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## **Background Paper Series**



**Background Paper 2009:1(6)**

# **A Profile of the North West Province: Demographics, Poverty, Income, Inequality and Unemployment from 2000 till 2007**

*Elsenburg  
February 2009*

# PROVIDE

# PROJECT

The Provincial Decision-making Enabling Project

## **Overview**

The Provincial Decision-Making Enabling (PROVIDE) Project aims to facilitate policy design by supplying policymakers with provincial and national level quantitative policy information. The project entails the development of a series of databases (in the format of Social Accounting Matrices) for use in Computable General Equilibrium models.

The National and Provincial Departments of agriculture are the stakeholders of the PROVIDE Project.

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# A Profile of the North West Province: Demographics, Poverty, Income, Inequality and Unemployment from 2000 till 2007<sup>1</sup>

## Abstract

*The North West agricultural sector is a dynamic and livelihood sustainable sector. Approximately 2.6% of the North West value added gross domestic product comes through agriculture and 1.7% of the population in the North West is working in this sector. There is thus a need for macro-economic research in order to investigate potential and current challenges and opportunities to ensure growth in agricultural industries.*

*This paper examines several of these challenges namely demographic compositions, unemployment, income distribution, poverty and inequality. It will provide results from the Labour Force Surveys from 2000 until 2007 with a more in-depth look into 2007. Population and labour force statistics provide the foundation for further analysis. This paper indicates that unemployment is being dominated by the African individuals and that employment in the North West agricultural sector is on a decreasing trend. It shows further that income distribution is highly skewed which leads to high levels of poverty and inequality. Agricultural incomes are lowest across all races compared to non-agricultural incomes. Poverty is extremely high for African workers in the North West agricultural sector but has decreased since 2000. One of the principal concerns is that of inequality. It shows no improvement since 2000 with a high in-between race inequality and lower within race inequality in the North West agricultural sector.*

*Throughout the report the North West agricultural sector is compared to the non-agricultural sector, North West overall and South Africa for a better understanding of the North West agricultural sector's position. This report indicates that the North West agricultural sector could benefit from intervention and support to correct the present state of decreasing employment, low income, and high poverty and inequality levels.*

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## **1. Introduction**

The North West Province is home to about 3.9 million people. The Province is also known as the “Platinum Province” and it is centrally located on the subcontinent with direct road and rail links to all Southern African countries. Agriculture is of extreme importance to the North West. About 64 000 people (1.7% of North West population) are working in the agricultural sector (Statistics South Africa, 2007a) and it contributes about 2.6% through value added for the economy in 2006 (Statistics South Africa, 2007b). Thorough research analysis is thus needed to identify gaps for the sector to improve.

This paper investigates the North West Province agricultural sector by analysing the Labour Force Surveys conducted by Statistics South Africa. These surveys are conducted biannually, and since 2000 done in March and September. The focus of this paper is to analyse trends through years 2000 till 2007 and to take a closer look at the 2007 data. Like all datasets, the Labour Force Surveys have some restrictions, and these are discussed in the next section together with the measurement issues confronted throughout the study.

Section 3 examines the population statistics of South Africa and the North West Province, together with the labour force profiles for South Africa, North West and the North West agricultural sector. Unemployment then will be discussed as well as employment statistics of the North West agricultural sector. The premises of this section are demographic analyses. Section 4 analyses the income profiles of the agricultural sector. Poverty indices are next investigated, and the Foster-Greer-Thorbecke class of indices was used. This is explained in this section together with the results for the agricultural sector. Section 6 takes a closer look at inequality within the province by using the Gini, Theil and Lorenz curve analysis. Throughout the paper the results of the North West agricultural households are compared with North West and South Africa data. Lastly conclusions are drawn from the provided information.

## **2. Measurement and challenges of dataset**

### **2.1. Labour Force Survey**

The Labour Force Surveys are conducted by Statistics South Africa biannually (March and September). For this paper, two datasets were used. Both datasets were obtained from Mr. Derek Yu from the University of Stellenbosch. This was done to have consistency between the two datasets. The first dataset is the 2007 March Labour Force Survey and it was used for more in-depth analysis such as location of work activity or analysis on district level. The second dataset is a merged dataset of all the Labour Force Surveys from 2000 until 2007. This was used for over-time analysis. This dataset only includes the working population (15 – 65 years),

but does have the information regarding the rest of the household for household level analysis. Adjustments were also made with the consumer price index (CPI) of wages for individuals as well as households to have reliable comparisons across time. The CPI adjusted wages to the basis year of 2000.

## 2.2. Extent of data

Respondents had to answer six sections in the most recent survey. The first section asks demographic information, section two about activities the past seven days, section three unemployment and non-economic activities, section four the main work activities the past seven days, section five about job creation and public works programmes and the last section (six) about agricultural activities. The surveys did change with time, but no major change occurs, and the demographic and employment sections remained relatively unchanged. In the Labour Force Survey of March 2007 there are 109 551 observations, whilst the Labour Force Survey from 2000 until 2007 contains between 23 000 and 70 000 observations depending on the period (period refers to when the survey was done, i.e. March 2000 or September 2005).

Weights were calculated by Statistics South Africa, and were used throughout the analysis to scale data from sample to population level<sup>2</sup>. It needs to be mentioned that the Indian population is the minority in South Africa and thus data for this sub-group might be problematic due to low observation numbers. Measurement errors do occur, and thus the reader must be careful when quoting figures for the Indian population.

In a number of cases, respondents did not provide any answers to certain questions. One of these problematic questions are that of income where respondents are averse to give their personal income information. If no answer was given for income, it was classified as a dot income (“.”). The statistical programme used for economic analysis (STATA) does not consider dot incomes as entries, and thus will disregard it when calculating mean or median income. But calculating household incomes, dot incomes are read as zero, thus a household with 2 individuals, one earning R100 and the other one did not respond, will have a household earning of R100. This means all household and per capita calculations are distorted and biased towards zero income. Poverty and inequality calculations are affected the most, due to calculation surrounding the rates (see respective sections for calculations of different rates). Poverty and inequality rates for certain subgroups might be exaggerated due to non response. This is especially troublesome when non response occur just within a specific subgroup. If the non response is according to the population composition the rates will be inflated accordingly, but if it is a skew distribution, all rates are inflated but one group more than the other.

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<sup>2</sup> See Metadata in Labour Force Survey reports. Available online at [www.statssa.org.za](http://www.statssa.org.za)



These inflated rates are difficult to pinpoint, because non response is unpredictable. Non response can be any value, and there are different ways of dealing with this. One response is to regard all non response as zero, another is to use hot deck imputation methods. Schoier (2008) states that this method uses respondents that fully completed the questionnaire to match with respondents that have missing values, and then impute their values into the non response values. This preserves the distribution of item values and there are different methods to obtain the 'donor value'. One way is to filter through certain variables (example race, sex etc.) for both donor and receiver, and when these variables match the rest of the donor information will be imputed into the receiver's missing values.

For South Africa in 2007, 62.68% of respondents did not provide information regarding income. If a sub sample of all respondents that are living in a household under the poverty line is taken, 83% did not provide income information. This becomes problematic especially in cases where the sample size is very small as the case with the White and Indian population. If only 17% (100% - 83%) of income information for those living under the poverty line is available, a small sample size will have negative impacts on poverty. For example, in the North West province, there are 55 entries for White individuals living under the poverty line. On an average only 17% of that information is available, leaving only 9 entries. In reality, there are only 2 entries left which is too small to make any significant derivation. In the North West province, 3245 entries were made in the African population group living under the poverty line. In reality 88% did not respond, leaving 389 entries. Although 389 entries is still a small sample size, a better analysis can be done. This trend of low White and Indian samples continues throughout all provinces, where the African populations have a bigger sample size to do better analysis with.

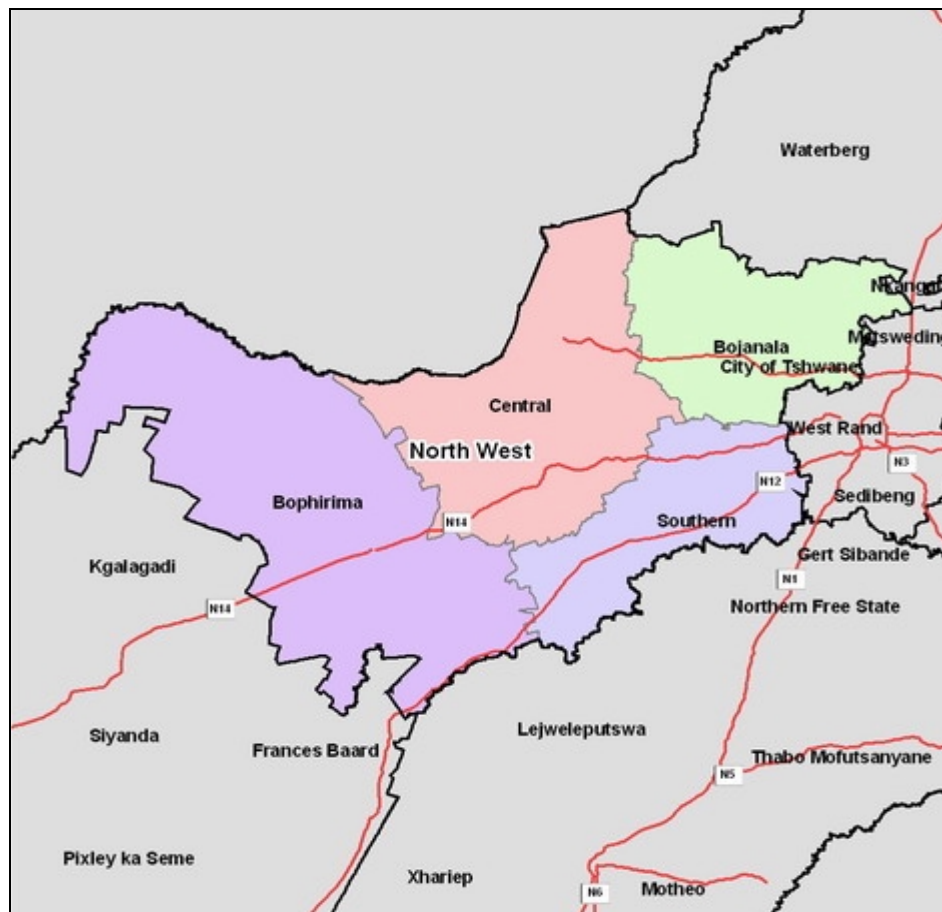
For the purpose of this paper, non-response was disregarded in income profiles, but treated as a zero in household income calculations. In the poverty profiles, per adult equivalent household income is used and thus missing values are also treated as zero.

This paper focuses on the North West agricultural households, but does compare certain statistics with the non-agricultural households in the North West and South Africa. South Africa is a diverse country and therefore social parameters i.e. income, poverty and unemployment are often compared across population groups. Population groups are classified according to the classification system used by Statistics South Africa in the Labour Force Surveys. Demographic analysis was also done according to gender, industry, occupation or skills level.

District level analysis was also done as mentioned earlier, and for clarity the following figure presents the North West Province and its districts. Data recorded in the Labour Force Survey for North West extend over eight district municipalities, of which four are the main districts and four are cross border districts. The four main districts within the province include Ngaka Modiri

Molema District (previously Central District), Dr Ruth Segomotsi Mompati District (previously Bophirima District), Dr Kenneth Kaunda District (previously Southern District) and Bojanala Platinum District. The two formal cross border districts are Kalahari Kgalagadi (with Northern Cape) and West Rand (with Gauteng), and there are also data recorded in the Labour Force Survey for North West for two additional municipalities, namely City of Tshwane (with Gauteng) and Frances Baard (with Northern Cape) Figure 1 reflects this:

**Figure 1: North West Province districts map**



Source: Demarcation Board ([www.demarcation.org.za](http://www.demarcation.org.za))

## 2.3. Challenges

### 2.3.1. *Definitions of agricultural households*

Agricultural households are defined as households whose main income (more than 50%) is derived from employment in the agricultural industry, or income from an occupation classified as a skilled agricultural worker, regardless the industry. In addition a household is also defined as an agricultural household if the household is involved in agricultural activities that entail the production of food crops and/or keeping of animals and that these activities provide the household with its main food source or income source. Households that rely on agricultural

activities for food supply or (non-salary) income are classified as subsistence farmers for purposes of this report. Information about subsistence farming was derived from the questions in section six of the Labour Force Survey where respondents were asked to indicate the aim of their involvement in agricultural activities as one of the following: a) as main source of food for the household, b) as main source of income/earning a living, c) as extra source of income, d) as extra source of food for the household, or e) as a leisure activity of hobby. Since there is no indication of the value of production by these households, households were classified as agricultural households if they selected either a) or b) in the questionnaire. Both datasets, i.e. the dataset for 2007 and the dataset for 2000 till 2007, contain information on employment in the agricultural industry, or income from an occupation classified as a skilled agricultural worker, regardless the industry. However information on subsistence farming as defined above, was only available in the dataset for 2007; hence workers involved in subsistence farming, but not employment in agriculture, are not included in the numbers presented in this report when looking at trends over the 2000 till 2007 period.

Non response with regard to income for individuals employed in the agricultural sector was treated as stated in section 2.1, and thus not regarded in the definition of agricultural households. Only the labour force was considered (thus individuals between 15 and 65) for analysis to gain information about employees, but all members of a household were included in household analysis.

### 2.3.2. *Income Bands*

Respondents were asked their respective incomes, and two different answers were accepted. Respondents could either state the specific value, or report it in income bands. These specific values and income bands were in Rand terms and either weekly, monthly or annual. It must be kept in mind that the earnings reported are from the main source of income (thus labour income), therefore social grants, remittances and in-kind transfers are not taken into account. In order to attain a value for the income bands, the interval regression method was used. This method consists of a generalised Tobit model where-after pseudo-maximum likelihood measures are estimated. The assumption is made that earnings follow a lognormal distribution. Interval-coded information is incorporated into the likelihood function to obtain the specific values for each income band. For more information, see Daniels and Rospabé (2005) and Von Fintel (2006).

### 3. Demographics

#### 3.1. Population statistics

In order to do social analysis, racial compositions are needed on national, provincial and district level for the population. The population will also be looked at in terms of households as defined in section 2.2.1. Table 1 offers the number of people residing in South Africa and North West by race, together with their shares of the population in 2007.

**Table 1: Racial composition of South Africa and North West Province in 2007**

Population Group	South Africa	Share	North West Province	Share
	Number	%	Number	%
<b>African</b>	37,887,594	79.42	3,511,713	90.66
<b>Coloured</b>	4,223,511	8.85	107,440	2.77
<b>Indian</b>	1,168,672	2.45	10,275	0.27
<b>White</b>	4,348,366	9.11	244,042	6.30
<b>Other</b>	8,764	0.17	0	0.00
<b>Total</b>	47,706,907	100	3,873,470	100

Source: Own calculation from Labour Force Survey 2007

It is shown that the African population group is the majority group in South Africa (79.42%) as well as in the North West (90.66 %). The total population of South Africa is 47.7 million, while the North West has 3.9 million residents.

Investigating the racial composition of the eight districts, covering the four main districts and the four cross border districts, the following information is obtained for 2007. Table 2 indicates that the Bojanala Platinum District Municipality have the largest share of people in the North West Province (37.57%), while the part of the City of Tshwane municipality that falls within the boundaries of North West hosts only 13.11% of the North West population.

**Table 2: Racial composition of North West districts in 2007**

District	Population Group				
	African	Coloured	Indian	White	Total
<b>Kalahari Kgalagadi</b>	141,127	2,176			143,303
<b>Share %</b>	4.89	3.89			3.84
<b>West Rand</b>	50,725	2,852		1,154	54,730
<b>Share %</b>	1.76	5.10		1.06	1.47

District	Population Group				
	African	Coloured	Indian	White	Total
Bojanala Platinum	1,307,110	3,138		91,292	1,401,541
Share %	45.25	5.61	0.00	83.74	37.57
Ngaka Modiri Molema	675,898	27,789	2,917	6,318	712,923
Share %	23.40	49.67	100.18	5.80	19.11
Dr Ruth Segomotsi Mompoti	408,204	17,253		11,458	436,915
Share %	14.13	30.84		10.51	11.71
Dr Kenneth Kaunda	429,322	46,892	7,358	133,821	617,393
Share (%)	14.86	83.82	252.66	122.75	16.55
Frances Baard	27,577				27,577
Share (%)	0.95	0.00			0.74
City of Tshwane	471,749	7,340			479,089
Share (%)	16.32	13.11			13.11
<b>Total</b>	<b>2,888,597</b>	<b>55,943</b>	<b>2,912</b>	<b>109,020</b>	<b>3,730,167</b>

Source: Own calculation from Labour Force Survey 2007

The racial composition of the agricultural and non-agricultural households (as defined in section 2.2.1) in North West Province in 2007 is given in Table 3. A household is defined in a specific population group according to the household head's race. The household head is classified as person number one that completes the questionnaire, thus it is not necessarily the household head that complete the questionnaire under the title 'person number one', but the assumption is made that the household head is more likely to complete the questionnaire first. Unfortunately mixed households are not acknowledged, and will be classified according to the household head's race.

**Table 3: Racial composition of agricultural households and non-agricultural households in the North West Province 2007**

Population Group	Agricultural		Non-agricultural		Total	
	Number	Share (%)	Number	Share (%)	Number	Share (%)
African	40,595	83.42	948,749	88.82	989,344	88.58
Coloured	703	1.44	26,498	2.48	27,201	2.44
White			2,529	0.24	2,529	0.23
Indian	7,364	15.13	90,428	8.47	97,792	8.76
<b>Total</b>	<b>48,662*</b>	<b>100</b>	<b>1,068,204</b>	<b>100</b>	<b>1,116,866</b>	<b>100.00</b>

Source: Own calculation from Labour Force Survey 2007

\*See Table 5 for detailed breakdown

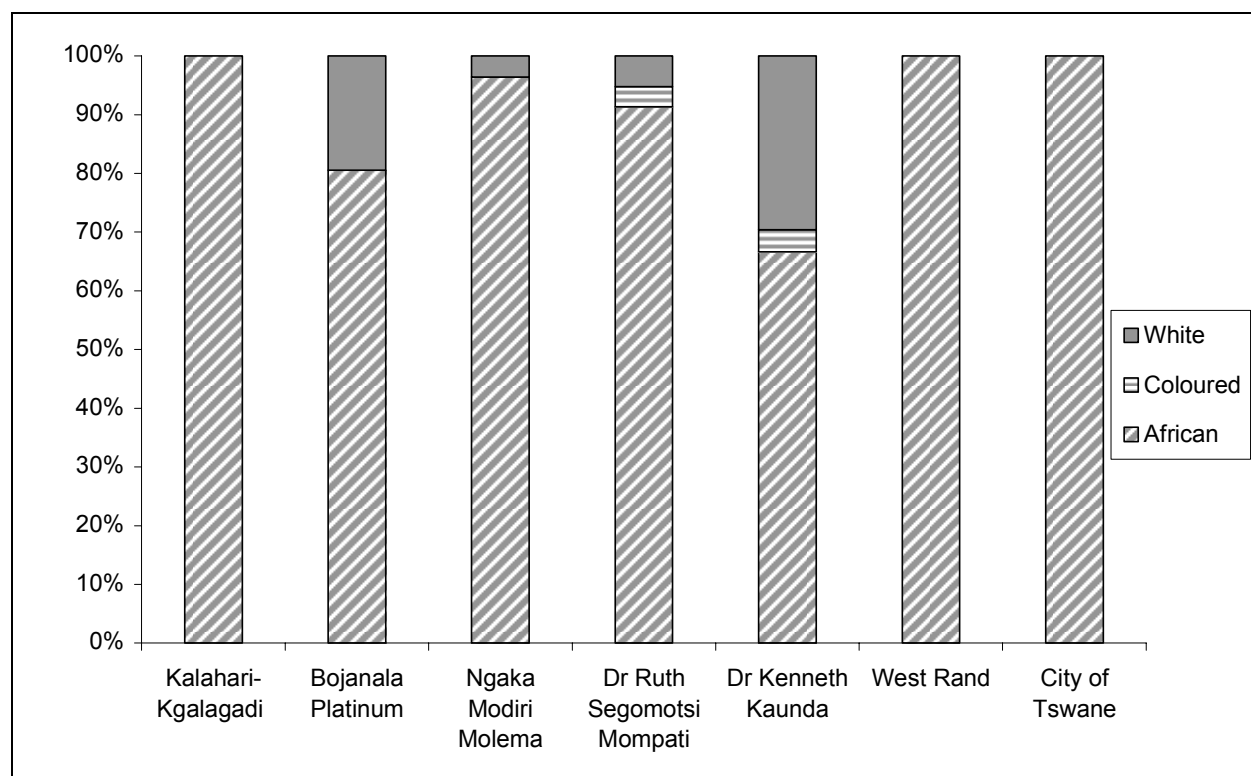
The agricultural sector is dominated by African households (83.42%), similar to the non-agriculture sector (88.82%). Taking a closer look at the racial composition of the agricultural households in the districts of North West, the following table is obtained:

**Table 4: Racial composition of agricultural households in the North West districts**

District	Population Group				
	African	Coloured	White	Total	Share (%)
Kalahari-Kgalagadi	1,397			1,397	2.87
Share (%)	3.44				
Bojanala Platinum	13,026		3,151	16,177	33.24
Share (%)	32.09		42.78		
Ngaka Modiri Molema	9,124		336	9,460	19.44
Share (%)	22.48		4.57		
Dr Ruth Segomotsi Mompoti	7,148	266	410	7,824	16.08
Share (%)	17.61	37.89	5.57		
Dr Kenneth Kaunda	7,799	437	3,467	11,703	24.05
Share (%)	19.21	62.11	47.08		
Frances Baard	115			115	0.24
Share (%)	0.28				
City of Tshwane	1,986			1,986	4.08
Share (%)	4.89				
<b>Total</b>	<b>40,595</b>	<b>703</b>	<b>7,364</b>	<b>48,662</b>	<b>100.00</b>

Source: Own calculation from Labour Force Survey 2007

Table 4 indicates that there are around 49 000 households with agricultural workers, with the Bojanala Platinum district having the biggest share and the Frances Baard the smallest share. Compiling a stacked column chart for comparing race compositions, the results are as follows:

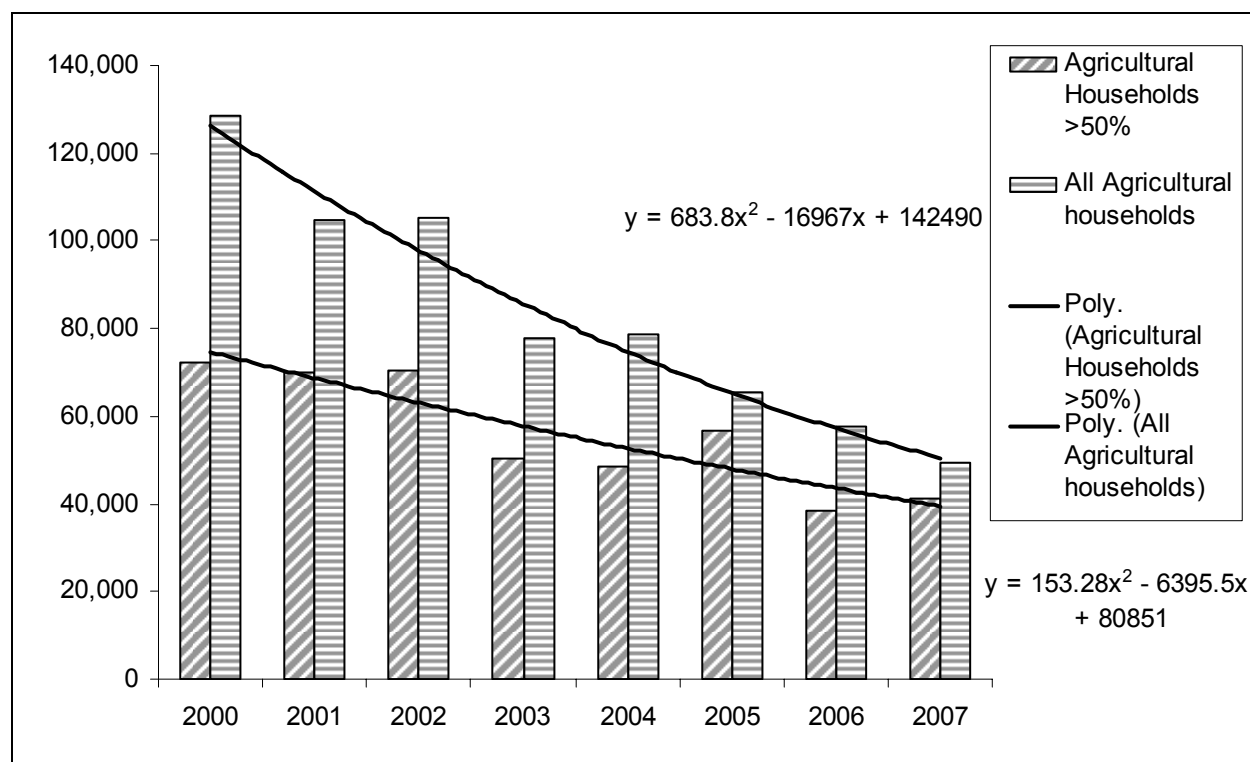
**Figure 2: Agricultural households in the North West districts**

Source: Own calculation from Labour Force Survey 2007

Figure 2 clearly indicates that across all districts, the African agricultural households dominate. In the Kalahari-Kgalagadi, West Rand and City of Tswane districts, no other households can be found than that of the African population. Only in the districts of Dr Ruth Segomotsi Mompoti and Dr Kenneth Kaunda, Coloured households are found.

Looking at the change in agricultural households since 2000, Figure 3 indicates the change in a) all households with a member / members working in agriculture and b) households whose agricultural income is more than 50% of household income. Both series show a decline, with all households ending at 49 608 households and the more than 50% income households ending at 41 044<sup>3</sup> households. It must be kept in mind that due to the dataset used for obtaining flow charts (thus over time), section 6 of Labour Force Survey questionnaire (subsistence farming) was not included. Households that therefore have access to agricultural land and this land is the main source of (non-salary) income and/or food, are not counted in Figure 3.

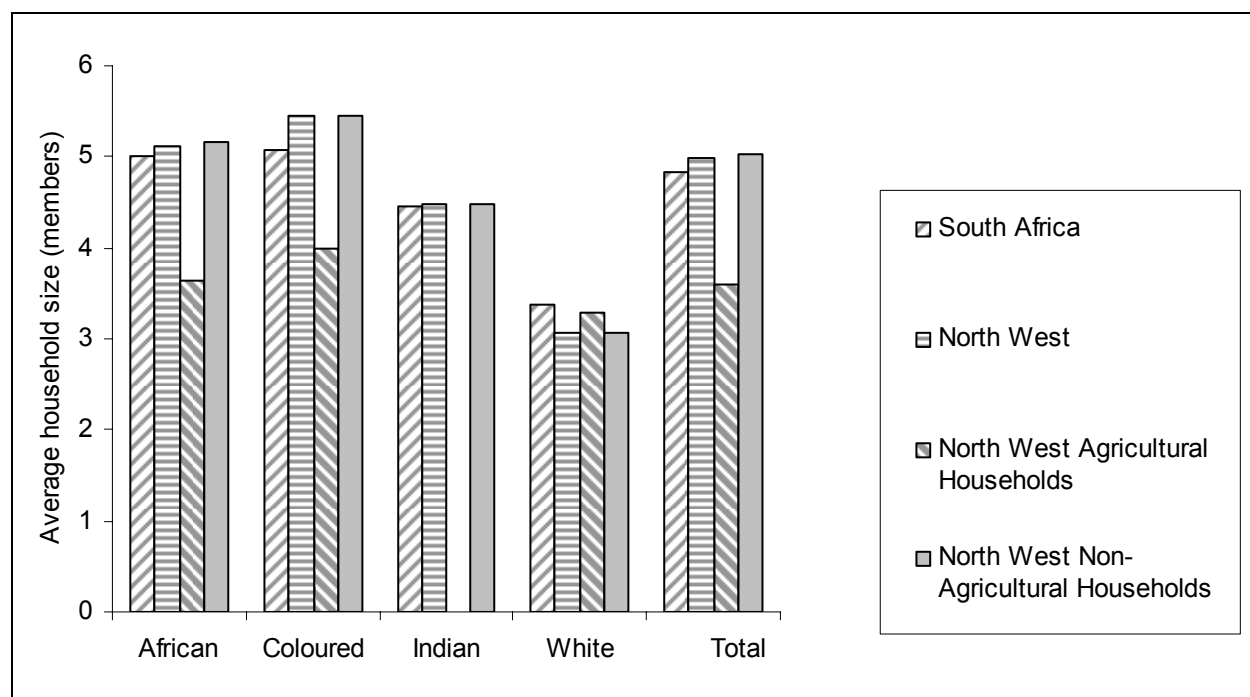
<sup>3</sup> Comparing this to Table 5, it corresponds to the total of the first two columns.

**Figure 3: Agricultural households over time**

Source: Own calculation from Labour Force Survey 2000-2007

The average household size by race is given in the next figure (Figure 4). It can be seen that the North West Province's households are in general bigger than South Africa's except for the White population. The size of non-agricultural households in North West drives the provincial average size across all races. The figure shows that there are no Indian agricultural households recorded for North West Province. With regards to the agricultural households, household size is considerably smaller (3.6) than the average in South Africa and North West (4.83 and 4.99).



**Figure 4: Household size by race for 2007**

Source: Own calculation from Labour Force Survey 2000-2007

Taking a look at how the household sizes increased or decreased through time for the agricultural households, the following figure (Figure 5) was obtained. Figure 5 indicates that in 2007 the Coloured population's household size is the biggest while the White population have the least number of people within the household. The total household size follows a similar path than that of the African populations' size. The Coloured household size varies over time but this might be explained through small sample size or due to measurement error.

**Figure 5: Household size from 2000 till 2007 for the agricultural households**

Source: Own calculation from Labour Force Survey 2000-2007

Economic activities within the agricultural households are investigated next to identify whether the households obtain their income and/or food from employment or subsistence farming. Table 5 indicates the number and share of agricultural households in North West that obtain more than 50% of their income from agricultural activities, or whose main food source is from agricultural activities. These households have indicated their main source of income from agriculture, i.e. a) from employment in the agricultural sector or by agricultural occupation (column 1), b) from subsistence farming only (as defined in section 2.2.1) (column 4), or c) from a combination of a) and b) (columns 2 and 3). The African households have the largest share (95.57%) of employment in the agricultural sector, and this is consistent with the employment numbers stated earlier. There are only 4,689 households in the North West that that depend solely on subsistence farming for main source of food (3 181 households) or non-salary income (1 508 households) and 78.1% are African households, the rest are Coloured and White households. 72.83% of agricultural households derive more than 50% of their household income from employment within the agricultural sector, while households involved with only subsistence farming, comprise 9.64%. There are 5 664 households that depend on subsistence agriculture, but they also receive salary income from employment in agriculture and this salary income is more than 50% of the household income. While 2 868 households depend on subsistence agriculture, but their salary income from employment in agriculture is less than 50% of the household income.

**Table 5: Economic activity for agricultural households by population group in 2007**

	Only Employment and Occupation and >50% income		Subsistence farming and >50% income		Subsistence farming and <50% income		Subsistence farming only		Total	
Population group	Number	Share	Number	Share	Number	Share	Number	Share	Number	Share
African	33,871	95.57	1,144	20.2	1,917	66.84	3,663	78.1	40,595	83.42
Coloured	266	0.75					437	9.31	703	1.44
White	1,303	3.68	4,520	79.8	951	33.16	590	12.59	7,364	15.13
Total	35,440	100	5,664	100	2,868	100	4,689	100	48,662	100
Activity Share	72.83		11.64		5.89		9.64		100	

Source: Own calculation from Labour Force Survey 2007

### 3.2. South African and North West labour force

Every citizen in a country can be classified as either economically active or economically inactive. If an individual is economically active, (s)he must be between the ages 15 and 65, and able and willing to work. (S)He is part of the labour force, whether employed or unemployed. The not economically active population is either not able or willing to work, or does not fall in the required age range. The labour force is divided between the employed and unemployed. In order to be classified as unemployed, there are two definitions, a broad (expanded) and narrow (official) definition. The broad definition states an individual is unemployed if (s)he: (a) did not work the past 7 days; (b) wants to work and is available to start within 2 weeks. The narrow (official) definition is the broad definition including (c) is actively searching for work the past 4 weeks (Statistics South Africa). The labour force can thus vary according to which definition of unemployment is used. Table 6 shows the number and share of people in 2007, according to the strict and broad definition in the labour force, for South Africa and North West respectively:

**Table 6: South African and North West labour force in 2007**

South Africa					North West			
	Broad		Strict		Broad		Strict	
	Number	Share	Number	Share	Number	Share	Number	Share
African	15,825,035	77.44	12,671,070	74.81	1,515,593	90.98	1,207,327	89.98
Coloured	1,977,240	9.68	1,746,798	10.31	50,649	3.04	36636	2.73
Indian	513,937	2.52	473,161	2.79	4,546	0.27	4546	0.34
White	2,117,799	10.3	2,047,715	12.09	95,108	5.71	93251	6.95
Total	20,434,011	100	16,938,744	100	1,665,896	100.00	1,341,760	100.00

Source: Own calculation from Labour Force Survey 2007

In 2007, there were 20.4 million (16.9 million) individuals in the South African labour force according to the broad (strict) definition. In North West there were 1.7 million (1.3 million), the largest share taken by the African population with 90.98% (89.98%). The largest contributor to the national labour force is the African population with 77.4% (74.81%). In both samples, the Indian population is the smallest (2.52% / 2.79% and 0.27% / 0.34% respectively).

### 3.3. Unemployment in South Africa and the North West

In explaining the labour force, unemployment was defined. The next table (Table 7) and figure (Figure 6) represent the unemployment data (in numbers and percentage respectively) for South Africa and North West by population group.

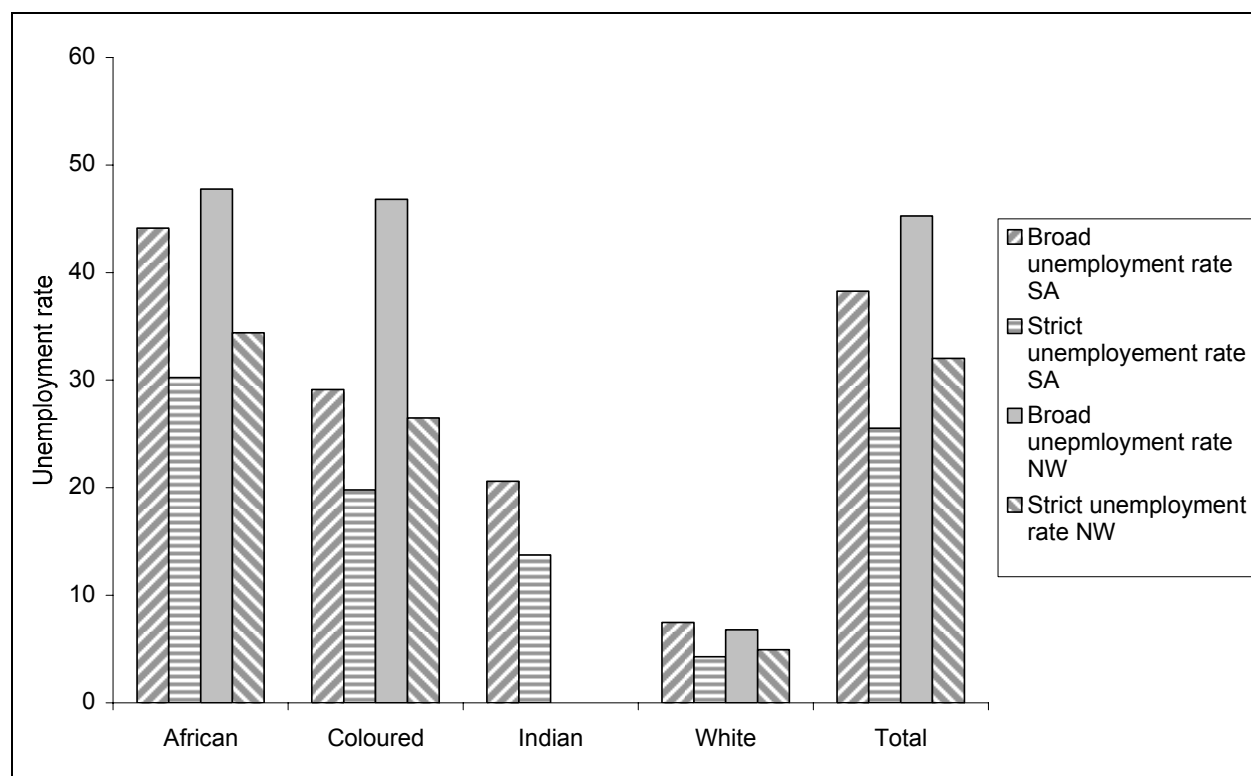
**Table 7: Unemployment numbers for South Africa and North West by population group in 2007**

	South Africa		North West	
	Broad	Strict	Broad	Strict
<b>African</b>	6,984,075	3,830,110	415,287	723,553
<b>Coloured</b>	576,177	345,735	9,695	23,708
<b>Indian</b>	105,855	65,079		
<b>White</b>	158,206	88,122	4,594	6,451
<b>Total</b>	7,830,004	4,330,958	429,576	753,712

Source: Own calculation from Labour Force Survey 2007

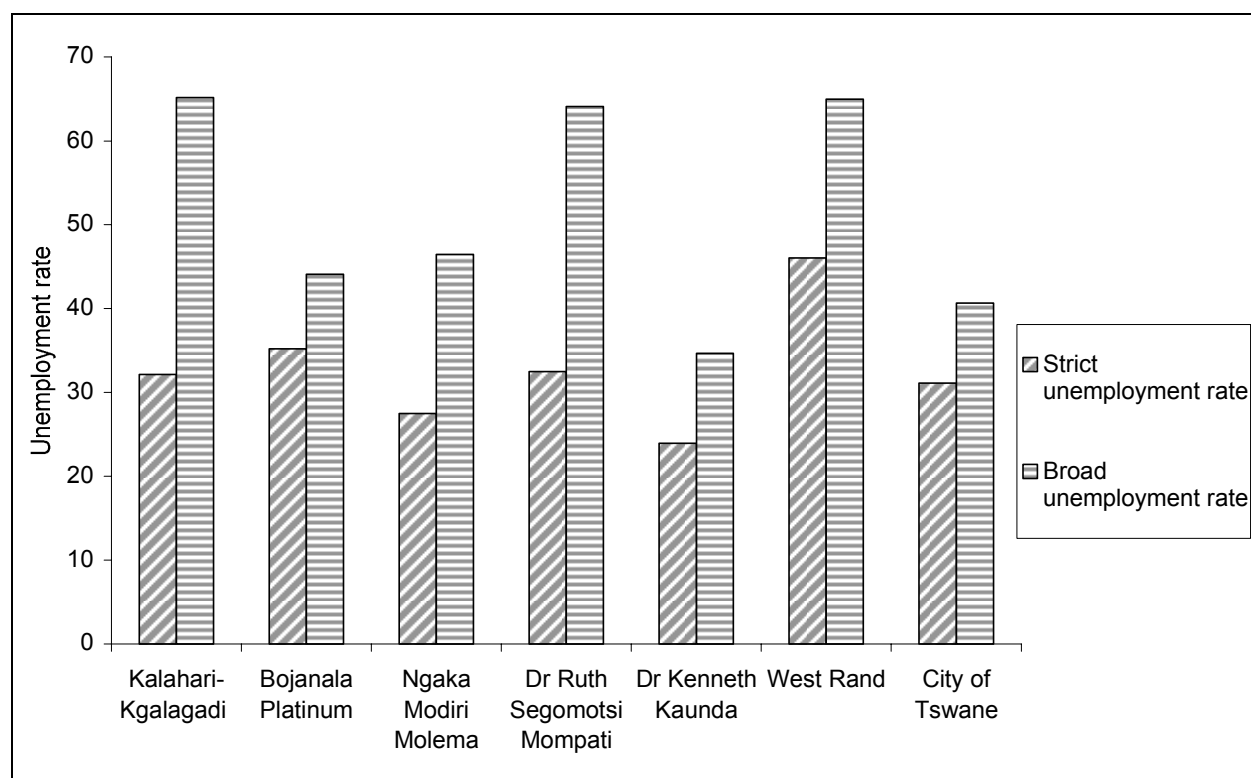
Table 7 indicates that the leading population group in terms of unemployment is the African population across all definitions and for both South Africa and North West. The smallest unemployed group is that of the Indian population followed by the White subgroup across all definitions and for both South Africa and North West.

There is a clear trend with Africans having the highest unemployment in South Africa and North West for both definitions (broad 44% and 47% respectively and for strict 30% and 34% respectively) (Figure 6). Africans and Coloureds in North West have a higher unemployment rate than in South Africa, whereas the Whites have a slightly lower broad rate. The White population in both South Africa (4.3% strict and 7.5% broad) and North West (4.92% strict and 6.78% broad) have significantly lower unemployment rates than the other population groups and the total. The total unemployment rate for the official (strict) definition for South Africa and North West respectively are 25.53% and 32.02%.

**Figure 6: Unemployment rates for South Africa and North West by population group**

Source: Own calculationn from Labour Force Survey 2007

Taking a closer look at North West, the following information regarding district level was obtained. In Figure 7, the cross border district of Kalahari-Kgalagadi has the highest broad unemployment level (65.17%) and the West Rand the highest strict unemployment rate (46.03%). The lowest unemployment levels are in the Dr Kenneth Kaunda district (23.97% and 34.66%).

**Figure 7: Unemployment rates for districts in the North West**

Source: Own calculation from Labour Force Survey 2007

### 3.4. Work-force and Employment in North West agriculture

A work-force is defined as all individuals that are able to work, of working age and employed according to various dictionaries ([www.thefreedictionary.com](http://www.thefreedictionary.com) ; [www.patana.ac.th](http://www.patana.ac.th) ; [www.allwords.com](http://www.allwords.com)), although Wikipedia ([www.wikipedia.org](http://www.wikipedia.org)) excludes the management and only refer to manual labour. For the purpose of this report, the full definition (including management) will be used to avoid making sample sizes too small by excluding management data.

The agricultural work-force, thus those between 15 and 65, and as previously mentioned in the agricultural industry or occupation, is listed for both South Africa and North West for 2007 in the subsequent table:

**Table 8: South African and North West agricultural work-force**

South Africa			North West	
	Number	Share (%)	Number	Share (%)
<b>African</b>	741,228	75.82	54,803	85.78
<b>Coloured</b>	143,172	14.65	266	0.42
<b>Indian</b>	5,458	0.56		
<b>White</b>	87,728	8.97	8,821	13.81
<b>Total</b>	977,586	100	63,890	100.00

Source: Own calculation from Labour Force Survey 2007

As can be seen in Table 8, the African population dominates the South African agricultural work-force (75.82%) as well as the agricultural work-force in North West (85.78%). There are no Indians recorded in the North West agriculture work-force and only 0.56% nationally. The White population's share in South Africa is 8.97% and in North West it is 13.81%. Decomposing the agricultural work-force of North West to a district level by gender, the following is obtained:

**Table 9: Agricultural work-force of the North West districts by gender in 2007**

	Male		Female		Total	
	Number	Share (%)	Number	Share (%)	Number	Share (%)
<b>Kalahari-Kgalagadi</b>	1,324	39.49	2,028	60.51	3,352	100
<b>Bojanala Platinum</b>	13,678	64.56	7,509	35.44	21,187	100
<b>Ngaka Modiri Molema</b>	8,820	69.07	3,949	30.93	12,769	100
<b>Dr Ruth Segomotsi Mompoti</b>	8,516	93.90	553	6.10	9,069	100
<b>Dr Kenneth Kaunda</b>	13,980	87.59	1,981	12.41	15,961	100
<b>West Rand</b>	115	40.03	173	59.97	288	100
<b>City of Tswane</b>	1,352	100.00	0	0.00	1,352	100
<b>Total</b>	47,785	74.69	16,193	25.31	63,978	100

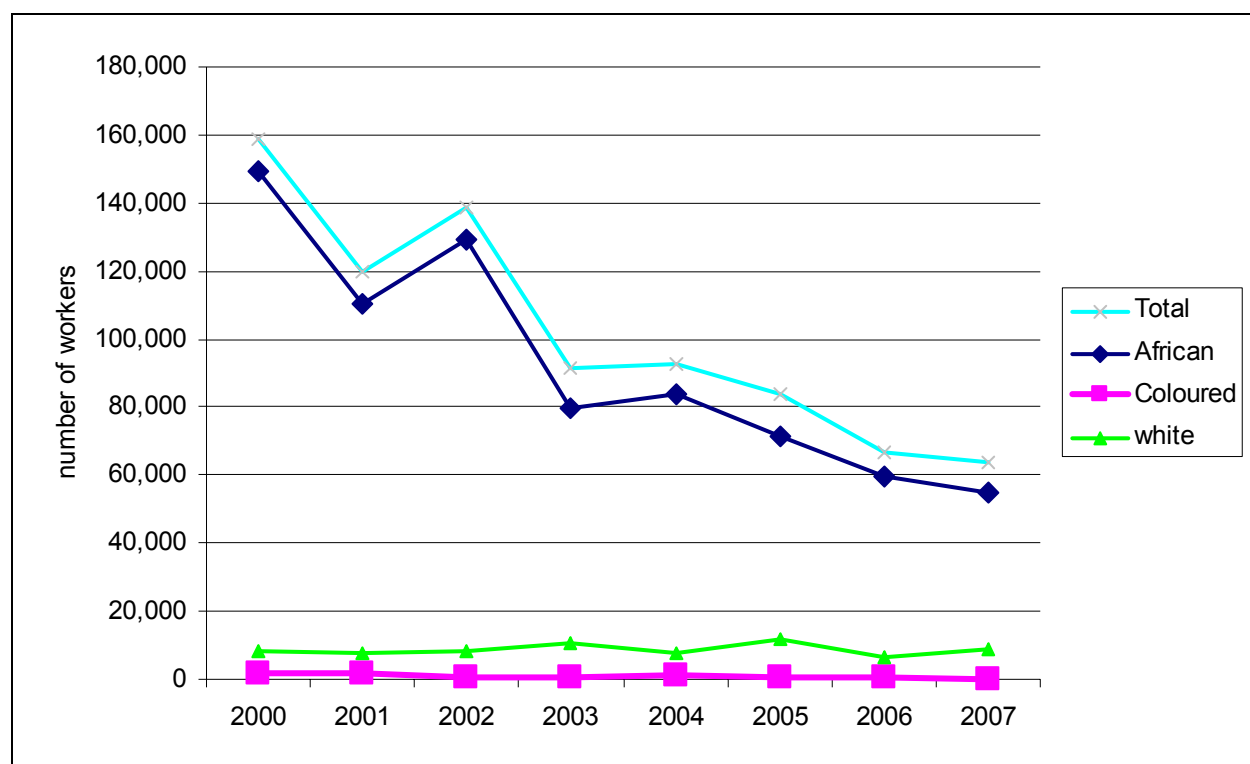
Source: Own calculation from Labour Force Survey 2007

Table 9 illustrates that the majority of the agricultural work-force in North West is male (74.69%). There exist great differences in composition across the districts, with the most unequal distribution in the four main districts in the Dr Ruth Segomotsi Mompoti district (93.9% male) and Dr Kenneth Kaunda districts (87.59%). In the small cross border district of City of Tswane men comprise 100% of the work-force. The Bojanala Platinum district have the most workers (21 187 workers) and West Rand cross border district the least (288 workers).

### 3.4.1. Employment over time

Employment for the agricultural sector has been in the limelight the past few years due to reports stating the steady decline within the sector. According to Statistics South Africa the definition of an agriculture worker is if (s)he claims that the main industry that (s)he works in is that of Agriculture, Fishery and Hunting, or if the main occupation, as classified by Statistics South Africa, is a skilled agricultural worker, regardless the industry. With regard to the industry Agriculture, Fishery and Hunting, only the work-force in the agricultural industry were used in this report. The following figure was obtained from the data:

**Figure 8: Agricultural employment figures from 2000 to 2007**



Source: Own calculation from Labour Force Survey 2000-2007

It can be observed in Figure 8 that there is definitively a decreasing trend in total employment. The African workers leaving the sector are mostly responsible for this occurrence as their trend follows a similar path as the trend for total employment. African employment decreased significantly over time, from 149,144 to 54,803 workers while White employment increased slightly from 7,982 to 8,821 workers. Further analysis needs to be done in order to investigate the reasons behind this declining trend.

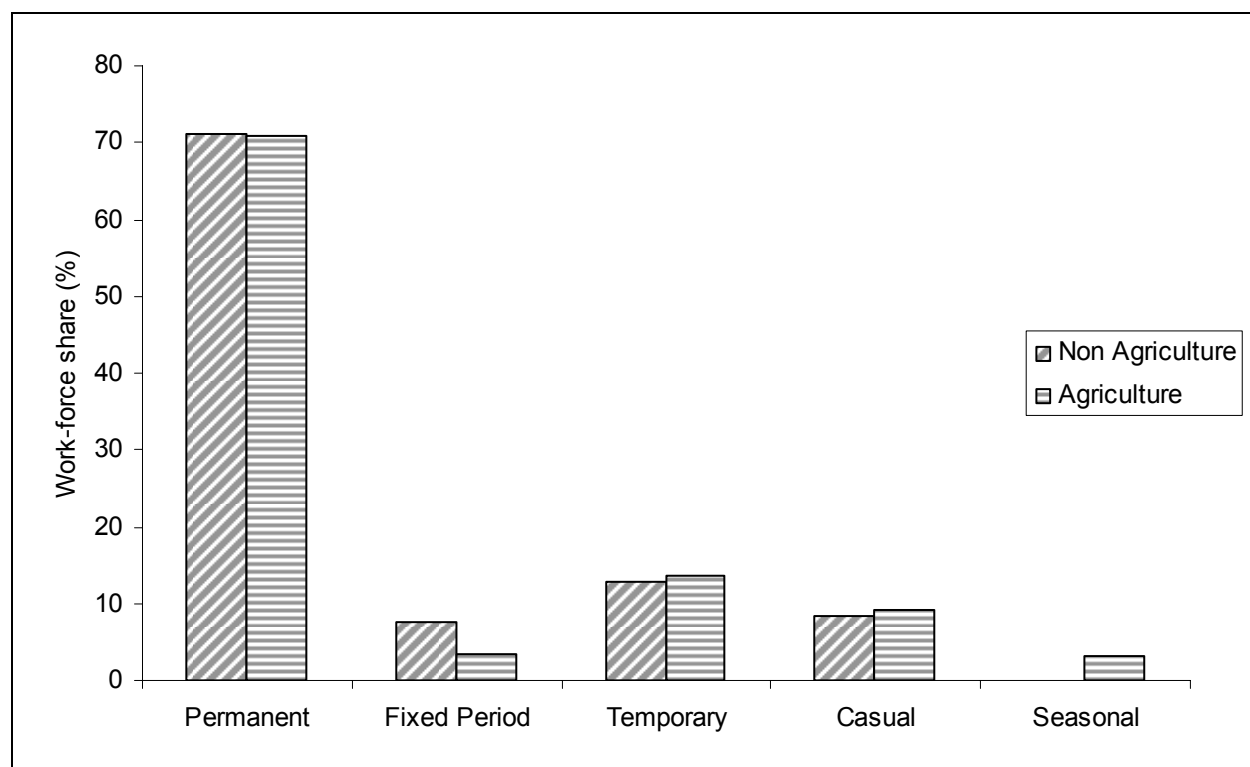
### 3.4.2. Employment status

The Labour Force Survey asks various work-related questions to employed respondents, one being that of the terms of employment. Respondents had to classify whether their job was



permanent, a fixed period contract, temporary, casual or seasonal. The following results in Figure 9 were obtained for 2007 while Figure 10 indicates the period 2000-2007:

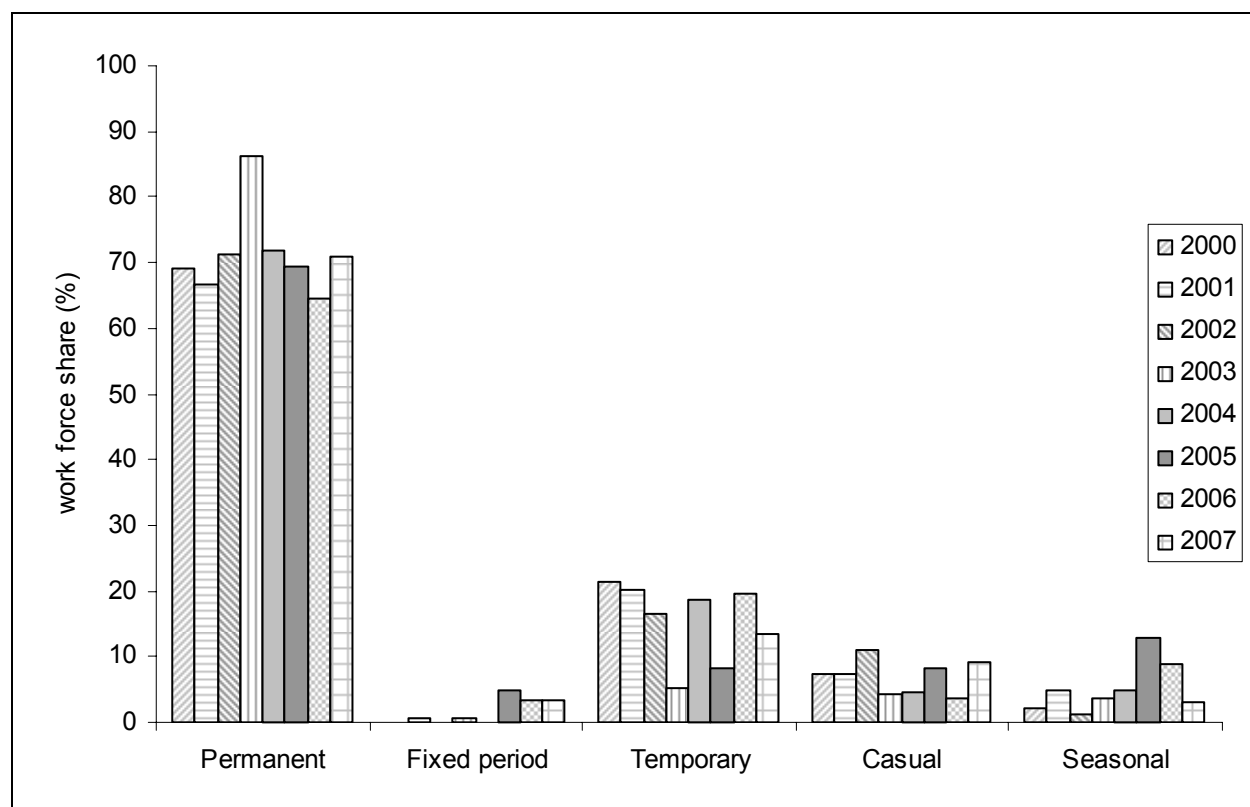
**Figure 9: Work status for North West work-force in 2007**



Source: Own calculation from Labour Force Survey 2007

The agricultural work-force has predominantly a permanent work-force, but a high temporary work-force is also visible. This seasonal element is clearly unique within the agricultural work-force, as the non-agricultural work-force has no seasonal employees. The fixed period contract workers in the agricultural work-force are the minority, while the casual workers are in line with the rest of the industries.

Figure 10 presents the work status data from 2000 till 2007 for the agricultural work-force:

**Figure 10: Work status over time**

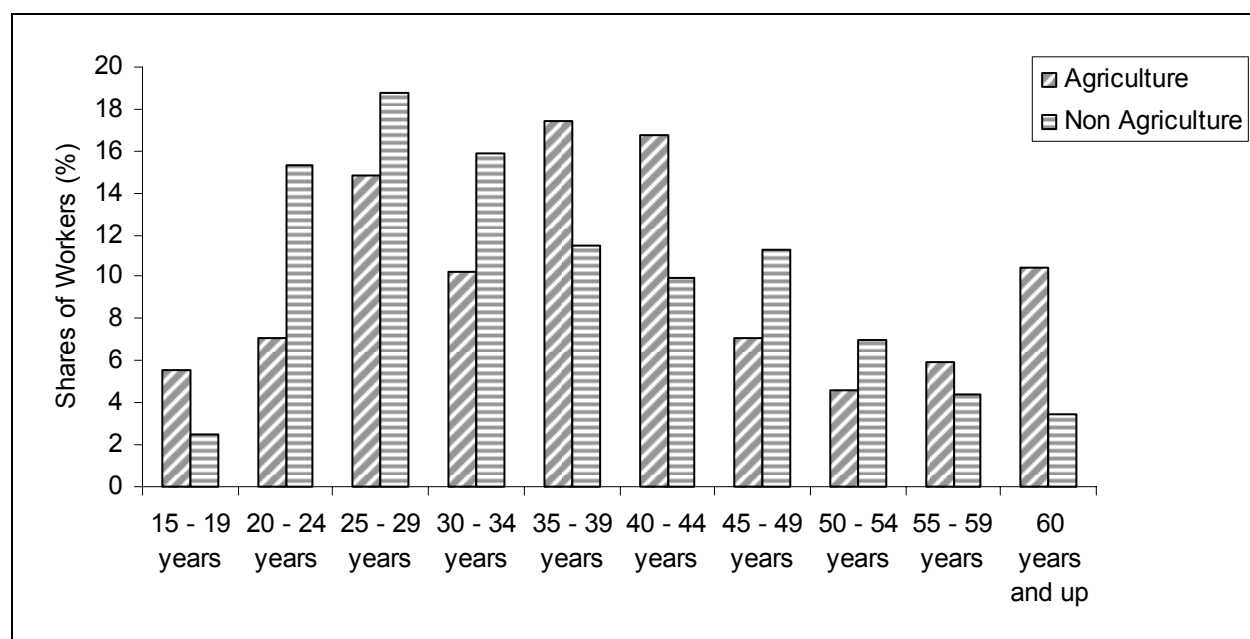
Source: Own calculation from Labour Force Survey 2000-2007

This figure indicates that the share of agricultural work-force in North West that is classified as permanent labour has remained fairly constant, except for 2006, which might be an inconsistency in the data. The share of fixed period employees is still small, but only became notable since 2005. There is a decline in the share of temporary employment, while the share of casual employment was higher in 2007 than in 2000. The share of seasonal employment peaked in 2005.

### 3.5. Characteristics of the North West agricultural work-force

#### 3.5.1. *Age structure*

Comparing the agricultural work-force with the non-agricultural work-force (thus those in other industries), Figure 11 was obtained.

**Figure 11: Age structure of agricultural and non-agricultural work-force in North West Province**

Source: Own calculation from Labour Force Survey 2007

A different pattern can be observed between the two work-forces, with the non-agricultural work-force showing an increase in the share as age increases until ages 25-29 where after the shares decline, while the share for agricultural work-force peaks around ages 35 to 40. The agricultural sector is characterised by proportionately more aged workers (60 years and above) than the non-agricultural sector (10.47% compared to 3.45%).

### 3.5.2. Location and occupation

The agricultural workers also indicated where the location is of their work. As expected, the majority (85.45%) work on a farm. The second most common place where agricultural activities take place is inside a formal business (8.18%). Table 10 presents the full results.

**Table 10: Location of North West agricultural work-force**

	Number	Share %
In the owner's home/On the owner's farm	54,666	85.45
In someone else's home / Private household	1,522	2.38
Inside a formal business premises such as factory or shop	5,233	8.18
At a service outlet such as a shop, school, post office etc.	1,432	2.24
On a footpath, street, street corner, open space or field	905	1.42
No fixed location	220	0.34
<b>Total</b>	<b>63,978</b>	<b>100</b>

Source: Own calculation from Labour Force Survey 2007

The occupation of agricultural workers, as classified by Statistics South Africa, is expressed in Table 11. As can be seen through Table 11, the elementary occupation dominates (62.57%), while service workers and shop and sales workers and clerks are the minority (0.38%). It can be seen that 23.27% of workers in the agricultural sector in the North West are classified as skilled agricultural workers.

**Table 11: Occupation of North West agricultural work-force**

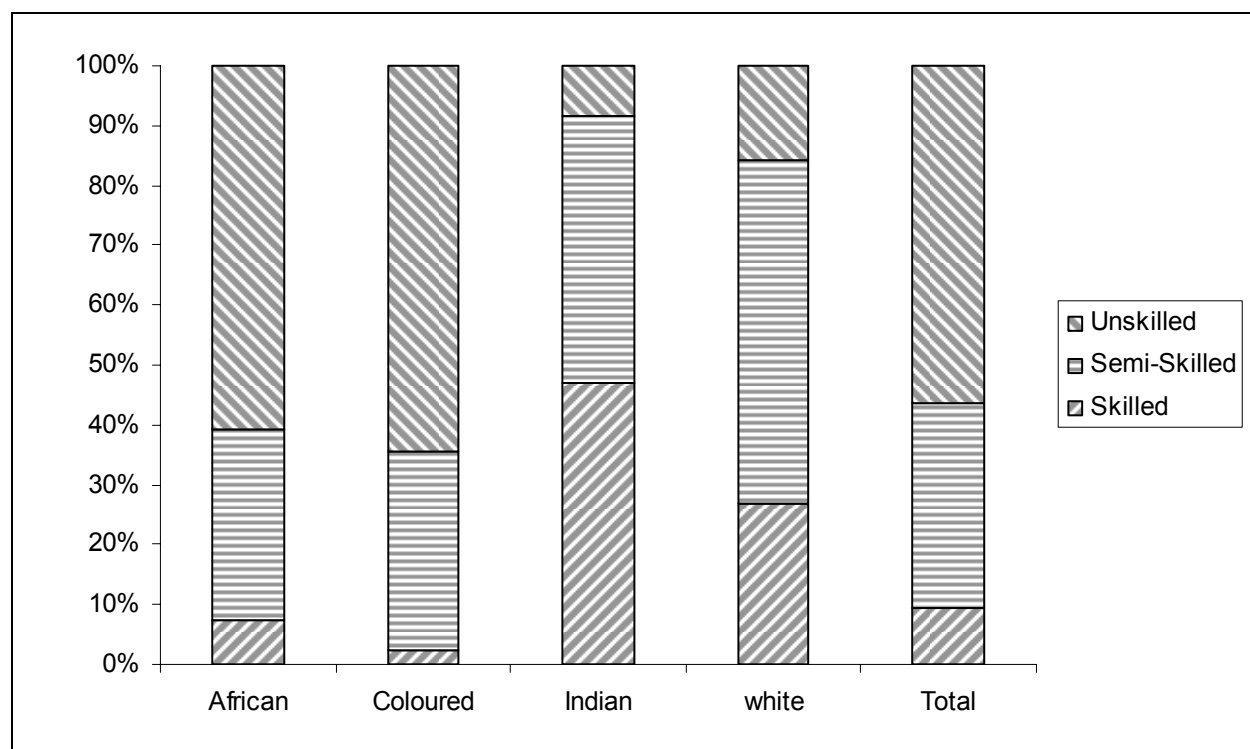
	Number	Share %
<b>Legislators, senior officials and managers</b>	772	1.21
<b>Professionals</b>	696	1.09
<b>Technicians and associate professionals</b>	451	0.71
<b>Clerks</b>	243	0.38
<b>Service workers and shop and market sales workers</b>	243	0.38
<b>Skilled agricultural and fishery workers</b>	14,869	23.27
<b>Craft and related trade workers</b>	522	0.82
<b>Plant and machinery operators and assemblers</b>	6,361	9.96
<b>Elementary occupations</b>	39,976	62.57
<b>Total</b>	63,890	100.00

Source: Own calculation from Labour Force Survey 2007

### 3.5.3. Skills level

The occupation of workers is an indicator of the skills level of the individual. Workers working in a legislative, senior official, manager or professional occupation are classified as skilled workers by Statistics South Africa. Semi-skilled workers are technical and associated professionals, clerks, and service and sales workers. The rest, skilled agricultural and fishery workers, craft workers, plant and machine operators and assemblers, elementary occupation and domestic workers, are classified as unskilled labour.

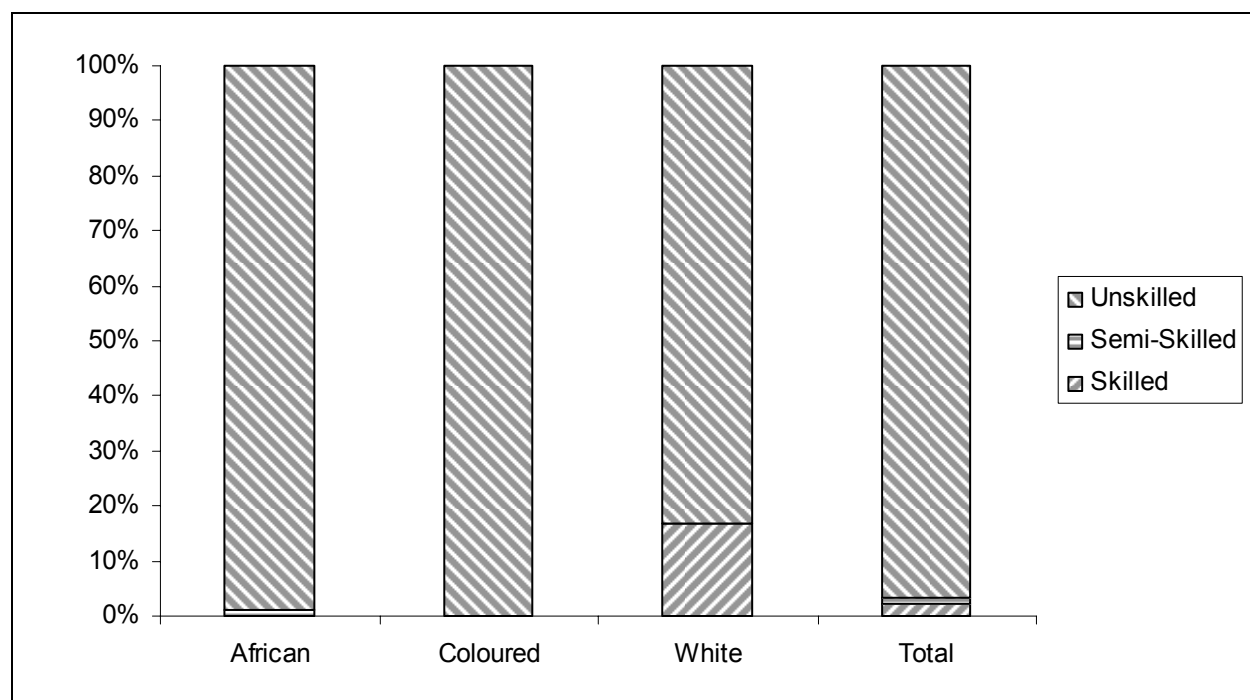
The subsequent figures were obtained for the skills level in 2007 of every population group in the non-agricultural sector:

**Figure 12: Skills level of the North West non-agricultural work-force in 2007**

Source: Own calculation from Labour Force Survey 2007

Figure 12 represents the skills level for every population group for the non-agricultural sector in 2007. There is clear distinction between African and White workers, with the majority (84%) of White workers being skilled or semiskilled workers and the minority (39%) of the African workers being skilled or semiskilled workers. Looking at the skill levels of agricultural workers in Figure 13, the same trend can be observed. None of the African workers are skilled, while 16.64% of White agricultural workers are skilled. The whole sector is also more dominated by unskilled labour, compared to the non-agricultural sector.

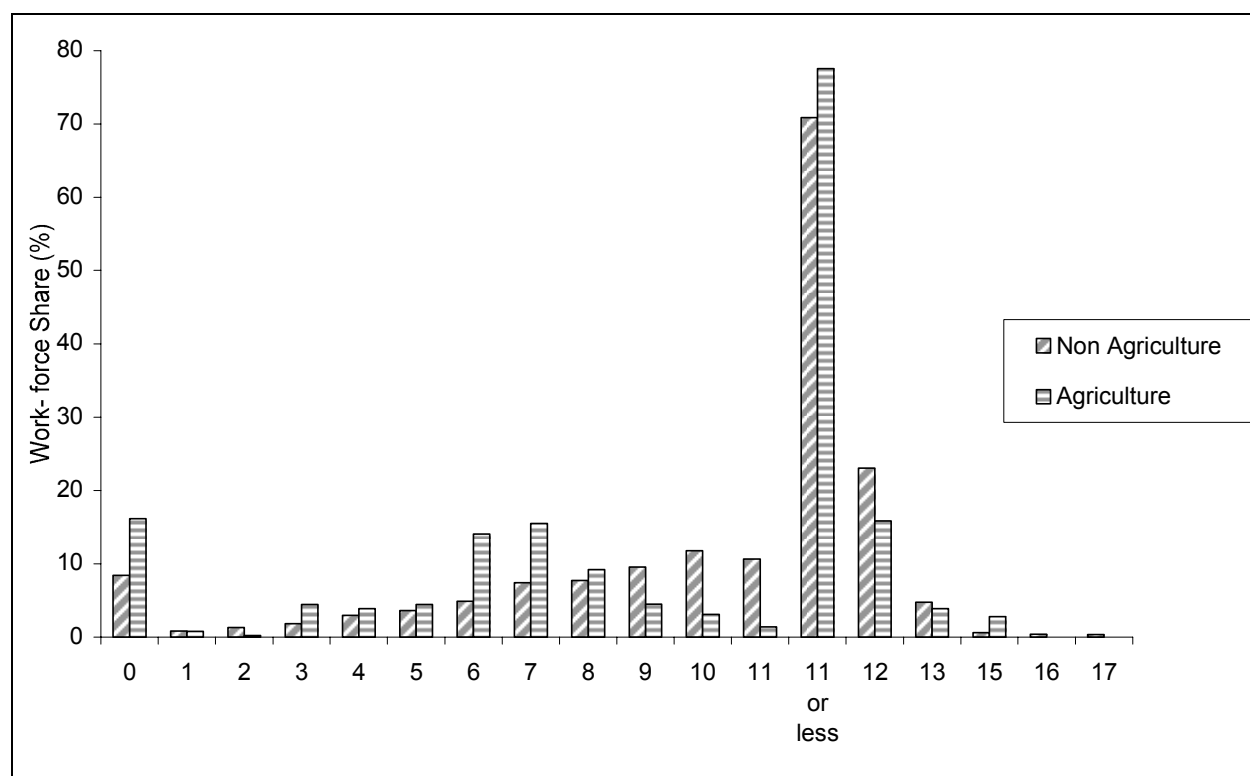
**Figure 13: Skills level of the North West agricultural work-force**



Source: Own calculation from Labour Force Survey 2007

Examining the education level of agricultural workers and non-agricultural workers, the following bar graph (Figure 14) contains the information:

**Figure 14: Highest education received for agricultural and non-agricultural workers**

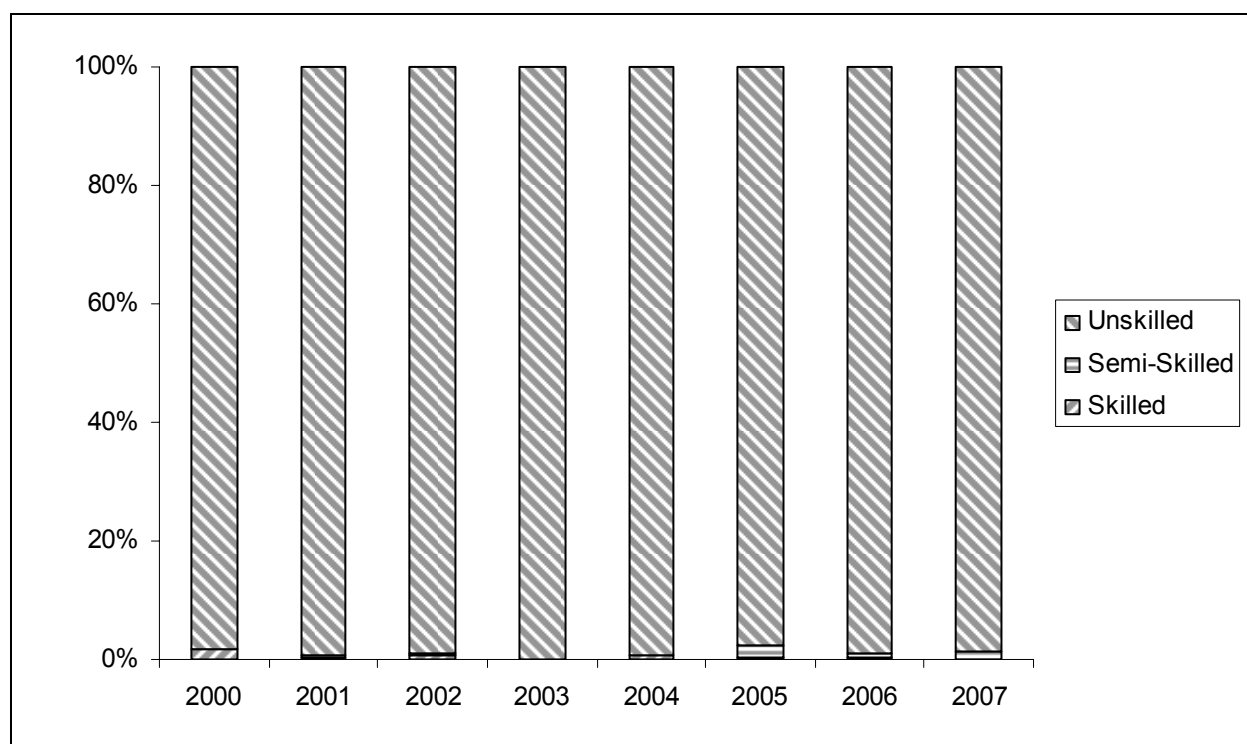


Source: Own calculation from Labour Force Survey 2007

The graph clearly shows that the majority of agricultural workers do not have a matric qualification (77.54%), although some received high school education. Only a small proportion of the agricultural work-force received 12 or more years of education (22.46%). The non-agricultural work-force has a higher share of matriculant workers (23.05%) compared to the agricultural work-force (15.83%), and they have a lower share (8.44%) who has not received any education compared to 16.14 % of the agricultural work-force.

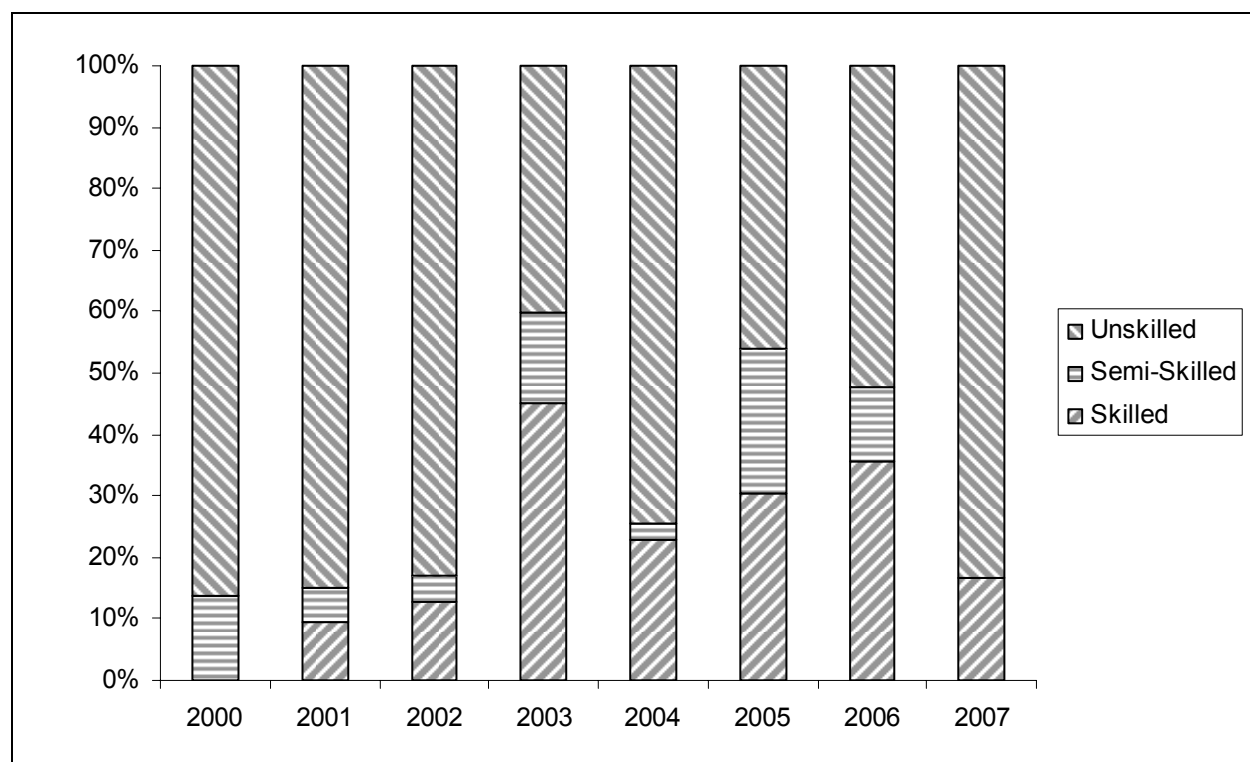
Looking at the skills level trend through years 2000 till 2007, the subsequent figures illustrate each population group's skills:

**Figure 15: Skills level for Africans in the agricultural work-force**



Source: Own calculation from Labour Force Survey 2000-2007

The skills level of the African population group did not change notably from 2000 (Figure 15). The majority of workers are unskilled, without any increase in the other two levels. This is a major source of concern, indicating that the African agricultural workers remain unskilled.

**Figure 16: Skills level of the White agricultural work-force**

Source: Own calculation from Labour Force Survey 2000-2007

In Figure 16 the White work-force has a dramatically different composition of skills than the African population group. It differs from year to year, but the share of skilled workers increased with time (0% to 16.64%), while the unskilled declined slightly (86.37% to 83.36%).

There is a definite skills gap between race groups in the North West agricultural sector, with the Whites as the only notable skilled group. According to the National Scarce Skills list of 2007 (Department of Labour), farm managers are rated as one of the most scarce skills in South Africa, while agricultural technicians, plant operators, crop farm workers and livestock farm workers also appear on the list. This indicates that there is definitely a need for skilled agricultural workers.

#### 4. Income

##### 4.1. South Africa and North West

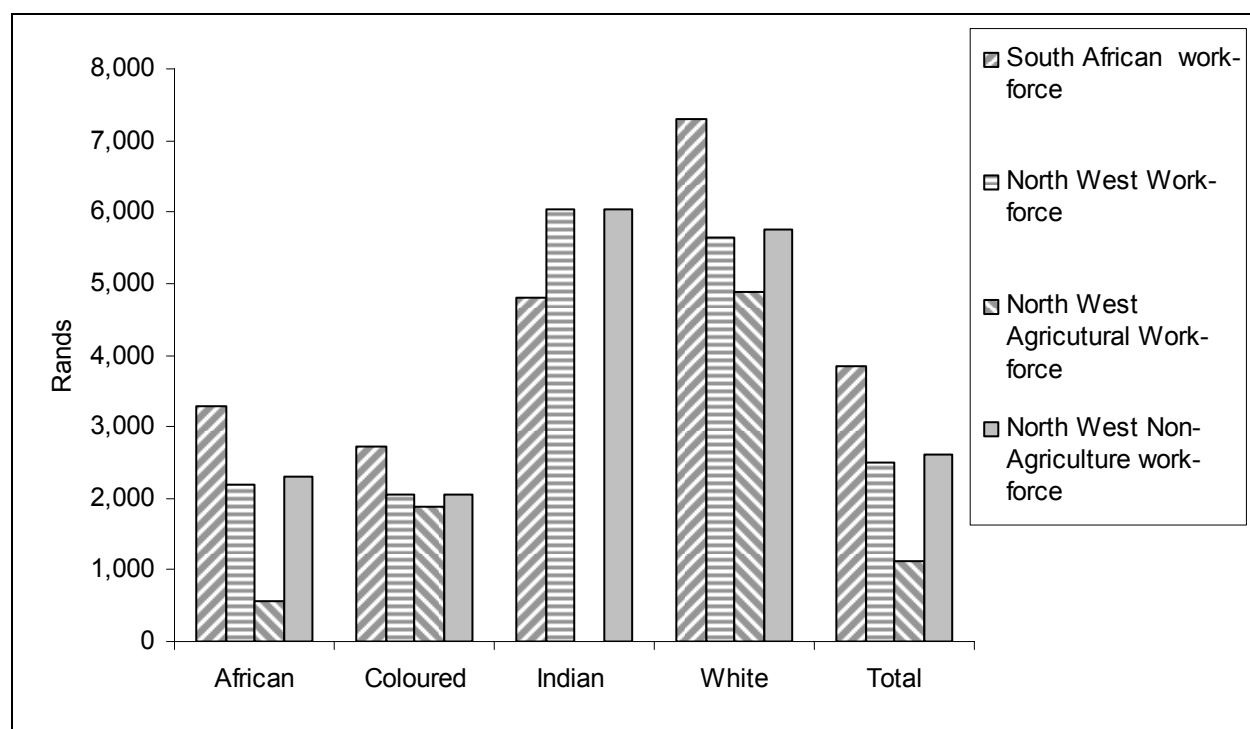
Respondents were asked about their income, and as explained previously, it was reported in either actual values or income bands. A value was dictated to each band by using the Interval Regression method as indicated in 2.3.2. Three different reporting measures were used to seek variation and to verify for consistency. The first figure reports the results for the earnings for the working individual. The second figure represents the per capita household earnings while the last figure embodies the median incomes for working individuals. The first and second figures'



income is an average and all three were adjusted for the consumer price index (CPI) making it real incomes. Therefore all values are in 2000 prices to have consistency when comparing from 2000 to 2007.

The subsequent figures represent the results of the analysis in 2007. It must be remembered that earnings used were total salary of main job, therefore excluding any remittances, social grants or payments in kind. Home consumption from home production is also excluded. Comparisons are made between the South African, North West, North West agricultural and North West non-agricultural work-forces.

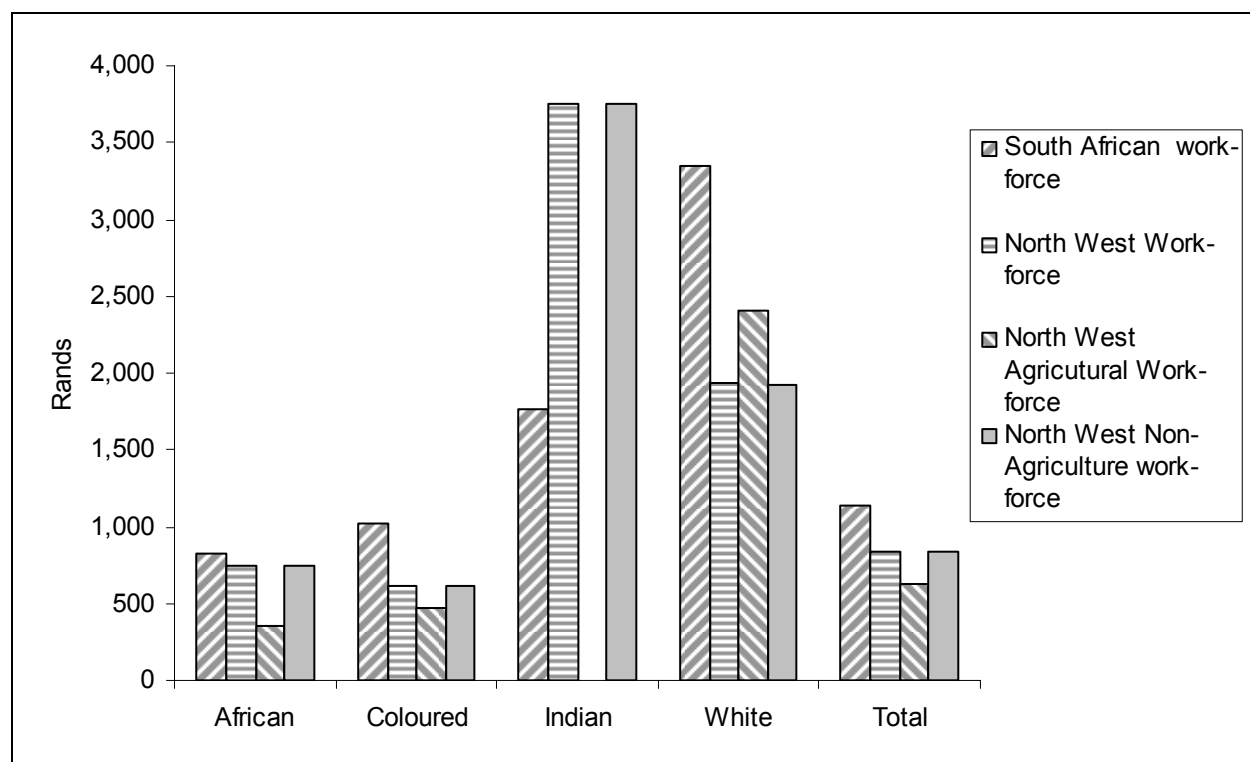
**Figure 17: Real mean monthly income from main source by race for 2007**



Source: Own calculation from Labour Force Survey 2007

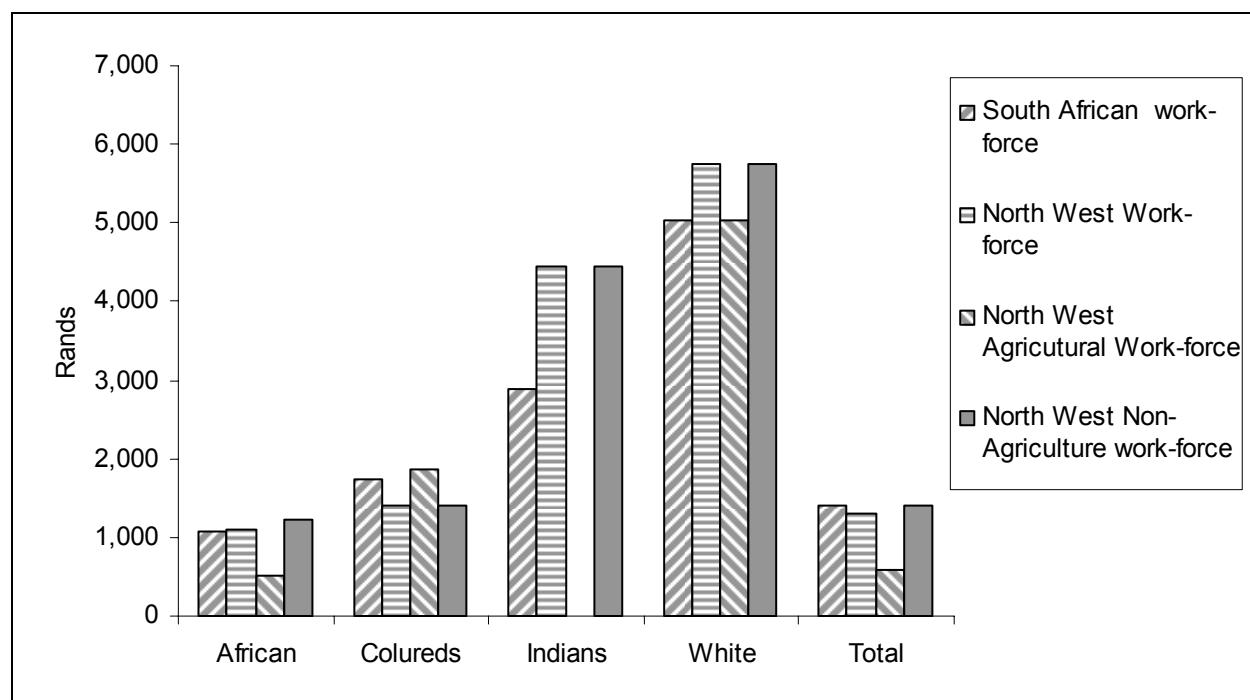
North West mean monthly income in Figure 17 is lower than that of South Africa for all population groups except the Indian population group. The results for the Indian population are driven by a high non-agricultural household income. Overall the agricultural households of North West receive a lower income. Generally, the non-agricultural income is similar to the mean income for the province and the country.

Looking at the mean real household income per capita for 2007, a similar pattern as the individual income is found. Household earnings are thus divided by household size, disregarding other income sources.

**Figure 18: Mean monthly real household income per capita by race for 2007**

Source: Own calculation from Labour Force Survey 2007

In Figure 18 again the agricultural sector's mean household income per capita is lower than that of the non-agricultural sector across all races, except Whites. The non-agriculture North West and South African household incomes display the same patterns as the individual incomes, with Indians and Whites earning the most on average and Africans and Coloureds earning the least.

**Figure 19: Monthly median income for individuals by race for 2007**

Source: Own calculation from Labour Force Survey 2007

The median incomes are illustrated above in Figure 19 to correct for any measurement error with regards to mean incomes. The mean can be influenced by outliers, and in a country like South Africa with the high inequality, median better reflects the true nature of profiles. Median represents the 50<sup>th</sup> percentile, meaning 50% of the individuals receive equal or less than the mentioned income. Compared to Figure 17, this figure shows a lower income across all population groups. The pattern remains the same, with Whites and Indians earning the most and Africans earning the least. The interesting result is that the provincial median income earnings of Whites, African and Indians are higher than the national median income for the same groups, while the mean incomes for Whites, Coloureds and Africans were lower for North West than for South Africa. This is driven by a similar high non-agricultural median income. The median income of the Coloured agricultural work-force is higher than for total Coloured work-force in North West and more comparable with the Coloured median income in South Africa. Because of the relatively small share of the agricultural work-force in the total work-force, the median income for the province more closely follows the median income for the non-agricultural work-force.

#### 4.2. North West agricultural work-force

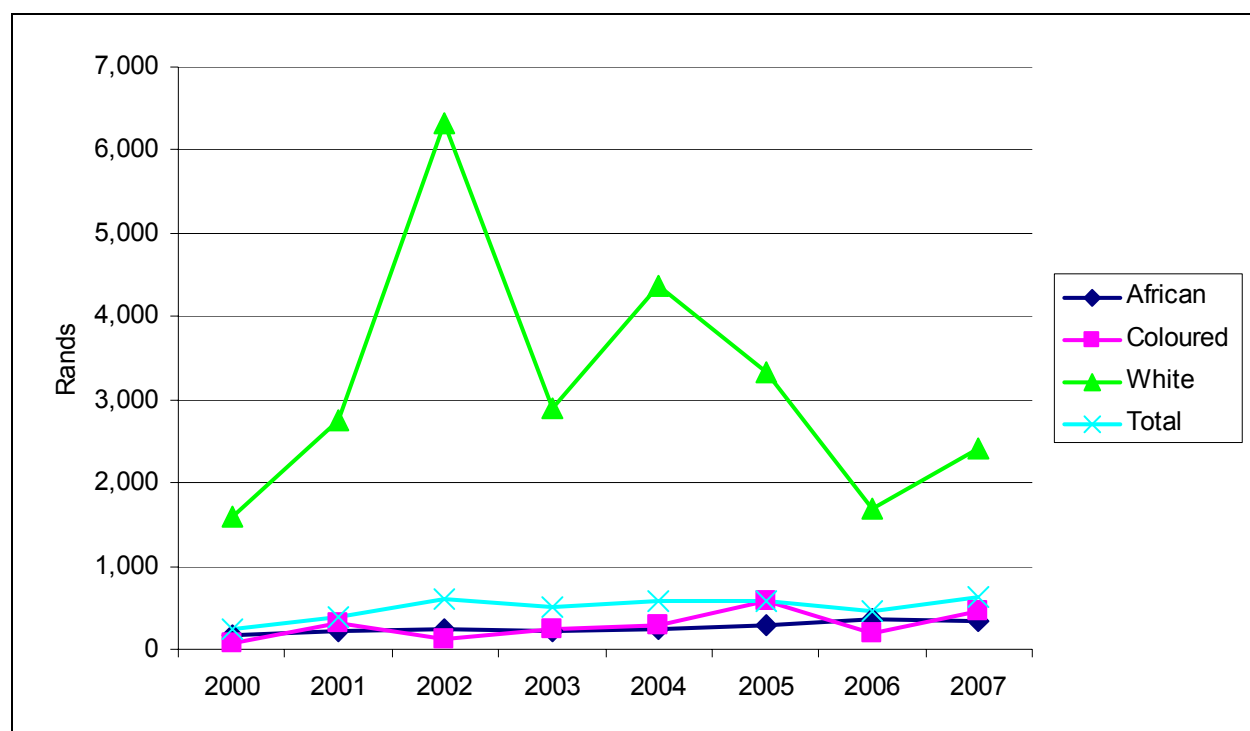
Taking a closer look at the agricultural work-force in the North West over time, the subsequent figures were obtained:

**Figure 20: Real monthly mean income for individuals working in agriculture from 2000**

Source: Own calculation from Labour Force Survey 2000-2007

Above figure (Figure 20) clearly indicates the substantial difference between the White population's mean income compared to that of the Coloured and African population. The Coloured and African population's average income remains stable and alike over time, with the Coloured income increasing sharply from 2006 to 2007. The White's income is on a decreasing trend since 2002, with a small incline in 2004. The total income is stable over the period.

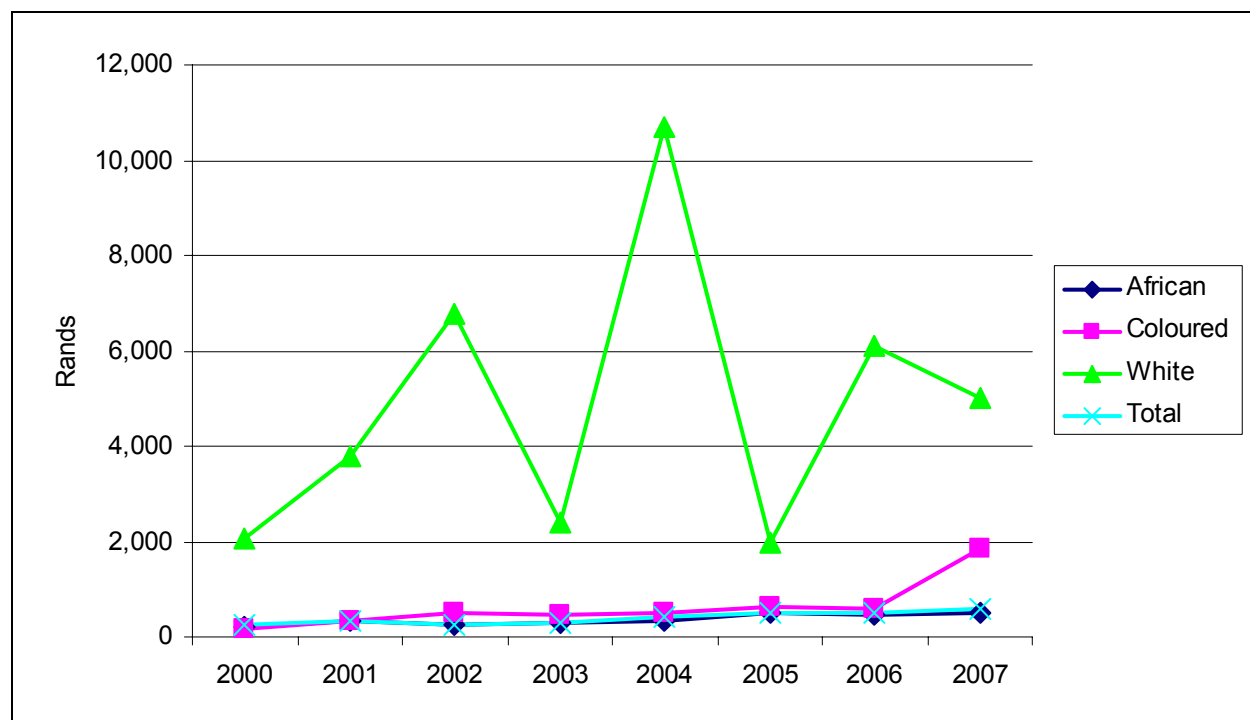
**Figure 21: Real mean household income per capita for all agricultural households since 2000**



Source: Own calculation from Labour Force Survey 2000-2007

The household earnings are presented above (Figure 21) for all agricultural households, thus all households that have a member/ members working in the agricultural sector.

**Figure 22: Monthly median incomes of individuals in agriculture since 2000**



Source: Own calculation from Labour Force Survey 2000-2007

Similar to the median income (Figure 22), the mean income (Figure 21) shows a wide disparity between incomes of Whites compared to the incomes of Coloureds and Africans.

#### 4.2.1. *Beneficiaries from agricultural activities*

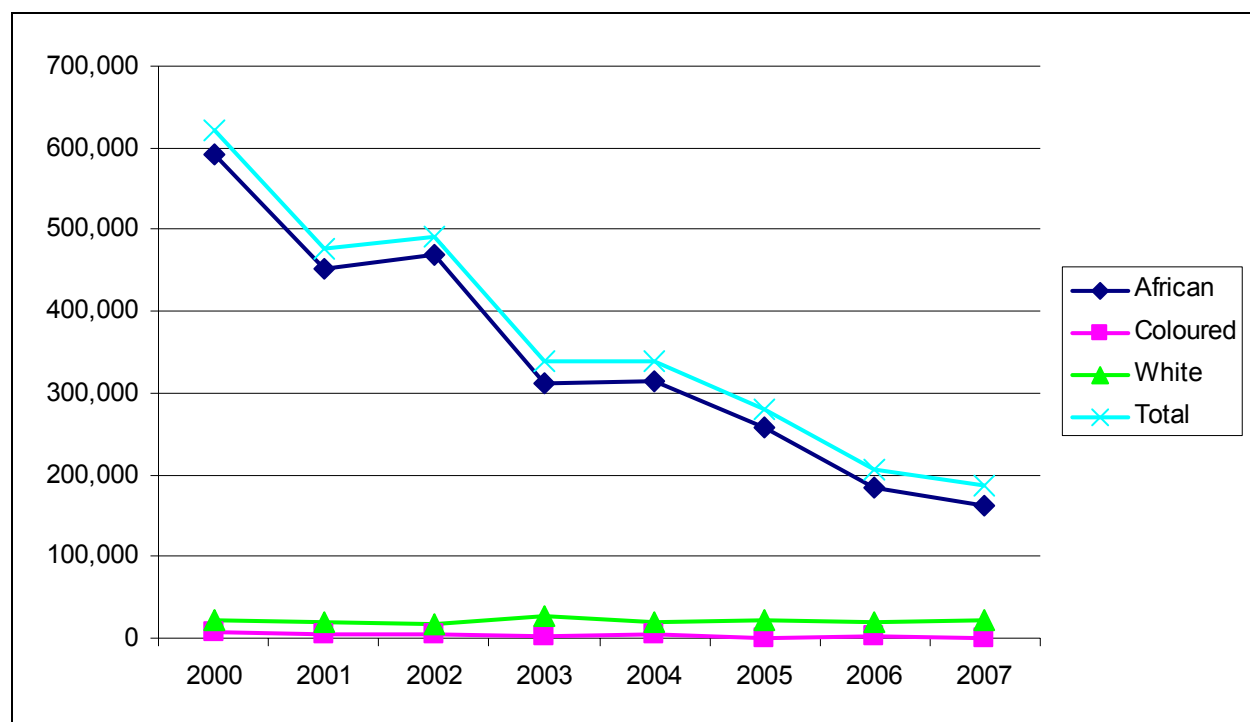
Considering the number of beneficiaries of the agricultural workers, the following table and figure were obtained. Beneficiaries were defined as the number of people in a household with an agricultural employee amongst them. But there are two different reporting measures. The first measures all beneficiaries, thus all individuals that get affected by agricultural activities, meaning a household with four members, all employed, will be beneficiaries if only one works in the agricultural sector. The second reporting measure is that of beneficiaries living in agricultural households where agricultural income is more than 50% of household income, thus as reported in Section 2.2.1.

**Table 12: Number of beneficiaries in 2007**

	All		More than 50%	
	Number	Share	Number	Share
<b>African</b>	163 190	87.36%	126 672	85.76%
<b>Coloured</b>	1 064	0.57%	1 064	0.72%
<b>White</b>	22 542	12.07%	19 974	13.52%
<b>Total</b>	186 796		147 710	

Source: Own calculation from Labour Force Survey 2007

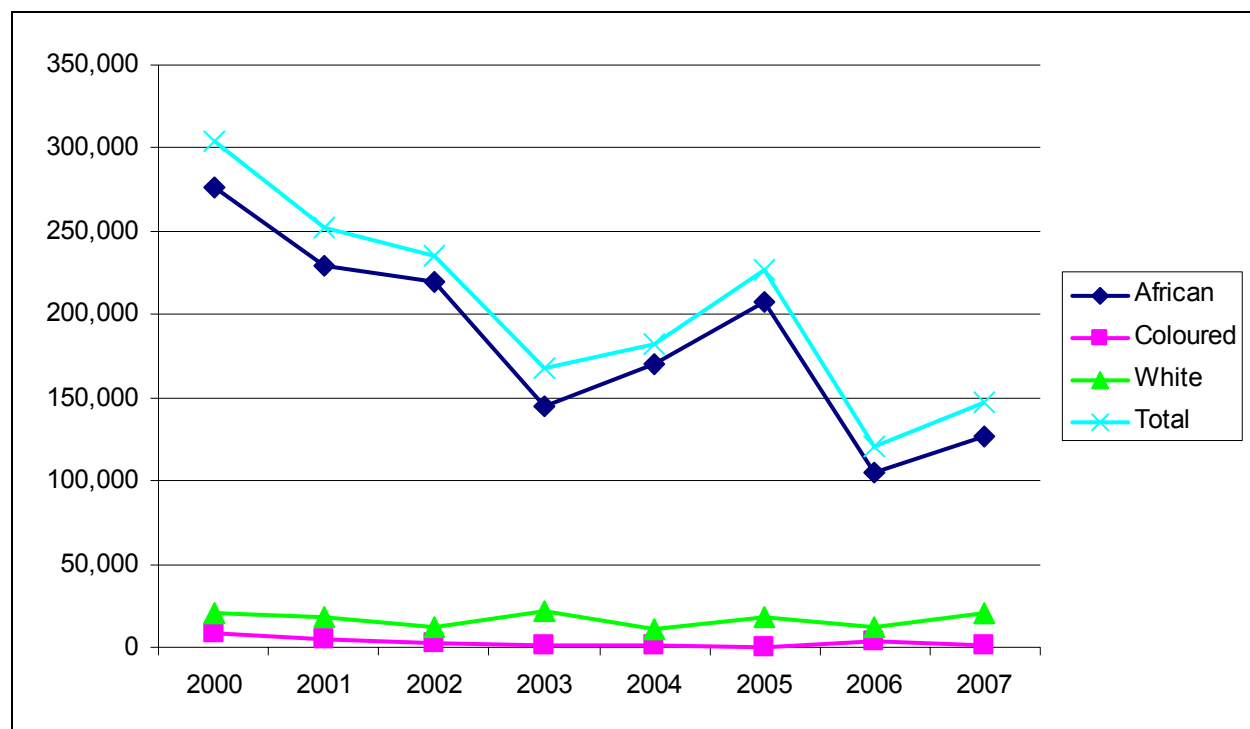
Table 12 indicates that the African population have the highest number of beneficiaries in the North West agricultural sector, dominating by 87.50% and 79.45% respectively. Investigating the trend over years in Figure 23, the total number of beneficiaries and the African households follows a similar decreasing trend. The African households decreased over time since 2000 from 590,737 to 163,190 in 2007, while the White households increased slightly from 22,234 to 22,542 over the same period. It can also be seen that the African population have the highest number of beneficiaries from agricultural activities (163,190 beneficiaries in 2007). The declining trend within the African population in agricultural households is an indication of the decreasing trend within employment, signifying a decrease in beneficiaries due to lower employment in the sector, and not smaller households or household sizes.

**Figure 23: Number of all beneficiaries from 2000 till 2007**

Source: Own calculation from Labour Force Survey 2000-2007

Figure 24 indicates the number of beneficiaries in households that obtain more than half of their household income from agricultural activities. The trend over time for these households also declines over time from 304,199 in 2000 to 147,710 in 2007. Again the African households have the most beneficiaries (276,172 in 2000 and 126,672 in 2007).

**Figure 24: Number of beneficiaries in agricultural households with more than 50% income share**



Source: Own calculation from Labour Force Survey 2000-2007

In general, the total number of beneficiaries, in both reporting measures, declined from 2000.

## 5. Poverty indices of North West Province agriculture

### 5.1. Theory

Poverty, as defined by the *Concise Oxford Dictionary*, “is the state of lacking adequate means to live comfortably and the want of things or needs indispensable to life (Govender, Kambaran, Patchett, Ruddle, Torr and Van Zyl 2007:118). A welfare indicator, usually either income or expenditure, is used to rank individuals or households.

Chambers (1988) claims that there are five dimensions of poverty namely:

1. ‘Poverty proper’ where a lack of adequate income or assets for generation of income are identified;
2. Physical weakness as a result of under-nutrition, disability or sickness;
3. Isolation, physical or social, because of location, access to goods and services;
4. Vulnerability to become poorer and risk to crisis;



## 5. Powerlessness within the existing economic, political, cultural and social sphere.

The first step regarding poverty analysis is to decide on a poverty (living) indicator to use, example income or expenditure, and which poverty dimension will be analysed. Next is to decide on a poverty line which separates the poor and non-poor. Woolard and Leibbrandt (1999:8) state that the point where the line is drawn is usually arbitrary. This can mean that one individual might be classified as poor; while another earning R1 more is qualified as not poor. But a poverty line needs to be drawn to analyse the nature of poverty.

Analysis of the poor usually entails measures of poverty. One of the most common measures to use is the Foster-Greer-Thorbecke class of poverty. The measure can be written as

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \left[ \frac{z - y_i}{z} \right]^{\alpha} \quad \text{for } \alpha \geq 0 \quad (5)$$

Where  $z$  represents the poverty line,  $y_i$  is the living indicator (i.e. income or expenditure) and  $\alpha$  symbolizes the aversion to poverty parameter. By adjusting  $\alpha$ , different classes of poverty can be identified. The headcount ratio, which gives the number of people living under the poverty line, is represented by  $\alpha=0$ . Adjusting the value to 1, a poverty gap index is achieved, which indicates the depth of poverty; thus the average inequality amongst the poor. The last index is  $\alpha=2$ , which illustrates the severity of poverty. This option gives the most poor a higher value (weight), and therefore the severity of the poverty gap can be observed. All three measures are expressed in percentage terms, hence  $\alpha=0$  will offer the percentage number of people living under the poverty line,  $\alpha=1$  will provide the inequality for those living under the poverty line, thus between the most poor and the least poor in percentage terms where 1 is equal to perfect inequality and 0 perfect equality. The last measure,  $\alpha=2$ , can be analysed the same as the previous measure, but the poorest weights more.

### 5.2. Poverty indicators from Labour Force Surveys

The living indicator used in the analysis of the Labour Force Survey data is that of per capita household earnings. These earnings were adjusted with consumer price index to achieve real earnings (in 2000 prices) over the years. The data was adjusted for per adult equivalent as proposed by the OECD equivalence scale where household size is equivalent to:

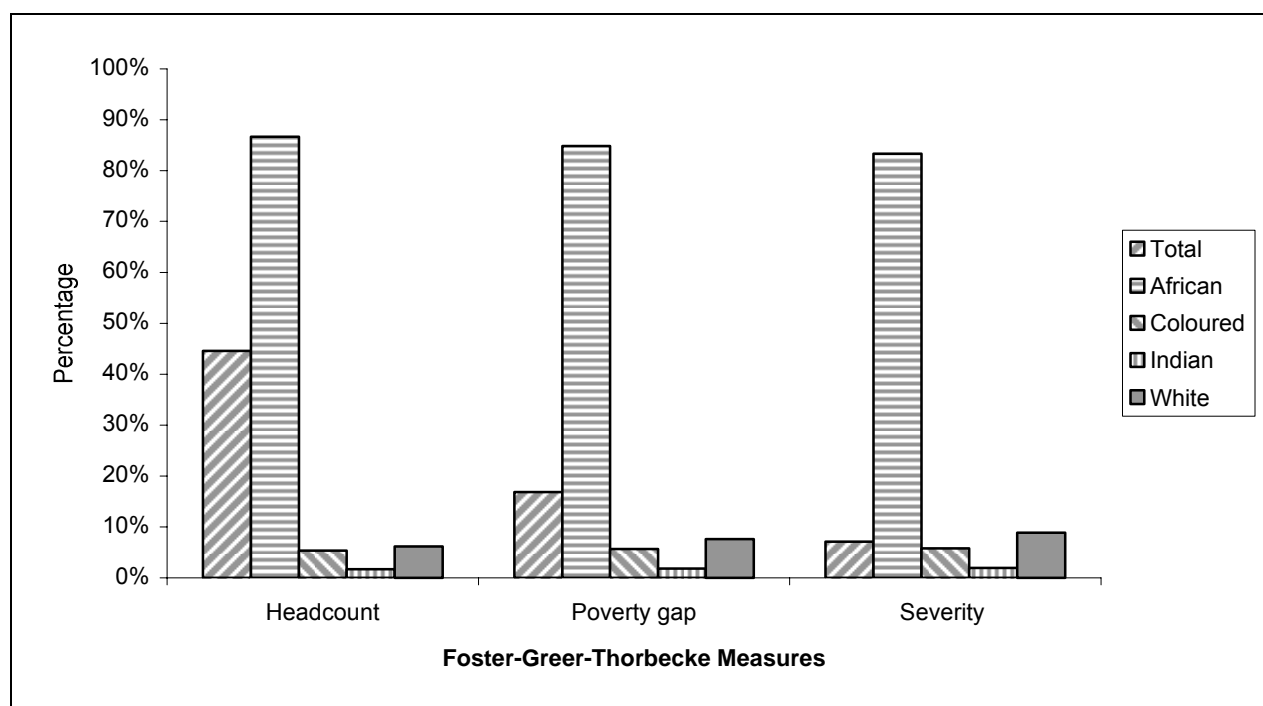
$$E = 1 + 0.5(A) + 0.3(K) \quad (6)$$

Where a value of 1 is assigned to the first household member, 0.5 to additional adult members ( $A$ ) and 0.3 to each child under the age of 15 ( $K$ ).

A poverty line of R 322 per adult equivalent per household per month in 2000 basis year terms was used; this poverty line was decided on by the South African Government as the 'official' poverty line. The advantage is that a 'national' poverty line was decided on, but to its disadvantage it cannot be compared with international standards.

The Foster-Greer-Thorbecke class of poverty indices were used, and the following figures illustrate the results obtained in 2007. The total rate for respectively South Africa, North West and the agricultural households in North West is given together with each population group's share towards the total.

**Figure 25: Poverty rate for South Africa and shares of population groups**

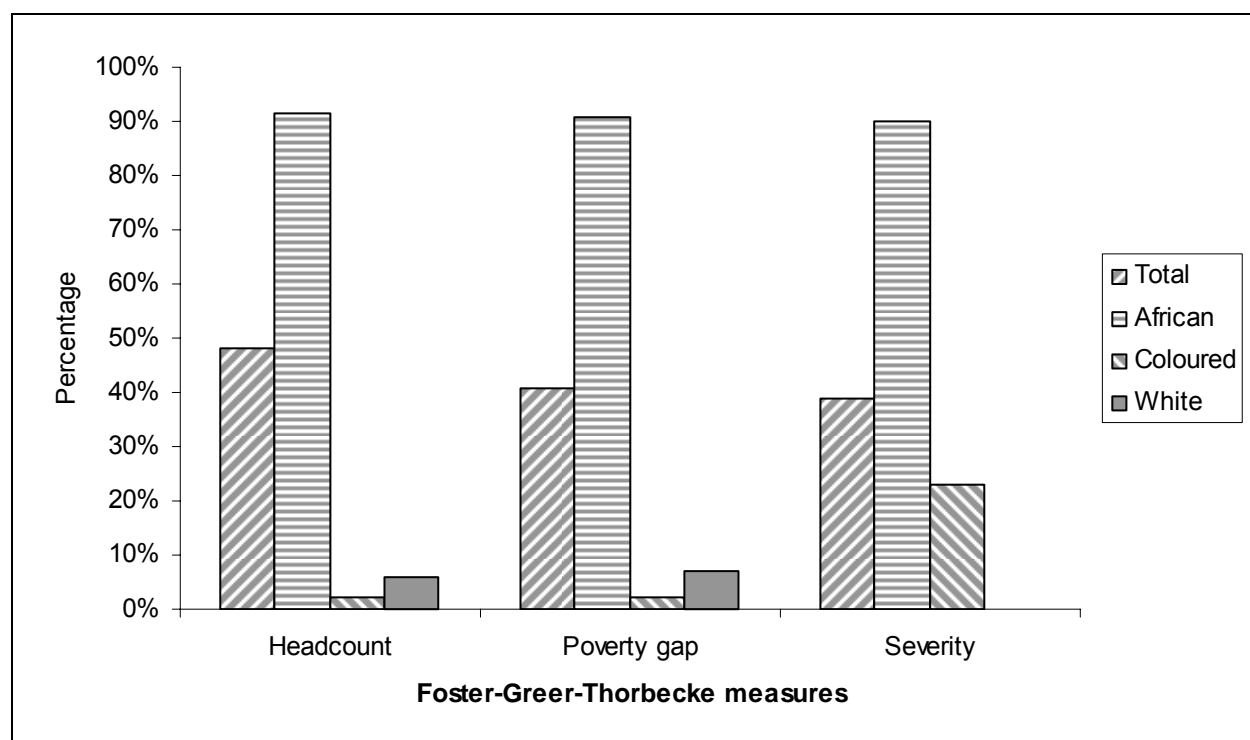


Source: Own calculation from Labour Force Survey 2007

In Figure 25 the total headcount ratio, poverty gap ratio and severity rate of individuals in South Africa are 44.57%, 16.88% and 7.15%. The African population has the highest share in the total for all classes of poverty (86.63%, 84.81% and 83.3%) and the Indians the lowest (1.7%, 1.8% and 1.9%). According to the headcount ratio 44.57% of the people in South Africa live below the poverty line. Africans comprise 86.63% of the people living below the poverty line and Indians comprise only 1.7%. This translates into 21 million people (44.57% of 47 million) in households earning less than R322 per month per adult equivalent (2000 values) with 18 million that are African and 361 164 of the Indian population group. The poverty gap of 16.88% gives an indication of the average inequality between those living below the poverty line, while the severity index of 7.15% gives and indicates the severity of poverty by given a greater weight to the most poor.

Looking at the North West in Figure 26, a similar trend can be identified. The African population is still dominating the poverty measures with a share of 91.6%, 90.5% and 90.15% respectively. The total poverty rates for the different measures in North West are respectively 48.2%, 40.8% and 38.7%. According to headcount ratio about 1.87 million people in North West are living below the poverty line. There are no Indians recorded that are living under the poverty line.

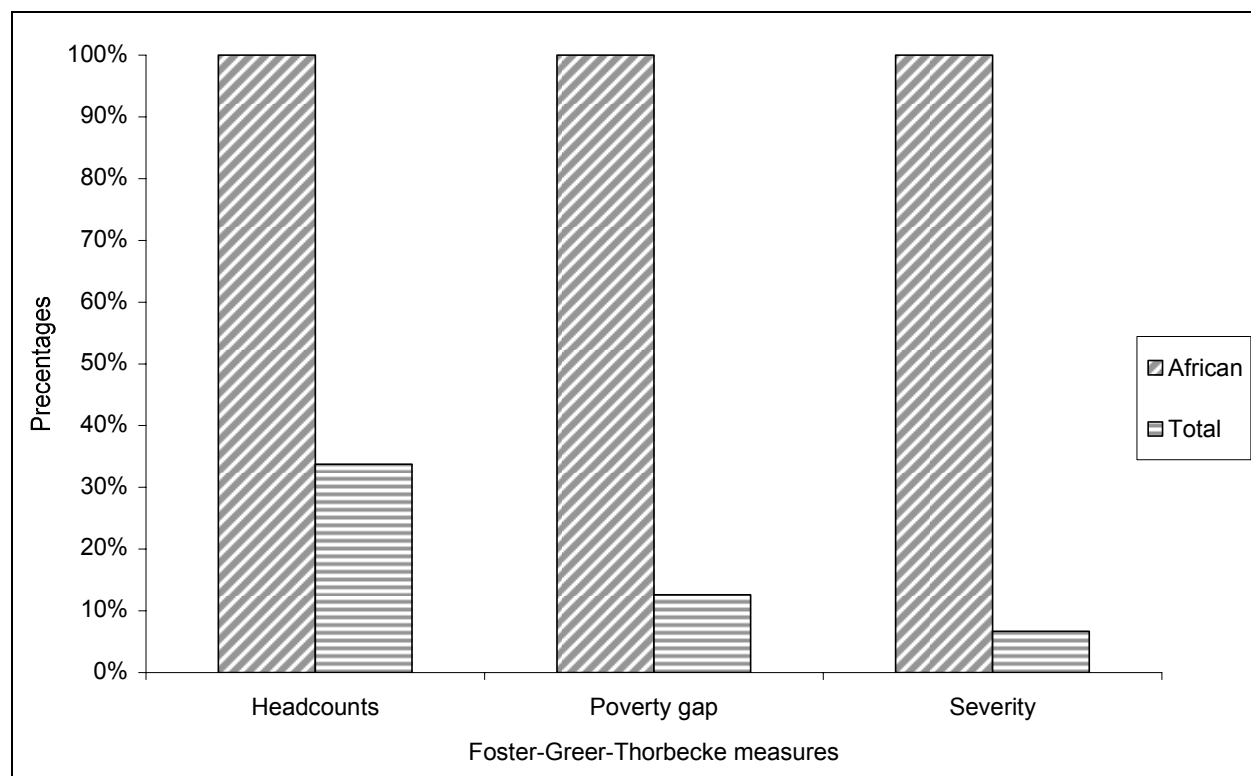
**Figure 26: Poverty rate of North West and shares of population groups**



Source: Own calculation from Labour Force Survey 2007

The North West agricultural households (more than 50% of income from agricultural activities) were also analysed in Figure 27 and the results show similar patterns as that of the rest of North West. There are no Coloured, Indian and White agricultural households recorded who are living below the poverty line. The total poverty rates are 33.71%, 12.5% and 66.86% for respective measures. This translates into around 16 403 households that are living below the poverty line. The poverty profile is dominated by Africans, with a 100% share across all measures. The alarming result is the high total severity within the North West agricultural sector. This indicates that the people living under the poverty line, are living in extreme poverty, and with the low poverty gap (12.5%) it indicates that inequality within the poor population is rather low. This means that most of the poor live far below the poverty line and are suffering severe poverty.

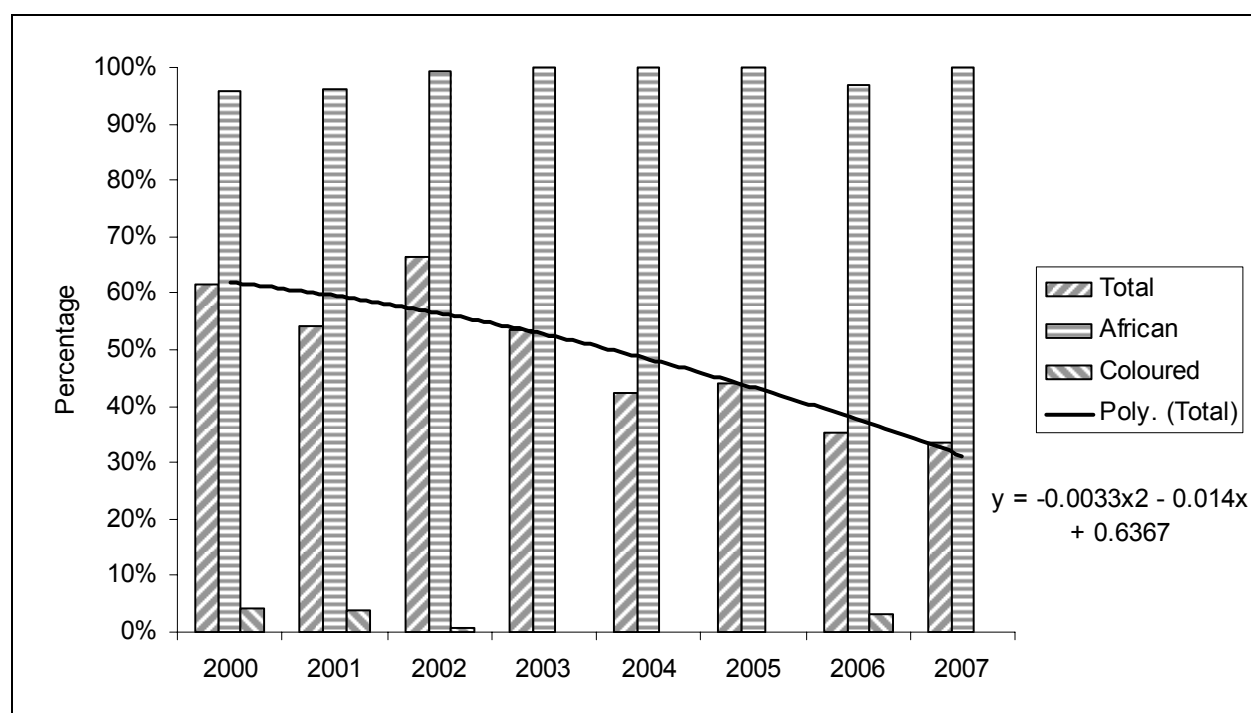
**Figure 27: Poverty rate for North West agricultural households and shares of population groups**



Source: Own calculation from Labour Force Survey 2007

Investigating the trend over years (2000 till 2007) of the North West agricultural households, the subsequent figures were obtained:

**Figure 28: Poverty headcount by year for North West agricultural households**

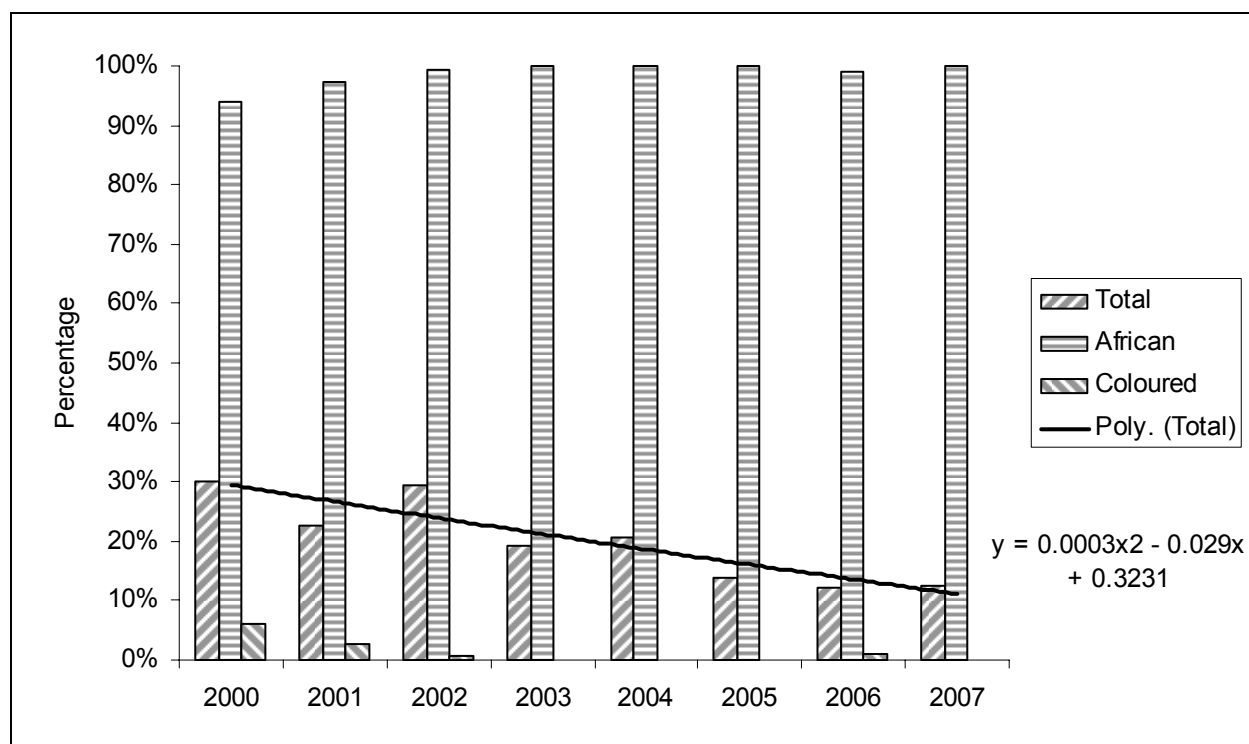


Source: Own calculation from Labour Force Survey 2000-2007

Figure 28 indicates the headcount ratio of individuals in North West agricultural households and the share of African and Coloured individuals towards the total headcount ratio. There is a decrease in total poverty, as the trend line indicates, ranging from 61.5% of individuals in agricultural households in North West living below the poverty line in 2000, to 31.7% in 2007. Africans comprise between 95% and 100% of individuals living below the poverty line between 2000 and 2007.

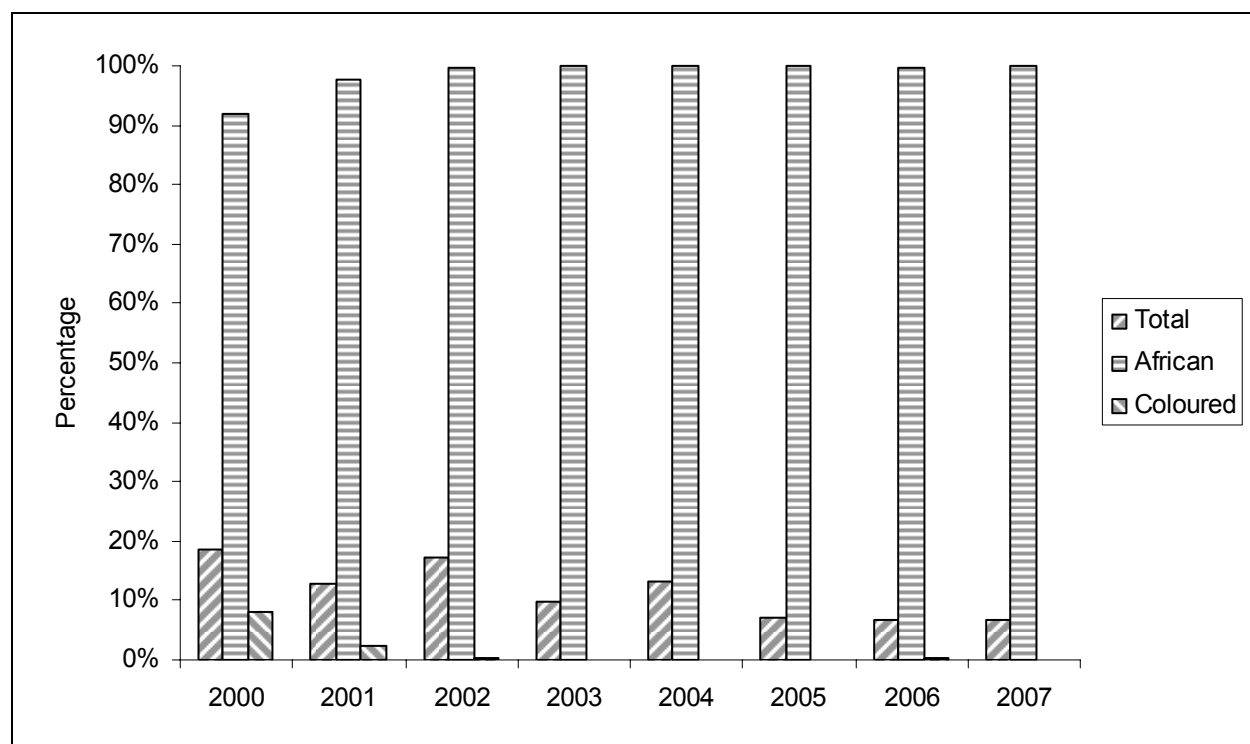
The next figure (Figure 29) indicates the poverty gap ratio:

**Figure 29: Poverty gap by year for North West agricultural households**



Source: Own calculation from Labour Force Survey 2000-2007

The poverty gap ratios over time indicate that individuals in African households have the highest inequality amongst the poor in the province with the highest share in the poverty gap measurement. The total poverty gap decreased from 30.12% to 12.5%. This signifies the decrease of inequality within the households living below the poverty line. The Coloured and African households living below R322 per month per adult equivalent are thus more equal resulting in less extreme poverty. The gap between the extremely poor and those living just below the poverty line has decreased.

**Figure 30: The severity of poverty by year for North West agricultural households**

Source: Own calculation from Labour Force Survey 2000-2007

Again, a similar trend can be seen in Figure 30 as the previous figure with shares and decrease in total severity. Total severity of poverty has decreased since 2000 and African individuals are the dominant population group in this poverty measure. The low poverty gap and high severity of poverty in North West agricultural households can be connected with inequality in the next section. It will be seen that within group inequality is relatively low compared to between group inequalities. The poverty rates according to all measures decreased through time within the North West agricultural households.

## 6. Inequality within the Province

### 6.1. Theory

Inequality is regularly measured with regards to income, and represents the distribution of income in a population or population sub-group. The poverty gap described in Section 6 is an example of such an inequality measure within a sub-group, in this case between the poor populations. There are various ways to measure income inequality, although most common is to provide summary statistics of the income distribution (Govender et al. 2007:127). Therefore the share of poorest 10% to the total population's income can be measured. Another measure is that of the Lorenz curve and Gini coefficient. The Lorenz curve plots the cumulative percentage of households against the cumulative percentage of incomes, creating a cumulative density function. The Gini coefficient ranges from 0 to 1, with 1 being perfectly unequal and 0 perfectly

equal. The Gini coefficient is derived from the Lorenz curve. The area between the Lorenz curve and the hypothetical perfect equality line divided by the area underneath the line reflects the Gini coefficient. Another measure is the Theil index which was developed by the econometrician Henri Theil, which can be written as follows:

$$T_T = \frac{1}{n} \sum_{i=1}^N \left( \frac{x_i}{\bar{x}} * \ln \frac{x_i}{\bar{x}} \right) \quad (7)$$

With  $x_i$  the income of the  $i$ th person,  $N$  the number of people and  $\bar{x} = \frac{1}{n} \sum_{i=1}^N x_i$  the mean income. The first part in the brackets can be seen as the individual's share of aggregate income, and the second part is the individual's income relative to the mean. The Theil index is equal to 0 if there is no income inequality (thus 50:50 distribution), equal to 0.5 if the distribution is 74:26, equal to 1 if it is distributed 82:18, equal to 2 if the distribution is 92:8, and 4 if it is distributed 98:2 (Wikipedia). Thus the higher the Theil, the skewer the income distribution.

## 6.2. Inequality measures from Labour Force Surveys

The following table represents the Gini and Theil inequality measurements by race for South Africa, North West and North West agricultural households. Per capita household earnings are used as reference throughout this section:

**Table 13: Gini and Theil measures of inequality for 2007**

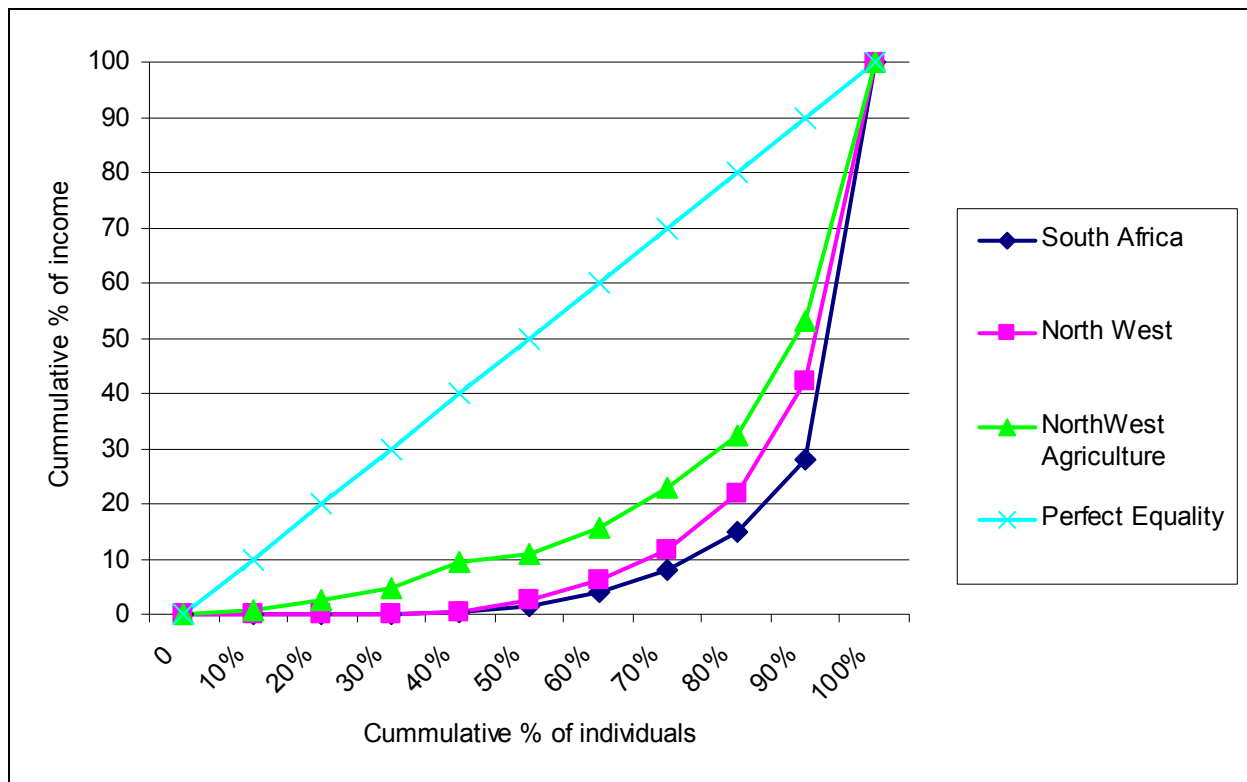
	South Africa		North West		North West agriculture	
	Gini	Theil	Gini	Theil	Gini	Theil
<b>African</b>	0.79	3.19	0.64	0.78	0.49	0.42
<b>Coloured</b>	0.55	0.56	0.46	0.37	0.00	0.00
<b>Indian</b>	0.57	0.6	0.37	0.26	0.00	0.00
<b>White</b>	0.47	0.4	0.37	0.26	0.37	0.25
<b>Total</b>	0.75	2.25	0.64	0.78	0.62	0.76

Source: Own calculation from Labour Force Survey 2007

In Table 13, the African population with a Gini of 0.79 and Theil of 3.19 have the highest inequality in South Africa. The lowest inequality is within the White population with 0.47 and 0.4 respectively, and the average for South Africa is 0.75 and 2.25. In North West, the African households in general and the African agricultural households suffer most from inequality. What is interesting to note is the relatively low inequality within race in North West agriculture households, but the total inequality is high. This indicates that between races inequality is high. The North West average is also high, signifying that there is high inequality within the province.

Looking at the Lorenz curve in Figure 31, the North West agricultural sector has the least inequality, followed by North West and then South Africa with the highest inequality.

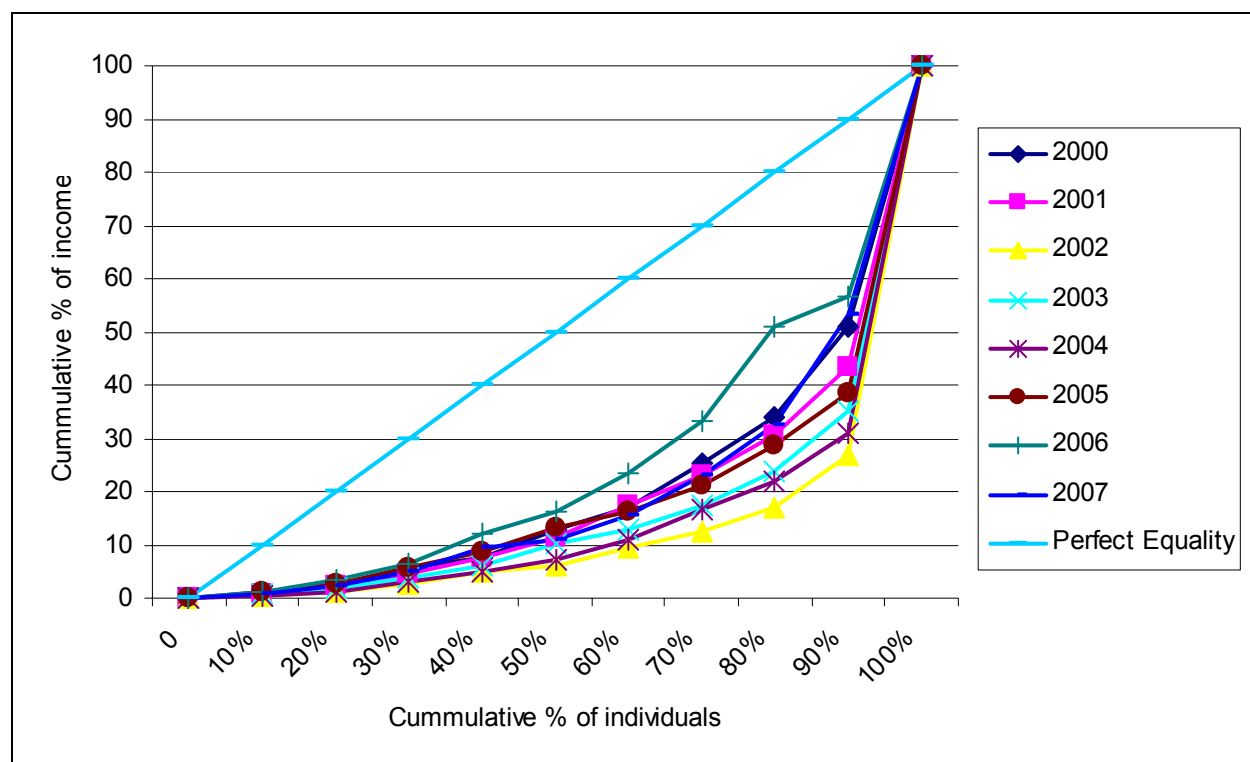
**Figure 31: Lorenz curve for individuals in South Africa, North West and North West agricultural households in 2007**



Source: Own calculation from Labour Force Survey 2007

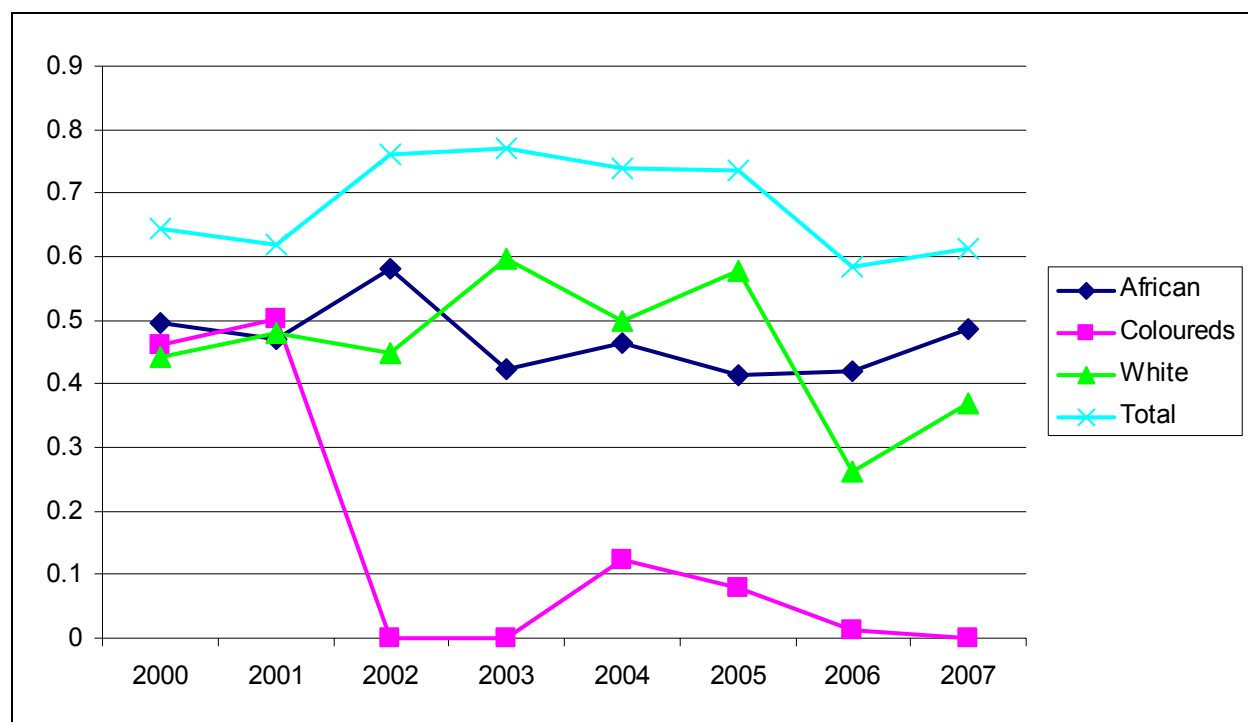
The following 2 figures represent the Lorenz curve and Gini coefficients for the North West agricultural households from 2000 till 2007. It can be observed in Figure 32 that inequality was the highest during 2002 and the lowest in 2006.



**Figure 32: Lorenz curve for North West agricultural households by year**

Source: Own calculation from Labour Force Survey 2000-2007

The Gini coefficient in Figure 33 also shows a slight downward pattern for the total (from 0.64 to 0.61). The total Gini coefficient for North West agricultural households decreased from 2000 till 2007 although it varies year on year. The African Gini coefficient decreased from 0.49 in 2000 compared to 0.48 in 2007 and the White Gini coefficient from 0.44 to 0.36 for the same period. The varied Gini coefficients for all races over time correspond to the above figure of the Lorenz curves where there is no systematic change in inequality over time.

**Figure 33: Gini coefficient for North West Province agricultural households by year**

Source: Own calculation from Labour Force Survey 2000-2007

## 7. Conclusion

The North West agricultural sector is a vital player in the economy of North West and therefore this paper analysed the trends associated with the sector with regards to demographics, poverty, income and inequality. The Labour Force Survey provided the necessary data to compute the required results, ranging from the year 2000 till 2007. The paper indicated that the African population is dominant in this sector in the North West province as well as in South Africa. The total number of individuals in respective economic segments, i.e. South Africa, North West and North West agriculture are also provided together with statistics such as age structures and employment figures.

The skills level of the agricultural sector is worrisome, and the impact of low skill levels reflects in the income profiles. The mean and median total agricultural incomes are lower than non-agricultural incomes, but there are exceptions when looking at different population groups. Unemployment rates are being driven by the high unemployment within the African population in both South Africa and North West. This reflects in the high share of the Africans in the total poverty rate throughout the country. Share of total poverty are extremely high amongst the Africans in the North West agricultural sector, reflecting the need for poverty alleviation. Poverty levels have been decreasing during the past seven years when using the poverty line of R322 per capita per adult equivalent as measure.

Income inequality paints a rather grim picture indicating that inequality has not decreased significantly over the past seven years for the agricultural sector. The sector is also characterised by more between-race inequality and not so much by within-race inequality compared to the average for the country.

This report provides an in-depth look at the agricultural sector of North West. Policy decisions and redistribution policies of provincial level need to take these data into account to promote the economic growth of North West and also to enhance the living standard of the people of North West.

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