the medical schemes industry from 2002 to 2006.

Specific objectives

The specific objectives of the study were to:

- assess trends in contributions claims and membership changes at scheme and option level;
- determine the impact of benefit design on contributions and claims;
- understand the effect that the numbers of options in schemes have on contributions, benefits and membership;
- determine trends in the demographic profiles of beneficiaries in medical schemes; and
- determine trends in the utilisation of and expenditure on benefits in medical schemes.

3 Methodology

Study population

The study was conducted on the South African medical aid industry. The study population consisted of all registered open and restricted schemes between 2002 and 2006.

Inclusion and exclusion criteria

Inclusion criteria

All registered medical schemes between 2002 and 2006 were included in the study.

Exclusion criteria

We excluded exempted schemes from the analysis contributions and benefits as they are excluded from the rules governing the provision of prescribed minimum benefits (PMBs).

Data

The data sources were contributions and benefit rules of individual schemes, audited financial statements and statutory returns over the period 2002 to 2006.

Variables used in the analysis

The data set consisted of the following variables:

- gross and net contributions;
- gross and net claims;
- healthcare service entitlements as reported in the annual report of the Council for Medical Schemes (CMS);
- benefit design configurations (attached as an appendix);
- scheme memberships;
- scheme types;
- net underwriting margins of benefit option levels calculated from statutory returns;
- demographic characteristics of members (including age, gender, pensioner ratio and dependant's ratio); and
- regional coverage of membership.

Data management and analysis

The data was extracted into a Windows Excel spreadsheet format and imported to a STATA statistical software package for management and analysis. The output was then transcribed to Excel for tabulating summary statistics and constructing

graphical representations of the results.

Descriptive statistics (including means, standard deviations and ranges) were calculated to produce summary statistics of key variables.

Design of data collection instruments and the standardisation of benefit designs

In order to derive reliable measures and comparisons of changes for the analysis of trends, we needed to group benefit designs within standardised design configurations. The subsection describes how this was achieved by analysing an existing database on benefit options in the medical schemes industry. It is important to mention that the selection criteria for configuration were based primarily on theoretical and empirical knowledge of benefit designs and design characteristics.

Benefit design configurations

Rationale

The rationale behind the configuration of the benefit options for this analysis is to capture the features that members use to differentiate their preferences across all benefit options on offer in the medical schemes industry. The other intention was to reflect these consumer preference decisions within the predetermined contextual paradigm of medical scheme product design configuration and benefit enhancements. The objective of the formulation of benefit design configurations was to group together design components that were perceived not to cause enough differentiation to render characteristics between benefit designs non-substitutable options.

A benefit design configuration framework will help elucidate how contributions and benefit entitlement changed between 2002 and 2006.

Empirical analysis

The benefit analyser containing scheme rule changes for reimbursement methods, financial limits/ceilings and benefit entitlements was used when formulating the benefit design configurations. The purpose of clustering benefit designs within standardised configurations is to facilitate meaningful comparisons of entitlements across a spectrum of differentiated benefit option product structures.

The properties used to categorise benefit options were:

- the extent of coverage for a specific and/or selected range of services. The individual services were included on the data extraction sheet;
- the funding method used for selected benefits in benefit options structures, such as medical savings accounts, above-threshold benefits and common-risk pool funds;
- the type of delivery network used for accessing selected services; and
- the reimbursement method used for selected medical services.

The properties were also tested against the following specification criteria¹:

- significant statistical conformity of the behaviour (causal direction) of the individual components with literature on their association with expected

1 Multivariate and univariate semi-log transformed regression models were run, with claims expenditure as the transformed outcome variable. The components to benefit design were categorical explanatory variables. The univariate and multivariate results dictate whether configuration components should be a deciding factor in forming configurations or whether they are more significant in explaining expected claims collectively in a multivariate model with other configuration components.

- severity and frequency of claims; and
- the relative frequency of component observations, so as to have benefit design configurations that are resistant to unusual observations within our analysis sample. Components and configurations that appeared infrequently were dropped.
- The overall goodness of fit and standard errors of the residuals was used to assess unbiased coefficient signs. However, they were not relied on greatly due to the use of categorical independent variables.
- Pearson's Chi-square tests were carried out on the benefit design components to test for independence. The only instance where components that were grouped together were of concern was for above-threshold and medical savings account benefit options. It was felt best to leave these components in a benefit design configuration as medical savings accounts are used to finance the first deductible in above-threshold benefits. On estimating separate benefit design configurations for medical savings accounts and above-threshold options, multivariate and univariate results were found not to be significantly different (standard errors did not decrease significantly).

Types of benefit design configurations

The basis of the method used in forming configurations and distinguishing between different benefit designs is informed by the extent to which severity and frequency have on expected claims expenditure.

Severity and frequency are assumed to result in different expected claims expenditure profiles as the benefit options vary in extent or percentage of costs paid out on claims by covered beneficiaries.

The benefit design configurations were grouped into the following five categories:

- traditional comprehensive;
- partial traditional cover;
- capitation;
- major medical; and
- co-payment.

An outline of benefit configurations

Traditional options

Traditional options offer major medical and out-of-hospital supplementary benefits at full risk cover (no out-of-pocket payment or cost-sharing is required from the member).

Partial traditional cover

Partial cover options offer some but not all benefits of full risk cover that are offered in traditional options.

Major medical

Major medical policies are distinguished from comprehensive and partial traditional benefit options in that they control the severity and frequency of claims through medical savings accounts, thresholds and other out-of-pocket requirements from members over and above monthly contribution premiums.

Co-payment

Co-payment benefit designs are distinguishable from major medical benefit options in that they make use of tariff rates payable by the member on accessing benefits rather than fixed monetary service user charges that apply for major medical benefit designs. It was assumed that the impact of the tariff on severity and frequency of expected claims is of a different nature to that of major medical benefits.

Capitation

The distinguishing characteristic of capitation benefit options relative to the others is the capping by medical schemes of the risk exposure relating to the severity and frequency of expected monetary claims through fixed-fee contracts with service providers per beneficiary covered in the benefit options.

4 Results

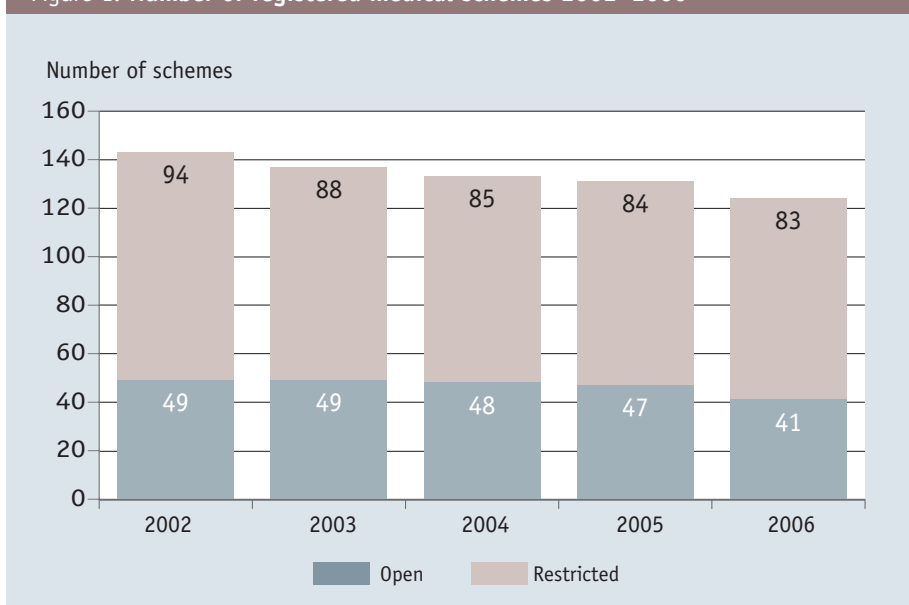
Number of schemes

This section describes how aspects of the underlying medical scheme industry structure evolved from 2002 to 2006.

Figure 1 shows that, in 2002, there were 143 registered medical schemes. This number declined by 13,3% to 124 at the end of 2006. The decline was more pronounced in restricted as opposed to open schemes. The number of open schemes declined by eight (16,3%), from 49 schemes in 2002 to 41 in 2006. The number of restricted schemes declined by 11 (11,7%), from 94 in 2002 to 83 in 2006.

The decline in the number of medical schemes was due to amalgamations and liquidations. Some of the motivations cited by schemes upon amalgamation or liquidation were low membership, poor long-term financial sustainability, low economies of scale, and difficult trading conditions.

Figure 1: Number of registered medical schemes 2002–2006



Changes in scheme sizes

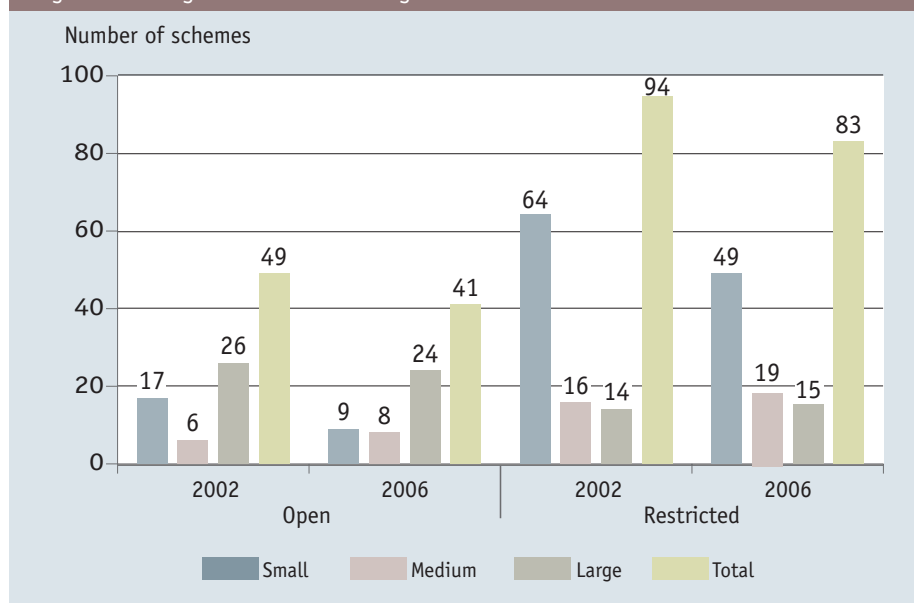
Figure 2 below shows the number and size (in terms of members and beneficiaries) of medical schemes in two different years (2002 and 2006).

In 2002, more than half of the schemes (56,2%) were small in size as measured through the number of members and beneficiaries; 16,4% were medium and 27,4% were large. Among the small schemes, most (79%) were restricted schemes, while a smaller proportion (21%) was open schemes. Among the medium-sized schemes, 72,7% were restricted. In large schemes, just under two thirds (65%) were open while the rest were restricted (35%). During this time, there were almost twice as many restricted schemes (65,5%) as open schemes (34,3%).

In 2006, 46,8% of the schemes were small, 21,7% were medium and 31,5% were large. Among the small schemes, 84,4% were restricted while the rest were open. In the same period, 70,3% of the medium-sized schemes were restricted while 29,7% were open. In large schemes, just under two thirds (61,5%) were open while the rest were restricted (38,5%).

The proportion of open relative to restricted schemes shifted moderately. However, greater consolidations occurred in the open schemes than among the restricted schemes.

Figure 2: Changes in the sizes of registered schemes



Number of benefit options

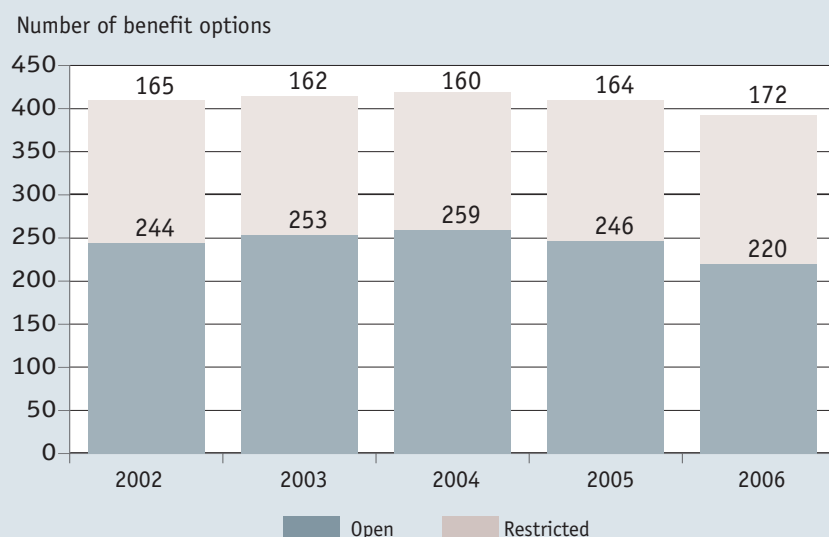
The number of benefit options changed over time both in the open and in the restricted schemes, as shown in Figure 3. In 2002, medical schemes offered a choice of 409 benefit options. Initially, this increased marginally, reaching a peak of 419 in 2004 before declining to 392 in 2006. Open schemes experienced a 10% decline in the number of benefit options, from 244 in 2002 to 220 in 2006. Restricted schemes, on the other hand, experienced an increase of 4,2% in the number of benefit options, from 165 in 2002 to 172 in 2006. Open schemes had more benefit options (59,7%) when compared with restricted schemes in 2002. By 2006, the proportion of open medical schemes benefit options had declined to 56%.

The average number of options in medical schemes was 2,9 options per scheme in 2002. This number increased to 3,2 options per scheme in 2006. The average number of options was higher in open than in restricted schemes. In 2002, the average number of options in open schemes was five, increasing to 5,4 in 2006. In restricted schemes, the average number of options was 1,7 in 2002, increasing to 2,1 in 2006.

Some of the factors contributing to the trend have been a growing number of

schemes opting to introduce the so-called low-cost options to cater for low-income earners, the grouping of people with similar profiles in a single option and, recently, the focus on the so-called corporate clients.

Figure 3: Number of benefit options in registered schemes

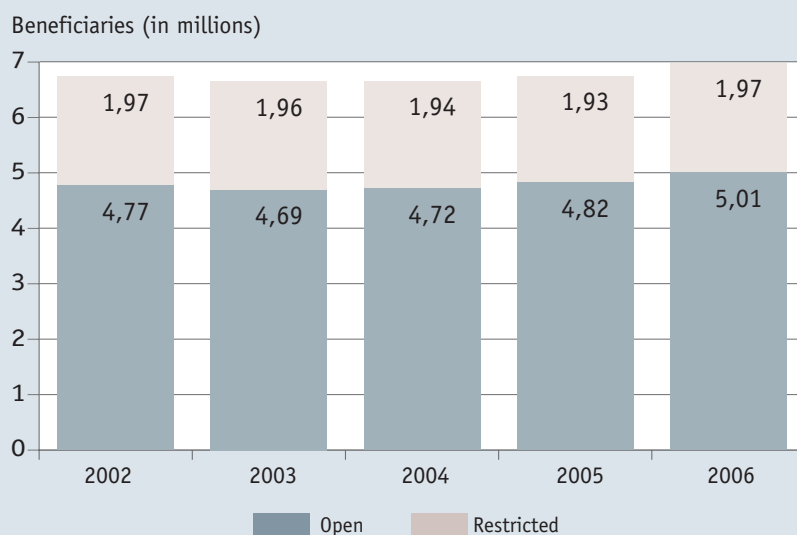


Number of beneficiaries in medical schemes

Figure 4 illustrates the trend in beneficiaries enrolled in open and restricted schemes from 2002 to 2006.

Overall, medical schemes experienced a marginal membership loss of 1,3% between 2002 and 2004, from 6,74 million beneficiaries in 2002 to 6,65 million in 2004. The trend was reversed after 2004 with an increase in average membership of 5%, from 6,65 million beneficiaries in 2004 to 6,98 million in 2006. Open

Figure 4: Average number of beneficiaries in registered schemes



medical schemes experienced a short period of membership loss of 1,7% between 2002 and 2003, followed by a sustained 6,8% growth in average membership from 4,69 million average beneficiaries in 2003 to 5,01 million in 2006.

Restricted medical schemes experienced a prolonged period of marginal membership loss from 1,97 million average beneficiaries in 2002 to 1,93 million in 2005. This was as a result of liquidations and amalgamations, particularly among open medical schemes. In 2006, the average number of beneficiaries increased by 2% from 2005's 1,93 million to 1,97 million. The increase in membership resulted in part from the registration of new schemes such as Lonmin Medical Scheme and GEMS (Government Employees Medical Scheme).

Distribution of beneficiaries across open and restricted scheme benefit options — a comparative analysis between 2002 and 2006

Tables 1 and 2 show the distribution of beneficiaries across the benefit options offered by open and restricted schemes between 2002 and 2006. The option strata categorise the observations representing different numbers (quantities) of benefit options offered by schemes.

In 2002, more beneficiaries (59,1%) were distributed in open schemes offering more than five options and the least number of beneficiaries (13,5%) were in schemes offering fewer than three benefit options. There appeared to be a positive correlation between membership and number of benefit options. In restricted schemes, more beneficiaries (86,5%) were in schemes offering fewer than three benefit options and the least number of beneficiaries were in schemes offering 3-5 benefit options (3,8%).

Table 2 reports the 2006 data, with open schemes offering more than five options reporting higher membership (64,8%) of beneficiaries, while schemes offering fewer than three benefit options had the least membership (6,2%).

For restricted schemes, the greatest proportion of beneficiaries was in schemes with fewer than three options reporting a portion of 66,5% of beneficiaries, while schemes with more than five options had the least number of beneficiaries (7,8%).

Table 1: Distribution of beneficiaries across open and restricted scheme options in 2002

Scheme type	Option strata	Beneficiaries	Number of options	Average number of beneficiaries per option	Percent of total beneficiaries	Percent of beneficiaries per type of scheme
Open schemes	<3	637 691	41	15 553	9,5	13,48
	3-5	1 296 864	72	18 012	19,32	27,41
	>5	2 796 656	131	21 349	41,65	59,11
	Total	4 731 211	244	19 390	70,47	100
Restricted schemes	<3	1 714 927	132	12 992	25,54	86,48
	3-5	75 559	22	3 435	1,13	3,81
	>5	192 448	11	17 495	2,87	9,71
	Total	1 982 934	165	12 018	29,53	100

Table 2: Distribution of beneficiaries across open and restricted scheme options in 2006

Scheme type	Option strata	Beneficiaries	Number of options	Average number of beneficiaries per option	Percent of total beneficiaries	Percent of beneficiaries per type of scheme
Open schemes	<3	310 721	26	11 951	4,36	6,15
	3-5	1 466 657	75	19 555	20,58	29,04
	>5	3 273 060	119	27 505	45,92	64,81
	Total	5 050 438	220	22 957	70,86	100
Restricted schemes	<3	1 380 542	118	11 700	19,37	66,47
	3-5	533 972	39	13 692	7,49	25,71
	>5	162 391	15	10 826	2,28	7,82
	Total	2 076 905	172	12 075	29,14	100

In open schemes, the number of options for the stratum offering more than five benefit options decreased from 131 in 2002 to 119 in 2006 whilst the number of beneficiaries as a proportion of those in open schemes increased.

For restricted schemes there was an increase in number of options with more than five benefit options from 11 in 2002 to 15 in 2006.

In all, the average number of beneficiaries enrolled in schemes offering three or more options increased in open schemes. However, the average number of beneficiaries for schemes offering fewer than three options reduced.

For restricted schemes, schemes offering 3-5 options experienced a significant increase in the average number of beneficiaries, whilst there was a dilution in average enrolment for schemes offering fewer than three options and more than five options.

There was thus a migration of beneficiaries to schemes with more options in open schemes, and a migration to schemes with 3-5 options in restricted schemes.

Trends in the total number of medical schemes and benefit options

Figure 5 reports the total number of options in restricted schemes from 2002 to 2006. The total number of restricted schemes was 94 in 2002, and this decreased to 83 in 2006. The number of benefit options in these schemes was 165 in 2002 and it increased to 172 in 2006. The average number of options offered by restricted schemes showed a marginal increase, from 1,8 options in 2002 to 2,1 in 2006.

Figure 6 reports the total number of options in open schemes from 2002 to 2006. The total number of open schemes was 49 in 2002, and this decreased to 41 in 2006. The number of benefit options in these schemes was 244 in 2002 and this decreased to 220 benefit options in 2006. The average number of options in open schemes had a very marginal increase, from five options in 2002 to 5,4 options in 2006.

Figure 5: Trend in the total number of restricted medical schemes and benefit options

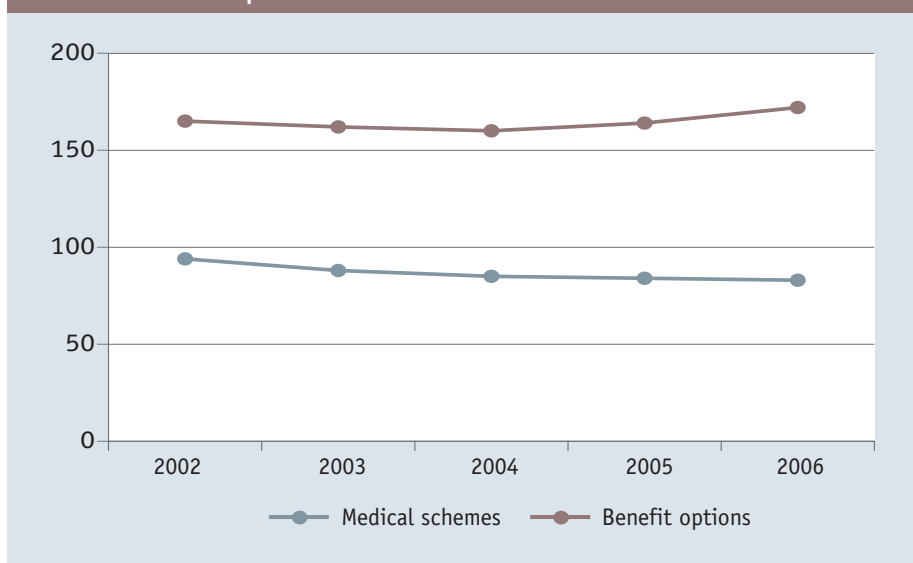
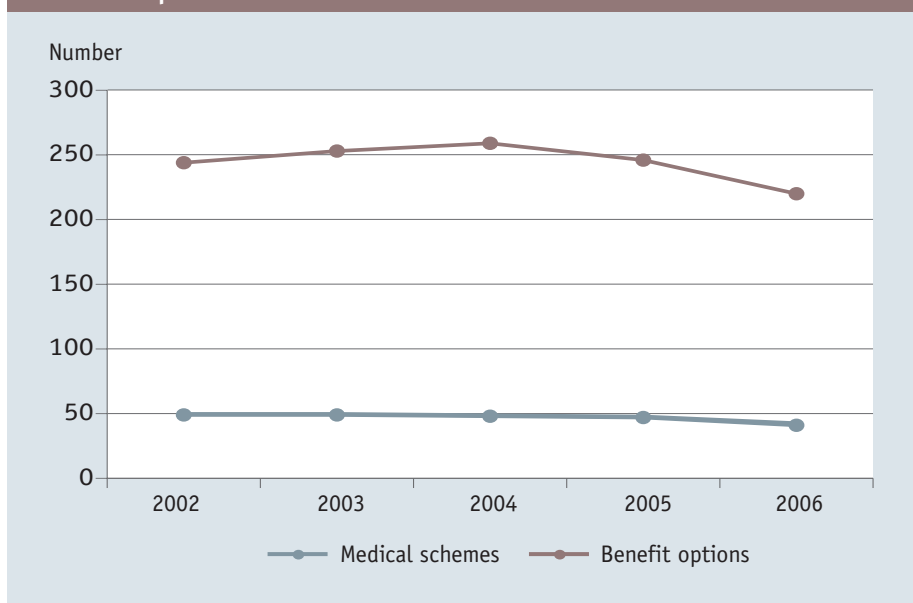


Figure 6: Trend in the total number of open medical schemes and benefit options

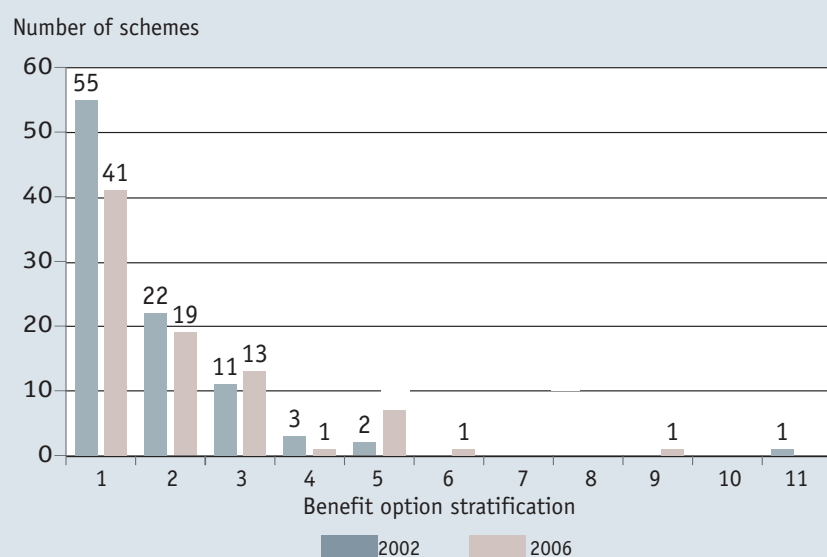


Stratification of benefit options

Figure 7 illustrates the change in the number of benefit options in restricted schemes between 2002 and 2006. In 2002, 55 restricted schemes offered only one benefit option, followed by 22 schemes with two benefit options and 11 schemes with three benefit options. Only one restricted scheme, Transmed, offered 11 benefit options in that year.

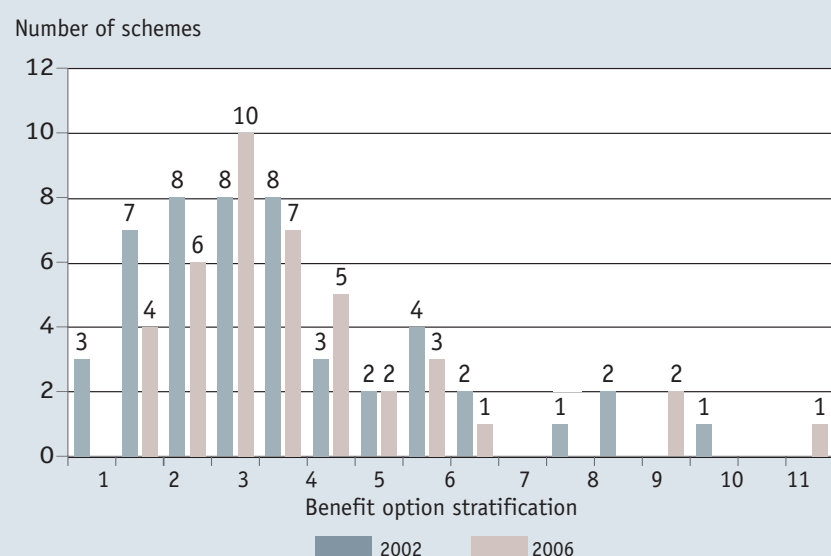
In 2006, the number of schemes offering only one option fell to 41; those offering two options declined to 19 while schemes offering three options increased marginally to 13. The highest number of options in restricted schemes in 2006 was nine.

Figure 7: Stratification of benefit options in restricted schemes



In contrast with restricted schemes, there was a tendency among open schemes to have more options, as shown in Figure 8. In 2002, only three open schemes had one benefit option, while most had more than two options. The maximum number of options in a scheme was 14 in 2002. In 2006, no schemes offered a single benefit option. More schemes had four options while one scheme offered as many as 16 options.

Figure 8: Stratification of benefit options in open schemes



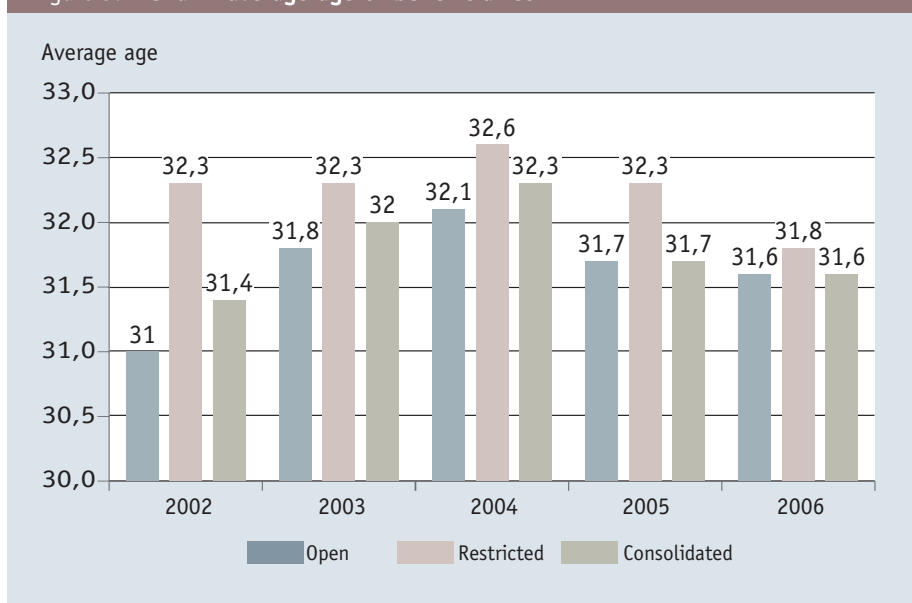
Overall, for restricted schemes, there were marginal reductions in the number of schemes with one, two and four options, and small increases in the number of schemes with three and five options. Open schemes saw a reduction in numbers offering one, two, three and five options, while there was a large increase in the

number of schemes with four options and extreme observations of schemes with 14 and 16 options.

Average age of beneficiaries

The average age of beneficiaries in open schemes was 30,8 years in 2002 and it increased to 31,6 years in 2006. In 2002, restricted schemes had an average beneficiary age of 32,4 years and 31,8 years in 2006. Generally, restricted schemes had an older membership profile than open schemes, as shown in Figure 9. However, the average age in restricted schemes fell relative to that of open schemes in 2006.

Figure 9: Trend in average age of beneficiaries

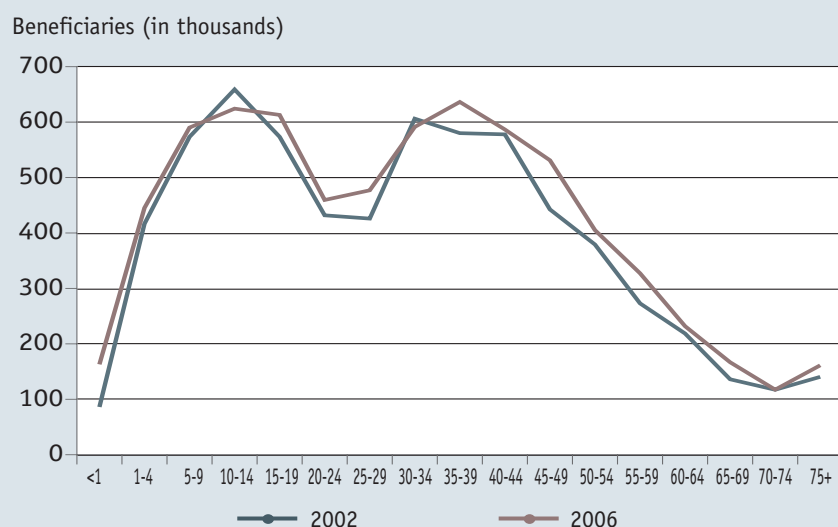


Distribution of membership by age

Distribution of beneficiaries in all schemes

Figure 10 shows the distribution of beneficiaries by age groups in all medical schemes in 2002 and 2006. A bimodal distribution was consistent in the age pattern of enrolment from 2002 to 2006, with coverage in the 20-29-year age group consistently lower than in the age groups on either side. What is also evident is that the distribution shifted towards older beneficiaries in 2006. The pattern does not seem to show large changes due to growth or contraction of enrolment numbers across age groups. The exceptions to the pattern are a higher prevalence than in other years for the 10-14-year age group for 2002 and for the 35-years-and-older age group in 2006. It is also noteworthy that there was a growth in beneficiaries of the age group 25 to 29 in 2006.

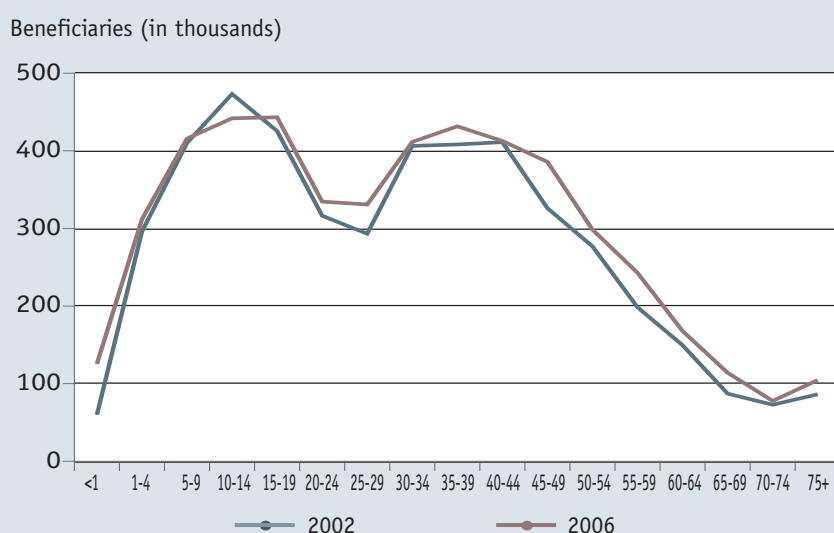
Figure 10: Age distribution of beneficiaries in medical schemes (2002 and 2006)



Distribution of beneficiaries in open schemes

Figure 11 captures the age distribution patterns of beneficiaries enrolled in open schemes over the years 2002 to 2006. The pattern of enrolment, like that of all schemes, illustrates a marginal increase in all ages, except those younger than 14 years. The age group 10 to 14 was at a peak in 2002 and had declined marginally by 2006.

Figure 11: Age distribution of beneficiaries by age in open schemes (2002 and 2006)

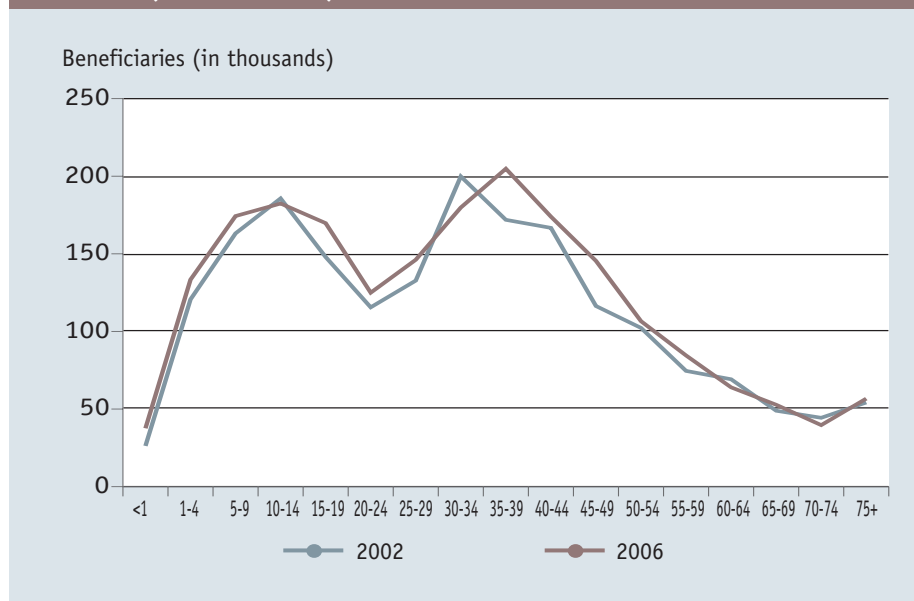


Distribution of beneficiaries in restricted medical schemes

Figure 12 illustrates the pattern of age distribution for restricted schemes for the years 2002 and 2006. The peak age group of 30 to 34 in 2002 shifted to the 36

to 38 age group in 2006. In all, the advancing age distribution of the restricted schemes seems to have been more pronounced than that of the open schemes.

Figure 12: Age distribution of beneficiaries by age in restricted schemes (2002 and 2006)



Distribution of membership by gender and type of medical scheme

Overall, there were more females than males in the medical schemes industry (Table 3). The trend was observed in open and restricted schemes. In open schemes, the age gap appears to widen in 2005 and 2006, suggesting a higher enrolment by females than by males. The ratio of females to males remained fairly constant in restricted schemes.

Table 3: Distribution of membership by gender and type of medical scheme

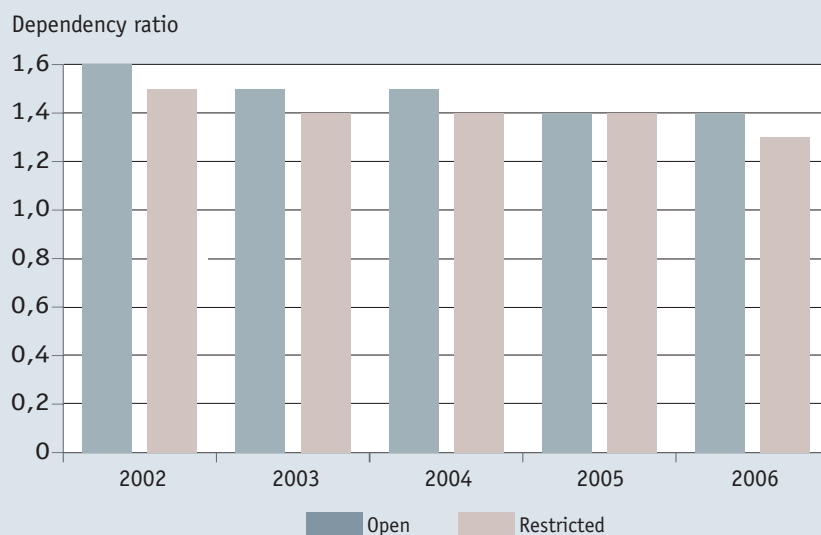
Scheme type	Gender	2002	2003	2004	2005	2006
Open	Female (%)	51,8	51,8	51,4	52,1	52,5
	Male (%)	48,2	48,2	48,6	47,9	47,5
Restricted	Female (%)	50,4	50,1	51,2	50,3	50,0
	Male (%)	49,6	49,9	48,8	49,7	50,0
Consolidated	Female (%)	51,1	51,3	50,8	51,6	51,8
	Male (%)	48,8	48,6	49,2	48,4	48,2

Dependency ratio

The dependency ratio measures the average number of dependants per principal member. Overall, the dependency ratio declined in 2006 (Figure 13). In open schemes, the ratio declined from 1,6% in 2002 to 1,4% in 2006, while in restrict-

ed schemes, which generally have a lower dependency ratio than open schemes, the ratio declined from 1,5% in 2002 to 1,4% in 2006.

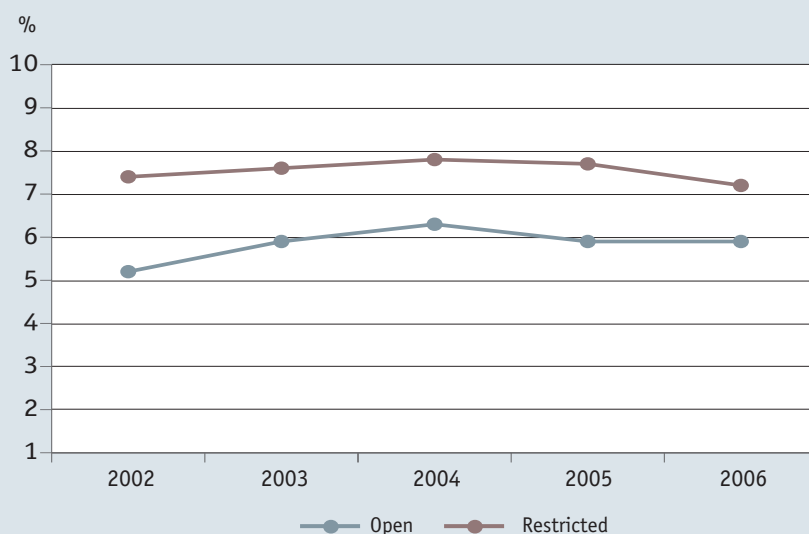
Figure 13: Dependency ratio



Pensioner ratio

Overall, the pensioner ratio has increased over time from 5,9% in 2002 to 6,3% in 2006. Figure 14 illustrates that the ratio of pensioners was consistently higher in restricted than in open schemes. The pensioner ratio of open schemes increased to 5,9% in 2006 from 5,3% in 2002. There were more female than male pensioners in open schemes. In restricted schemes, the proportion of pensioners decreased to 7,2% in 2006 from 7,5% in 2002. As in open schemes, there were

Figure 14: Pensioner ratio



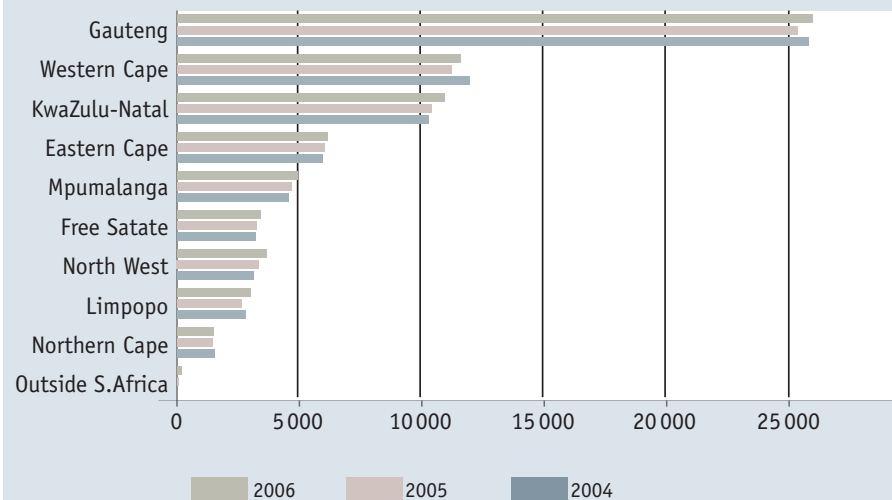
more female than male pensioners. The ratio of females to males has consistently been around 1,2 females per male beneficiary.

Distribution of medical scheme beneficiaries by province

The majority of medical scheme beneficiaries is situated in the Gauteng province, followed by the Western Cape and KwaZulu-Natal. The Northern Cape has consistently had the fewest medical scheme beneficiaries.

Figure 15: Distribution of medical scheme beneficiaries by province*

*Data collection of membership by provincial distribution commenced in 2004



5 Contributions and claims

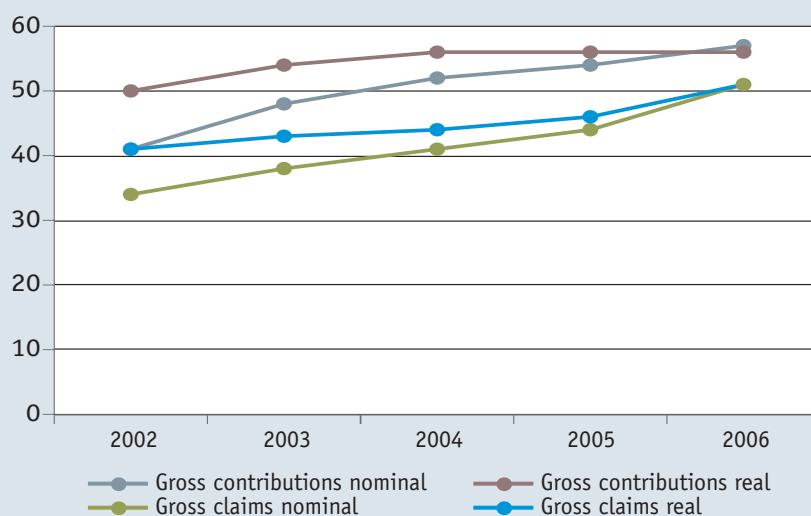
Gross contributions

Figure 16 shows gross contributions and claims in nominal and real terms for open and restricted schemes from 2002 to 2006. (Real figures are adjusted in terms of the consumer price index for price inflation. Real in this context does not mean an adjustment for isolating prices in order to reflect constant prices.) Gross contributions paid to medical schemes by members increased in nominal terms from R42,7 billion in 2002 to R57,6 billion in 2006. This represented an overall increase of 34,7% and an average annual increase of 7,8%.

Figure 16: Trends in medical scheme nominal and real gross contributions and claims*

*Real = CPIX-adjusted using 2006 prices

Rand (in billion)



When categorised by scheme type, nominal gross contributions income in open schemes increased by 38% from R30,2 billion per annum in 2002 to R41,8 billion in 2006. The average annual rate of increase was 8,4% during the same period. In restricted schemes, the gross contributions income increased by 26,6% from R12,5 billion in 2002 to R15,8 billion in 2006. The average annual rate of increase was 6,1% over the same period.

Restricted schemes accounted for 29,2% of total gross contribution income in 2002. This declined to 27,5% in 2006.

After adjusting for inflation, gross contributions in registered schemes

increased in real terms by 11,2% from R51,8 billion per annum in 2002 to R57,6 billion in 2006. This represented an average year-on-year increase of 2,7%.

In open schemes, gross contributions increased by an average 14% in real terms, from R36,6 billion in 2002 to R41,8 billion in 2006. The average annual increase was 3,4%. Gross contributions for restricted schemes increased by 4,6% from R15,1 billion in 2002 to R15,8 billion in 2006, representing an average annual increase of 1,2%.

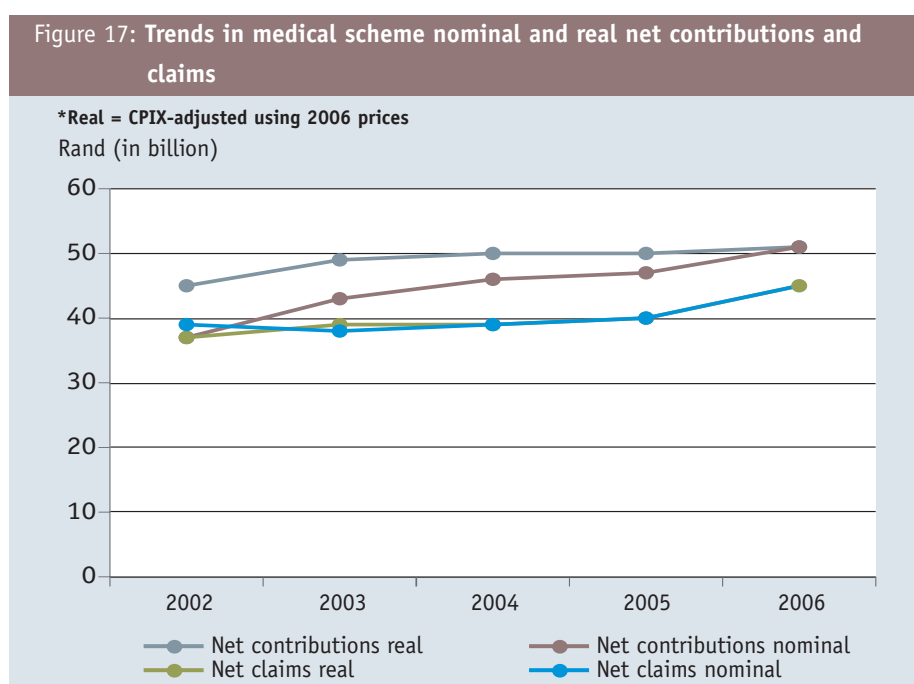
Gross claims incurred

Figure 16 also depicts the amount of claims paid by schemes to healthcare providers in nominal and real terms. Gross claims increased in nominal terms by 45,4% from R35,2 billion in 2002 to R51,1 billion in 2006. The average annual increase was 9,9%. The amount of claims paid by open schemes increased in nominal terms by 47,8% from R24,5 billion in 2002 to R36,3 billion in 2006, indicating an average annual increase of 11,5%. In restricted schemes, gross claims paid increased in nominal terms by 39,8% from R10,6 billion in 2002 to R14,8 billion in 2006. This represented an average annual increase of 8,8%.

Gross claims increased in real terms by 20,1% from R42,6 billion in 2002 to R51,1 billion in 2006. The average annual increase was 4,7%. In open schemes, gross claims increased by 22,1% from R29,7 billion in 2002 to R36,3 billion in 2006, representing an average annual increase of 5,2%. Restricted schemes saw a 15,5% increase in gross claims from R12,8 billion in 2002 to R14,8 billion in 2006. The average annual increase was 3,7%.

Net contributions

Figure 17 shows an increase in nominal contributions of 33,7% from R38,4 bil-



lion in 2002 to R51,4 billion in 2006. The year-on-year increase was 7,6%. Net contributions income in open schemes increased by 36,3% from R26,9 billion in 2002 to R36,8 billion in 2006. The average annual increase was 8,1%. In restricted schemes, the net contributions income increased by 27,4% from R11,5 billion in 2002 to R14,6 billion per annum in 2006, representing an average annual increase of 6,3%.

Real net contributions increased by 10,4% from R46,6 billion per annum in 2002 to R51,4 billion in 2006. The average annual increase was 2,5%. In open schemes, net contributions increased by 12,6% from R32,7 billion in 2002 to R36,8 billion in 2006, with an average annual increase of 3%. For restricted schemes, net contributions increased by 5,2% from R13,9 billion in 2002 to R14,6 billion in 2006. The average annual rate of increase was 1,3%.

Net claims incurred

Figure 17 also shows that the nominal net claims paid to healthcare providers increased by 47% from R30,7 billion per annum in 2002 to R45,2 billion in 2006. The average annual increase was 10,2%. Net claims paid by open schemes increased by 50,3% from R20,9 billion per annum in 2002 to R31,4 billion in 2006. The average annual rate of increase was 10,8%. Restricted schemes increased by 40,3% from R9,8 billion in 2002 to R13,8 billion in 2006. The average annual increase was 8,9%.

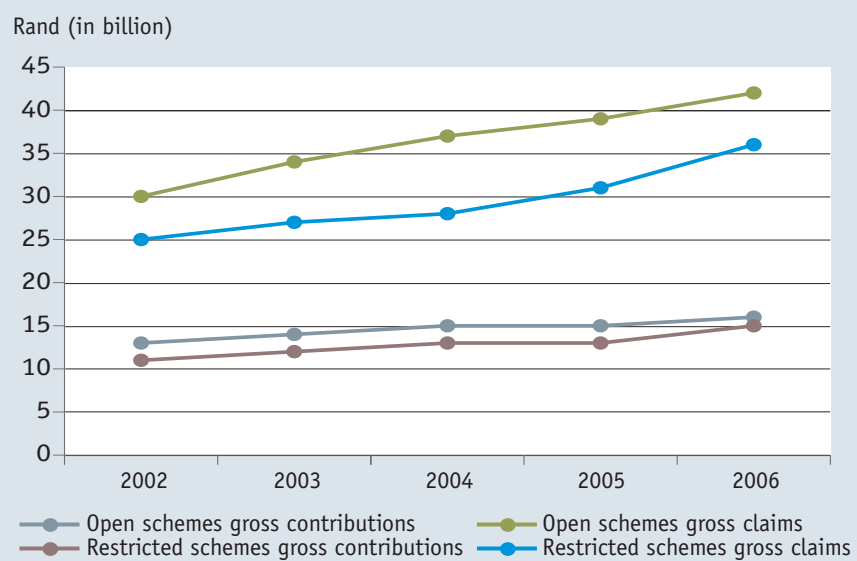
Real net claims incurred by schemes increased by 24,1% from R37,2 billion in 2002 to R45,2 billion in 2006 after adjusting for inflation. The average annual increase was 5,1%. Net claims incurred paid by open schemes increased by 21,4% from R25,3 billion in 2002 to R31,4 billion in 2006. The average annual increase was 5,6%. Net claims incurred paid by restricted schemes increased by 15,9% from R11,9 billion in 2002 to R13,8 billion in 2006. The average annual increase was 3,8%.

The pattern reflected in terms of the nominal and real growth of contributions and claims is that nominal increases were greater than increases adjusted for general price inflation (which is based on a general basket of consumer goods) between 2002 and 2006.

Comparison of gross and net contributions and net claims incurred

Figure 18 below shows the comparison of trends in gross contributions and claims for open and restricted schemes between 2002 and 2006.

Figure 18: Comparison of gross contributions and claims



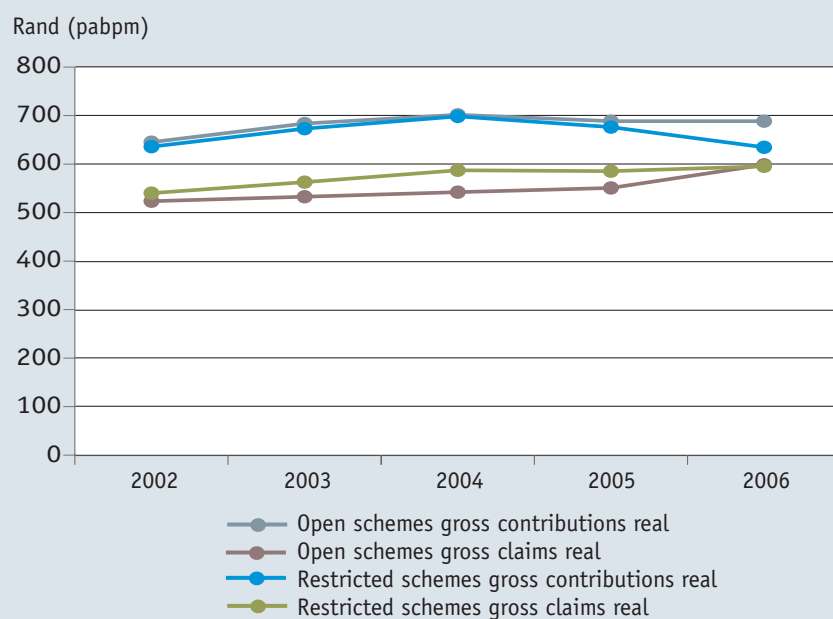
6 Trends in average contributions, claims and claims ratios adjusted for inflation and membership

Contributions income and claims per average beneficiary per month, adjusted for inflation

Gross contribution income for all schemes increased by 8,3% from R642,50 in 2002 to R673,10 in 2006 in real terms and after adjusting for membership. Gross claims incurred have consistently been higher in open than in restricted schemes. The increase in gross claims incurred in open schemes after adjusting for membership and inflation was 6,8%, while in restricted schemes it declined by 0,2%. The average year-on-year increase in open schemes was 1,7% compared to 0,1% in restricted schemes.

Gross claims incurred increased by 13,1% from R528,30 in 2002 to R597,67 in 2006 in real terms and after adjusting for membership. Gross claims incurred have consistently been higher in open than in restricted schemes. The increase in gross claims incurred in open schemes after adjusting for membership and inflation was 14,3%, while in restricted schemes it was 10,2%. The average year-on-

Figure 19: Trends in medical schemes contributions and claims adjusted for inflation per average beneficiary per month



year increase in open schemes was 3,5% compared to 2,5% in restricted schemes.

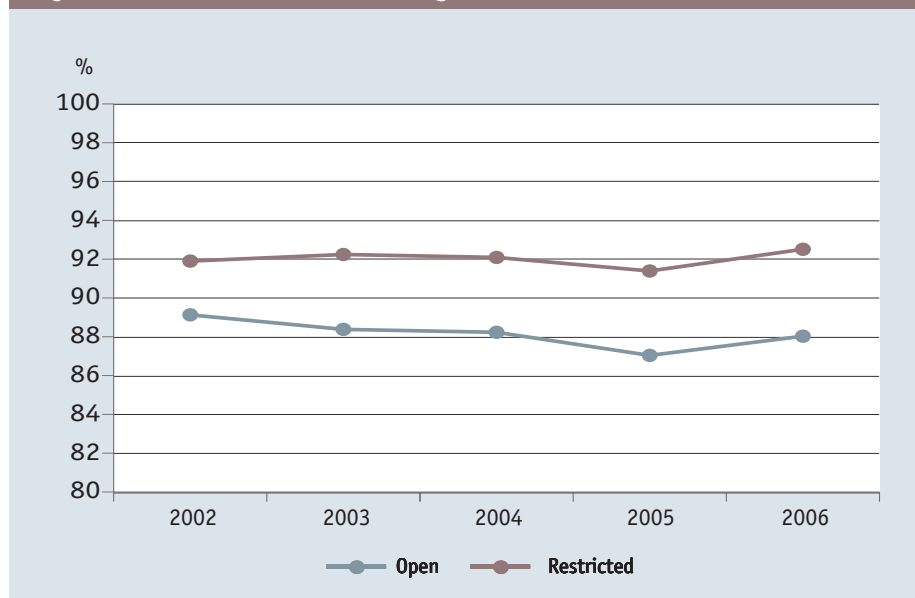
The rate of increase in claims was higher for both schemes types when compared with contributions, even though, in Rand terms, contributions were still higher. A similar trend was noted when net contributions and claims were analysed.

Claims ratio

The claims ratios, which represent the total benefits paid relative to the contributions received for a financial period, were 89,1% in 2002 and fell to 88,2% in 2004 before increasing to 88% in 2006 for open schemes. The claims ratio remained at around the levels of 88% to 89% from 2002 to 2006.

Restricted scheme claims ratios were higher than that of open schemes for the comparable period — they hovered around the levels of 91% to 92% (Figure 20).

Figure 20: Trends in medical scheme gross claims ratios



7 Contributions and claims by benefit design

Open medical schemes

The benefit options of open medical schemes were categorised into five distinct groups for purposes of analysis of contributions and claims. They are shown in Figures 21 and 22. The five categories are presented hereunder.

Figure 21: Contributions adjusted for inflation and membership by type of benefit design

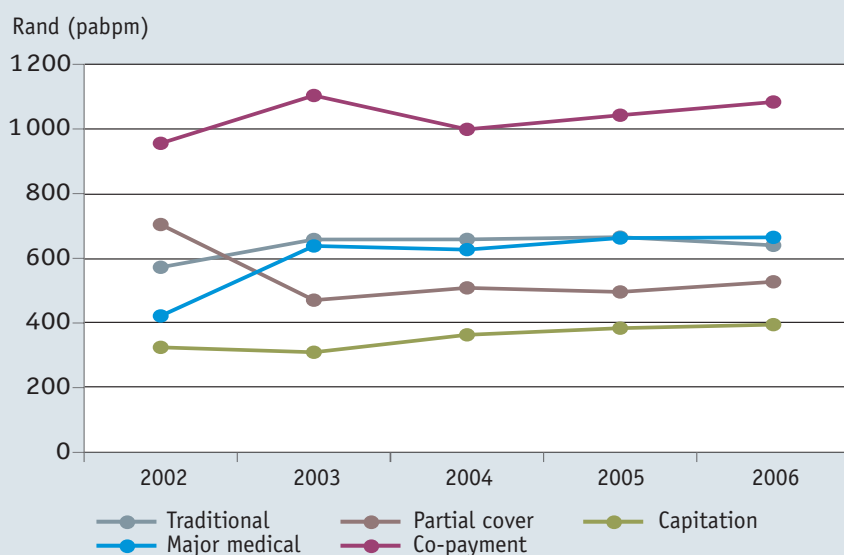
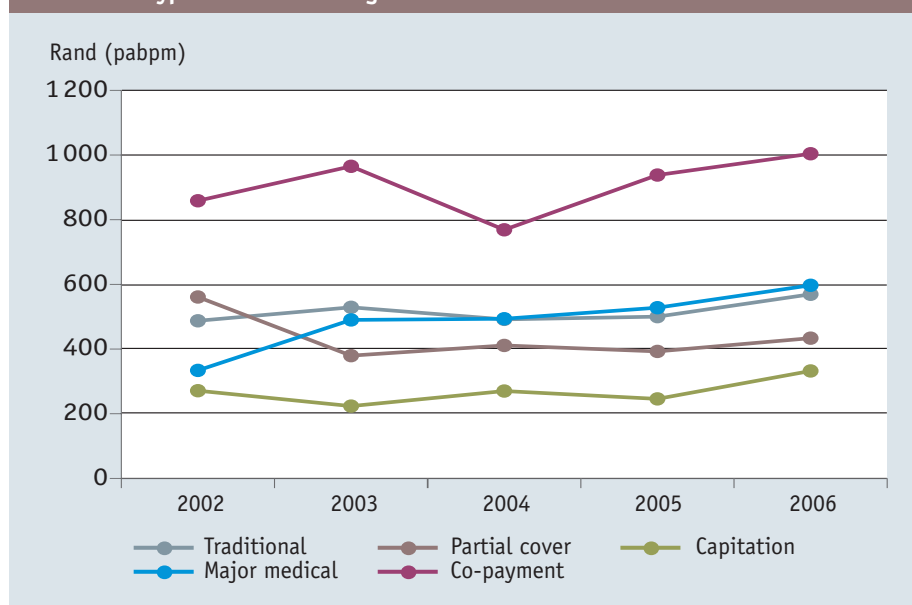


Figure 22: Gross claims incurred adjusted for inflation and membership by type of benefit design



Traditional options

As indicated earlier, traditional options offer major medical and out-of-hospital supplementary benefits at full risk cover and without any out-of-pocket or cost-sharing arrangement.

Contributions in these options increased by 35,4% to R640 per average beneficiary per month. Claims, on the other hand, rose by 41,5% to R569,40. The average annual increase was 8,2% for contributions and 9,4% for claims. A similar trend was noted with net contributions and claims: contributions appeared to be increasing at a lesser rate than claims.

After adjusting for membership and inflation, gross contributions income rose by 11,8% from R472,50 per average beneficiary per month in 2002 to R640 in 2006. Gross claims incurred increased by 16,8% from R402,40 per average beneficiary per month in 2002 to R569,40 in 2006. The average annual rates of increase for contributions and claims were 3,1% and 4,3% respectively.

Partial cover options

Partial cover options are different from traditional options in that they offer some traditional options benefits at full risk cover while certain benefits are not covered at all.

Unlike those for traditional options, contributions declined by 9,3% while claims decreased by 6,4% in partial cover options between 2002 and 2006. The decline in contributions and claims was more pronounced when they were adjusted for membership and inflation. Gross contributions dropped by 25,1% while claims declined by 22,7%.

Capitation options

The key distinguishing characteristic of capitated options relative to other benefit designs is in their monetary capping, through fixed-fee contracts with service

providers. This affects the severity and frequency of expected claims.

During the study period, gross contributions in capitated options increased by 47,3% from R268,10 per average beneficiary per month in 2002 to R394,90 in 2006. This represented an average annual rate increase of 10,4%. Gross claims, on the other hand, increased by 48,3% from R224 per average beneficiary per month in 2002 to R332,30 in 2006, representing an average year-on-year increase of 12,5%.

After adjusting for inflation, contributions for capitation benefit options increased by 21,6% while claims rose by 22,5%. In terms of average annualised rate of increase, contributions went up by 5,3% year-on-year while claims rose by 7,4%.

Major medical options

Major medical options can be distinguished from comprehensive and partial traditional benefit options by their ability to control the severity and frequency of claims through financial tools such as medical savings accounts, thresholds and other out-of-pocket requirements from members.

Contributions in these options rose from R384,20 per average beneficiary per month in 2002 to R664,60 in 2006. This represented an increase of 73% from 2002 to 2006. Gross claims, on the other hand, increased by 116,5% from R275,70 in 2002 per average beneficiary per month to R597,20 in 2006. Overall contributions increased by an average annualised rate of 19,7% while claims rose by 22,8%.

After adjusting for inflation, contributions and claims rose by 57,6% and 78,8% respectively. The average annualised increase was 13,9% for contributions and 16,9% for claims.

Co-payment options

Co-payment options are distinguishable from other benefit designs in that they make use of tariff rates payable to healthcare providers.

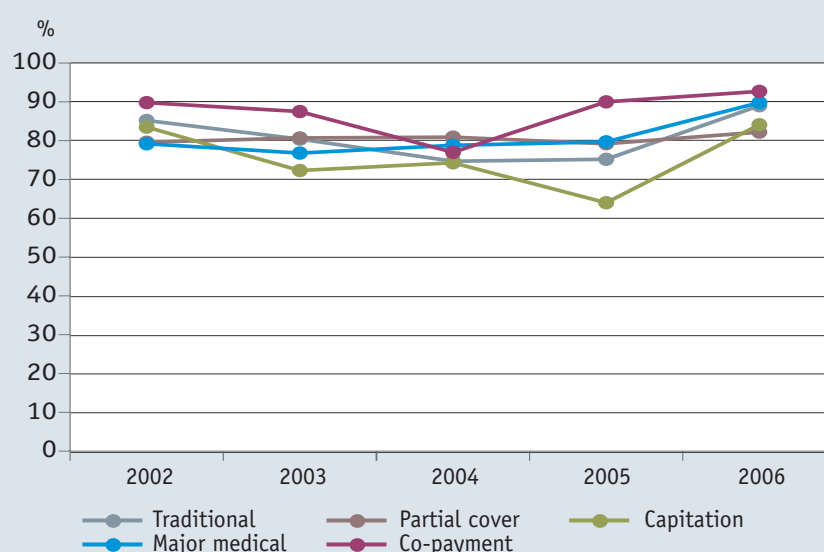
Gross contributions in these options increased by 37,3% from R789 in 2002 to R1083,40 in 2006. These options are comparatively more expensive than all other types of benefit options. Claims in co-payment options rose by 41,6% from R708,90 in 2002 to R1004 in 2006.

The average annualised increase in contributions was 8,7% and 10,5% for claims. After adjusting for inflation, contributions increased by 13,4% and claims by 16,9%.

Claims ratios for open schemes benefit options

In traditional options, the gross claims ratio was 85,2% in 2002. Thereafter, it dropped before rising again to 88,8% in 2006. Partial cover options experienced a comparatively lesser gross claims ratio, which, however, increased steadily from 77,7% in 2002 to 82% in 2006. The claims ratio in capitation options rose from 83,7% in 2002 to 84% in 2006. The gross claims ratio for major medical options was 79,2% in 2002, rising to 89,8% in 2006. In co-payment options, the claims ratio was 89,8% in 2002, rising to 92,7% in 2006.

Figure 23: Claims ratios by type of benefit design



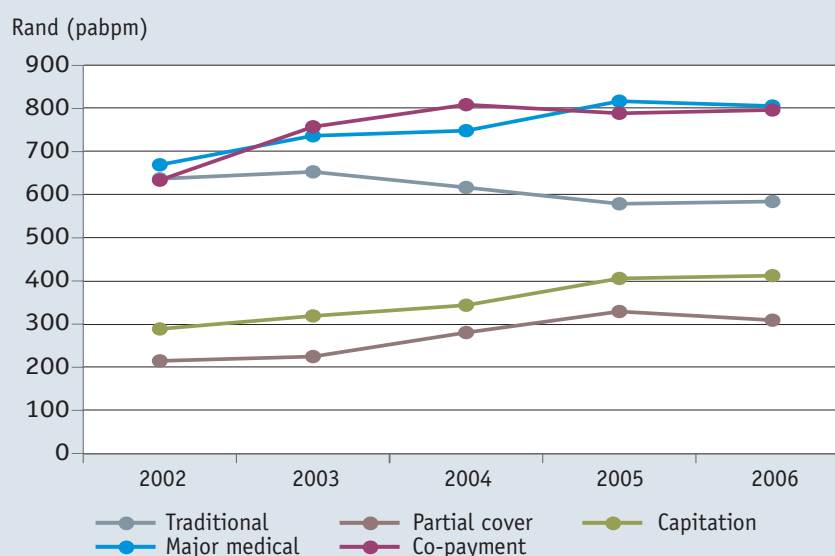
Restricted medical schemes

The benefit options of restricted medical schemes were categorised into five distinct groups for purposes of analysis of contributions and claims, and are shown in Figures 24 and 25. The five categories are presented hereunder.

Traditional options

In restricted schemes, gross contributions to traditional options rose by 11,1% from R525,90 per average beneficiary per month in 2002 to R584,40 in 2006. Gross claims rose by 50,5% from R384,40 per average beneficiary per month in 2002 to R578,70 in 2006. This represented an average annual increase of 2,8%

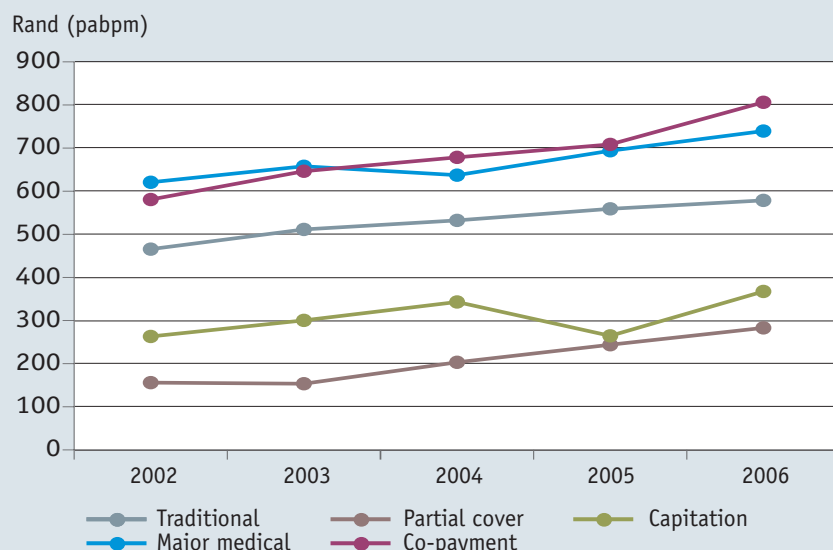
Figure 24: Contributions adjusted for inflation and membership by benefit design



for contributions and 10,8% for claims.

When adjusted for inflation, gross contributions decreased by 8,3% while claims increased by 24,3%, which could have been caused by under-pricing for these particular benefit design.

Figure 25: Gross claims incurred by benefit design



Partial cover options

In partial cover options, gross contributions income increased by 74,3% from R177,30 per beneficiary per month in 2002 to R309,10 in 2006. The gross claims rose by 119,7% from R128,80 in 2002 to R283 per beneficiary per month in 2006. The average annual increase for gross contributions was 15,5% while that of gross claims was 22,3%. After adjusting for inflation, the gross contributions increased by 44% while claims increased by 81,4%. This represented an average annual rate of increase of 10,2% for contributions and 16,7% for claims.

Capitation options

Gross contributions to capitated options in restricted schemes increased by 72,9% from R283,50 per beneficiary per month in 2002 to R412 in 2006. Gross claims rose by 69,2% from R217,20 in 2002 to R367,50 per beneficiary per month in 2006. This represented an average annual increase of 14,8% for contributions and 16,6% for claims.

When adjusted for inflation, gross contributions rose by 42,8% while claims increased by 39,7%. This represented an average annual increase of 9,5% for gross contributions and 11,1% for gross claims.

Major medical options

In major medical options of restricted schemes, gross contributions rose by 45,7% from R552,80 per beneficiary per month in 2002 to R805,70 in 2006.

Gross claims rose by 44,3% from R512,40 in 2002 to R739,50 per beneficiary per month in 2006. This represents an average annual increase of 10% for contributions and 9,7% for claims.

When adjusted for inflation, gross contributions increased by 20,3% while claims increased by 19,2%.

Co-payment options

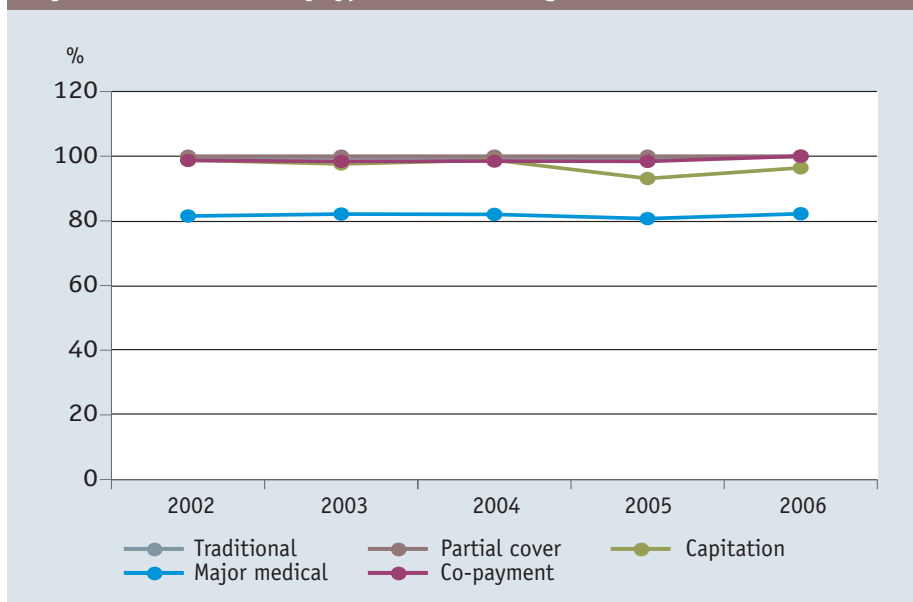
The gross contributions income of co-payment options in restricted schemes increased by 52,2% from R523,30 per beneficiary per month in 2002 to R796,60 in 2006. Gross claims rose by 68,2% from R479,40 in 2002 to R806,20 per beneficiary per month in 2006. This represents an average annual increase of 11,5% for contributions and 14% for claims.

When adjusted for inflation, gross contributions increased by 25,7% while contributions increased by 38,8%.

Claims ratios for restricted schemes benefit options

The gross claims ratio for traditional options rose marginally from 99,6% in 2002 to 99,9% in 2006. In partial cover options, the gross claims ratio has consistently remained at 100%. The gross claims ratio of capitation options dropped from 98,8% in 2002 to 96,4% in 2006. In major medical options, the gross claims ratio rose marginally from 81,5% in 2002 to 82,2% in 2006. The gross claims ratio of co-payment options rose marginally from 98,7% in 2002 to 100% in 2006.

Figure 26: Claims ratios by type of benefit design



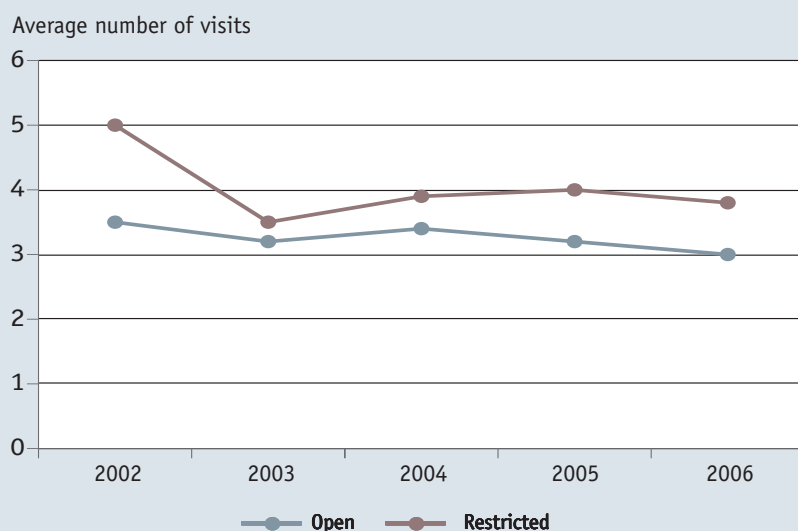
8 Utilisation of healthcare services

Primary healthcare providers

Average utilisation of GPs and dentists

For purposes of this report, the definition of a primary healthcare provider was restricted to general practitioners (GPs) and dentists. The average annual number of visits to GPs for all registered medical schemes declined from 3,5 in 2002 to 3,3 in 2006 (Figure 27). The average annual number of visits to GPs by beneficiaries in open schemes decreased marginally, from 3,5 visits per average beneficiary in 2002 to three visits in 2006. In restricted schemes, the average annual number of visits to GPs was five visits per average beneficiary per annum in 2002 but declined to 3,8 average visits by 2006. Despite the decline, the average number of GP visits per average beneficiary per annum was consistently higher for restricted schemes than for open schemes. In general, restricted schemes tend to have more generous benefits than open schemes.

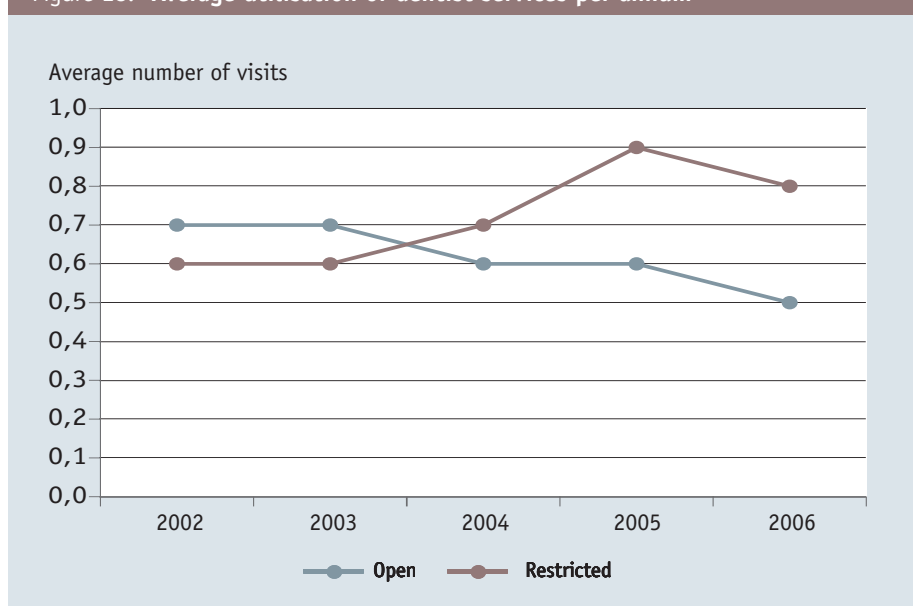
Figure 27: Average utilisation of GP services per annum



The trends regarding the utilisation of services of dentists were different (Figure 28). The average annual number of visits to dentists decreased marginally from 0,7 visits per average beneficiary in 2003 to 0,5 visits per average beneficiary per year in 2006. Beneficiaries of restricted schemes tended to visit dentists

more frequently than those of open medical schemes.

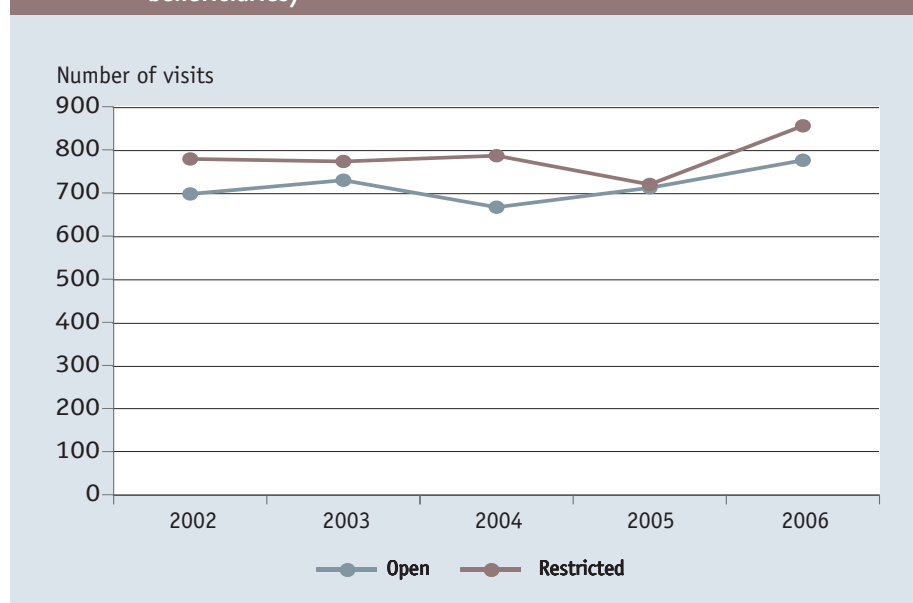
Figure 28: Average utilisation of dentist services per annum



Utilisation of GP services at least once a year

The utilisation rates for GPs and dentists are shown in Figures 29 and 30. The rate of beneficiaries utilising the services of GPs at least once a year has increased by 10,6% from 721,9 per 1 000 average beneficiaries per annum in 2002 to 798,4 per 1 000 average beneficiaries per annum in 2006 in all schemes. The increase was

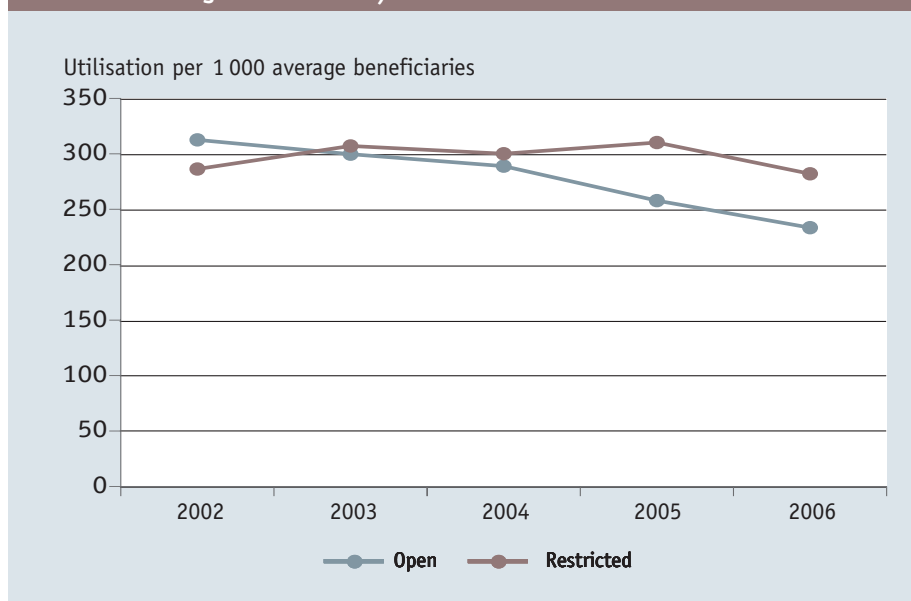
Figure 29: Utilisation of GP services at least once a year (per 1000 average beneficiaries)



higher in open schemes (11,2%) than in restricted schemes (9,9%). The rate of utilisation of services was consistently higher for restricted than open schemes over the same period.

The rate of utilisation of dentists services in open schemes decreased by 18,9% from 304,8 visits per 1 000 average beneficiaries per year in 2002 to 247,2 visits per average beneficiary per year in 2006 in all schemes. A similar trend was observed in restricted schemes where visits to dentists were 286,3 per 1 000 average beneficiaries per annum in 2002 and declined by 1,5% to 282 visits per 1 000 average beneficiaries per year in 2006, having reached a peak in 2005.

Figure 30: Utilisation of dentist services at least once a year (per 1000 average beneficiaries)

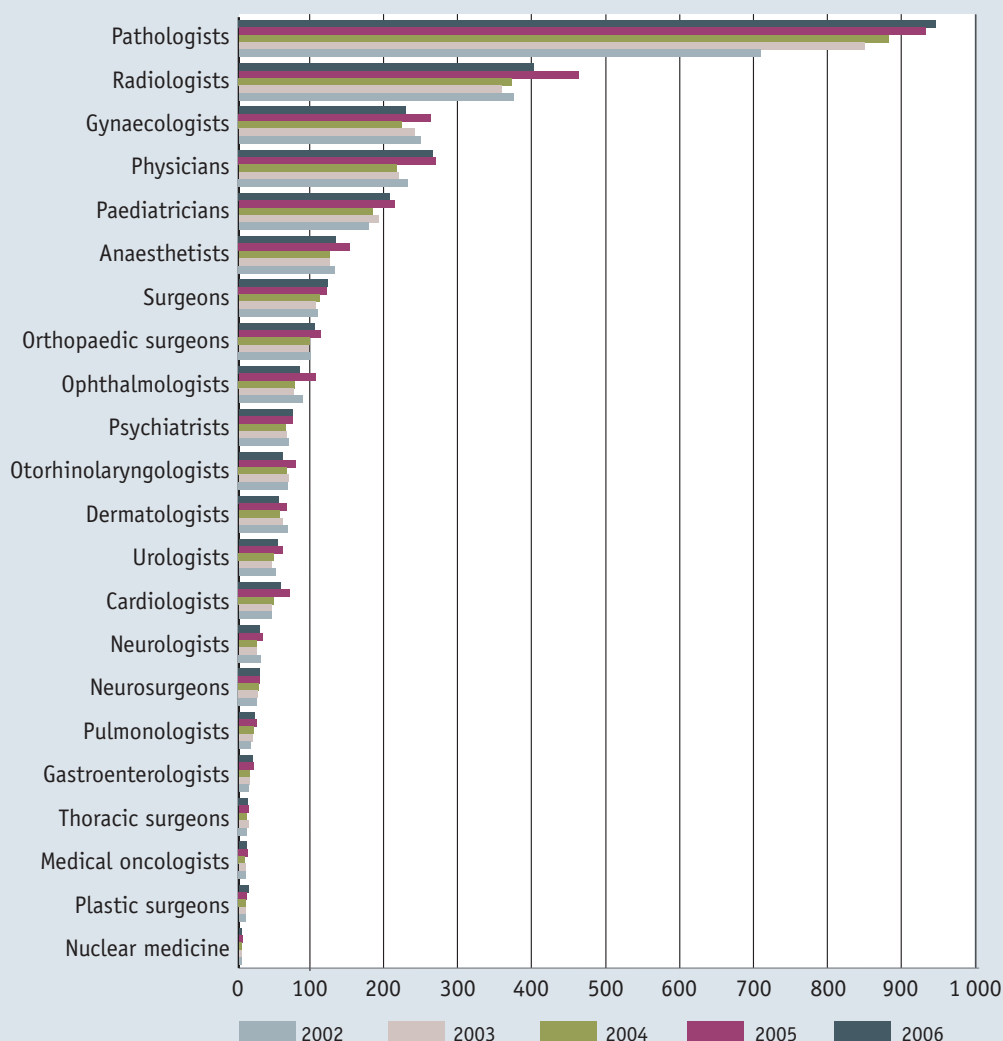


Medical specialists

Utilisation of medical specialists

There has been a general increase in the rate of utilisation of services of medical specialists across all specialist disciplines (Figure 31). The rate of utilisation of medical specialists services in 2002 was high for pathologists, radiologists, physicians, paediatricians, gynaecologists and anaesthetists. All these specialities experienced utilisation of more than 100 visits per 1 000 average beneficiaries per annum. By 2006, the utilisation of services of pathologists had increased by 33,7%, followed by paediatricians (16,6%) and physicians (14,7%). The use of radiologist and anaesthetist services increased by 7,4% and 0,9% respectively. Generally, utilisation of specialists services was higher for open schemes than for restricted schemes.

Figure 31: Utilisation rates for medical specialists (per 1000 average beneficiaries per annum)

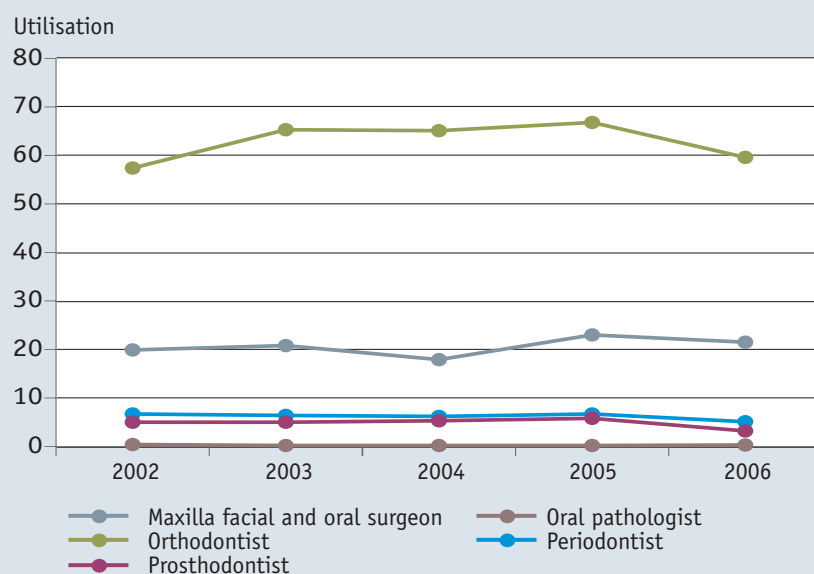


Dental specialists

Utilisation of dental specialists

The rate of utilising the services of dental specialists declined, with only the maxilla facial and oral surgeons as well as orthodontists experiencing an increase of 8% and 3,8% respectively (Figure 32). The utilisation rates for orthodontists were consistently higher than those of other dental specialists, followed by maxilla facial and oral surgeons. The utilisation of dental specialist services was generally higher for restricted than for open schemes.

Figure 32: Utilisation rates for dental specialists (per 1000 average beneficiaries)

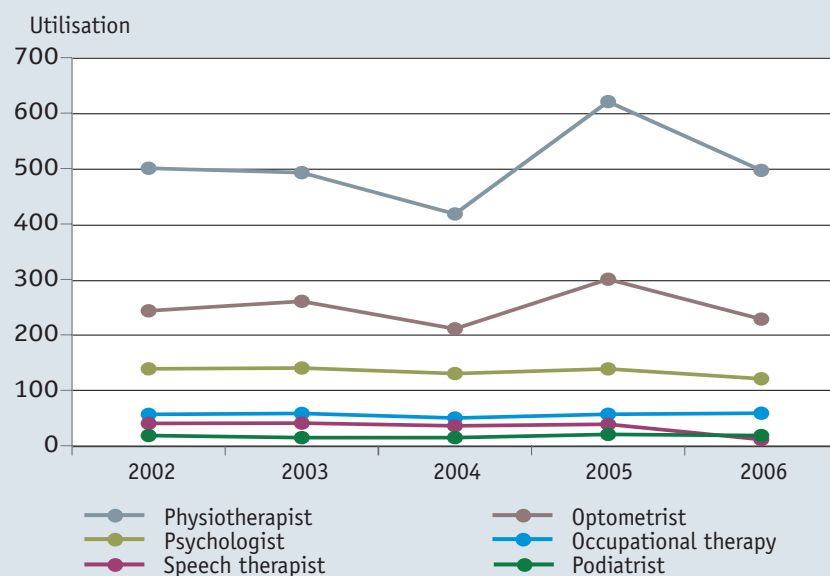


Supplementary and allied health professionals

Utilisation of supplementary and allied health professionals

Figure 33 depicts the utilisation rates for supplementary and allied health professionals, excluding pharmacists. Almost all disciplines experienced a decline in utilisation of services, except for occupational therapists for whom there was a 3,7% increase in utilisation during the study period. The rate of utilisation of physiotherapy services was highest, followed by optometrists and psychologists.

Figure 33: Utilisation rates for supplementary and allied health professionals (per 1000 average beneficiaries per annum)



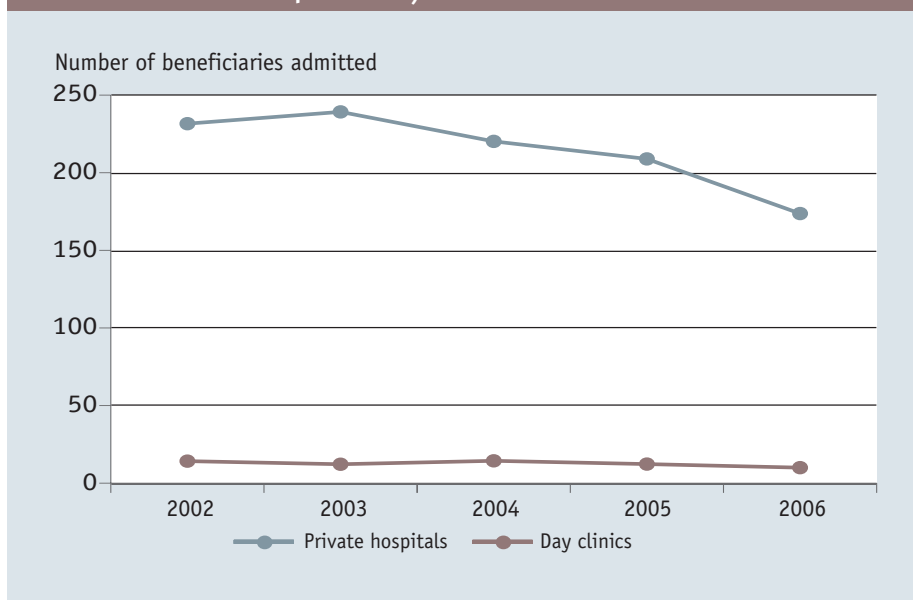
Private hospitals

Utilisation of private hospital services

In 2002, there were 231,6 beneficiaries admitted to private hospitals per 1 000 average beneficiaries. This declined by 25% to 173,7 beneficiaries admitted per 1 000 average beneficiaries in 2006. The number of beneficiaries admitted to day clinics declined by 29,6% from 14,2 beneficiaries admitted per 1 000 average beneficiaries in 2002 to 10 beneficiaries admitted per 1 000 average beneficiaries in 2006.

There is limited data to evaluate admissions per ward type. However, there appears to be a tendency towards increased utilisation of general wards relative to all other ward types. The number of beneficiaries admitted to private hospitals was consistently higher for restricted than for open medical schemes.

Figure 34: Utilisation rates for private hospitals (per 1 000 average beneficiaries per annum)



9 Expenditure on healthcare services

Primary healthcare providers

Expenditure on GPs increased by 46% in nominal terms between 2002 and 2006 (Figure 35). After adjusting for inflation, this amounted to 7,4%. In 2002, GPs received R430,90 per average beneficiary per annum, which increased to R629,30 per average beneficiary per annum in 2006. The level of increase was higher for restricted schemes than open schemes.

Expenditure on dentists decreased in nominal terms by 2,4% from R255,10 average beneficiaries per annum in 2002 to R248,90 per average beneficiary per annum in 2006, while in real terms the decline was more substantial at 28,3% from R347 per average beneficiary per annum in 2002 to R248,90 per average beneficiary per annum in 2006.

Figure 35: Total benefits paid (in Rand) to GPs and dentists

*Real = CPIX-adjusted using 2006 prices



Medical specialists

Table 4 shows total expenditure on medical specialists after adjusting for inflation and membership. There was a general increase in expenditure on specialists for open and restricted schemes. Expenditure on anaesthetists increased in nominal terms by 89,3% from R73,20 per average beneficiary per annum in 2002 to

R138,60 in 2006. Expenditure on pathologists increased by 87% from R160 in 2002 per average beneficiaries per annum to R292,20 in 2006. Expenditure on radiologists rose by 51,8% from R198,10 per average beneficiary per annum in 2002 to R300,80 per average beneficiary per annum in 2006. These trends were maintained when the figures were adjusted for inflation.

Table 4: Total benefits paid (in Rand) to medical specialists (2002 and 2006)

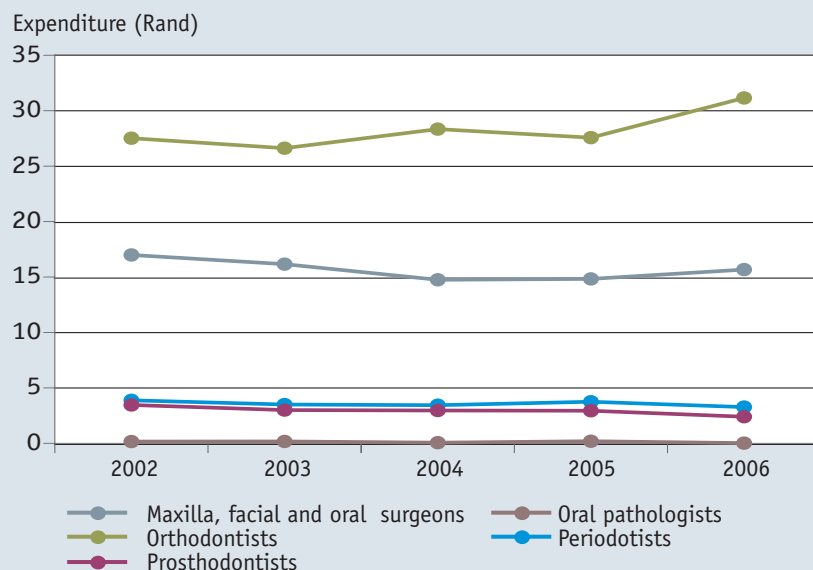
Medical specialists	Nominal			Real		
	2002	2006	% change	2002	2006	% change
*Real = CPIX-adjusted using 2006 prices						
Cardiologists	23,6	43	82,2	28,61	43,02	50,4
Dermatologists	10,8	12,9	19,4	13,1	12,95	-1,1
Gastroenterologists	4,5	8,1	80,0	5,44	8,07	48,3
Gynaecologists	78,4	108,2	38,0	94,89	108,23	14,1
Medical oncologists	9,1	10,7	17,6	11,05	10,7	-3,2
Neurologists	9,8	13,8	40,8	21,02	28,25	34,4
Neurosurgeons	17,4	28,3	62,6	11,83	13,84	17,0
Nuclear medicine	14,2	8,2	-42,3	17,15	8,2	-52,2
Ophthalmologists	48,1	66,3	37,8	58,26	66,29	13,8
Orthopaedic surgeons	53,1	81,7	53,9	64,3	81,67	27,0
Otorhinolaryngologists	23,7	31,5	32,9	28,73	31,48	9,6
Paediatricians	31,5	55,6	76,5	38,1	55,62	46,0
Psychiatrists	18,9	29	53,4	22,91	29,05	26,8
Pulmonologists	4,6	8,8	91,3	5,52	8,79	59,2
Surgeons	52,6	71,7	36,3	63,7	71,71	12,6
Thoracic surgeons	11,7	17,2	47,0	14,1	17,17	21,8
Urologists	21,7	29,9	37,8	26,3	29,87	13,6
Physicians	59,1	82,1	38,9	71,5	82,08	14,8
Plastic surgeons	5,8	8	37,9	7,02	8,02	14,2
Clinical support specialists						
Anaesthetists	73,2	138,6	89,3	88,57	138,63	56,5
Radiologists	198,1	300,8	51,8	239,73	300,82	25,5
Pathologists	160	299,2	87,0	193,66	299,16	54,5

Dental specialists

There was a general reduction in expenditure on all dental specialists (Figure 36). In 2002, orthodontists received R22,70 per average beneficiary per annum, followed by maxilla facial and oral surgeons at R14 per average beneficiary per annum. Overall, there were no significant differences between open and restricted schemes in terms of expenditure on dental specialists.

Figure 36: Total benefits paid per average beneficiary (in Rand) to dental specialists

*Real = CPIX-adjusted using 2006 prices

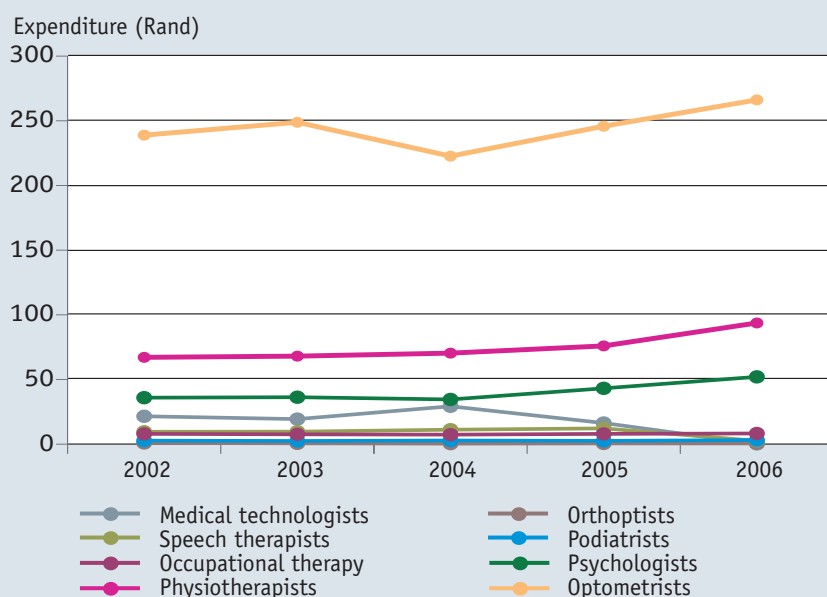


Supplementary and allied health professionals

Expenditure on all the supplementary and allied health professionals increased over time. Optometrists experienced an overall 34,9% increase in nominal terms from R197,40 per average beneficiaries per annum in 2002 to R266,20 in 2006. Expenditure on physiotherapists rose by 68,8% from R55,50 per average beneficiaries per annum in 2002 to R93,70 in 2006. Psychologists also experienced a significant increase of 75,15% from R29,70 per average beneficiaries per annum in 2002 to R52 in 2006.

Figure 37: Total benefits paid per average beneficiary (in Rand) to supplementary and allied health professionals

*Real = CPIX-adjusted using 2006 prices



Private hospital services

Expenditure on private hospitals rose by 40,7% in nominal terms from R1 511,90 per average beneficiary per annum in 2002 to R2 126,80 in 2006 (Figure 38). Day clinics also experienced an increase of 31,8% to R49,30 in 2006 from R37,40 per average beneficiary per annum in 2002 (Figure 39). Within private hospitals, the highest increase was on theatre fees which rose by 79,6% from R272,70 per average beneficiary per annum in 2002 to R484,80 in 2006. Theatre fees for day clinics increased by 120,1% from R13,40 per average beneficiary per annum in 2002 to R29,50 in 2006.

Figure 38: Expenditure on private hospitals

*Real = CPIX-adjusted using 2006 prices

Expenditure (Rand)

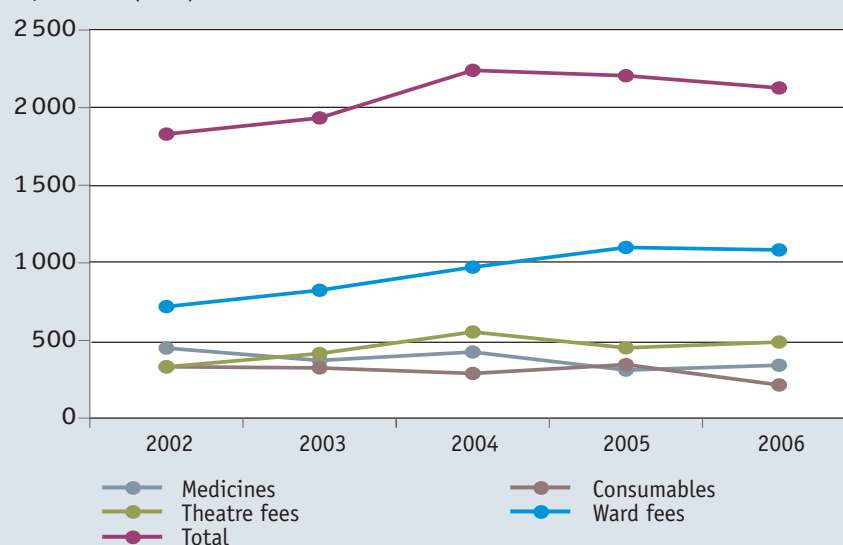
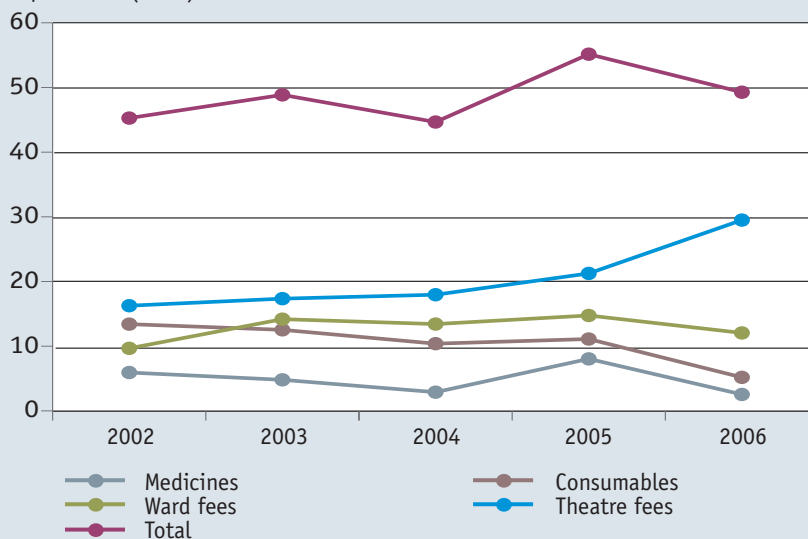


Figure 39: Expenditure on day clinics

*Real = CPIX-adjusted using 2006 prices

Expenditure (Rand)



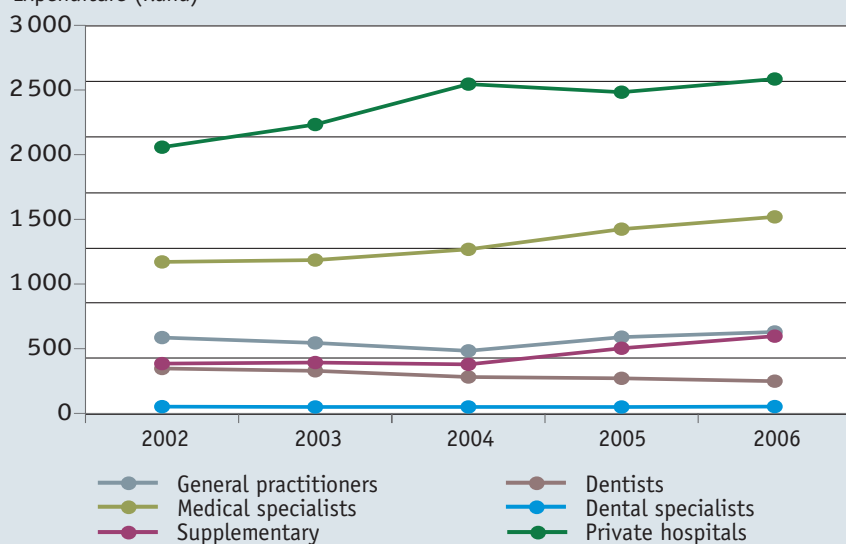
Total benefits paid

After adjusting for inflation and average beneficiary per month membership, the trends observed in Figure 40 were maintained, even though there was a slight downward adjustment in private hospital expenditure.

Figure 40: Total benefits paid in real terms

*Real = CPIX-adjusted using 2006 prices

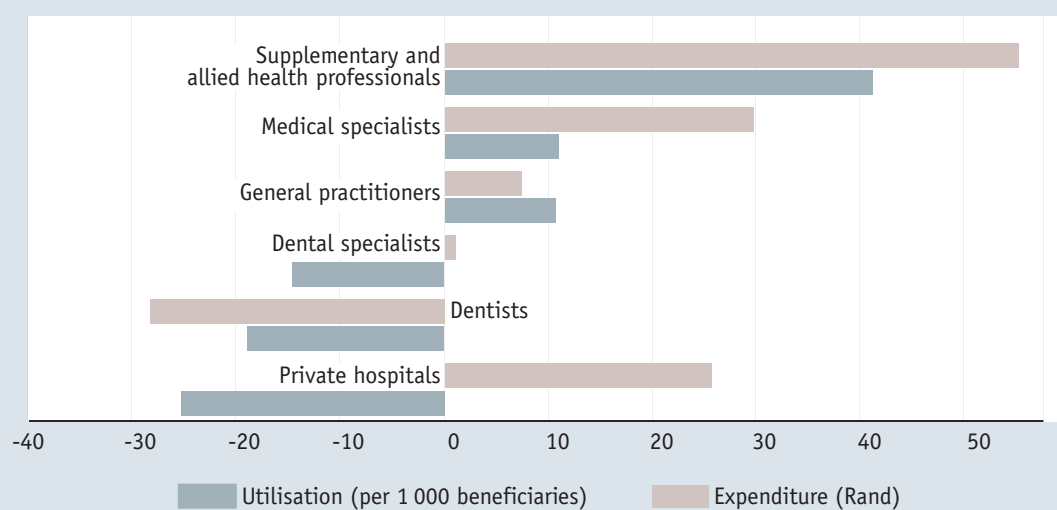
Expenditure (Rand)



Comparative analysis

Figure 41 provides a comparative analysis of the utilisation and expenditure trends of various healthcare services.

Figure 41: Comparative analysis of utilisation and expenditure on healthcare services



10

Conclusions

The number of registered schemes declined over the study period, but membership grew to just above 7 million.

For open schemes, there was a movement of beneficiaries from schemes with fewer options to schemes with more than five options. Nevertheless, there was a decline in the number of schemes and options.

For restricted schemes, the growth of beneficiaries was in schemes with 3-5 options. There was a decline in the number of beneficiaries of schemes offering more than five options, accompanied by a move to schemes offering 3-5 options.

Female beneficiaries were more dominant in registered schemes and they were generally older than the male beneficiaries.

What was also noteworthy in the study was the contrast in the age distributions of restricted scheme relative to open scheme beneficiary profiles. The pattern was smoother for open schemes than for restricted schemes for the study period.

Gross contribution and net claims incurred increased in real terms over the study period. However, the growth in claims expenditure was higher than that of the growth in contributions. This may have been as a result of the multiple tariff system that impacted on the reimbursement of providers.

The findings of the report also revealed that, among the five benefit structures, co-payment cover was more costly than that of the other benefit structures. It also had the highest claims ratio over the study period. In terms of costs, this co-payment was followed by major medical cover, partial cover, traditional cover and capitation plans. Capitation cover was the least expensive, and this was true for open and restricted schemes. The contributions for the benefit options followed the same pattern as that of claims magnitudes for restricted and open schemes. The performance in underwriting for open schemes showed convergence in pricing policy at times of regulatory changes and divergence after periods of change. However, the restricted schemes' claims ratios followed a constant pattern, with capitation plans having the lowest ratio while the other benefit options had relatively the same underwriting performance.

The study also explored utilisation and expenditure on various healthcare services during the period. Average utilisation of general practitioners and dental services declined over the study period. However, the number of visits by beneficiaries making at least one visit a year increased for general practitioners, medical specialists, and some of the supplementary and allied healthcare services. The rate of utilisation for medical specialist services in 2002 was high for pathologists, radiologists, physicians, paediatricians, gynaecologists and anaesthetists. All the medical specialists experienced utilisation of more than 100 visits per 1 000 average beneficiaries per annum. By 2006, the utilisation of services of pathologists had increased by 33,7%, followed by paediatricians (16,6%) and physicians (14,7%). The use of radiologists and anaesthetists increased by 7,4% and 0,9% respectively. Generally, utilisation of medical specialists' services was higher for

open schemes when compared with those of beneficiaries of restricted schemes.

There was a general increase in expenditure on specialists for open and restricted schemes. Expenditure on anaesthetists increased in nominal terms by 89,3% from R73,20 per average beneficiary per annum in 2002 to R138,60 in 2006. Expenditure on pathologists also increased by 87% to from R160 in 2002 per average beneficiary per annum to R292,20 in 2006. Expenditure on radiologists rose by 51,8% from R198,10 per average beneficiary per annum in 2002 to R300,80 in 2006. These trends were maintained when the figures were adjusted for inflation.

Private hospitals and medical specialists received a significant increase in claims paid to them when compared to those paid to other service providers. Annual expenditure on private hospitals per medical scheme beneficiary in 2002 was R2 023,56 and it had increased to R2 483,84 by 2006 (an increase of 22,85% in real per beneficiary terms). However, the utilisation of private hospitals in terms of number of beneficiaries admitted declined over the study period. Expenditure on ward and theatre fees increased consistently in real terms during the study period by 34% and 32,1% respectively. The study also revealed opposing trends between the utilisation of and expenditure on private hospitals (in real per beneficiary terms). There was a general increase in the utilisation of and expenditure on general practitioners, dental specialists, medical specialists, and the supplementary and allied health professions. The study also revealed declining trends in the utilisation of and expenditure on dentists.

In all, the industry has experienced higher rates of increases in claims expenditure than in contributions. This occurred against the backdrop of declining utilisation of private hospitals (in real per beneficiary terms), which has been a major cost driver in terms of claims expenditure. This points to a cost-push phenomenon that has proven difficult to manage using demand-side risk mitigation mechanisms.

During the study period, there have been several operational and legislative changes in the medical schemes industry. These entailed amendments to the legislation, which saw the introduction of mandatory cover for a limited list of chronic conditions as well as the requirement that schemes have designated service providers and managed care.

There were also changes in the manner of reimbursement of providers after an intervention by the Competition Commission. The changes entailed the discontinuation of the tariff system of the Board of Healthcare Funders (BHF) and its replacement by the National Health Reference Price List (NHRPL) and Health Professions Council's Ethical List. The latter reimburses providers for as much as 300% more than the NHRPL on which it is based.

These changes have undoubtedly influenced the development and pricing of medical scheme options. The detail of such changes on benefit options has unfortunately not been captured sufficiently in this study. The changes would also have had an effect on data requirements.

Over time, the Council for Medical Schemes (CMS) improved the statutory returns, particularly with regards to non-financial data. The data has evolved over time and now includes additional demographic information, the utilisation of health services data, and the categorisation of utilisation of medicines by

provider group, chronic conditions and new healthcare provider disciplines. As a result, the quality of data in terms of accuracy and completeness was a challenge in the early years. This has, however, improved significantly over time, as has the Registrar's Office's initiative in standardising data and definitions.

Certain data items were excluded from the analysis due to concerns over quality and completeness. These include utilisation of medicines and chronic conditions. Also excluded from the analysis were disciplines with low utilisation levels, the majority of which were supplementary and allied health professions such as Ayurvedic medicines.

There were also instances where a sample of the population had to be used. This was particularly so for restricted schemes where detailed information normally stored in hard copies could not be readily accessed as the files were stored off-site and the listing of the files made it well-nigh impossible to retrieve them.

The primary purpose of this study was to present, in as much detail as possible, trends in the various variables considered to be significant and relevant. The level of detail and the quality of data continue to improve and it might be appropriate to repeat this study later so as to acquire a deeper understanding of variables, such as medicines, for which full and complete data is not currently available.

Several data sources were used and there were challenges in integrating them. This also resulted in the attrition of certain data elements that could not be merged easily across databases.

Despite all these difficulties, every care has been taken by the Office of the Registrar to ensure that the data presented is accurate and complete, and that it depicts what has transpired over time in the many variables that were analysed.

The current study has sought to add to the ever-increasing body of knowledge by exploring areas that had previously not been fully explored. These include the assessment of contribution trends of various benefit designs, and the utilisation of and expenditure on healthcare providers.

It is recommended that a similar study be repeated once additional data that provides more depth in understanding industry-wide trends has been accrued. It is hoped that the data quality of variables that have been excluded from the study will have improved sufficiently to warrant a more detailed study.

Some of the trends identified in this study, particularly on contributions, claims, utilisation and expenditure, provide useful information for policy development purposes and therefore need to be considered carefully.

11 Appendices

Appendix 1: Description of benefit design configurations

Standard benefit design	Benefit design configurations
Traditional option	Full risk cover and fee-for-service
Partial cover option	Partial risk cover and fee-for-service
Capitation option	Full and partial capitation plan
Major medical option	Fee-for-service, full risk cover, partial cover, medical savings account above-threshold benefit
Co-payment option	Options a rate deductible

Appendix 2: Multivariate and univariate actual claims value semi-log regressions for open schemes

Configuration components	n	Univariate case				Multivariate case			
		Coefficient sign	SE	p-value	Corroborates with theory	Coefficient sign	SE	p-value	Corroborates with theory
Medical savings account	50	+	0,34	0,90	✗	-	0,63	0,23	✓
Above-threshold benefits	23	+	0,44	0,67	✗	+	0,45	0,92	✗
Risk cover	117	-	0,33	0,21	✗	-	0,50	0,60	✗
Fee for service	144	+	0,40	<0,001	✓	+	0,10	0,06	✓
Partial cover	38	+	0,37	0,53	✗	+	0,55	0,70	✗
Capitation	25	-	0,40	<0,001	✓	-	1,10	0,90	✓
Co-payment	40	+	0,35	0,13	✓	+	0,36	0,68	✓

SE = standard error; n = number of observations; * (p<0,05)

Standardised benefit designs

	n	Univariate case				Multivariate case			
		Coefficient sign	SE	p-value	Corroborates with theory	Coefficient sign	SE	p-value	Corroborates with theory
Benefit design									
Traditional benefit option	35	+	0,30	0,04	✓	+	0,48	0,60	✓
Partial cover option	11	+	0,18	0,50	✗	+	0,24	0,63	✗
Capitation options	25	-	0,13	<0,001	✓	-	0,16	<0,001	✓
Major medical options	44	-	0,12	0,35	✓	-	0,12	0,10	✓
Co-payment options	39	+	0,07	0,13	✓	+	0,07	0,87	✓

SE = standard error; n = number of observations; * (p<0,05)

Appendix 3: Benefit option configuration frequency table for open and restricted scheme benefit options

Scheme type	Benefit design	Year	No. of observations
Open schemes	Traditional options	2002	31
		2003	32
		2004	33
		2005	34
		2006	36
	Partial cover options	2002	10
		2003	11
		2004	11
		2005	11
		2006	11
	Capitation options	2002	11
		2003	19
		2004	26
		2005	31
		2006	24
	Major medical options	2002	37
		2003	40
		2004	41
		2005	61
		2006	54
	Co-payment options	2002	34
		2003	37
		2004	39
		2005	39
		2006	39

Scheme type	Benefit design	Year	No. of observations
Restricted schemes	Traditional options	2002	12
		2003	12
		2004	12
		2005	12
		2006	14
	Partial cover options	2002	1
		2003	2
		2004	2
		2005	2
		2006	2
	Capitation options	2002	7
		2003	8
		2004	9
		2005	8
		2006	8
	Major medical options	2002	26
		2003	23
		2004	25
		2005	26
		2006	29
	Co-payment options	2002	8
		2003	8
		2004	9
		2005	8
		2006	8

12

References

- Bryk, A. S. & Raudenbush, S. W. (1992) *Hierarchical linear models: Applications and data analysis methods*. Newbury Park, CA: Sage Publications.
- Buchmueller, T. & DiNardo, J. (2002) *Did Community Rating Induce an Adverse Selection Death Spiral? Evidence from New York, Pennsylvania, and Connecticut*. The American Economic Review 92: 1 (p. 280-294).
- Cutler, D. M. (1994) *Market failure in small group health insurance*. National Bureau of Economic Research (working paper 4879).
- Feldman, R & Dowd, B. (1991) *A New Estimate of the Welfare Loss of Excess Health Insurance*. The American Economic Review 81: 1 (p. 297-301).
- Friedman, B. (1974) *Risk Aversion and the Consumer Choice of Health Option*. The Review of Economics and Statistics 56: 2 (p. 209-214).
- Hadley, J. & Reschovsky, J. (2002) *Premium variation in the individual health insurance market*. International Journal of Healthcare Finance and Economics 1: 1.
- Hadley, J. & Reschovsky, J. (2003) *Health and the cost of non-group insurance*. Inquiry 40: 3.
- Heckman, J. (1979) *Sample selection bias as a specification error*. Econometrica 47: 1.
- Herring, B. & Pauly, M. V. (2006) *The effect of state community rating regulations and premiums and coverage in individual health insurance*. U.S. Department of Health and Community Services.
- Keeler, E., Newhouse, J. P. & Phelps, C. E. (1977) *Deductibles and the Demand for Medical Care Service: The Theory of a Consumer Facing a Variable Price Schedule under Uncertainty*. Econometrica 45: 3 (p. 641-656).
- Manning, W. G., Newhouse, J. P. et al. (1987) *Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment*. The American Economic Review 77: 3 (p. 251-277).
- Marquise, M. & Holmer, M. (1996) *Alternative Models of Choice Under Uncertainty and Demand for Health Insurance*. The Review of Economics and Statistics 78: 3 (p. 421-427).
- Shepherd, G. (1972) *The elements of market structure*. The Review of Economics and Statistics 54: 1.
- Shrout, P. E. & Fleiss, J. L. (1979) *Intra-class Correlations: Uses in Assessing Rater Reliability*. Psychological Bulletin (p. 420-428).
- Singer, J. D. & Willett, J. B. (2003) *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*.
- Singer, J. D. (1998) *Using SAS PROC MIXED to fit multilevel models, hierarchical models, and individual growth models*. Journal of Educational and Behavioural Statistics (p. 23, 323-355).
- Snijders, T. & Bosker, R. (1999) *Multilevel analysis: An Introduction to Basic and Advanced Multilevel Modeling*. Thousand Oakes, CA: Sage Publications.

- South African Institute of Chartered Accountants. (2007) *Medical Schemes Accounting Guide*.
- Statistics South Africa. (January 2002 – December 2006) *Annual inflation on a monthly basis: consumer price index, metropolitan and other urban areas*.
- Thompson, S. G., Turner, R. M. & Warn, D. E. (2002) *Multilevel models for meta-analysis, and their application to absolute risk differences*. *Statistical Methods in Medical Research* 10 (p. 375-392).
- Tversky, A. & Kahneman, D. (1991) *Loss Aversion in Riskless Choice: A Reference Dependent Model*. *The Quarterly Journal of Economics* 106: 4 (p. 1039-1061).

13 Acknowledgements

The research team responsible for this work was led by Patrick Matshidze who is the Head of Research and Monitoring at the Office of the Registrar of Medical Schemes. Members of his team included Phakamile Nkomo and Michael Willie. We also acknowledge the contributions made by T. Patrick Masobe, Alex van den Heever, Maggie Grobler, Stephen Harrison, Thulani Matsebula, Tebogo Maziya, Julindi Scheepers, Boshoff Steenekamp, Aleksandra Serwa and Baanetse Selebi.



COUNCIL FOR MEDICAL SCHEMES

OFFICE OF THE REGISTRAR OF MEDICAL SCHEMES

1267 Pretorius Street
Hadefields Block E
Hatfield, Pretoria

Private Bag X34
Hatfield 0028

Telephone: 012 431 0500

Telefax: 012 430 7644

www.medicalschemes.com