



University of Pretoria
Department of Economics Working Paper Series

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Working Paper: 2009-16

August 2009

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Abstract

South Africa, which allowed complete suffrage in 1994, for the first time, has committed itself to improved health outcomes through equitable economic and social development. However, South Africa fares poorly in the World Health Organization's ranking of health system performance, while spending a large proportion of its Gross Domestic Product on health care, suggesting that inequities in health opportunities and outcomes remain. This paper reports on medical aid scheme coverage rates estimated from a series of nationally representative surveys undertaken in South Africa by Statistics South Africa between 2002 and 2007. The individual's age group, population group and gender were all used to assess coverage to examine inequalities in health care opportunities. The estimates show that coverage rates are quite low, and differ by age group, population group and gender. Despite government efforts to improve health outcomes for the previously disadvantaged population groups, medical aid access for the most disadvantaged, under apartheid, have not improved over the analyzed time period. The study provides important information related to equitable health care financing, noting that a universal national health insurance plan would need to cover an extremely large proportion of the population, as well as the failure, heretofore, of equalizing access to medical aid schemes across population groups in South Africa.

Keywords: Medical Schemes, General Household Survey

* The author would like to thank Adél Bosch for her research assistance, as well as the Department of Agricultural and Applied Economics at the University of Wisconsin for their generous research support during his sabbatical – much of this work was done at that time. All errors are the author's sole responsibility.

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Introduction

The United States Census Bureau recently estimated the number of Americans without health insurance to be 45.7 million, over 15% of the population (DeNavas-Walt et al, 2008). Hadley et al (2008) estimate that the cost of providing uninsured Americans with health insurance could exceed \$122 billion. For South Africa, the proportions are reversed. A recent Statistics South Africa (2008) report places the number of uninsured near 41 million, over 85% of the population; however, no estimate of the cost of providing health insurance for the uninsured has yet been undertaken in South Africa; furthermore, very few studies related to health insurance have been conducted. Those that do exist, point to inequalities in access. Van den Heever and Brijlal (1997) report that 4.4% of South Africans in the lowest income quintile had access to a medical aid in 1995, although coverage rates were 88.3% in the richest quintile. Statistics South Africa (2008) also reports that access to coverage varies widely by population group: approximately 67% of whites were covered by a medical aid scheme, while less than 7.5% of blacks were covered. Similarly, Myburgh et al (2005) report that whites and higher SES individuals are more satisfied with their health care, possibly because they are more likely to have access to personalized care, and are able to pay for it via prefunded medical aid schemes.¹

¹ Söderlund and Hansl (2000) examined data from the Registrar of Medical Schemes in South Africa in order to examine the effect of changes resulting from an Amendment in the Medical Schemes Act that was passed in 1989. Their analysis shows that risk-rating was associated with fewer pensioner members, and that loss ratios and increased contributions were associated with greater pensioner members. Given that the law was, again, changed in 1998 – see Van den Heever (1998) for recommendations related to the change – Söderlund and Hansl’s analysis should be updated.

Although health insurance coverage is low in South Africa, South Africans do have access to publicly provided health care and often make use of private health care facilities.² Despite publicly provided health care, South Africa ranked 160th out of 193 countries in terms of disability life adjusted expectancy, according to the World Health Organization (2000). Meanwhile, data from the World Health Organization's Statistical Information Service (2008) points out that health expenditure, as a proportion of Gross Domestic Product (GDP), was 8.7% in 2005, placing South Africa 33rd. Furthermore, McIntyre and Gilson (2002) highlight provincial inequalities related to the delivery and funding of public health care associated with a change in the block grant system of funding developed by South Africa's National Treasury. South Africa's low health ranking combined with its rather high expenditure suggests that "there is a maldistribution of total available health care resources between the public and private sectors in South Africa, relative to the populations they serve," (McIntyre and Gilson, 2000). The lack of access to private health insurance, a potential symptom of maldistribution, may be an important contributor to health outcome inequalities, given the importance of access to health care in determining health outcomes (Andrulis, 1998).

Despite the efforts of the African National Congress (ANC), the party that has headed the South African government since the instatement of full suffrage in 1994 and came to power committed to reducing poverty, inequalities in the distribution of

² Grobler and Stuart (2007) provide evidence that uninsured South Africans make extensive use of the private sector when seeking health care.

income and inequalities in the distribution of health, racial inequality remains high. Importantly, the ANC's Health Plan (1994) noted that, "The health of all South Africans will be secured and improved mainly through the achievement of equitable social and economic development." Immediately following the 1994 election, public health services were made available free of charge for children under the age of six, pregnant and nursing mothers, as well as individuals aged 65 or greater. In addition, the ANC was in office when the medical aid schemes in South Africa were re-regulated in 1998; that re-regulation required the return to community rating, while also imposing prescribed minimum benefits. Each of these interventions was put in place to improve health outcomes equality in South Africa, before the survey years examined here.

As previously noted, medical care access remains highly unequal; however, whether or not there has been a reduction in inequality has not received attention in the literature. Furthermore, since reductions in inequality could be driven by either an increase in access for the previously disadvantaged or a decrease in access for the previously advantaged (or a combination of both), which have different policy implications, a more detailed examination of medical aid access inequality is warranted. This study aggregates a series of the most recent household surveys to provide the most up-to-date information on private health insurance access in South Africa, using data from Statistics South Africa. Although each statistical release contains at least one table noting individual access to a medical aid scheme by either province, age group (different than the ones used here), gender, or population

group, no concerted attempt has been made to aggregate the data to consider demographic trends, specifically racial (in)equity with respect to these, as is done here.

Methodology

The objective of this study was to examine demographic trends in medical aid access in South Africa. The analysis is based upon South African General Household Surveys collected by Statistics South Africa over the years 2002 to 2007 (Statistics South Africa 2003, 2004, 2005, 2006, 2007, 2008). These surveys are nationally representative, and follow a multi-stage stratified sample design. From 2002 until 2004, the enumeration areas and sampling design were based upon the demarcations used in the 1996 census; from 2005, the demarcations were taken from the 2001 census. Individual weights were used in all of the analyses to allow for comparability of outcome measures across the survey years. The analysis is undertaken both graphically and empirically, using R (R Core Development Team, 2008).

The variable of primary interest in the analysis is whether or not an individual had access to private health insurance, based on one question located in the person file in each year of the survey.³ Plausible responses were: “yes”, “no” and “don’t know”. “Don’t know” responses ranged between 300 and 500 in any survey year – less than 0.5% of the survey responses – and, therefore, were not included in the analysis.

³ In 2002, for example, the question reads, “Is ... covered by a medical aid or medical benefit scheme or other private health insurance?” The question in subsequent years is nearly identical.

Additional demographic information, such as the age, race and gender of the survey respondent was also recorded in the survey. As with medical scheme access, incomplete information regarding these variables led to the respondent being discarded in the analysis – less than 0.05% of respondents were discarded because of incomplete demographic information.

Health insurance status means, weighted by the individual inclusion probability, were calculated across a number of different demographic variables, such that the resulting means represent the proportion of individuals covered by private health insurance in South Africa. The data is analyzed and presented graphically, as well as empirically. The empirical analysis is based on a generalized linear model with a binomial logit link, to address the fact that the response variables are binary in nature. Due to the fact that medical scheme access is a binary response variable and each year can be classified as an analysis category, a factorial analysis of deviance was estimated via a saturated model – see below.

As previously noted, South Africa, in 1994, made public health care free of charge for all children under the age of six and all adults over the age of 65. Therefore, children, aged six years or less, are contained in one age group, while adults aged 65 or older are contained in another age group. Three other age groups were also included. Youths between the ages of six and eighteen, those most likely to still be in school, are included in one of these additional age groups, while working aged

adults were split into two separate groupings, those aged between 18 and 42, and those aged between 42 and 65.

The final analysis data contains 618 426 observations for the six survey years, approximately 103 000 individuals in each year. There are 81 662 individuals six years old or less, and 172 458 between the ages of six and 18, while there are only 35 661 aged 65 or older. The working aged groups include 223 709 between the ages of 18 and 42 and 105 436 between the ages of 42 and 65.

Results

The analysis data, weighted up to the population in each year, is summarized in Figure 1, which contains eight separate panels: one for both genders of each population group. A number of important features related to the data can be gleaned across these panels. Medical aid access varies widely across all populations groups, with the exception of blacks. Coverage rates are generally lowest for blacks, followed by coloureds, then Asians, and, finally, coverage for whites is the highest. Approximately one decade following the end of apartheid, and, yet, one measure of socioeconomic status, access to a medical aid scheme, continues to be associated with population group in much the same way as it was under apartheid.

Trends within Population Groups

A generalized linear model with a binomial link was estimated to determine if the plotted proportions were statistically different from each other. A factorial analysis

of deviance was estimated via a fully saturated model for each of the panels in Figure 1.⁴ Table I contains the results of this analysis: Panel A contains the odds ratios for males, while Panel B contains the odds ratios for females. The odds ratio presented in the table can be interpreted as the ratio of the proportion with access to health insurance in 2007 relative to the proportion in 2002, such that any number below one represents a decrease in access, and any number in excess of one represents an increase in access for that particular group. In order to conserve space, odds ratios for the intervening years were not included, although they are available from the author upon request.

In Panel A, five of the 20 estimated odds ratios were identified as exceeding one, an additional two could not be distinguished as different from one, while the remaining 13 were identified as significantly less than one. In other words, on average, males in 2007 were less likely to have access to health insurance in 2007 than in 2002. Only Asian males were, more often than not, likely to have seen an improvement in coverage rates. The results were slightly better for females. In Panel B, nine estimated odds ratios exceeded one, an additional two could not be distinguished from one, such that the remaining nine were statistically less than one. As with the males, Asian females fared best amongst all females, with only one estimate, that for the youngest Asian females, less than one. Similarly for coloured females, only one estimate was significantly less than one.

⁴ The generalized linear model is estimated for each age group and population group, separately, such that the inclusion of each year fully saturates the model.

Overall, odds ratios ranged from 0.61 to 1.56. White female coverage rates in 2007 were only three-fifths of what they were in 2002. For males, the greatest reduction occurred amongst black males, aged 18-42, and white males, aged 65 years or more. For both of these groups, coverage in 2007 was 84% of what it was in 2002. The greatest increase amongst males occurred for Asian males, aged 42-65, where coverage rates increased by a factor of 1.56. Coverage rates for females increased the most for Asian females, aged 6-18, by a factor of 1.24.

Although separate estimates of relative gender effects within population groups are not provided, the numbers in the table provide a simple way to consider the gender gap in coverage, and how it has changed between 2002 and 2007. First note that coverage rates in 2007 for black males, aged 0-6, was 91% of what it was in 2002. For females in the same age and population group, however, coverage in 2007 was 98% of what it was in 2002. In other words, coverage rates fell by less for females than for males, such that gender gap, in this age and population group, improved. Considering all of the pair-wise comparisons that could be made in the two panels of Table I, it can be seen that in 12 of the 20 comparisons, female coverage rates either increased by more than it did for males or decreased by less than it did for males. On the other hand, for four of the comparisons, the opposite was true. Finally, the four remaining odds ratio comparisons are either the same or cannot be determined without a more formal analysis. Therefore, we can conclude that the gender gap in coverage rates decreased, on average, such that females had relatively better access to health insurance than males in 2007, compared to 2002.

Trends across Population Groups

The results, so far, indicate that access to a medical aid scheme is generally less prominent than it was at the beginning of the analysis period, and that Asian males and females and coloured females have been most likely to see improvements in health insurance coverage rates. However, in order to determine if there have been any reductions in the medical aid access gap by population group, a more careful analysis was considered. As noted when discussing the gender gaps, it would be possible to simply look at the relative ratios across population groups within gender; however, the number of comparisons is quite large, and, therefore, the gap analysis was formalized. Once again, a generalized linear model was estimated for each population group comparison that could be made. The estimated odds ratios from this analysis are presented in Table II for males and Table III for females.

Estimated odds ratios can be interpreted as measures of the change in the difference between coverage rates for the population groups between 2002 and 2007. Only the estimates for 2007 are presented, although all of the intervening year estimates are available from the author upon request.

Each row in Table II considers the gap in coverage between males in one population group and males in another population group. For row one, any number less than one represents an improvement for blacks relative to coloureds, and any number greater than one represents an improvement for coloureds relative to blacks. The remaining rows are interpreted in the same fashion, but for different comparisons

across population groups. Given the results above, for the different population groups, it is not surprising that Asian males have closed the gap with respect to whites (row 6), and generally extended the gap between themselves and both black and coloured males (rows 2 and 4). Although whites are the most likely to have access to coverage, there have been some improvements in the gaps between themselves and Asians (already noted), blacks (row 3: aged 42-65 and aged 65 or more), and coloureds (row 5: aged 18-42, aged 42-65 and aged 65 or more). Finally, the gap in coverage between black males and coloured males (row 1) also depends on the age group. Coloured males have done relatively better between the ages of six and 65 than black males.

Odds ratios of the male specific change in the population based coverage gap range from 0.52 to 1.53. In 2002, approximately 30% of Asian males, aged 42-65 (Figure 1, Panel C), were covered by a medical aid scheme; in 2007 that proportion had increased to 40%. For black males (Figure 1, Panel A), the respective numbers were approximately 12% in both years. In other words, the Asian-black gap was 18% in 2002 and 28% in 2007; 28:18 is nearly 1.53, the estimate presented in Table III (row 2, column 4). In this case, the gap increased because access for Asian males increased dramatically, while access for black males did not change much. On the other hand, the gap could have been affected, because, even though coverage fell for both groups, it fell more precipitously for one of the groups. For black males, aged 0-6, the coverage rate fell by about 1%, but fell by about 2.5% for coloured males in

the same age group, such that the coloured-black coverage gap in 2007 was 88% of the 2002 gap.

A similar analysis was conducted for females, and those results are presented in Table III. Odds ratios for female specific population based coverage rate gaps ranged from 0.60 to 1.71. Given that females have generally done better than males, there is a less clear pattern in coverage gap trends for females than there was for males. However there are some patterns. With the exception of females, 65 years or older, Asian female coverage improved enough to reduce the gap in coverage between white and Asian females. Also, for females, six years or younger, Asian female coverage improved more rapidly than that for coloured females, extending the coverage gap between Asian and coloured females. Once again, in an effort to save space, coverage gaps for the intervening years are not reported here, but they are available from the author upon request.

Discussion and Conclusions

The preceding analysis has been able to uncover a number of important observations with respect to medical aid coverage in South Africa. Firstly, medical aid scheme coverage rates are quite low, with the exception of whites; see Figure 1. Furthermore, amongst males, there has been a general reduction in coverage rates, although Asian males have bucked this trend. Access amongst females, on the other hand, has shown more signs of improvement, as access has increased (or at least not

fallen) for both Asian females and coloured females in most age groups, between 2002 and 2007.

Secondly, access to private health insurance in South Africa differs greatly by age. Older working age adults are more likely to have medical scheme access than anyone else, while retirement age individuals are the least likely to have access. Interestingly, the youngest white and Asian children are more likely to have coverage than most other whites or Asians, while the youngest black and coloured children are the least likely to have coverage than most other blacks and coloureds, excluding retirement age individuals. Some of these age differences can be explained by health policy in South Africa. In particular, public health care is free for children six years old and younger, as well as for adults aged 65 and older. It is quite reasonable for economizing households to skimp on medical aid premiums, when both their youngest and oldest members are not subject to public health care fees.

Thirdly, access to medical schemes differs greatly by population group. Worryingly, medical scheme coverage amongst blacks, the most disadvantaged population group under apartheid, has not generally improved relative to other population groups in South Africa, although access for Asians has generally improved relative to other population groups. These results suggest that much more work needs to be done to improve access to health insurance, amongst the population groups in South Africa that were the most disadvantaged under apartheid.

One such possibility for improving access is through the implementation of a national health insurance program or a social insurance program. A recent study by Shisane, Rehle, Louw et al (2006) showed extensive support for a universal national health insurance program in South Africa; approximately 47% supported a universal program, although support fell to 41% or less when likely national program realities, such as limited doctor choices and the introduction of waiting lists, were included. Notably, support differed by population group, quite likely due to the differences in access to private insurance shown above. However, a series of papers (McIntyre and Gilson, 2000; Gilson et al, 2003; Thomas and Gilson, 2004) suggest that improved alignment of policy goals across all of the important social and political actors is necessary for the implementation of a national scheme, and, therefore, an national policy is unlikely until these goals can be aligned.

One issue only tangentially addressed in the papers by McIntyre and Gilson (2000), Gilson et al (2003) and Thomas and Gilson (2004) is the cost of implementing a universal health insurance program. The preceding results suggest that the program will need to cover approximately 85% of the population.⁵ Hadley et al (2008) estimate that the cost of insuring 47 million uninsured Americans, approximately 16% of the population, could exceed \$122 billion. Although no such estimates exist for South Africa, it is clear that insuring the 85% of uninsured South

⁵ Most of the recently touted programs – see McIntyre and Van den Heever (2007) – accept that universal coverage is not a realistic goal, and, instead, support mandates for those, who can afford coverage.

Africans, approximately 41 million individuals, will not be inexpensive. Further research into the potential costs and benefits of insuring currently uninsured South Africans is needed. The results presented here suggest that coverage is worsening, such that, in the future, health insurance will be available for even less than the 85% currently covered.

The time period under consideration, 2002-2007, has not been associated with any significant changes in health insurance legislation, and, therefore, it is reasonable to expect that health insurance access would not be greatly affected during this time period, although the preceding results suggest that there have been many changes. One feature of health insurance that has not received any attention is the relation between the direct and indirect access to medical aid schemes via the labour market. It is quite plausible that the changes observed have been associated with changes in the labour market, since, in South Africa, as in many other countries, health insurance premiums are subsidized as pre-tax business expenses, and, therefore, medical scheme availability is often tied to the employment relationship.⁶ Future research will need to provide further understanding of the link between the labour market and health insurance coverage and more recent estimates of the value of this subsidy, while determining whether or not health financing policy can meaningfully influence this link.

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⁶ Price et al (1994) value this subsidy between R1.5 and R2.6 billion.

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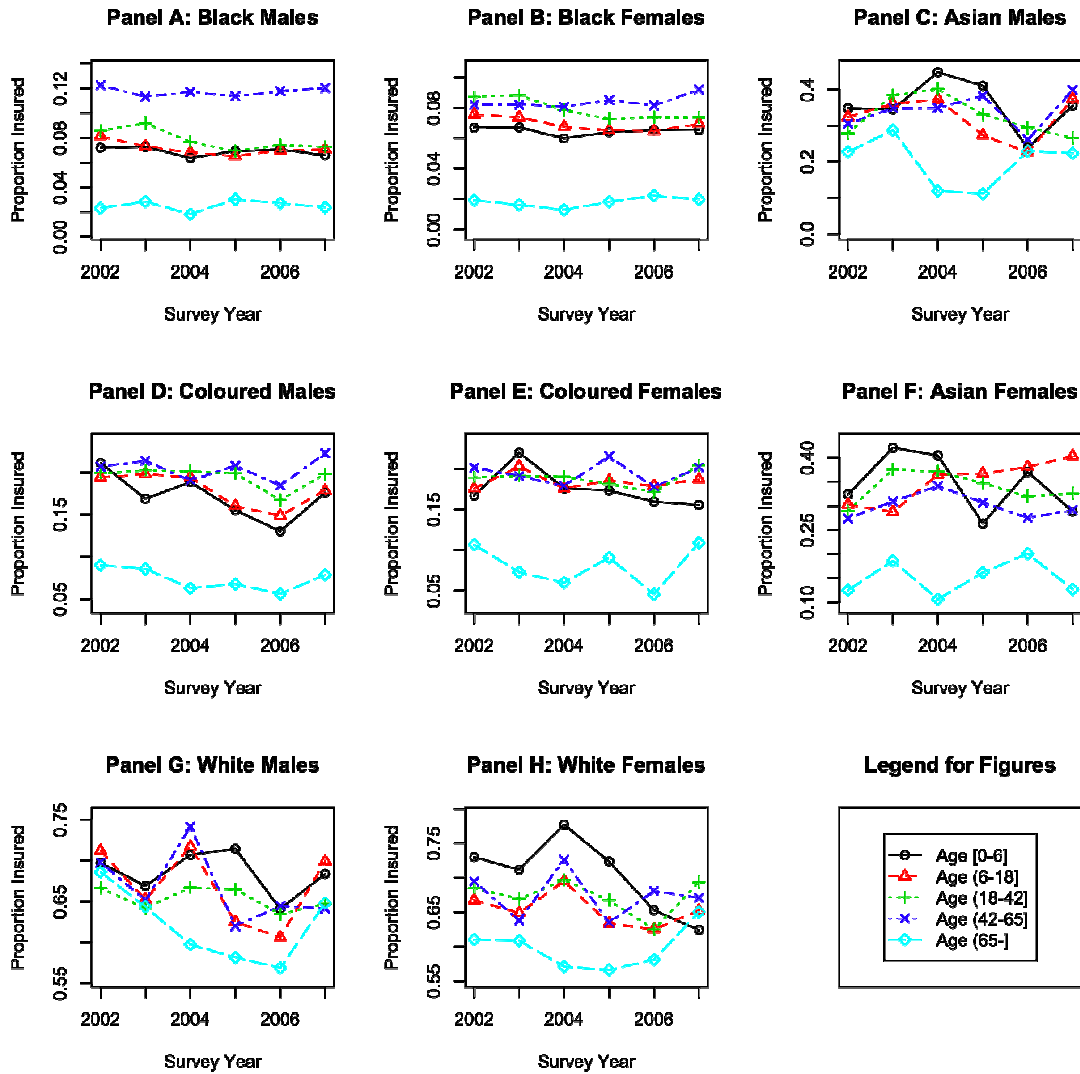


Figure 1: Private Health Insurance by gender, age group and population group, 2002-2007.

Table I: Odds Ratios Comparing 2007 Coverage Proportions with 2002 Coverage Proportions by Gender, Age and Population Group.

Males	Age 0-6	Age 6-18	Age 18-42	Age 42-65	Age 65+
Black	0.91	0.86	0.84	0.98	1.03
Coloured	0.80	0.90	0.99 #	1.10	0.86
Asian	1.03 *	1.24	0.93	1.50	0.98 #
White	0.94	0.94	0.92	0.78	0.84
Females	Age 0-6	Age 6-18	Age 18-42	Age 42-65	Age 65+
Black	0.98	0.91	0.83	1.13	1.03
Coloured	0.92	1.08	1.10	1.00 #	1.02 #
Asian	0.85	1.56	1.19	1.09	1.01 #
White	0.61	0.94	1.04	0.90	1.19

Source: Author's calculations from South African General Household Surveys, 2002-2007.
 Note: *- Significant at 5%, # - Insignificant. All others significant at 1%.

Table II: Population Group Coverage Gap Odds Ratios Comparing 2007 with 2002 by Age Group for Males.

Sub-populations	Age 0-6	Age 6-18	Age 18-42	Age 42-65	Age 65+
Coloureds relative to Blacks	0.88	1.05	1.19	1.12	0.83
Asians relative to Blacks	1.13	1.45	1.12	1.53	0.95
Whites relative to Blacks	1.03	1.09	1.10	0.79	0.82
Asians relative to Coloureds	1.29	1.38	0.94	1.37	1.14
Whites relative to Coloureds	1.29	1.04	0.92	0.71	0.98 #
Whites relative to Asians	0.91	0.76	0.98 #	0.52	0.86

Source: Author's calculations from South African General Household Surveys, 2002-2007.
 Note: # - Insignificant. All others significant at 1%.

Table III: Population Group Coverage Gap Odds Ratios Comparing 2007 with 2002 by Age Group for Females.

Sub-populations	Age 0-6	Age 6-18	Age 18-42	Age 42-65	Age 65+	
Coloureds relative to Blacks	0.94	1.18	1.32	0.88	0.99	#
Asians relative to Blacks	0.87	1.71	1.43	0.95	0.98	#
Whites relative to Blacks	0.63	1.03	1.25	0.79	1.15	
Asians relative to Coloureds	0.92	1.44	1.08	1.09	0.99	#
Whites relative to Coloureds	0.92	0.87	0.95	0.89	1.16	#
Whites relative to Asians	0.72	0.60	0.88	0.82	1.17	

Source: Author's calculations from South African General Household Surveys, 2002-2007.

Note: # - Insignificant. All others significant at 1%.