

# The Human Resource Supply Constraint: The Case of Nurses

*This note, the third in our mini-series of research notes on human resources for health (HRH) issues in South Africa (SA), assesses the supply of nurses over the next 10 years, while examining the underlying characteristics and supply constraints of this particular market. The results indicate an increase in the supply of nurses, but point out that the internal mix of different categories of nurses will be problematic – especially given the planned healthcare reforms and central role of task shifting between doctors and nurses.*

## 1 Introduction

In NHI Note 4 (November 2009),<sup>1</sup> we determined the total number of nurses actively working in SA in 2008. In this note we provide updated estimates of those totals as well as a possible scenario for the future supply of nurses in SA if current trends were to continue.

Similar to the Health Professions Council of SA (HPCSA) where all doctors have to register, all nurses are required by law to register with the South African Nursing Council (SANC).<sup>2</sup> In 2009 there were 221,817 nurses registered with the SANC (these include 111,299 registered nurses (RNs), 48,078 enrolled nurses (ENs) and 62,440 en-

rolled nursing auxiliaries (ENAs)<sup>3</sup>). As a data source, the SANC registry is plagued with the same shortcomings as the HPCSA data, i.e. the registry includes all nurses registered in SA and not only those actively working in the country. Nurses working abroad or in other occupations, but still keeping up their registration with the SANC, are all

This research note forms part of a series of notes dealing with issues of health reform in South Africa. In the interest of constructively contributing to the NHI debate, the Hospital Association of South Africa (HASA) has commissioned this series of research notes which can be accessed on the Econex website: [www.econex.co.za](http://www.econex.co.za).

1. Available at: [www.econex.co.za](http://www.econex.co.za)

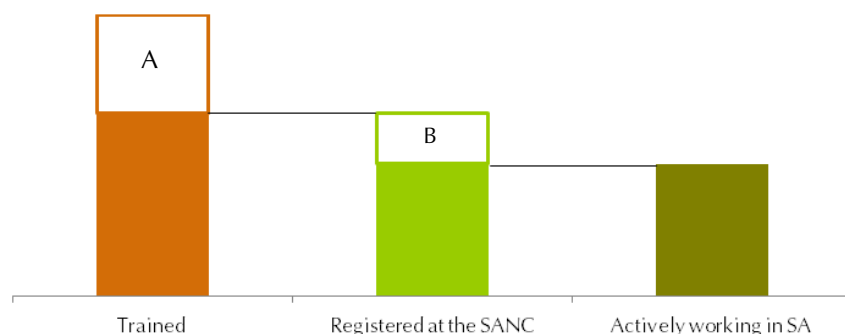
2. The SANC currently has registers and rolls. The names of all registered general nurses (also called professional nurses in some establishments), who have completed their general training with a diploma or degree, and may, or may not, have included midwifery, psychiatric nursing and community nursing science in that training programme, which will have been of three-four years duration, will be placed on the general nursing register. In addition to the registered general nurse there is also a registered midwife and registered psychiatric nurse category, nurses who have only qualified in the specialist field. In addition to the register, there are rolls for the Enrolled nurses (ENs), who have completed two years of training, and the Enrolled Nursing Auxiliaries (ENAs) who have completed a one year training programme. There is also an Enrolled Midwife category, based on the same principle as the Registered Midwife.

3. Throughout the rest of this note, the term “nurses” will collectively refer to RNs, ENs and ENAs, unless otherwise indicated.

included. This was confirmed in a 2009 study by the Human Sciences Research Council (HSRC)<sup>4</sup> indicating that not all nurses registered are actually practicing in South Africa. Some prefer to maintain their registration while having retired. Others, working abroad, maintain their local registration with the possible intention of returning to work in South Africa at a future date.

Although the SANC data are valuable in terms of demographic or other underlying trends analyses, one should consult other sources to determine the actual number of nurses currently working in SA. However, since the SANC registration data is our starting point to determine the current stock of nurses, and the latest data are for 2009, we need to run our supply model first in order to get an estimate of all registered

Figure 1: Methodology to calculate the future supply of nurses



Source: Econex

nurses in 2010, as well as the stock of nurses actively working in the country currently.

## 2 Determining the Future Supply of Nurses

In this section we describe the various steps to calculating the supply of nurses in SA over the next 10 years. With much less information available on nurses than doctors, we had to use a somewhat different methodology than that of Health Reform Note 8. The diagram in Figure 1 is a graphical representation

of the methodology which is explained in detail below.

### 2.1 Assumption 1: Training

Our starting point is the number of nurses graduating each year, i.e. the first column in Figure 1. Table 1 shows the output from all public and private training institutions in SA (colleges, universities, etc.) from 2000 to 2009. We did not include the output from “bridging programmes” since these do not represent new nurses added to the stock, but only ENs who are already employed

Table 1: Nurses trained - output from all institutions, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
RNs	2,494	2,041	1,652	1,553	1,716	1,533	2,027	2,342	2,371	2,638
ENs	1,919	1,932	2,771	3,158	4,273	4,565	4,816	4,758	6,154	7,493
ENAs	1,509	1,914	3,078	4,390	6,698	6,754	5,422	6,136	5,593	5,779
<b>TOTAL</b>	<b>5,922</b>	<b>5,887</b>	<b>7,501</b>	<b>9,101</b>	<b>12,687</b>	<b>12,852</b>	<b>12,265</b>	<b>13,236</b>	<b>14,118</b>	<b>15,910</b>
Annual increase		-0.6%	27.4%	21.3%	39.4%	1.3%	-4.6%	7.9%	6.7%	12.7%

Source: Econex calculations from SANC data, 2010

4. Breier, M., Wildschut, A., & Mgqolozana T., 2009. “Nursing in a New Era: The Profession and Education of Nurses in South Africa,” HSRC Press. Available at: <http://www.hsrbpress.ac.za>

and improved their qualifications to RNs. Since our focus is on all nurses collectively (rather than the individual categories), output from bridging programmes can be excluded.

Although the observed increase in nurses trained is encouraging, the annual rate of increase has been very inconsistent. This makes any assumption about the future capacity to train nurses rather difficult. After considering various options, it was decided to use the average annual increase over the last five years for which we have data (i.e. 4.8%) to calculate the expected increase from 2010 to 2020. In other words, we make the assumption that training capacity will continue to increase by 4.8% every year for the next 10 years.

## 2.2 Assumption 2: Attrition rate

In Health Reform Note 8 it was possible to divide the attrition rate for doctors between its underlying components and calculate a separate rate for retirement, death and illness, other reasons for exiting, as well as emigration. While it is possible to calculate the expected

Table 2: Training, registration and attrition rate of nurses, 2000-2009

	Total registered	Growth in registrations	Total trained (output)	Nurses not registered <sup>7</sup>	Attrition rate <sup>8</sup>
2000	171,645		5,922	5,229	88.3%
2001	172,338	693	5,887	5,356	91.0%
2002	172,869	531	7,501	2,649	35.3%
2003	177,721	4,852	9,101	2,363	26.0%
2004	184,459	6,738	12,687	5,877	46.3%
2005	191,269	6,810	12,852	7,207	56.1%
2006	196,914	5,645	12,265	5,231	42.6%
2007	203,948	7,034	13,236	4,378	33.1%
2008	212,806	8,858	14,118	5,107	36.2%
2009	221,817	9,011	15,910		

retirement rate of nurses over the next decade, information on the other factors causing attrition are limited. (See the additional notes at the end for a more detailed discussion with regards to this problem.)

Therefore, in order to determine an all inclusive attrition rate, we considered the discrepancy between nurses trained each year and those registered in the following year (block A in Figure 1).<sup>5</sup> Importantly, note that in addition to nurses that finished their train-

ing and decided not to register with the SANC (for whatever reason), "there are many reasons why there would not be a direct match between output and registration, such as nurses retiring, dying, leaving the profession or withdrawing from the register."<sup>6</sup>

Table 2 indicates that the average attrition rate over the last 5 years for which we have data (2004-2008) is 42.9%. Since the rate has gone down somewhat in 2007 and 2008, and for simplicity sake, our assumption

5. Nurses only register with the SANC in the year following their graduation or completion of training.

6. See footnote 4. (p.78)

7. See footnote 5. For example, to calculate the number of nurses not registered in 2000 (5,229), one subtracts the growth in registrations in 2001 (693) from the total number of nurses trained in 2000 (5,922).

8. The attrition rate is calculated by expressing the number of nurses who were not registered as a percentage of the total trained in each year.

is that the average all inclusive attrition rate will be 40% each year over the next 10 years.

(The HSRC study<sup>9</sup> calculated an attrition rate of 67% across all professional categories of nurses for 1998 to 2006 but we believe that 40% is a more realistic and conservative assumption.)

### 2.3 Assumption 3: Actively working in SA

As explained previously, not all nurses registered with the SANC actively work as nurses in SA (block B in Figure 1). Some may have emigrated, chosen to stay at home while their children are growing up,

or perhaps work in other occupations, while maintaining their registration with the SANC. In the HSRC study<sup>10</sup> the researchers compared the SANC registry with data from the Labour Force Surveys (LFS) in 2001 and 2005. They found that 18.4% and 17.6% of those registered were not reflected as actively working in the respective years. Table 3 shows the discrepancy between being on the registry and actively working as a nurse, as well as the public / private split according to the LFS (we will return to this at a later stage).<sup>11</sup> Based on the analysis from Breier, et. al. (2009) we assume that **18% of all reg-**

**istered nurses do not actively work as nurses in SA** and should therefore not be included when determining the current stock or future supply of nurses in each year.

### 3 Model Results: The Future Supply Scenario

By using the assumptions described above and the methodology depicted in Figure 1 for each of the following 10 years, we can determine the annual supply of actively working nurses in SA up to 2020. Table 4 provides the results. Beginning with the number of nurses trained, as well as all

Table 3: Total registrations with SANC vs. nurses in employment, 2001 and 2005

Year	Registered with SANC	Active nurses (LFS)	% registered but not active	Public sector (LFS)	% of total active	Private sector (LFS)	% of total active
2001	190,449 <sup>12</sup>	155,484	18.4%	97,423	62.7%	58,061	37.3%
2005	191,269	157,501	17.6%	95,248	60.4%	62,253	39.5%

### About ECONEX

ECONEX is an economics consultancy that offers in-depth economic analysis covering competition economics, international trade, strategic analysis and regulatory work. The company was co-founded by Dr. Nicola Theron and Prof. Rachel Jafta during 2005. Both these economists have a wealth of consulting experience in the fields of competition and trade economics. They also teach courses in competition economics and international trade at Stellenbosch University. Director, Cobus Venter, who joined the company during 2008, is also a Senior Economist at the Bureau for Economic Research (BER) in Stellenbosch. For more information on our services, as well as the economists and academic associates working at and with Econex, visit our website at [www.econex.co.za](http://www.econex.co.za).

9. See footnote 4.

10. See footnote 4.

11. We are aware that the LFS data have certain shortcomings, but given the lack of accurate, good quality data in the health sector in general, this is the best indication of actively working nurses we could find.

12. We realise that this figure differs from that in Table 2 for the same year, but are unable to make any adjustments as both figures are copied directly from the respective sources.

Table 4: Econex future supply scenario for nurses, 2009-2020 (selected years)

	2009	2010	2012	2015	2018	2020
Nurses trained (output)	15,910	16,674	18,313	21,078	24,262	26,647
60% who register in the NEXT year	9,546	10,004	10,988	12,647	14,557	15,988
Total registered with the SANC	221,817	231,363	251,852	286,422	326,214	356,026
18% not actively working in SA	39,927	41,645	45,333	51,556	58,718	64,085
<b>Total nurses actively working in SA</b>	<b>181,890</b>	<b>189,718</b>	<b>206,518</b>	<b>234,866</b>	<b>267,495</b>	<b>291,942</b>
Nurses per 100,000 population <sup>13</sup>	369	383	413	462	519	560

Source: Econex calculation

nurses registered with the SANC in 2009, the model shows a steady increase in the supply of nurses over the next decade. According to this scenario there will be 291,942 nurses by 2020; implying a nurse to population ratio of 560 per 100,000 in that year. (Further on in the note, Table 8 indicates that upper middle income countries currently have an average of 400 nurses per 100,000 population – the model results seem to be in line with this benchmark.)

At a first glance the results look quite favourable for SA and it seems there may not be such a large supply constraint as often quoted in the media or as there is with doctors currently and in the near future. However, there is a very concerning internal supply constraint related to the mix of different categories of nurses which is not evident from the results in Table 4.

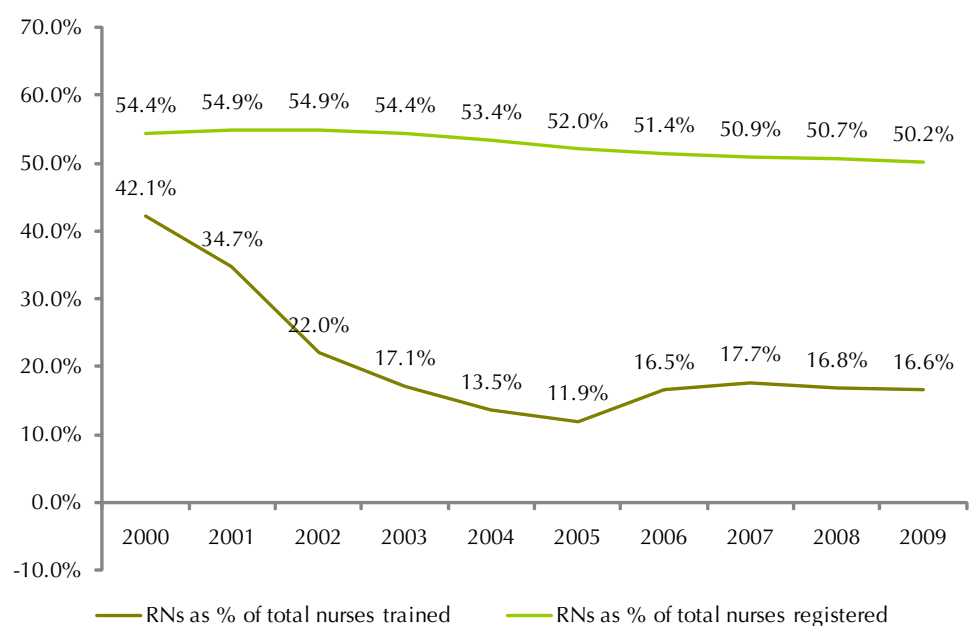
### 3.1 Shortage of RNs

If one were to consider the internal mix of RNs, ENs and ENAs in the training output (Table 1), as well as the growth in registrations over the past couple of years, it turns out that the proportion of RNs in both these indicators have declined over time (see Figure

2). The decline has been most dramatic among those trained.

Running the same supply model as above (based on the same assumptions) for RNs only, indicates only a small increase in the total number of active RNs by 2020. Table 5 shows the results. As a share of the total

Figure 2: Decline in RNs trained and registered, 2000-2009



Source: Econex calculations from SANC data, 2010

13. Based on population estimates from StatsSA for 2009 and for 2010-2020: Bureau for Economic Research, Long Term Scenarios, December 2009.



number of active nurses in SA, RNs make up 50.2% in 2009, but then decline to 42.6% (2015) and 37.5% (2020).

Further also, it is clear that RNs in general are much older than ENs and ENAs with a much larger percentage (43.7%) of this group being older than 50 (see Table 9 in the additional notes at the end of this document). This exacerbates the problem even further, as almost half of the current stock of RNs will retire within the next 10 to 15 years (almost 3,000 per year<sup>14</sup> of those actively working in SA in 2010), while fewer will be added. The additional notes also highlight the fact that it is mostly RNs who emigrate. Referring to the shortage of trauma/emergency

nurses specifically, Brysiewicz and Bruce (2008: 130)<sup>15</sup> say that, "Nursing shortages are as a direct result of migration of specialist nurses to other countries and areas of work such as medical aid and pharmaceutical industries..."

All of these factors concerning the supply of RNs (decline in the percentage trained and registered, decline in the percentage of future supply, large portion currently over 50 and emigration) paint a very dark picture for the provision of high quality nursing services over the next couple of years – particularly in light of the government's commitment to certain future health reforms. Both the Minister of Health, in referring to primary healthcare

(PHC) reforms based on the Brazilian healthcare system,<sup>16</sup> and the latest ANC discussion document on the proposed national health insurance (NHI),<sup>17</sup> confirm the importance of task shifting where, amongst others, nurses will have to perform some of the services currently only provided by doctors. This implies a great need for specifically RNs who are best qualified to take over some of the work done by doctors at present.

Given the expected shortage of doctors over the next decade,<sup>18</sup> together with the facts about the existing, as well as future supply of (and need for) RNs highlighted here, the results from our supply scenario in Table 4 should be in-

Table 5: Econex future supply scenario for RNs, 2009-2020 (selected years)

	2009	2010	2012	2015	2018	2020
RNs trained (output)	2,638	2,765	3,036	3,495	4,023	4,418
60% who register in the NEXT year	1,583	1,659	1,822	2,097	2,414	2,651
Total registered with the SANC	111,299	112,882	116,279	122,011	128,609	133,552
18% not actively working in SA	20,034	20,319	20,930	21,962	23,150	24,039
<b>Total RNs actively working in SA</b>	<b>91,265</b>	<b>92,563</b>	<b>95,349</b>	<b>100,049</b>	<b>105,459</b>	<b>109,513</b>

14. Assuming a constant rate of retirement. See the additional notes at the end for a more detailed discussion on this issue.

15. Brysiewicz, P. & Bruce, J., 2008. "Emergency nursing in South Africa," *International Emergency Nursing*, Vol. 16(2), p. 127-31

16. Thom, A. (2010): South Africa: PHC the Cornerstone of NHI – Minister. *allAfrica.com*, 30 September 2010, Available at: <http://allafrica.com/stories/201009300648.html>. See also Econex Occasional Note – October 2010 at [www.econex.co.za](http://www.econex.co.za).

17. ANC National General Council 2010, *Additional Discussion Documents*. Released September 2010. Available at: <http://www.anc.org.za/docs/discus/2010/aditionalo.pdf>

18. See the results from the future supply scenario for doctors in Health Reform Note 8. Available at: [www.econex.co.za](http://www.econex.co.za)

terpreted with caution. As we warned in the previous Health Reform Note, the figures from the supply side scenario are only one side of the coin and it is difficult to put these in context without a proper analysis of the demand for healthcare services delivered by nurses. However, also considering the planned PHC reforms and specifically referring to the high attrition rate among RNs, Subedar (2005: 94)<sup>19</sup> says that, "If it persists, the production of nurses will have to be increased at least threefold to keep up with the requirements of the health system."

### 3.2 Changes to nursing categories and education<sup>20</sup>

According to the Nursing Act (33 of 2005) the existing categories of nurses will soon change to the following:

(1) Professional nurse – this will include all nurses currently referred to as PNs or RNs, and will be a 4-year bachelors degree (not a 4-year diploma). These will be the only nurses allowed to take charge of healthcare institutions.

(2) Staff nurse – a new category that will replace the current EN category, but doing tasks much more similar to current RNs, and thus allowing for a wider scope of practice than what is the case presently. These nurses will probably obtain a 3-year diploma and can complete an extra year to qualify as a midwife. They will probably make up the bulk of South African nurses in the future. The current EN's may well need to complete a bridging programme to be able to function as staff nurses, and their absence from the clinical environment for this training programme will further deplete the nursing numbers for this transitional phase.

(3) Auxiliary nurse – similar to what is currently known as ENAs, but with a higher level of qualification, although still only a 1-year diploma.

These changes will have many different implications for the future supply, as well as demand, for nurses in SA, but in particular it means that firstly, all the nursing qualifications

will now be in the higher education band (National Qualifications Framework (NQF) level 5 and higher). Secondly, and of specific relevance to our preceding discussion on the shortage of RNs, the new category of staff nurses will be specifically trained to address the South African health requirements in terms of the need for higher quality services and the country's quadruple burden of disease.<sup>21</sup> They would be able to replace many of the existing RNs retiring, emigrating or leaving the profession. (The additional notes on emigration explain that RNs are in greater demand across the world, but also in other health-related occupations, because of their 4-year degrees.)

Although we acknowledge that these changes to the education and scope of practice will affect the overall future supply of nurses, as well as the internal mix between different categories, it was not explicitly taken into account when the model was run. As stated before, the aim was to assess the possible future scenario

19. Subedar, H., 2005. "Nursing profession: Production of nurses and proposed scope of practice," in *South African Health Review 2005*, p.88-101. Durban: HST

20. We would like to thank Sharon Vasuthevan (Life Healthcare), Eileen Brannigan (Netcare) and Estelle Jordaan (Medi-Clinic) for valuable inputs to this section.

21. See Econex NHI Note 2 for a detailed discussion on the burden of disease. Available at: [www.econex.co.za](http://www.econex.co.za)

if all existing trends were to continue over the next 10 years.

#### 4 Updated Nursing Numbers for 2010

Based on the future supply scenario modelled above, there are 189,718 nurses actively working in SA at the moment (2010). This will be our starting point for calculating the current public / private sector split of nurses.

##### 4.1 Public / Private sector split

Data from the government's public sector Personnel and Salary Administration System (PER-SAL) indicate that there were 111,180 nurses working in the public sector in 2010. A recent survey<sup>22</sup> among the three large private sector hospital groups (Life, Medi-Clinic and Netcare), as well as other private sector hospitals and clinics in the Na-

tional Hospital Network (NHN), indicated that there were 25,392 full-time equivalent (FTE) nurses permanently employed in the private sector hospitals in January 2010.<sup>23</sup> However, this is not the total number of nurses working in the private sector, since there are a large group of nurses that do not work in the private hospital sector specifically, but in other parts of healthcare provision such as in pharmacies, non-governmental organisations (NGOs), private GP practices or in one of the many fields where a nursing qualification might be required.

By using the analysis in section 2.3 above, it is possible to

calculate the public / private sector split of nurses for 2010. We have shown that the private sector hospitals and clinics formally employ 25,392 permanent nurses, while 111,180 are employed in the public sector. This implies that the remainder (53,146) of active nurses work elsewhere in the private sector, i.e. there are a total of 78,538 nurses currently working in the private sector (see Table 6). It is important to draw your attention to Appendix A, which clarifies the impact of agency nursing staff used in the private hospital sector. In other words, the sector 'uses' far more nursing hours than those produced by its own full time employees.

Table 6: Public / private split of nurses, 2010

	Public	Private	Total
Number of nurses	111,180	78,538	189,718
Percentage of nurses	58.6%	41.4%	100.0%

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22. The Ministerial Advisory Committee (MAC) on the NHI requested all private sector hospitals and clinics to provide the MAC with data on the number of nurses, pharmaceutical personnel, emergency care workers, etc. employed by each facility. These were independently collected and collated by Econex during October 2010.

23. See Appendix A for a discussion on vacancy rates and the use of agency staff in the private hospital sector.



Although the specific questions related to these figures in the LFS were discontinued, the 2010 estimate for the private sector seems more or less in line with the earlier results from the LFS. The public / private split has not changed much over the past decade. Also, while the 53,146 private sector nurses who are not working in the private hospitals may seem a lot, it is quite possible that this may be the case.

According to the latest statistics from the South African Pharmacy Council there were 2,886 pharmacies (excluding public institutional and wholesale pharmacies) in SA in 2005. Many, if not most, of these pharmacies employ a nurse(s). Similarly, many pharmacies also have smaller clinics administering vaccinations, treating wounds, etc. who all employ at least one nurse. According to data from MEDpages there are 500 pharmacy clinics and 546 baby clinics at the moment.<sup>24</sup>

The mining sector is another large employer of nurses as most mines provide on-site medical services as well as hospitals and clinics where thou-

Table 7: Types of NPOs in the health sector, 1999

Major areas of work	Number of NPOs	Number of sub-groups
1. Hospital rehabilitation	-	
2. Nursing homes	2,138	
3. Mental health/crisis intervention	1,473	
- Mental health treatment		480
- Crisis intervention		993
4. Other health services	2,888	
- Public health and wellness education		1,038
- Health treatment (outpatient)		416
- Rehabilitative medical services		187
- Emergency medical services		1,247
<b>TOTAL</b>	<b>6,499</b>	

sands of nurses are employed. Statistics indicate that there are 34 mining hospitals and 64 military hospitals (in addition to all public sector hospitals) at present.<sup>25</sup> There are also 1,005 factory clinics currently where nurses are likely to be employed.

In addition, the NGO sector (or non-profit organisations (NPOs)) is probably one of the largest employers of private nurses. In a 2002 study<sup>26</sup> titled *The Size and Scope of the Non-Profit*

Sector in South Africa, data for 1999 indicate that there were 6,499 NPOs in the health sector of which the largest majority (68.7%)<sup>27</sup> provided medical services or treatment of some kind – see Table 7. This group of NPOs employed 98,494 full-time equivalent (FTE) workers (including volunteers, permanent and part-time employees). Of course not all of these were nurses, but one should keep in mind that this figure will be much larger now, more than

Source: Adapted from Swilling & Russel, 2002 (Table 12, p.28)

24. MEDpages Hospitals & Clinics: Statistics (2010). Available at: [www.medpages.co.za/stats](http://www.medpages.co.za/stats)

25. See footnote 24.

26. Swilling, M. & Russell, B., 2002. "The size and scope of the non-profit sector in South Africa," Durban: Centre for Civil Society, University of Natal.

27. Calculated by excluding the crisis intervention and education centres from the total. See Table 7.

10 years later, and that it does offer a valid explanation of where many of the private sector nurses could be employed.

#### 4.2 Nurse to population ratio

The latest NHI discussion document from the ANC states that there were 102 people per nurse in the private sector and 616 people per nurse in the public sector in 2005.<sup>28</sup> However, given currently available data, it is impossible to know the exact portions of the population dependent on either public or private sector nurses. Specifically the 53,146 private sector nurses not working in the private hospitals and clinics complicate such a calculation. In all probability these nurses play a vital role in healthcare provision in South Africa and it is conceivable that the large majority of patients treated by this group do not belong to medical schemes, i.e. these nurses see potentially more public sector patients, than private sector patients. Hence, since there is no data on the number of private sector

Table 8: International comparative nursing ratios, 2000-2009

Country	Nursing & midwifery personnel per 100,000 population
Low income	100
Lower middle income	140
Upper middle income	400
High income	810
South Africa*	410 (383)
Lesotho	60
Brazil	290
Mexico	400
USA	980
Greece	350
Australia	1090

\* Econex calculations for 2010 in brackets.

nurses actually serving public sector patients, it is only possible to determine the population ratio for the total number of nurses in SA. Accordingly, based on a total of 189,710 nurses in 2010, there are 383 nurses per 100,000 population, or a ratio of 261 people per nurse at the moment.<sup>29</sup>

Table 8 presents comparable international ratios for the same countries used in Health Reform Note 8. Importantly, the ratios given are averages over the years 2000 to 2009 and therefore not directly comparable with the current South African ratio of 383 nurses per 100,000 population. However, there is

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If you want to add your name to our mailing list, please send an e-mail to [iris@econex.co.za](mailto:iris@econex.co.za)

28. See footnote 17. (p.14)

29. Based on population estimates from: Bureau for Economic Research, Long Term Scenarios, December 2009.

30. WHO, 2010. "World Health Statistics." Available at: <http://www.who.int/whosis/whostat/2010/en/index.html>

not a large difference between the ratio given for SA in the table and the one we calculated, especially if one takes into account that the World Health Organisation (WHO) ratio is an average over 10 years during which the total number of nurses has declined gradually.

From the ratios in Table 8 it is clear that, unlike the situation with doctors, SA does not have an overall shortage of nurses compared to international norms and standards. However, as we pointed out in our discussion in section 3.1, the internal mix of different categories of nurses could be problematic – especially in the light of planned health reform initiatives.

## 5 Conclusion

This note showed that if current market trends were to continue over the next 10 years, we would see a steady increase in the supply of nurses by 2020. However, the change in the internal mix between different categories of nurses is concerning. We already witness a decline in the portion of RNs trained as a

percentage of the total. This will be problematic over the longer term, especially given the central role of task-shifting in the planned health reforms and the need for higher quality services in the public sector specifically.

We also provided updated figures for the number of nurses actively working in SA in 2010. It was shown that there are currently 189,718 nurses of which almost 60% work in the public sector (111,180), while the private sector nurses (78,538) work in the private hospitals or other private sector organisations such as pharmacies, clinics, mining hospitals and NPOs.

The role of nurses in health-care provision in SA cannot be overemphasized. This group of health workers are key to efficient service delivery and even though it may seem that there is not such a big problem facing the industry at the moment or even in the near future, one should keep in mind that the unmet demand for healthcare in our country is enormous. Also in light of possible future health reforms, whether in the form of the NHI or not, SA would need

many more nurses than are currently trained. We would like to conclude with the following quote from the HSRC study:

*“The nursing profession in South Africa today is in need of care. Thousands of nurses have left the country, either temporarily or permanently, to seek better conditions abroad. Those who remain face increasingly demanding workloads as HIV/AIDS and tuberculosis take their toll. Although many young people choose to study nursing and applications for nursing education programmes far outnumber available places, the profession itself is not growing in proportion. Attrition, both during and after training, is high and two-thirds of all practising nurses are over the age of 40. At the same time, the image and status of nursing is low. Once regarded as an elite profession for women, it is now overshadowed by more attractive and lucrative careers. Yet nursing remains the foundation of healthcare in South Africa and needs to be nurtured and strengthened if the country is to overcome the health challenges facing it.”<sup>31</sup>*

31. See footnote 4. (p.1)

## Additional Notes: Limited resources on Attrition Rate

As with our model for the future supply of doctors (Health Reform Note 8), we would have liked to include separate rates for each of the underlying factors explaining attrition among nurses. Broadly speaking, attrition is made up of four factors:

1. Retirement rate
2. Death and illness
3. Emigration rate
4. Other reasons for exiting (e.g. pursuing different career opportunities)

After spending much time researching these factors, no information could be found on death and illness, or other reasons for exiting the nursing profession (numbers 2 and 4 on the list above). Information on the first and third items on the list is presented below. Suffice to note that the only component of the attrition rate that we could calculate with much confidence was the first on the list: the retirement rate. Although much research on the emigration of nurses from SA exists, the sources contradict one another and a specific emigration rate could not be found. Calculating such a rate also turned out to be problematic given the type of information that is available.

### The age profile of nurses

Considering the age profile of nurses will assist in determining the retirement rate for nurses. Having analysed data up to 2006, the HSRC study<sup>32</sup> comes to the following conclusion when discussing the age profile of nurses:

*“Most worrying is that nurses under 25 comprise scarcely 1% of the total nursing workforce, illustrating the small number of young nurses entering the profession, effectively turning nursing into an ageing workforce. Moreover, these nurses are entering and practising the profession mostly at auxiliary level. This trend would be justifiable if there were indications that these young nurses are planning to continue their studies and become RNs. However, very low proportions continue into the 25-29 and 30-34 age groups of RNs. If most of South Africa’s professional nurses are nearing retirement age and presumably will leave the profession soon, and nurses now entering and practising the profession are doing so mostly at the lower categories of nursing, then the country might be facing a dire shortage of registered nurses in future.”*

A similar picture emerges when looking at the age profile of all registered nurses in 2009. Table 9 shows the total number, as well as relative percentage of RNs, ENs and ENAs in each age group. As explained before, the absolute numbers from the SANC data are not necessarily the most reliable source, but in the absence of alternative data, the relative age profile is still useful, albeit as an indicator only.

Comparing the age profile of nurses presently working in the public sector with the age profile of all nurses presented in Table 9, reveals a somewhat younger workforce (see Table 10) – implying that the ageing nursing population is predominantly found in the private sector. This is largely due to younger nurses completing their training in the public sector and indicates a failure on the side of the public sector to retain older, more experienced nurses (especially RNs).<sup>33</sup>

Given the fact that much emphasis is placed on the role of the nurse in the public sector and in the provision of primary care, it makes sense to have the best qualified nurses in place. Thus, there is a greater need for

32. See footnote 4. (p.22)

33. Unfortunately data on why RNs leave the public sector or what the age breakdown looks like in the private sector are very limited.

Table 9: Age distribution all registered South African nurses, 2009

Age Group	RNs		ENs		ENAs	
	Total	%	Total	%	Total	%
<25	69	0.06%	795	1.67%	1,530	2.50%
25-29	3,895	3.53%	6,361	13.33%	9,093	14.83%
30-34	7,926	7.18%	7,505	15.73%	10,456	17.05%
35-39	14,030	12.70%	7,653	16.04%	9,781	15.95%
40-44	16,346	14.80%	7,111	14.90%	7,932	12.93%
45-49	19,942	18.06%	6,589	13.81%	7,047	11.49%
50-54	18,585	16.83%	5,446	11.41%	6,290	10.26%
55-59	13,175	11.93%	3,546	7.43%	4,834	7.88%
60-64	8,598	7.79%	1,681	3.52%	3,025	4.93%
65-69	4,974	4.50%	748	1.57%	1,036	1.69%
>69	2,902	2.63%	282	0.59%	298	0.49%
<b>TOTAL</b>	<b>110,442</b>	<b>100.00%</b>	<b>47,717</b>	<b>100.00%</b>	<b>61,322</b>	<b>100.00%</b>
Total above 50 years	48,234	43.67%	11,703	24.53%	15,483	25.25%

Source: Adapted from SANC 2010

Note: These percentages are calculated from all nurses who reported their ages. 857 RNs, 361 ENs and 1,118 ENAs of the original sample did not report their ages.

more and better qualified nurses in the public sector. This should be borne in mind when decisions that might influence outcomes around the architecture of reforms and proposed delivery structures are debated – as was pointed out in section 3.1.

retirement rate for nurses. We assume the same relative percentages of RNs, ENs and ENAs apply to the actively working nurses as to those registered. Accordingly, a total of 65,143 nurses (out of the 189,718 active nurses, i.e. 34.3%) are

older than 50 in 2010. Similar to the assumption made for doctors in Health Reform Note 8, we assume that all nurses presently above the age of 50 will retire within the next 15 years. For simplicity sake, we assume a constant rate of re-

## Retirement

By using the percentage of all registered nurses that are above 50 in each category (according to the last row in Table 9) to calculate the number of actively working nurses older than 50, one can determine the implied

Table 10: Age distribution of nurses working in the public sector, 2010

	% of all nurses	% younger than 30	% between 30 & 50	% older than 50
RNs	48.0%	8.7%	60.5%	30.7%
ENs	21.7%	15.9%	62.9%	21.2%
ENAs	30.3%	17.5%	59.9%	22.6%
<b>All nurses</b>	<b>100.0%</b>	<b>13.0%</b>	<b>60.8%</b>	<b>26.2%</b>

Source: Econex calculations from PERSAL 2010



tirement and therefore divide the number of nurses above 50 by 15 to determine how many would retire each year. Hence, one can assume that 4,343 nurses retire each year.

### Emigration

As mentioned above, there is much research on the emigration of nurses from SA, but it is very difficult to quantify the extent of the problem. This was confirmed in the HSRC study too: "There are no definitive statistics on South African nurse migration, and for this reason we [the authors] have drawn on a number of different sources in an attempt to quantify trends, including World Health Report figures on OECD countries, official statistics collected by Stats SA and SANC, as well as figures contained in international articles on migration."<sup>34</sup> Cau-

tious not to duplicate research already done, we briefly list the available figures here and shortly discuss some of the limitations to the various sources.

According to the World Health Report 2006 there were 13,496 South African nurses and midwives working in seven OECD countries in 2004.<sup>35</sup> That represents 7.3% of all nurses registered with the SANC in that year. This is clearly a gross under-estimation since it only represents data from seven countries. A further problem with that figure is that it only represents South African nurses actively working as nurses in those countries. It is conceivable that some nurses who have emigrated, and are keeping up their registration with the SANC, are not working as nurses in the countries they moved to.

Similarly there are many pitfalls to official emigration statistics from Stats SA. It is widely recognised that people rarely indicate that they are emigrating, nor is the completion of exit forms always enforced. The statistics also capture only those people leaving from the major South African ports of entry/exit and thus severely undercount the actual numbers of people emigration from SA. For example, according to the official Stats SA data, only 745 nurses emigrated between 2000 and 2003, but in the UK alone more than 26,000 work permits were issued for South African nurses over the same period.<sup>36</sup>

Another source is the SANC statistics on the verification of nursing qualifications to other countries (available from their website). Before considering the

Table 11: SANC verifications of qualifications and transcripts, 2001-2008

	2001	2002	2003	2004	2005	2006	2008
SANC verifications	3,938	4,002	4,111	2,411	1,592	992	1,180
Number on register	172,338	172,869	177,721	184,459	191,269	196,914	212,806
Verifications as % of total registered	2.3%	2.3%	2.3%	1.3%	0.8%	0.5%	0.6%

### More Information

ECONEX regularly publishes Research Notes on various relevant issues in South African competition, trade and applied economics. For access to previous editions of Research Notes, or other research reports and published articles, go to: [www.econex.co.za](http://www.econex.co.za)  
If you want to add your name to our mailing list, please send an e-mail to [iris@econex.co.za](mailto:iris@econex.co.za)

34. See footnote 4. (p.44)

35. WHO, 2006. "World Health Report 2006: Working together for health," Geneva: WHO Press. Available at: <http://www.who.int/whr/2006/en/>. The seven countries are made up of Canada, Denmark, Finland, Ireland, Portugal, UK and USA.

36. See footnote 4

data in Table 11, it is important to note that the SANC states explicitly that the figures on verifications “indicate the number of persons who have requested that verifications of qualifications and/or transcripts of training be sent to the countries indicated only and NOTHING ELSE. It is specifically stated that nurses are not required to notify the Council if they do leave the country. The fact that a nurse has requested a verification be sent

does not necessarily mean that she/he has taken up the offer of a position in another country.”<sup>37</sup>

Clearly these figures also under-estimate the total number of South African nurses working abroad and as such the data cannot be used to estimate an annual emigration rate. Hence, we can conclude that aside from contradicting indications of the number of South African nurses actively working in the

handful of countries information is available for, it is not possible to accurately quantify the contribution of emigration to the attrition rate of nurses. However, it is important to note that it is usually the better trained nurses that SA loses most to emigration as RNs with their 4 year academic qualifications are listed as professionals abroad and therefore easily qualify for immigration permits in countries with shortages.

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37. Quoted from: <http://www.sanc.org.za/stats/stat2008/Verifications%202008.xls.htm>

## Appendix A: Vacancy Rates and Agency Staff in the Private Hospital Sector<sup>38</sup>

Many private hospitals elect not to staff their hospitals to cover the average expected bed occupancy. A certain number of positions are budgeted but deliberately not filled with permanently-appointed staff in order to improve efficiency and not have too many staff when hospital occupancy is low. In other words, the ebb and flow of occupancy can be better managed by employing nurses through the agencies as the need arises.

Since agency staff can make up a significant portion of the total staff on any given day, one would like to include these numbers with the total number of nurses working in the private hospital sector (i.e. there are substantially more than just the 25,392 nurses working in the private hospital sector). However, in most instances adding these nurses would lead to double counting as is evidenced by the following explanation.

Agency staff used in the private hospitals is generally made up of 3 categories:

1. Public and private sector nurses working extra shifts/ hours through the agencies in order to increase their income.

2. The students training in the specific private hospitals working additional hours once they have completed their training requirements.

3. Part-time nurses choosing to work through the agency rather than in full-time employment because of the flexibility this provides. Many of these nurses work at a single hospital and work as many hours as a full-time employee but decline permanent employment due to personal circumstances and choice. An added benefit for this group is that they are paid more frequently by the agencies.

As is clear, only the last category would be nurses not already counted as working for the public or private hospitals. These nurses would however have been included amongst those nurses actively working in the private sector, but not for the private hospitals specifically (i.e. among the 53,146). As such, including or excluding them from the number of nurses working for the private sector, would only affect the internal private sector distribution between those nurses working for the private hospitals and those working elsewhere in the

rest of the sector – it would not impact on the public / private split, nor the total number of nurses actively working in SA.

There is also an argument to be made that the agency staff in category 3 above should specifically not be included with those working for the private hospitals, since the hospitals have contracts with the agencies, and not the individual nurses. In other words, the hospitals do not directly employ these nurses themselves since they are employed by other private sector companies (the agencies) and this is a pure case of outsourcing specific services. This group often also work in both private and public sector hospitals.

Nevertheless, if one were to include all FTE nurses that worked in the private hospital sector on a temporary basis (i.e. as agency staff), the figures would look somewhat different. There would be a total of 32,617 nurses working in the private hospitals in 2010 – in addition to the permanently employed nurses, this figure includes only FTE positions filled by agency staff in January 2010 (the month for which the survey

38. We would like to thank Sharon Vasuthevan (Life Healthcare), Eileen Brannigan (Netcare) and Estelle Jordaan (Medi-Clinic) for valuable inputs to this section.

data was collected). It does not give an indication of all vacancies in the sector, but only those positions filled at that time.<sup>39</sup> Occupancy is generally lower during December and January, which would mean that this is a very conservative estimate of the total number of agency staff used on a regular basis. This issue around vacancy rates in the private hospitals of SA and the use of agency staff as part of situational management, is largely undocumented. With the short explanation above, we hope to contribute to this gap in the research and acknowledge that further work in this area is required.

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39. The estimate is based on data for agency staff used by the three large hospital groups which was extrapolated for the industry as a whole.

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