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Background Paper Series



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A Profile of the Western Cape Province: Demographics, Poverty, Income, Inequality and Unemployment from 2000 till 2007

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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 Western Cape Province: Demographics, Unemployment, Poverty and Inequality¹

Abstract

The Western Cape agricultural sector is a dynamic and livelihood sustainable sector. Approximately 3.9% of the Western Cape value added gross domestic product comes through agriculture and 3% of the population in the Western Cape is working in this sector. There is thus a need for macro-economic research in order to investigate potential and current challenges and opportunities.

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 and Coloured individuals and that employment in the Western Cape 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 except for the White farmers/farm workers who earn more than their counterparts in other sectors. This was investigated and explained characteristics such as education and experience levels can be attributed to this. Poverty is extremely high for Coloured workers in the Western Cape 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 Western Cape agricultural sector.

Throughout the report the Western Cape agricultural sector is compared to the non-agricultural sector, Western Cape overall and South Africa for a better understanding of the Western Cape agricultural sector's position. This report indicates that the Western Cape 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 Western Cape is home to about 4.8 million individuals and about 145 000 are working in the agricultural sector (Statistics South Africa, 2007a). Therefore 3% of the Western Cape population is working in the agricultural sector, but it contributed 3.9% through value added for the economy in 2006 (Statistics South Africa, 2007b). This shows that the agricultural sector is an important sector in the Western Cape and thorough analysis is needed to identify areas of need to better the sector.

This paper investigates the Western Cape 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 deeper 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 Western Cape, together with the labour force profiles for South Africa, the Western Cape and the Western Cape agricultural sector. Unemployment then will be discussed as well as employment statistics of the Western Cape agricultural sector. The premises of this section are demographic analyses. Section 4 analyses the income profiles of the agricultural sector, together with Oaxaca-Blinder and Juhn-Murphy-Pierce decomposition. These decompositions determine the mean wage gap between two groups (in this case the White and Coloured population) and split the mean gap into productive capabilities and an unexplained (or discrimination) part. Wage differences can thus be contributed to either of these two, and income profiles can be explained through this. 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 Western Cape agricultural households are compared with the Western Cape 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 level². 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

² See Metadata in Labour Force Survey reports. Available online at www.statssa.org.za

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.

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.

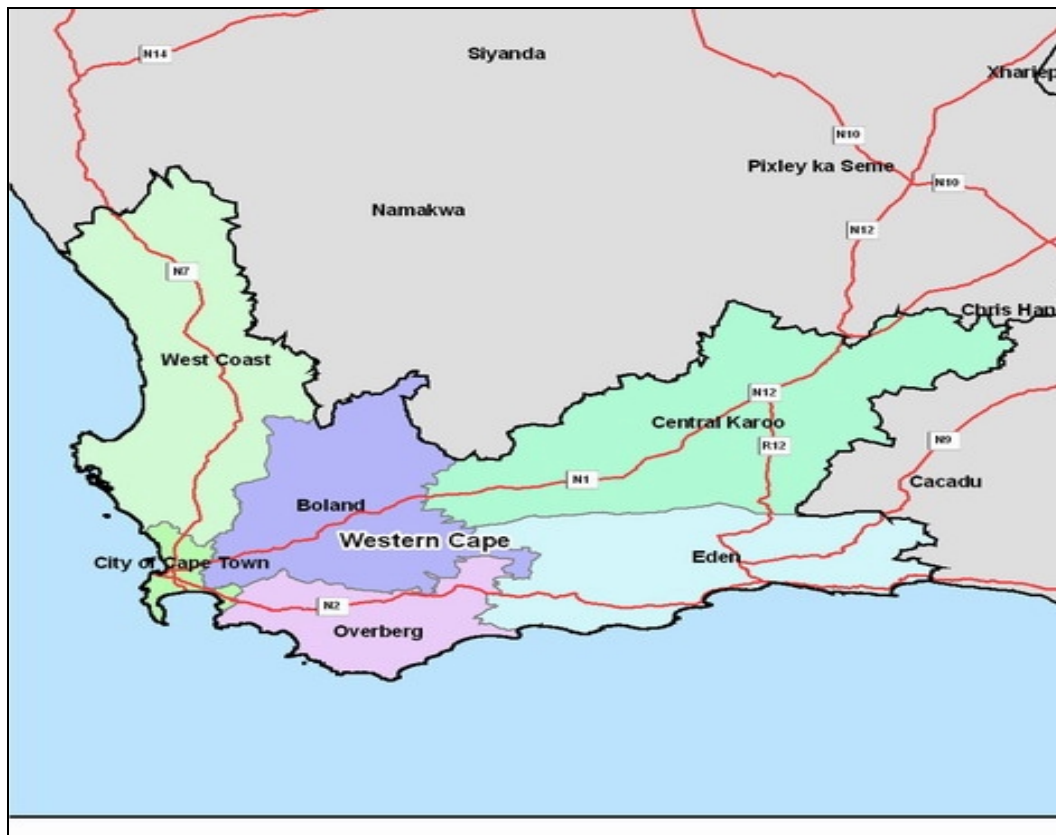
For South Africa in 2007, 62.68% of respondents did not provide information regarding income. If a sub sample of all respondents that are living in a household under the poverty line is taken, 83% did not provide income information. This becomes problematic especially in cases where the sample size is 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 Western Cape there are 359 entries for White individuals living under the poverty line. On an average only 17% of that information is available, leaving only 61 entries. In reality, there are only 4 entries left which is too small to make any significant derivation. In the Western Cape, 1117 entries were made in the Coloured population group living under the poverty line. On average, 190 entries must be left, but in reality 87% did not respond, leaving 137 entries. Although 137 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 and Coloured populations have a bigger sample size to do better analysis with.

For the purpose of this paper, non-response was disregarded in income and poverty 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 Western Cape agricultural households, but does compare certain statistics with the non-agricultural households in the Western Cape 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 Western Cape and its districts. There are six districts within the Province namely the City of Cape Town, West Coast, Boland, Overberg, Eden and Central Karoo. Figure 1 reflects this:

Figure 1: Western Cape districts map



Source: Demarcation Board (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 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 the current employees, but all members 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 Western Cape by race, together with their shares of the population in 2007.

Table 1: Racial Composition of South Africa and Western Cape in 2007

Population Group	South Africa	Share	Western Cape	Share
	Number	%	Number	%
African	37,887,594	79.42	1,382,064	28.73
Coloured	4,223,511	8.85	2,462,512	51.18
Indian	1,168,672	2.45	42,662	0.89
White	4,348,366	9.11	907,419	18.86
Other	8,764	0.17	16,542	0.34
Total	47,706,907	100	4,811,199	100.00

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%) while the Coloured community dominates in the Western Cape (51.18%). The total population of South Africa is 47.7 million, while the Western Cape has 4.8 million residents.

Investigating the racial composition of the six districts, the following information is obtained for 2007. Table 2 indicates that not only does the City of Cape Town have the largest share of people in the Western Cape, but also the largest share of all population groups resides in the City of Cape Town. The Central Karoo district is home to only 1.05% of residents of the Western Cape.

Table 2: Racial Composition of Western Cape districts in 2007

District	Population Group					
	African	Coloured	Indian	White	Total	Share (%)
City of Cape Town	1,092,483	1,485,448	42,161	655,189	3,286,398	68.31
Share %	79.05	60.32	98.83	72.57		
West Coast	17,821	178,190	227	41,773	238,012	4.95
Share %	1.29	7.24	0.53	4.63		
Boland	105,916	389,605	222	97,551	596,899	12.41
Share %	7.66	15.82	0.52	10.80		
Overberg	40,645	106,083	53	36,956	183,928	3.82
Share %	2.94	4.31	0.12	4.09		
Eden	120,290	262,179		71,386	455,483	9.47
Share %	8.70	10.65		7.91		
Central Karoo	4,909	41,006			50,479	1.05
Share %	0.36	1.67				
Total	1,382,064	2,462,512	42,662	902,854	4,811,199	

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 Western Cape 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 Western Cape 2007

Population Group	Agricultural		Non-agricultural		Total	
	Number	Share	Number	Share	Number	Share
African	24,339	33.33	402,643	30.34	426,982	30.50
Coloured	40,335	55.24	575,081	43.34	615,416	43.96
White	8,009	10.97	337,049	25.40	345,058	24.65
Indian	331	0.45	8,528	0.64	8,859	0.63
Total	73,015*	100	1,327,035	100	1,400,050	100.00

Source: Own calculation from Labour Force Survey 2007

*See Table 5 for detailed breakdown

The agriculture sector is dominated by Coloured households, similar to the trend in the non-agriculture sector. Taking a closer look at the agricultural Western Cape district composition, the following table is obtained:

Table 4: Racial Composition of agricultural households in the Western Cape districts

District	Population Group					
	African	Coloured	White	Total*	Share (%)	
City of Cape Town	6,988	4,166	2,433	13,587	18.61	
Share %	28.71	10.33				
West Coast	909	6,944	1,052	8,906	12.20	
Share %	3.74	17.22	13.14			
Boland	9,943	17,637	2,151	30,062	41.17	
Share %	40.85	43.72	26.86			
Overberg	4,965	5,106	702	10,773	14.75	
Share %	20.40	12.66	8.77			
Eden	1,534	5,241	1,285	8,059	11.04	
Share %	6.30	12.99	16.04			
Central Karoo		1,243	386	1,628	2.23	
Share %		3.08	4.82			
Total	24,339	40,335	8,009	73,015		

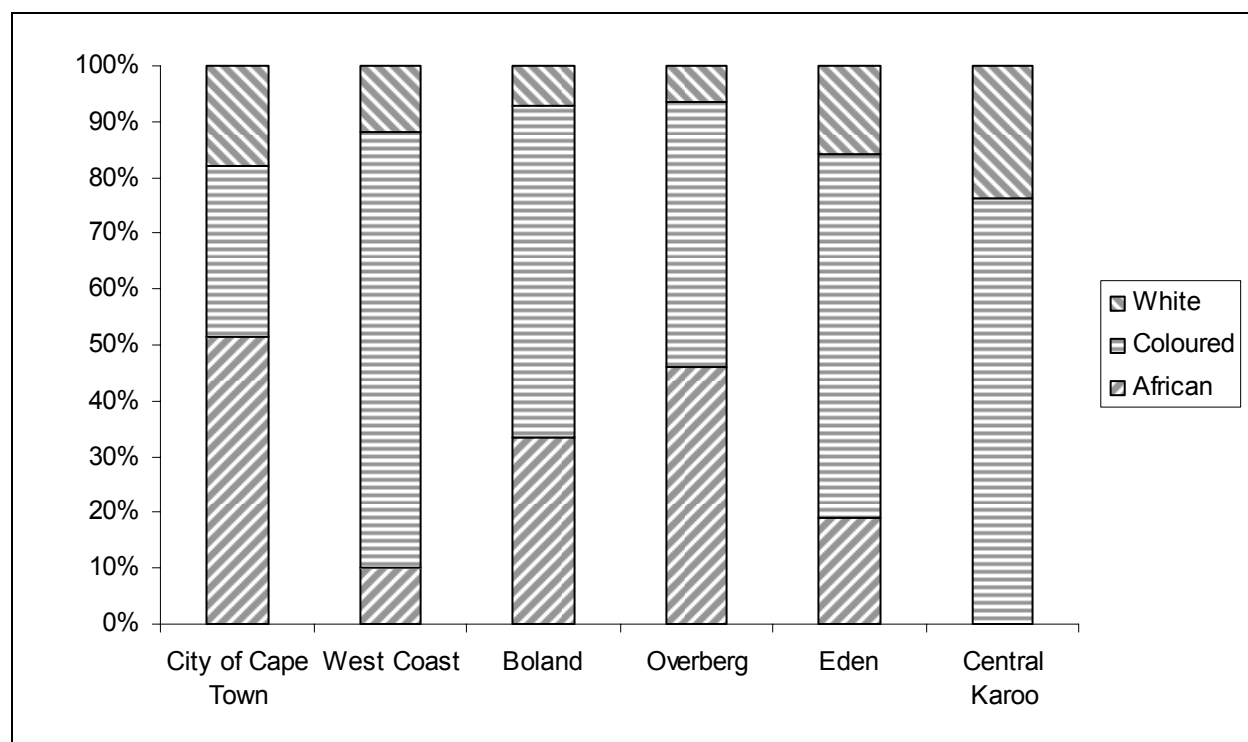
*The Indian/Asian population group has been left out due to insignificant low numbers.

Source: Own calculation from Labour Force Survey 2007

Table 4 indicates that there are around 73 000 households that derive more than 50% of their income from household members employed in agriculture, with the Boland district having

the biggest share and the Central Karoo the smallest share. Compiling a stacked column chart for comparing race compositions, the results are as follows:

Figure 2: Agricultural households in the Western Cape districts

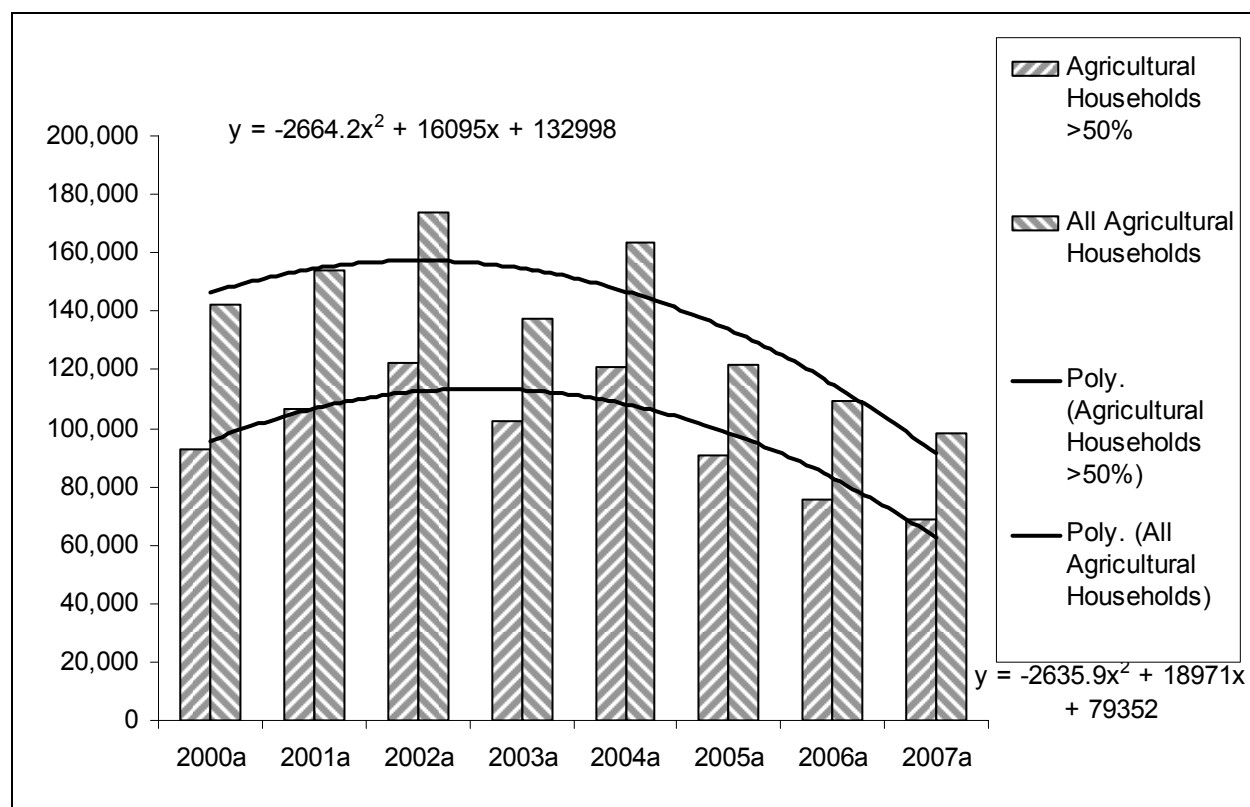


Source: Own calculation from Labour Force Survey 2007

Figure 2 clearly indicates that African households are more dominant in the City of Cape Town than in any other district, while the Coloured households are active across all districts. Coloured households dominate in the Central Karoo where there are no African households earning more than 50% of income from agriculture.

Looking at the change in agricultural households since 2000, Figure 3 indicates the change in both all households with a member / members working in agriculture and households whose agricultural income is more than 50% of household income. Both series are declining, with all households ending at 97 960 households and the more than 50% income households ending at 68 800³ households. It must be kept in mind that due to the dataset used for obtaining flow charts (thus over time), section 6 of the LFS questionnaire (access to agricultural land and main reason for it) was excluded. 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.

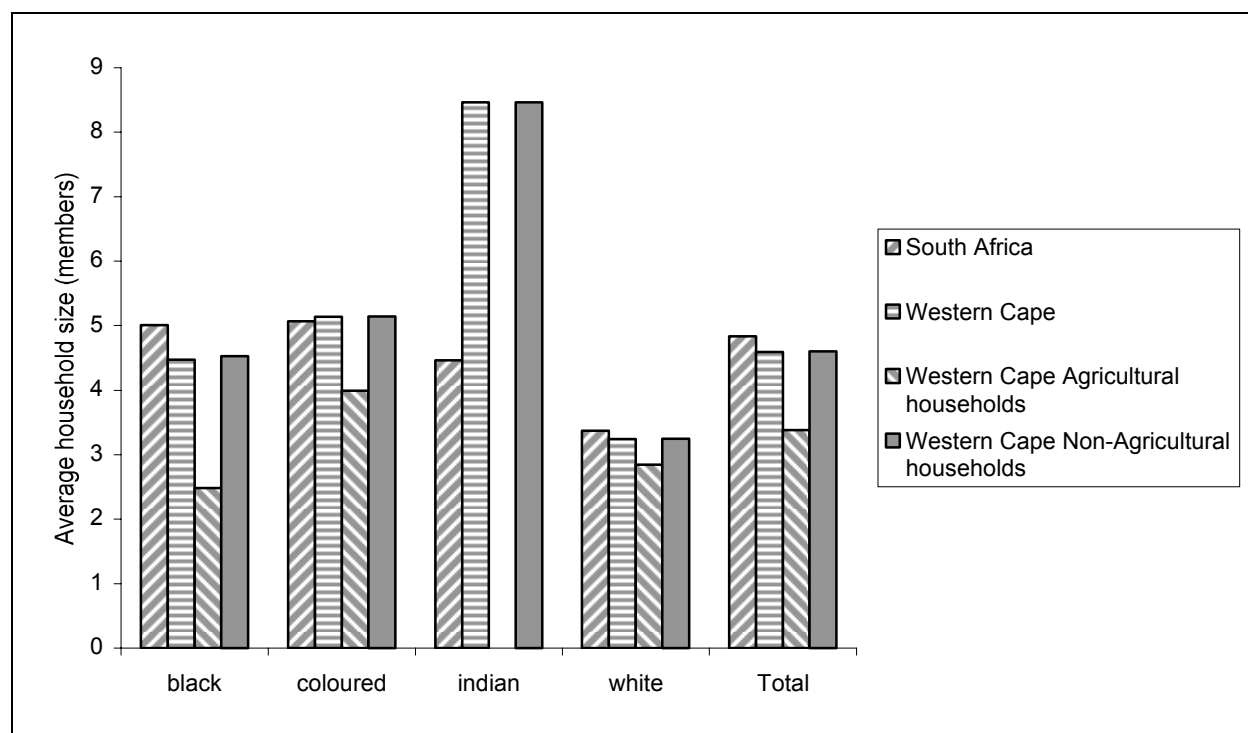
³ Comparing this to Table 5, it corresponds to the total of the first two columns.

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). There can be seen that the Western Cape's households are in general smaller than South Africa's except for the Coloured and Indian population. The Indian non-agricultural households in Western Cape are extremely high (8.46 members) but they have no agricultural households. This contradicts Bhanisi's (2007) figure of an average of four members for Indians. It must be kept in mind that the Indian population is the minority and therefore measurement errors do occur regularly with regards to Indian quantities, and thus must data be handled with care. When investigating the trend of household size over time, it differs year on year. In 2004, the average was 3.5 members in a household, in 2005 it was 3.1, but in 2006 it jumped to 7.1 members. This indicates the wide disparity in household size within the Indian population.

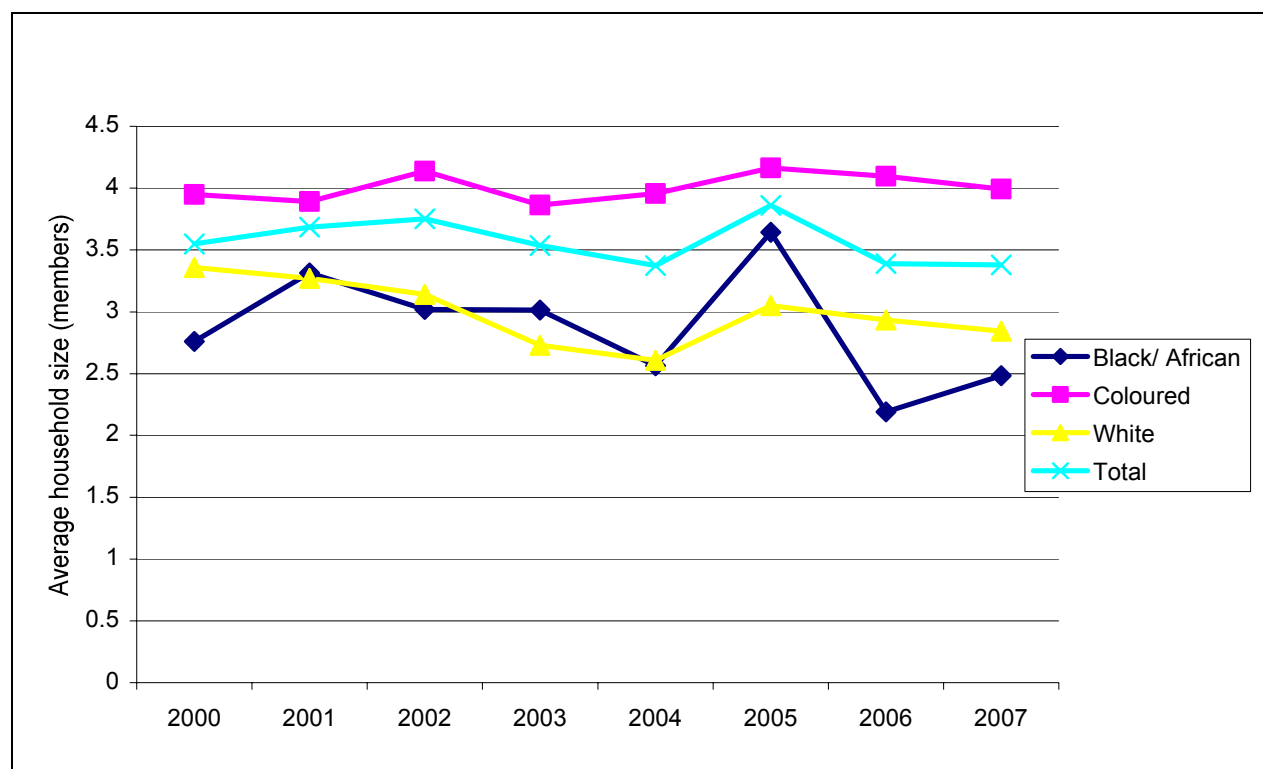
With regards to the agricultural households, household size is considerably smaller (3.4) than that of the average in South Africa and Western Cape (4.83 and 4.59).

Figure 4: Household size by race for 2007

Source: Own calculation from Labour Force Survey 2000

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 the Coloured population's households are the biggest while the White and African population have the least number of people within the household. The African population's size is on a decreasing trend, with some sharp incline in 2005. This might be due to measurement error, as it is not in accordance with the rest of the trend. The other two population groups' household sizes remained relatively stable.

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 the Western Cape 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 Coloured households have the largest share (58.86%) of employment in the agricultural sector, and this is consistent with the employment numbers stated earlier. There are only 2 493 households in the Western Cape that depend solely on subsistence farming and for all of them it's the main source of food (as opposed to the main source of non-salary income). 91.13% 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 3.14%. Only 5.46% of agricultural households engage in agricultural employment as well as subsistence farming to provide for the household. There are 1 573 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 2 493 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	21,802	32.77	84	5.33			2,453	98.41	24,339	33.33
Coloured	39,160	58.86	111	7.04	1,025	42.47	40	1.59	40,335	55.24
White	5,242	7.88	1,379	87.62	1,389	57.53			8,009	10.97
									0	0.00
Total	66,535	100.00	1,573	100.00	2,414	100	2,493	100.00	73,015	100.00
Activity Share	91.13		2.15		3.31		3.41		100.00	

Source: Own calculation from Labour Force Survey 2007

3.2. South African and Western Cape 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 represents the number and share of people in 2007, according to the strict and broad definition in the labour force, for South Africa and the Western Cape respectively:

Table 6: South African and Western Cape labour force in 2007

South Africa					Western Cape			
	Broad		Strict		Broad		Strict	
	Number	Share	Number	Share	Number	Share	Number	Share
African	15,825,035	77.44	12,671,070	74.81	762,112	31.54	700,958	31.57
Coloured	1,977,240	9.68	1,746,798	10.31	1,181,308	48.89	1,058,402	47.67
Indian	513,937	2.52	473,161	2.79	16,688	0.69	15,852	0.71
White	2,117,799	10.3	2,047,715	12.09	456,314	18.88	445,081	20.05
Total	20,434,011	100	16,938,744	100	2,416,422	100	2,220,293	100

Source: Own calculation from Labour Force Survey 2007

In 2007, there was 20.4 million (16.9 million) individuals in the South African labour force according to the broad (strict) definition. In the Western Cape there were 2.4 million (2.2 million), the largest share taken by the Coloured population with 48.89% (47.7%). 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 0.69% / 0.71% respectively).

3.3. Unemployment in South Africa and the Western Cape

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 the Western Cape by population group.

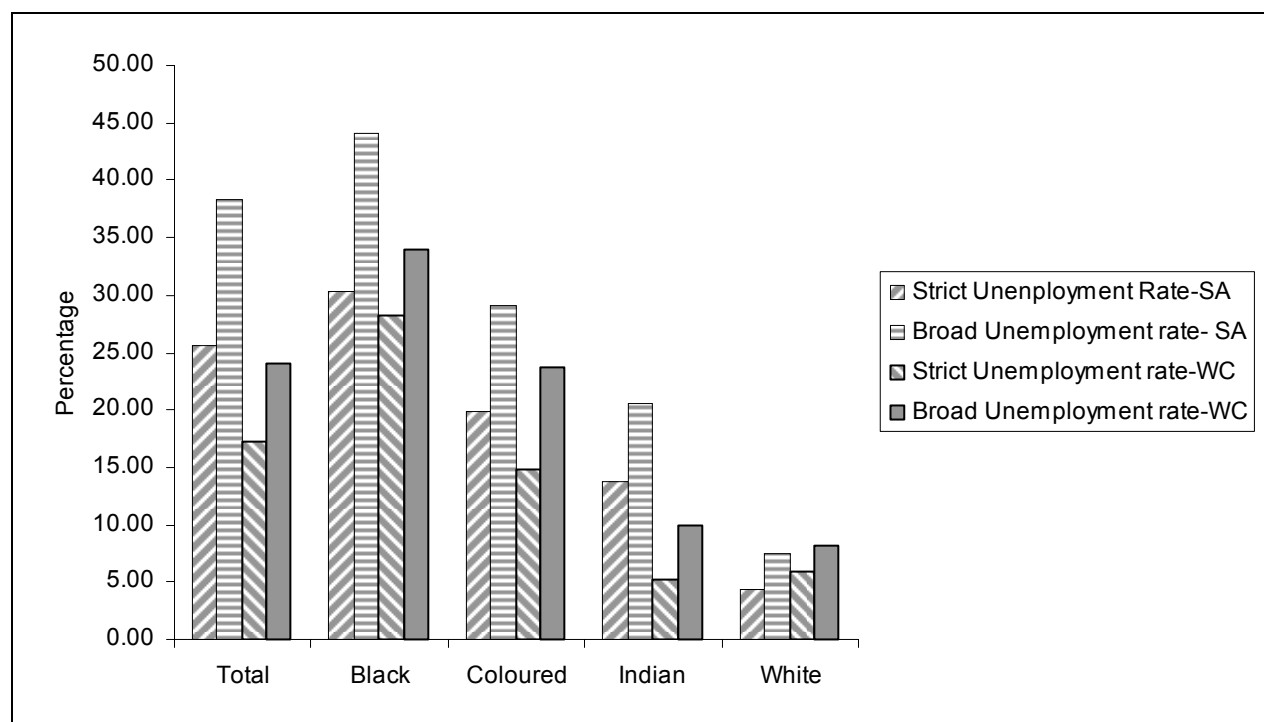
Table 7: Unemployment numbers for South Africa and Western Cape by population group in 2007

	South Africa		Western Cape	
	Broad	Strict	Broad	Strict
African	6,984,075	3,830,110	259,359	198,205
Coloured	576,177	345,735	279,865	156,959
Indian	105,855	65,079	1,652	816
White	158,206	88,122	37,374	26,141
Total	7,830,004	4,330,958	581,297	382,121

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 Western Cape with the exception of the broad definition in the Western Cape. In this category the Coloured takes the lead with just over 20 000 more people unemployed than the African population. The smallest unemployed group is that of the Indian population followed by the White subgroup across all definitions and for both South Africa and Western Cape.

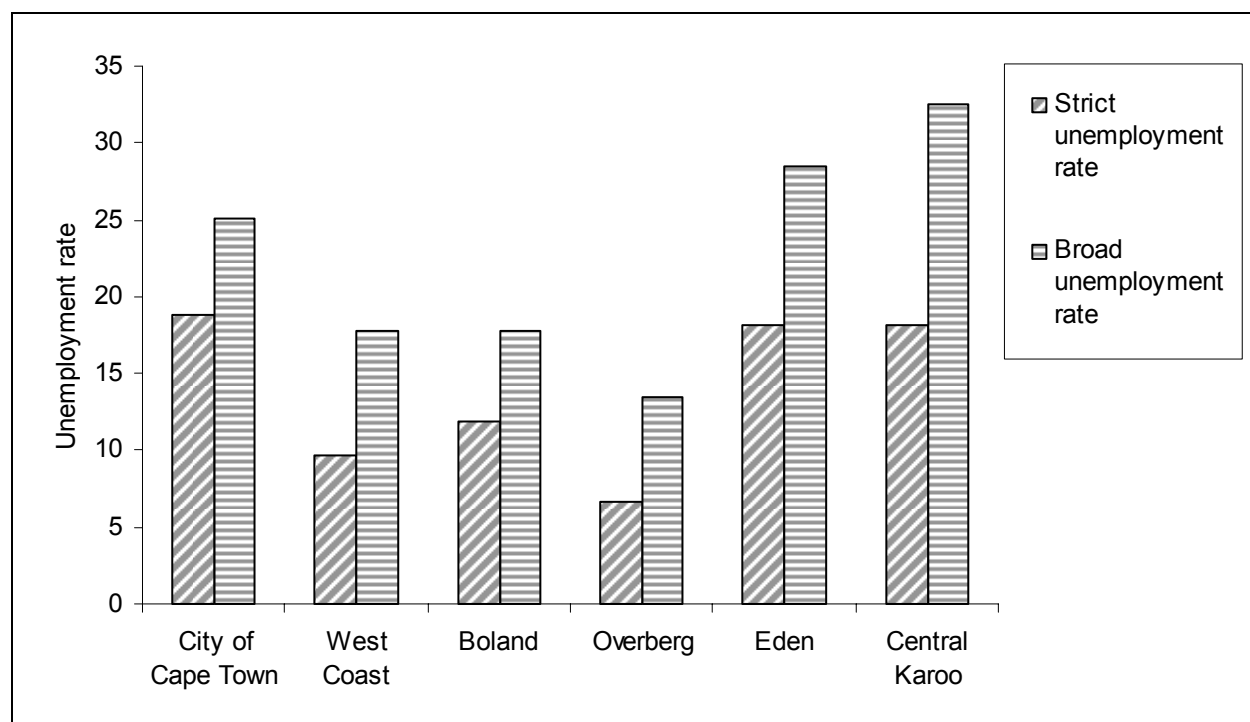
There is a clear trend with Africans having the highest unemployment in South Africa and the Western Cape for both definitions (broad 44% and 34% respectively and for strict 30% and 28% respectively) (Figure 6). Africans and Coloureds in the Western Cape have a slight lower unemployment rate than in South Africa, whereas the Indians have a significantly lower rate. The White population in both South Africa (4.3% strict and 7.5% broad) and the Western Cape (5.9% strict and 8.2% 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 Western Cape respectively are 25.53% and 17.17%.

Figure 6: Unemployment rates for South Africa and Western Cape by population group

Source: Own calculation from Labour Force Survey 2007

Taking a closer look at the Western Cape, the following information regarding district level was obtained. In Figure 7, Central Karoo has the highest unemployment levels considering the broad and strict definitions (32.56% and 18.11% respectively). The lowest unemployment levels are in the Overberg (13.45% and 6.61%). The broad and strict rates show a similar trend towards unemployment, with Central Karoo the highest, Eden second highest, followed by City of Cape Town, Boland, West Coast and lastly Overberg.

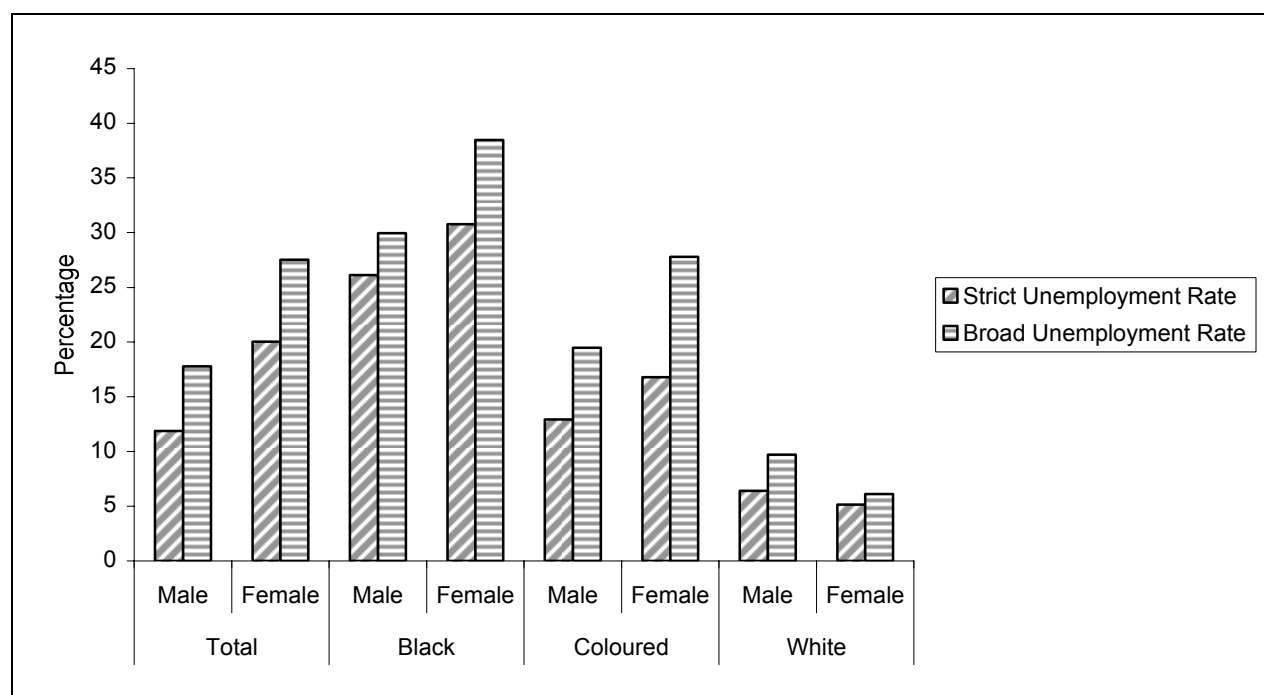
Figure 7: Unemployment rates for districts in the Western Cape



Source: Own calculation from Labour Force Survey 2007

Looking from a gender side, the subsequent figure (Figure 8) arises.

Figure 8: Unemployment rates in the Western Cape by gender and population group



Source: Own calculation from Labour Force Survey 2007

Females tend to have a higher unemployment rate for both definitions across all population groups except with the White population. The African population in the Western Cape

dominates in terms of unemployment in both genders with a broad unemployment of 30% and 38.5% and strict unemployment of 26.1% and 30.8% for respective genders. The total is 11.9% and 17.8% for males and 20% and 27.4% for females for broad and strict definitions. For the White population males dominate with 9.7% over 6.1% in the broad definition and 6.4% over 5.2% in the strict definition.

3.4. Work-force and Employment in Western Cape 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 ; www.patana.ac.th ; www.allwords.com), although Wikipedia (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 the Western Cape for 2007 in the subsequent table:

Table 8: South African and Western Cape agricultural work-force

South Africa			Western Cape	
	Number	Share	Number	Share
African	741,228	75.82	29,162	20.03
Coloured	143,172	14.65	102,826	70.63
Indian	5,458	0.56		
White	87,728	8.97	13,597	9.34
Total	977,586	100	145,585	100

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 whereas the Coloured population is the central component of the agricultural work-force in the Western Cape. There are no Indian/Asians in the Western Cape agriculture work-force and only 0.56% nationally. The White population's share in both South Africa and the Western Cape are around 9%. Decomposing the Western Cape to a district level by gender, the following is obtained:

Table 9: Agricultural work-force of the Western Cape districts by gender in 2007

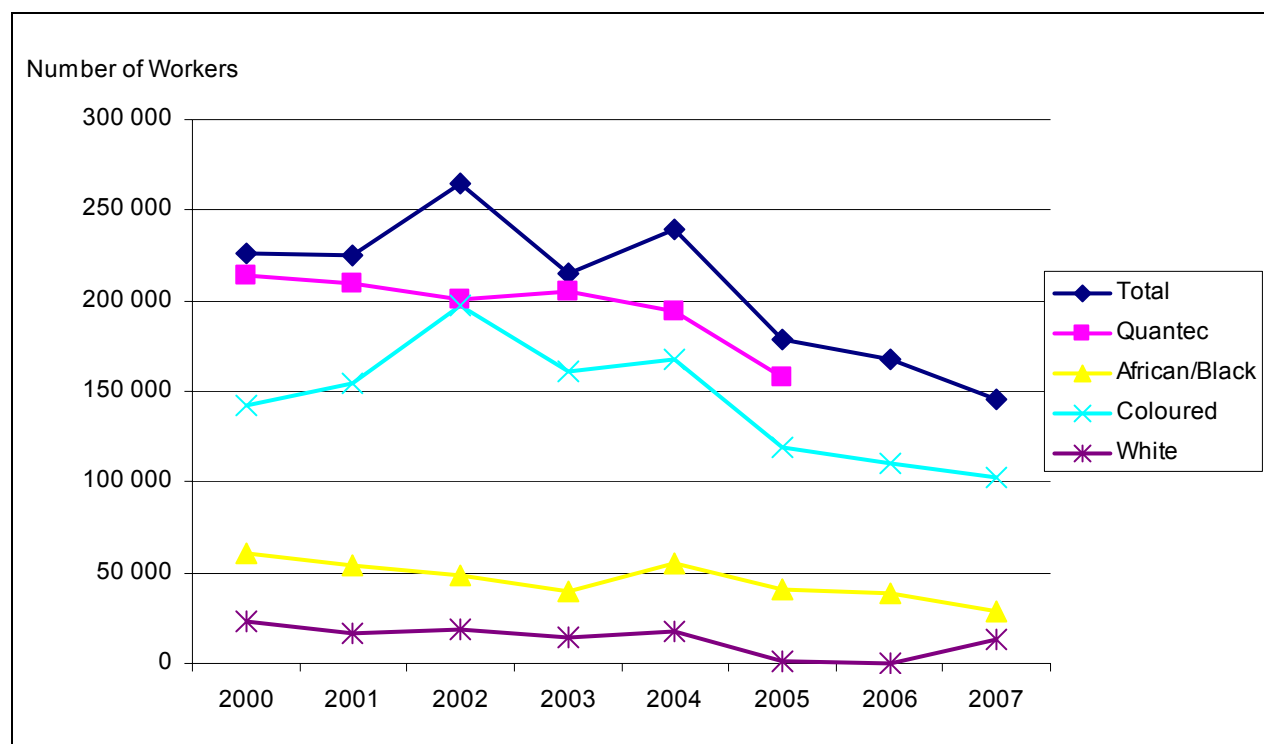
	Male	Share	Female	Share	Total	Share
City of Cape Town	10,709	82.60	2,256	17.40	12,965	100.00
West Coast	10,973	64.66	5,999	35.34	16,971	100.00
Boland	43,912	56.42	33,921	43.58	77,833	100.00
Overberg	13,198	63.58	7,561	36.42	20,758	100.00
Eden	10,267	65.68	5,366	34.32	15,633	100.00
Central Karoo	2,001	90.27	216	9.73	2,217	100.00
Total	91,060	62.21	55,318	37.79	146,378	

Source: Own calculation from Labour Force Survey 2007

Table 9 illustrates that the majority of the work-force is male, and that only in the Boland district there is close to an even share (56.42% for males and 43.58% for females). The Central Karoo is the most gender unequal with men comprising 90.27% of the work-force. The Boland also have the most workers (77 833 workers) and the Central Karoo the least (2 217 workers).

3.4.1. *Employment over time*

Employment for the Western Cape 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 is skilled agriculture disregarding the industry. The industry Agriculture, Fishery and Hunting was evaluated, and workers of only agricultural activities were used in this report. The following figure was obtained from the data:

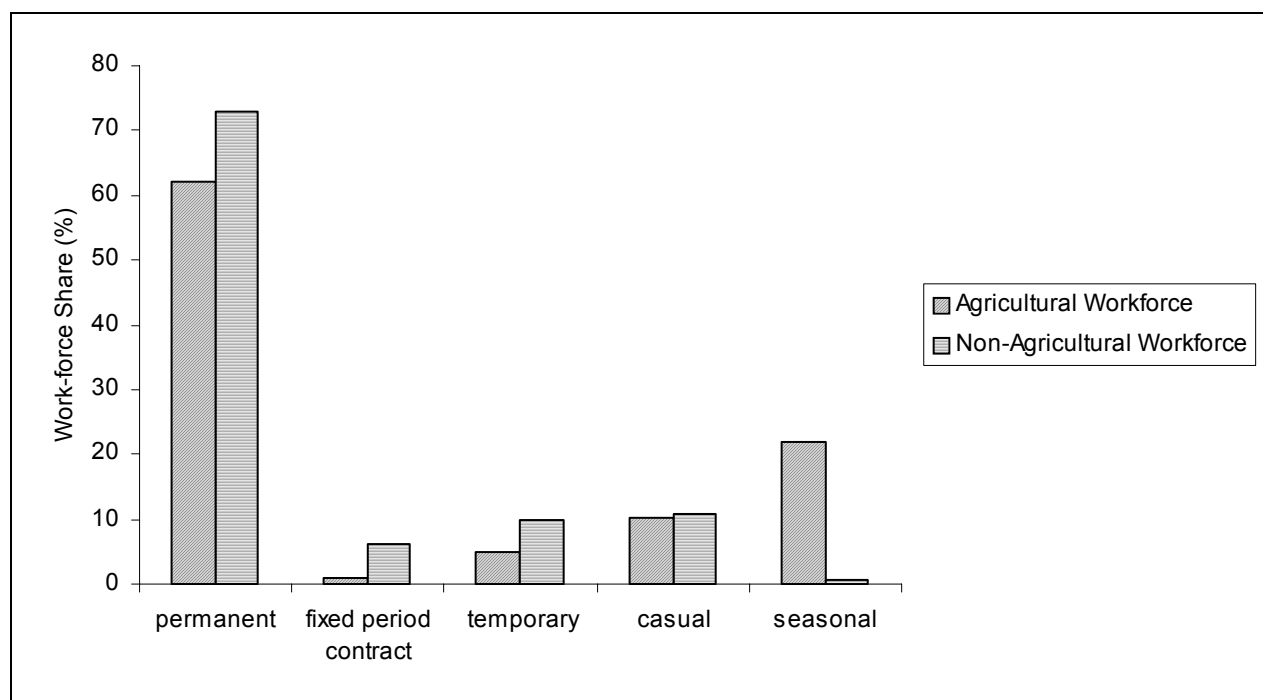
Figure 9: Agricultural Employment figures from 2000 to 2007

Source: Own calculation from Labour Force Survey 2000-2007 and Quantec (2008)

It can be observed in Figure 9 that there is definitively a decreasing trend in total employment. Comparing it to Quantec total employment data (Quantec 2008) indicates the same trend as the results from the Labour Force Survey. The Coloured workers leaving the sector are mostly responsible for this occurrence as their trend follows a similar path as the trend for total employment. African and White employment decrease significantly over time, for Africans from 60,904 to 29,162 workers and for Whites from 22,670 to 13,579 workers. Further analysis needs to be done in order to investigate the reasons behind this declining trend.

3.4.2. Employment status

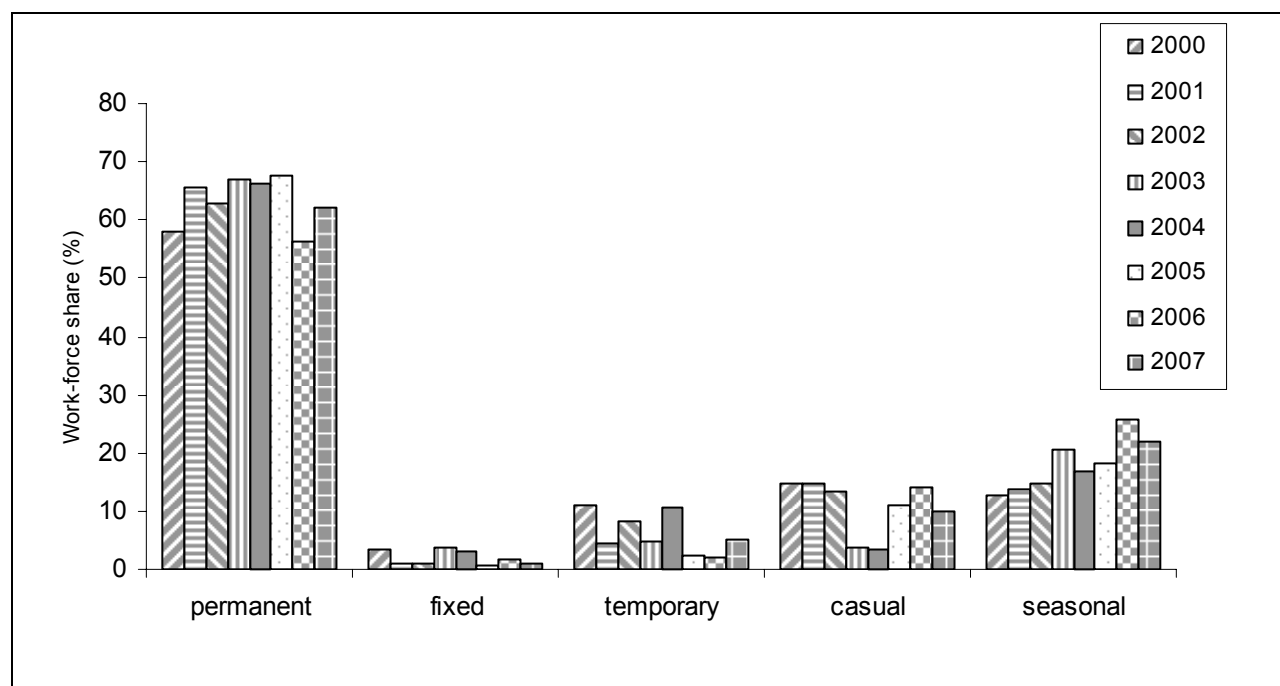
The Labour Force Survey asks various work-related questions to employed respondents, one being that of the terms of employment. Respondents had to classify whether their job was permanent, a fixed period contract, temporary, casual or seasonal. The following results in Figure 10 were obtained for 2007 while Figure 11 indicates the period 2000-2007:

Figure 10: Work status for Western Cape 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 seasonal work-force is also visible. This seasonal element is clearly unique within the agricultural work-force, as the non-agricultural work-force has almost 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.

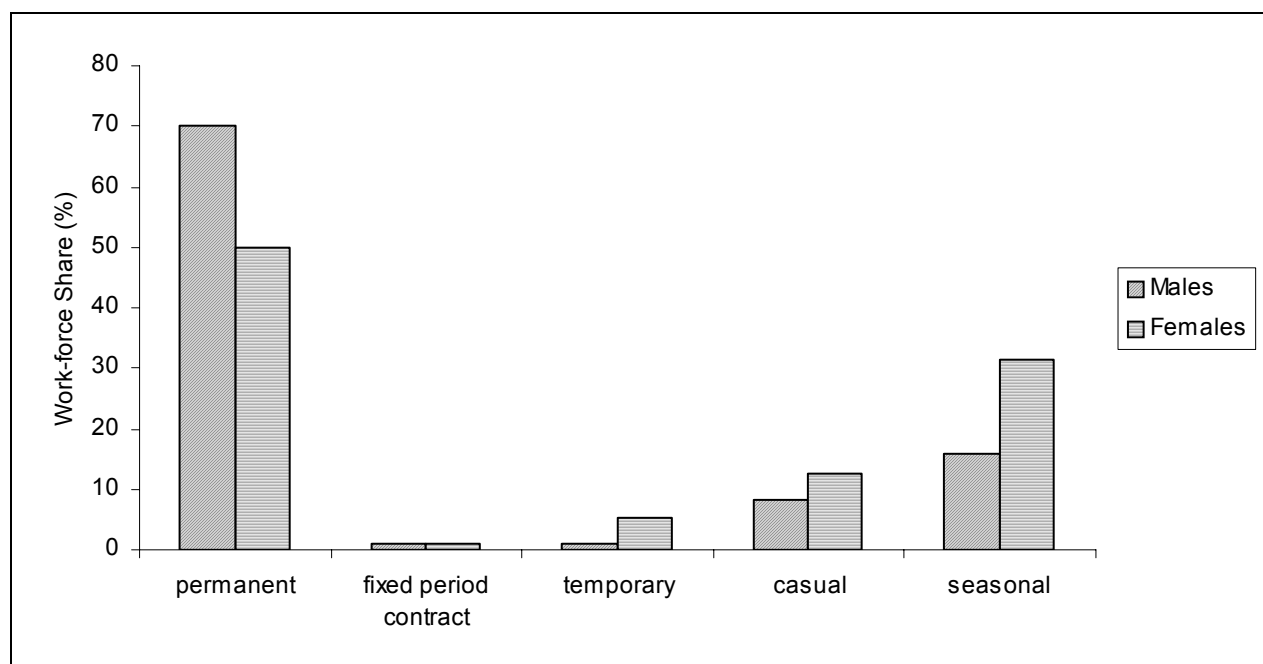
Figure 11 presents the work status data from 2000 till 2007 for the agricultural work-force:

Figure 11: Work status over time

Source: Own calculation from Labour Force Survey 2000-2007

This figure indicates a slight increase followed by a decrease in permanent labour, while the number of fixed period employees remained relatively small. There is another decline in temporary employment and casual employment differs from year to year. The significant result is of the incline in seasonal workers, indicating that workers might have moved from permanent and temporary employment towards seasonal employment. Taking Figure 9 into consideration, total employment decreased, while seasonal employment increased. This might suggest that more workers were leaving the sector than joining, but some of the decrease in permanent and temporary employment were picked up by seasonal employment.

Looking more closely at the agricultural sector, and dividing it between genders, Figure 12 was obtained. The permanent work-force is being dominated by males, whereas the seasonal work-force is dominated by females. Females tend to be more temporary, casual and seasonal workers, while males had relatively more permanent employment.

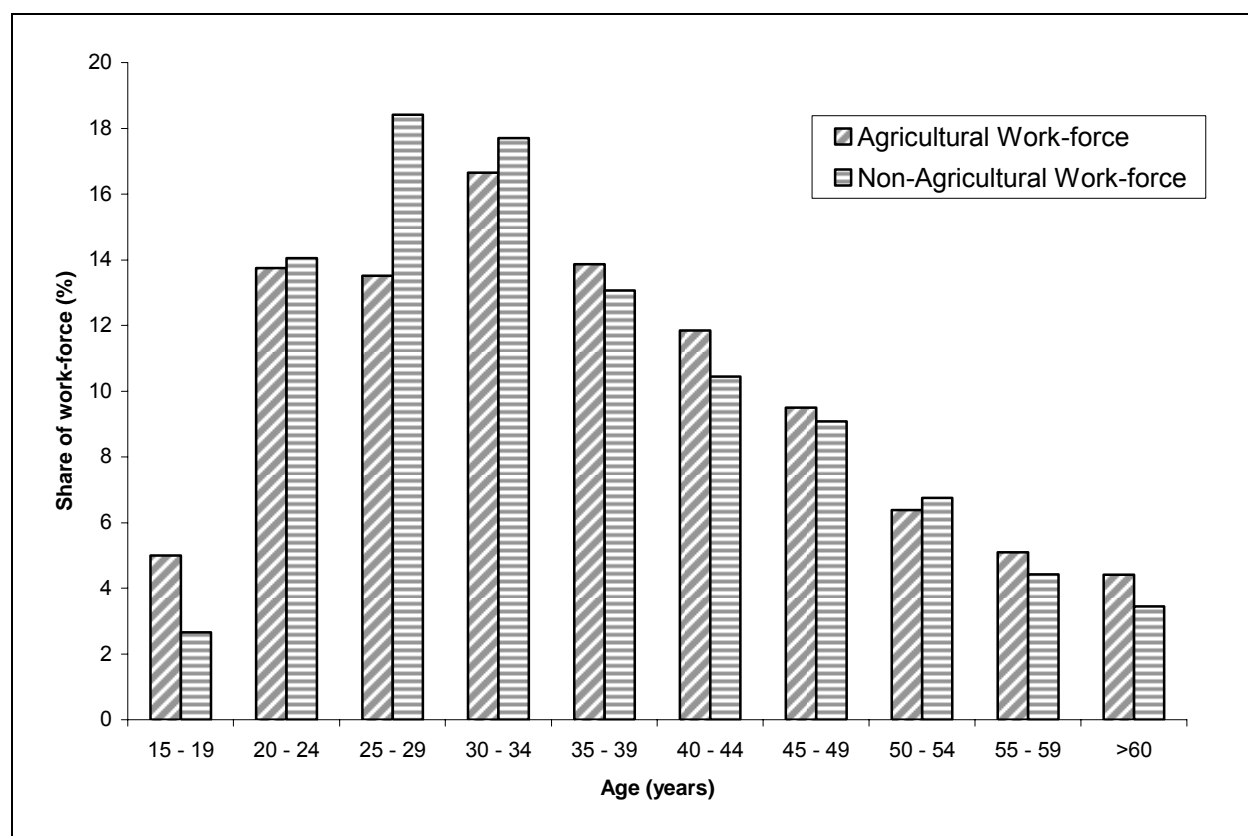
Figure 12: Work status for agricultural workers by gender

Source: Own calculation from Labour Force Survey 2007

3.5. Characteristics of Western Cape agricultural work-force

3.5.1. *Age structure*

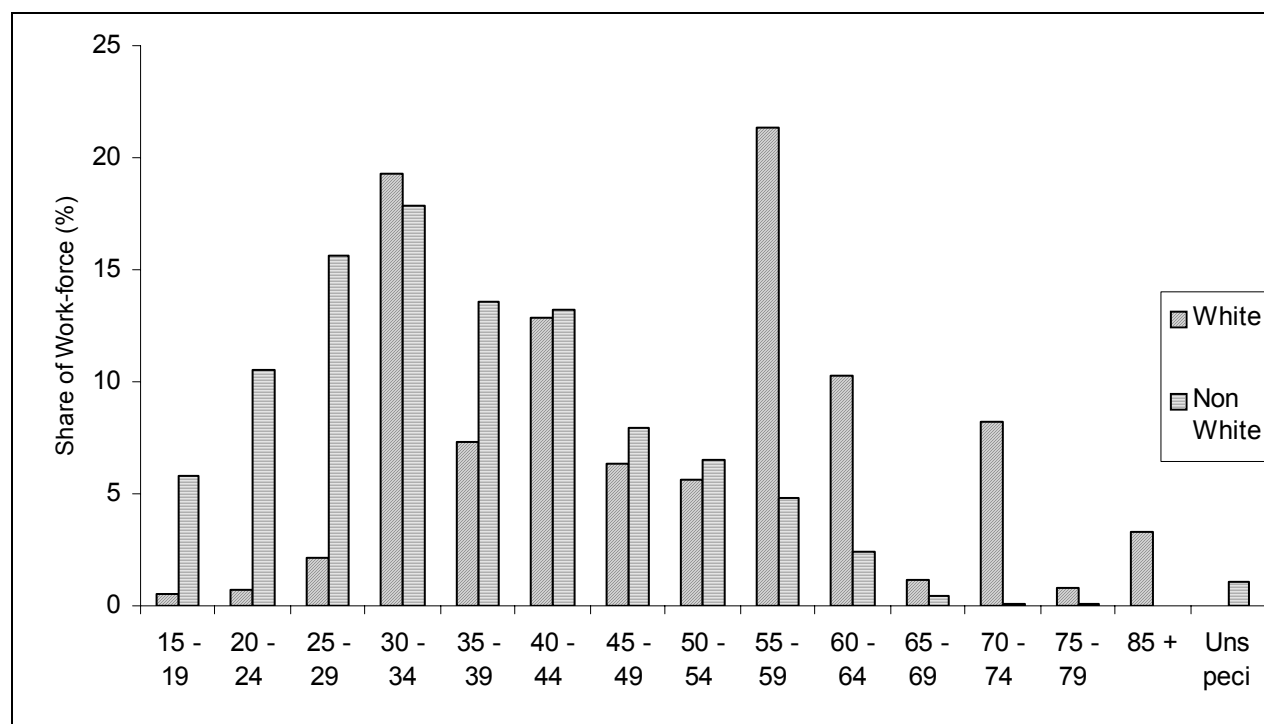
Comparing the agricultural work-force with the non-agricultural work-force (thus those in other industries), Figure 13 was obtained.

Figure 13: Age structure of agricultural and non-agricultural work-force in the Western Cape

Source: Own calculation from Labour Force Survey 2007

The same trend can be observed between the two work-forces, with the difference that the non-agricultural work-force reaches a peak between ages 25 and 29. The agricultural work-force only peaks around ages 30 to 35.

Taking a closer look at the agricultural sector, and breaking it up between White and non-White workers, the following Figure 14 can be presented:

Figure 14: Agricultural work-force by age for White and non-White population groups

Source: Own calculation from Labour Force Survey 2007

There is a clear difference between the White work-force and the rest of the work-force in agriculture. The non-White work-force follows the same pattern as the work-force in general (Figure 13), but the White work-force drives the older age groups. A larger share of White agricultural workers / employers are thus 'older' compared to their non-White counterparts.

3.5.2. Location and occupation

The agricultural workers also indicated where the location is of their work. As expected, the majority (82.62%) work on a farm. The second most common place where agricultural activities take place is inside a formal business (factory or shop) and the least common is on a footpath, street corner or open space (0.38%). Table 10 present the full results, including the number and share.

Table 10: Location of Western Cape agricultural work-force

	Number	Share %
In the owner's home/On the owner's farm	120,945	82.62
In someone else's home / Private household	623	0.43
Inside a formal business premises such as factory or shop	20,854	14.25
At a service outlet such as a shop, school, post office etc	3,248	2.22
On a footpath, street, street corner, open space or field	563	0.38
No fixed location	145	0.10
Total	146,378	100.00

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 (75.26%), while service workers and shop and sales workers are the minority (0.38%). It can be seen that only 8.78% of workers in the agricultural sector in the Western Cape is classified as skilled agricultural workers.

Table 11: Occupation of Western Cape agricultural work-force

	Number	Share %
Legislators, senior officials and managers	7,387	5.06
Professionals	2,633	1.8
Technicians and associate professionals	561	0.38
Clerks	3,608	2.47
Service workers and shop and market sales worker	544	0.37
Skilled agricultural and fishery worker	12,808	8.78
Craft and related trade workers	1,325	0.91
Plant and machinery operators and assemblers	7,228	4.95
Elementary occupations	109,822	75.26
Total	145,916	100

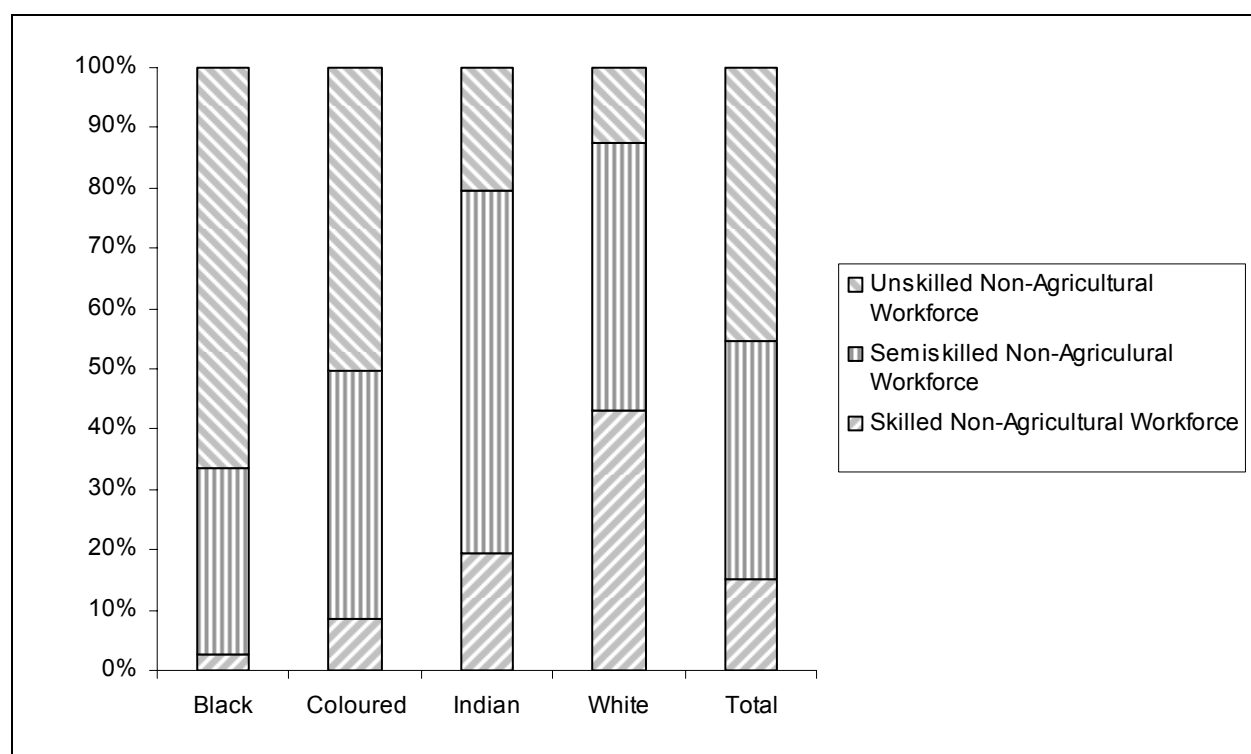
Source: Own calculation from Labour Force Survey 2007

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:

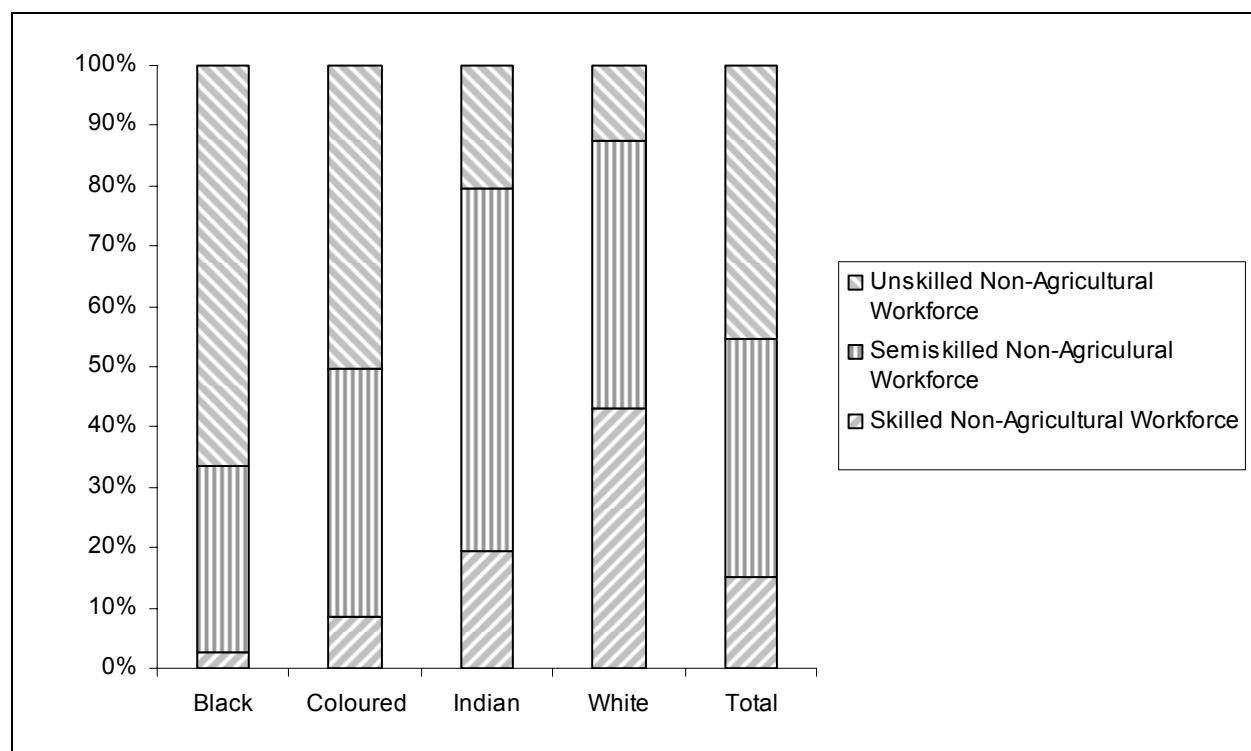
Figure 15: Skills level of the Western Cape non-agricultural work-force in 2007



Source: Own calculation from Labour Force Survey 2007

Figure 15 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 (87.5%) of White workers being skilled or semiskilled workers and the minority (33%) of the African workers being skilled or semiskilled workers. Looking at the skill levels of agricultural workers in Figure 16, the same trend can be observed. Almost none of the African workers are skilled (0.29%), while 58.1% of White agricultural workers are skilled. The whole sector is also more dominated by unskilled labour, compared to the non-agricultural sector.

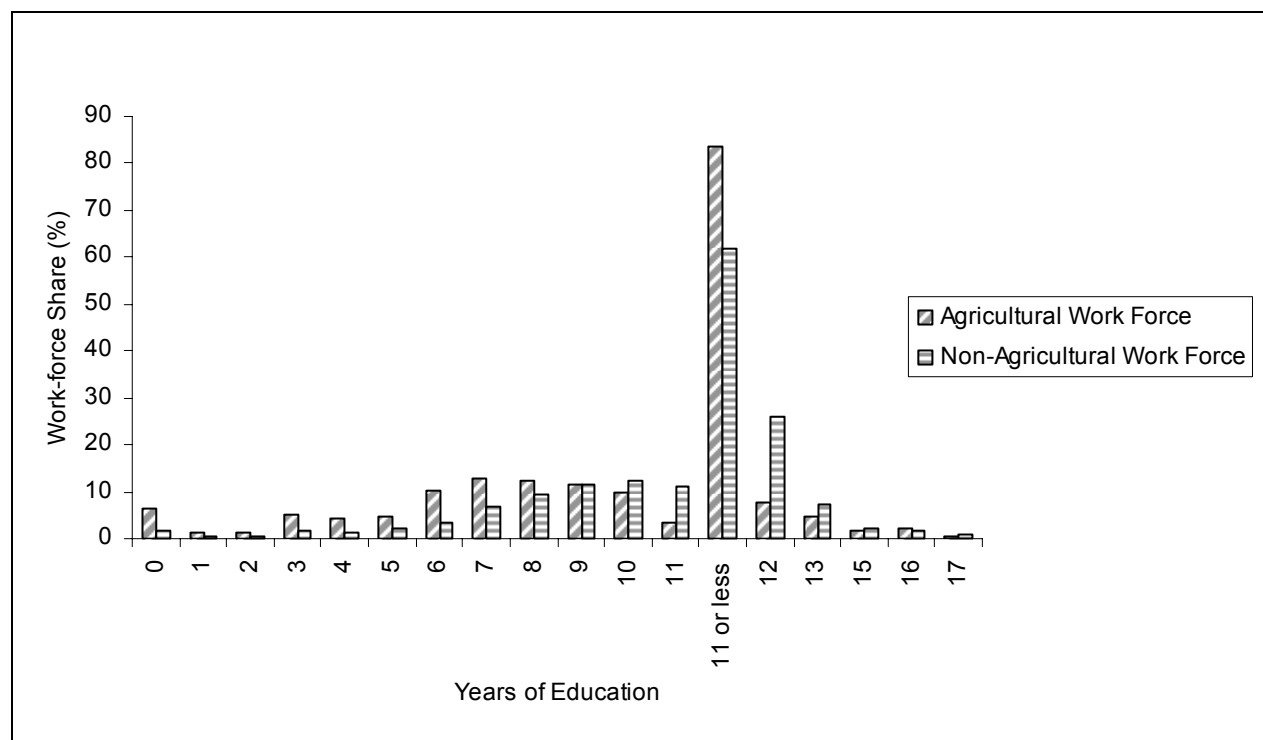
Figure 16: Skills level of the Western Cape agricultural work-force



Source: Own calculation from Labour Force Survey 2007

Examining the education level of agricultural workers and non-agricultural workers, the following bar graph (Figure 17) contains the information:

Figure 17: Highest education received for agricultural and non-agricultural workers

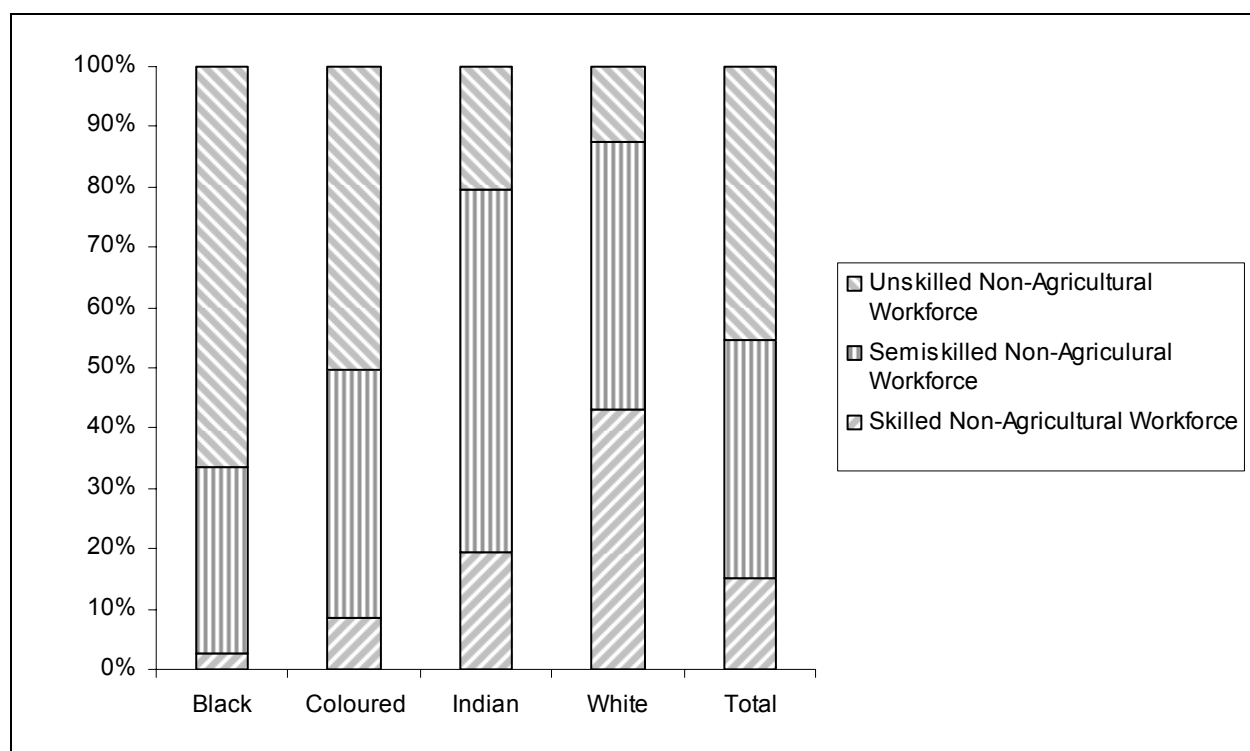


Source: Own calculation from Labour Force Survey 2007

The graph clearly shows that the majority of agricultural workers do not have a matric qualification (84%), although they received high school education. Only a small portion received more than 12 years of education (16%). The non-agricultural work-force has a higher share of matriculant workers (26%) and workers with post-matric education (12% compared to 8.3% of agricultural work-force). This clearly indicates that the agricultural work-force has less formal education than the non-agricultural work-force.

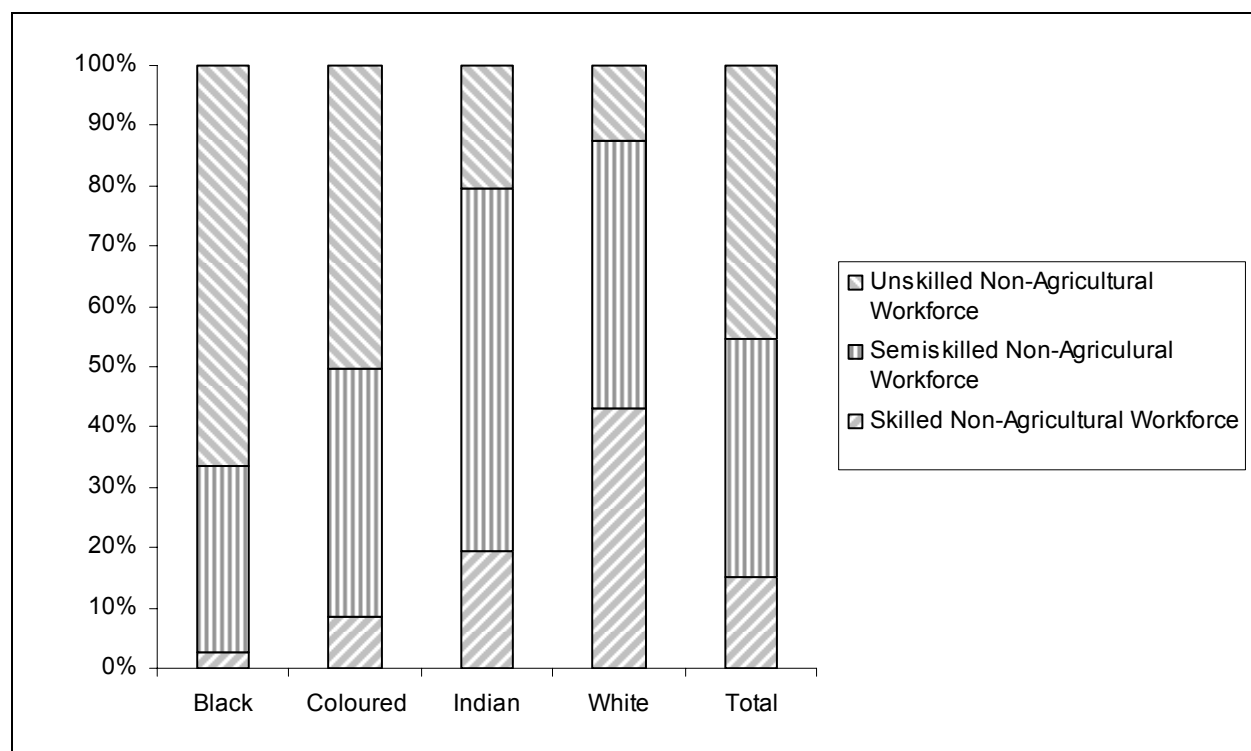
Looking at the skills level trend through years 2000 till 2007, the subsequent figures illustrate each population group's skills:

Figure 18: Skills level for Africans in the agricultural work-force



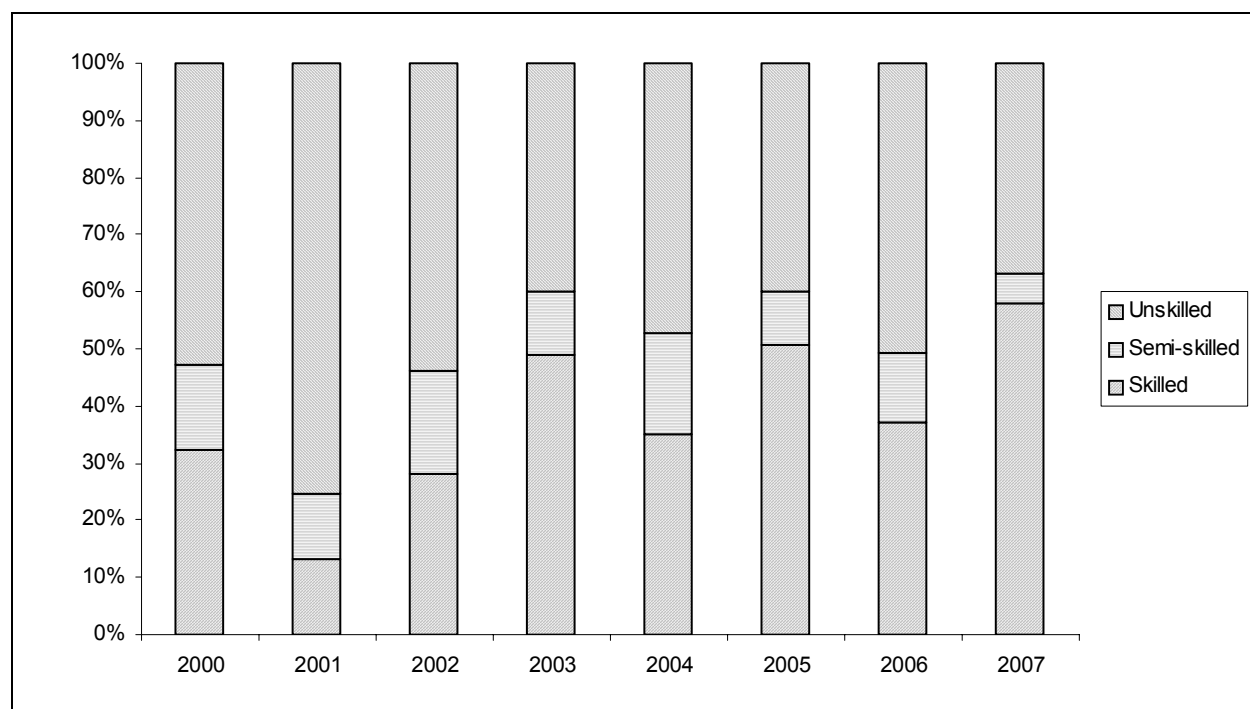
Source: Own calculation from Labour Force Survey 2000-2007

The skills level of the African population group did not change from 2000 (Figure 18). 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 19: Skills level of the Coloured agricultural workers

Source: Own calculation from Labour Force Survey 2000-2007

The skills level of the Coloured population in Figure 19 does not differ much from the African population's skills level, but a slight share increase in semi-skilled (0.81% to 3.7%) through time. This indicates that a minority did acquire more skills to move towards more specialised work.

Figure 20: Skills level of the White agricultural work-force

Source: Own calculation from Labour Force Survey 2000-2007

In Figure 20 the White work-force has a dramatically different composition of skills than the other two population groups. It differs from year to year, but the share of skilled workers increased with time (32.33% to 57.9%), while the unskilled declined (52.7% to 36.77%).

There is a definite skills gap between race groups in the Western Cape 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.

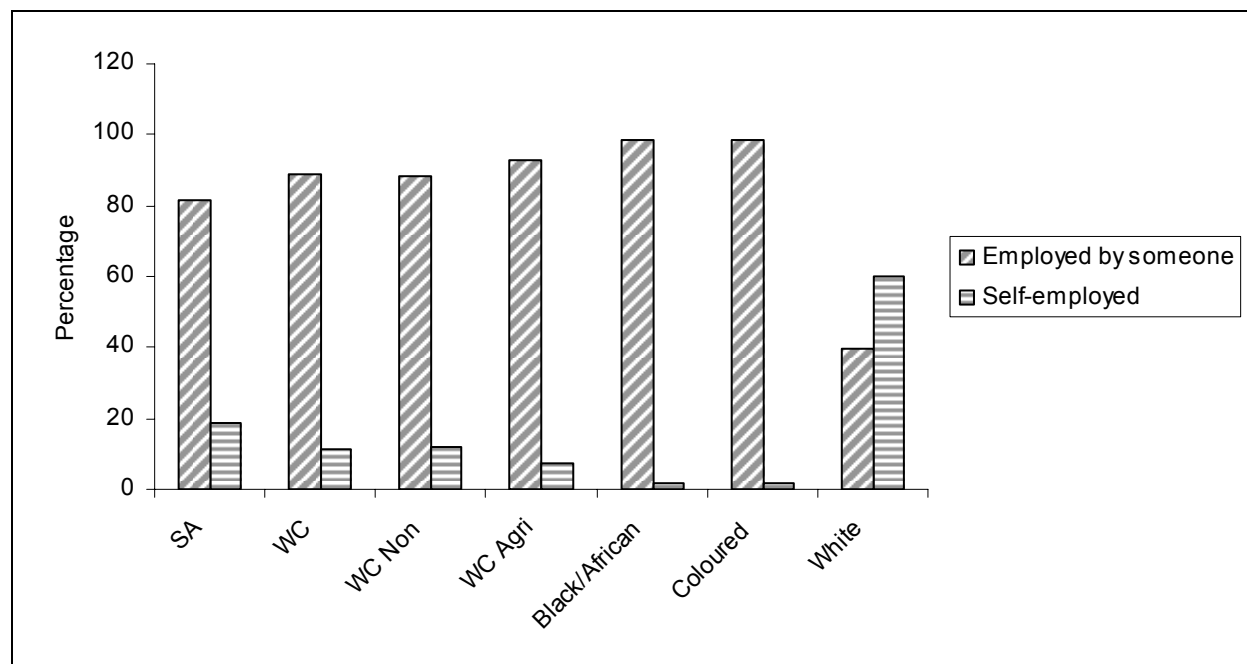
4. Income

4.1. South Africa and Western Cape

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. But before income can be analysed, there needs to be distinguished between employed and self-employed in South Africa and the Western Cape. Figure 21 represents the percentages of employed and self-employed individuals in South Africa, the Western Cape, the Western Cape non-agricultural sector and the Western Cape agricultural sector by race.

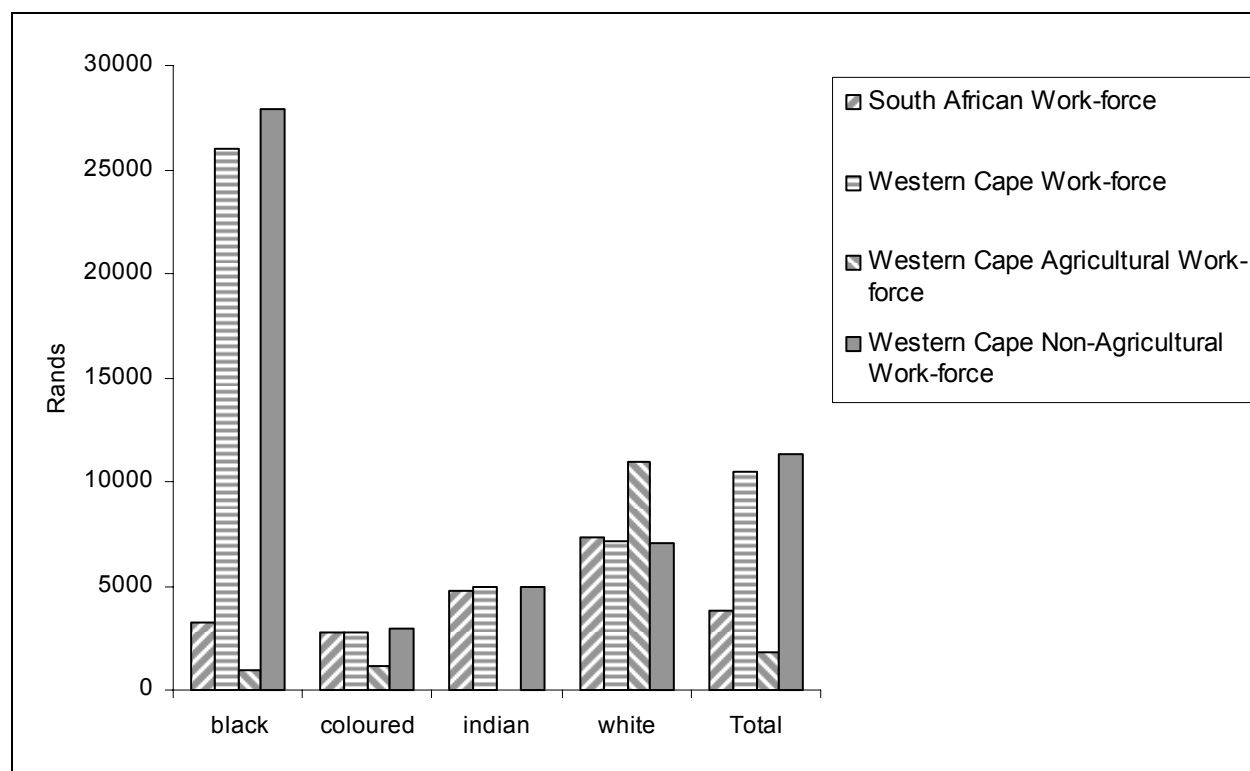
Figure 21: Employed and Self-employed percentages in 2007



Source: Own calculation from Labour Force Survey 2007

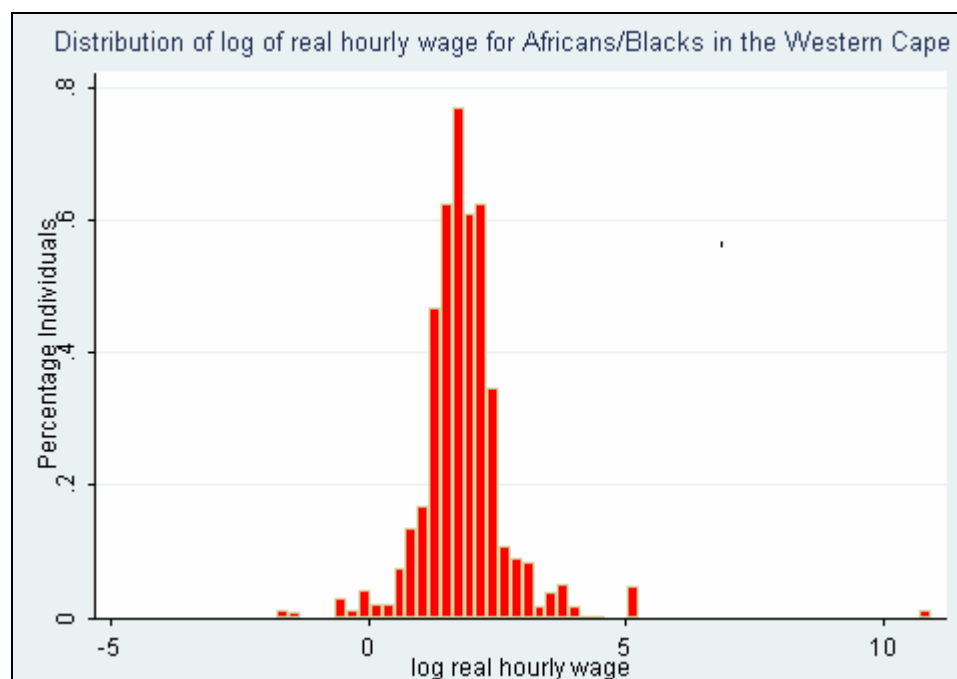
This figure indicates that the majority of individuals are employed by someone else throughout the groups, except for the White Western Cape agricultural population. There 60% of individuals in the agricultural sector are self-employed. This difference has significant implications when analysing the income profiles. Firstly individuals employed by someone else receive a constant monthly wage, but self-employed individuals' income differs with business output. Secondly self-employed agricultural individuals are usually farm owners with an even more irregular income due to seasonality. White agricultural individuals in the Western Cape therefore are expected to have a varying income profile. This provides a foundation to analyse income profiles across population groups and time more effectively.

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, Western Cape, Western Cape agricultural and Western Cape non-agricultural work-forces.

Figure 22: Real mean monthly income from main source by race for 2007

Source: Own calculation from Labour Force Survey 2007

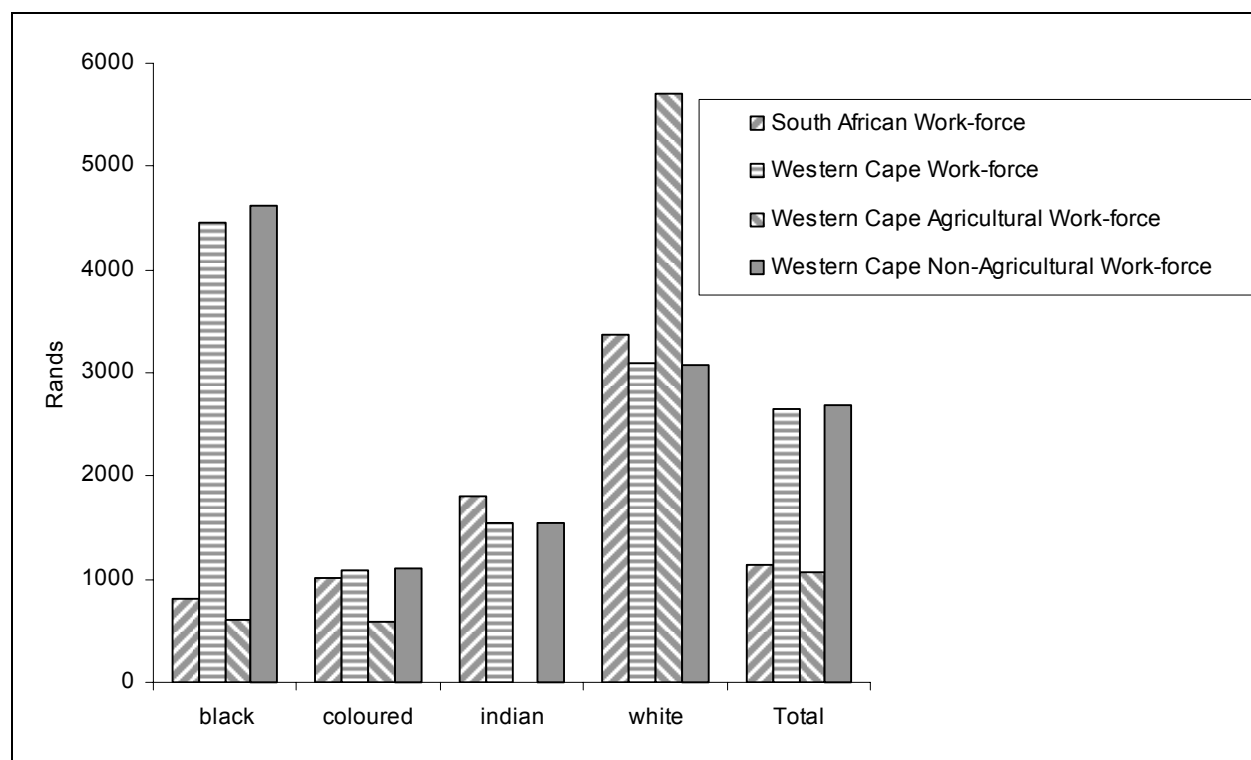
The Western Cape mean monthly income in Figure 22 is similar to that of South Africa for all population groups except the African population group. The results for the African population are driven by a high non-agricultural household income. This suggests that there must be some outliers driving this occurrence. Overall the agricultural households of the Western Cape receive a lower income, excluding the White population. The White agricultural mean income is higher than the other mean incomes, suggesting that on average a white individual in the agricultural household in the Western Cape is doing financially better than his/her peers. Generally, the non-agricultural income is similar to the mean income for the province and the country. The next figure investigates why the mean income for African population in the non-agricultural households is completely disproportionate to the rest:

Figure 23: Distribution of African real monthly income for 2007

Source: Own calculation from Labour Force Survey 2007

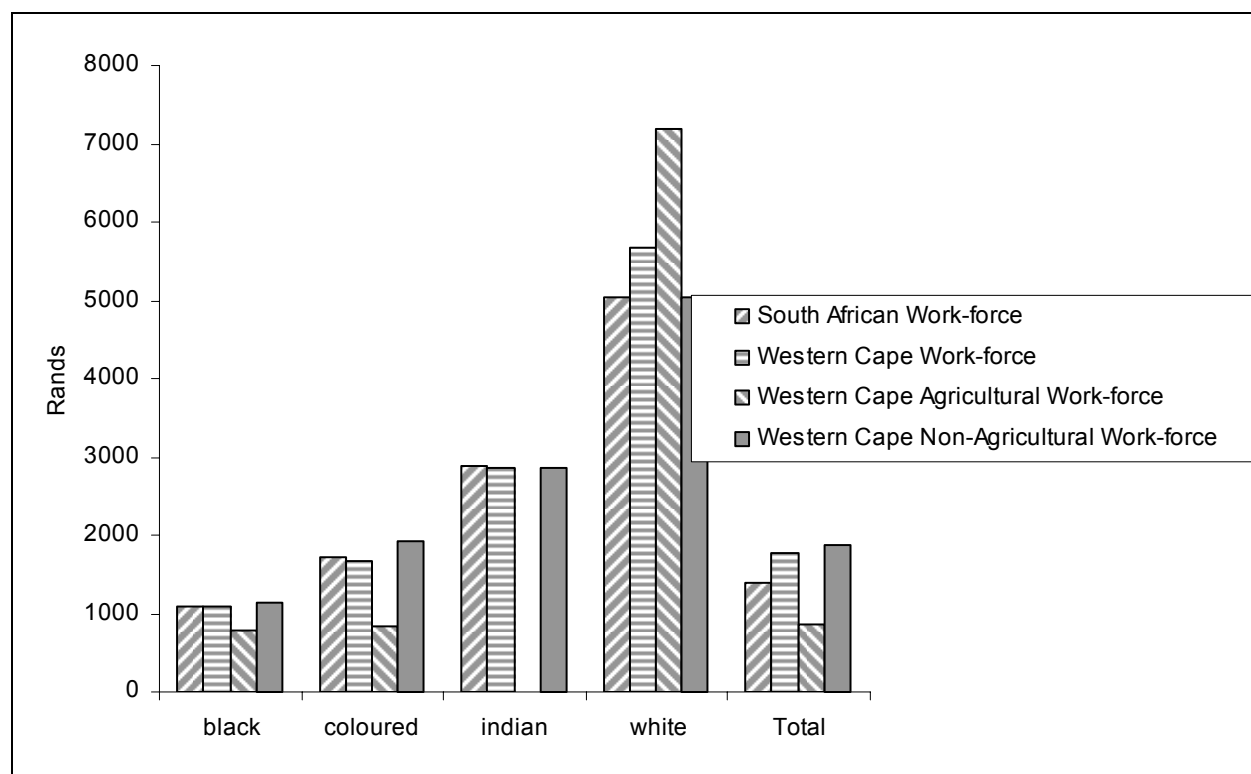
Logarithms were used in order to obtain a more 'normal' distribution histogram. An important feature that arises when using logarithms is that of sample selection bias in the data. This is due to the absence of data in case the respondent did not answer the question. All zero inscriptions are thus eliminated when transforming the data into logarithmic form. The above figure (Figure 23) indicates that the African income follows a normal distribution path with a mean around 1.74 logarithmic of income (R5.70 per hour) which translates into R1025 per month. There is a few extreme outliers (one observation without weights, 1084 observations with weights) at around logarithmic 11 (R56 545 per hour) which influence the mean income of the subgroup. The mean is thus not a representative figure of the real income for African, non-agricultural workers.

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 24: Mean monthly real household income per capita by race for 2007

Source: Own calculation from Labour Force Survey 2007

In Figure 24 again the agriculture sector's mean household income per capita is lower across all races except for the White populations. The non-agriculture Western Cape and South African household incomes display the same patterns as the individual incomes, with Whites earning the most on average and Africans and Coloureds earning the least. Again the outliers influence the African, non-agriculture sector in the Western Cape.

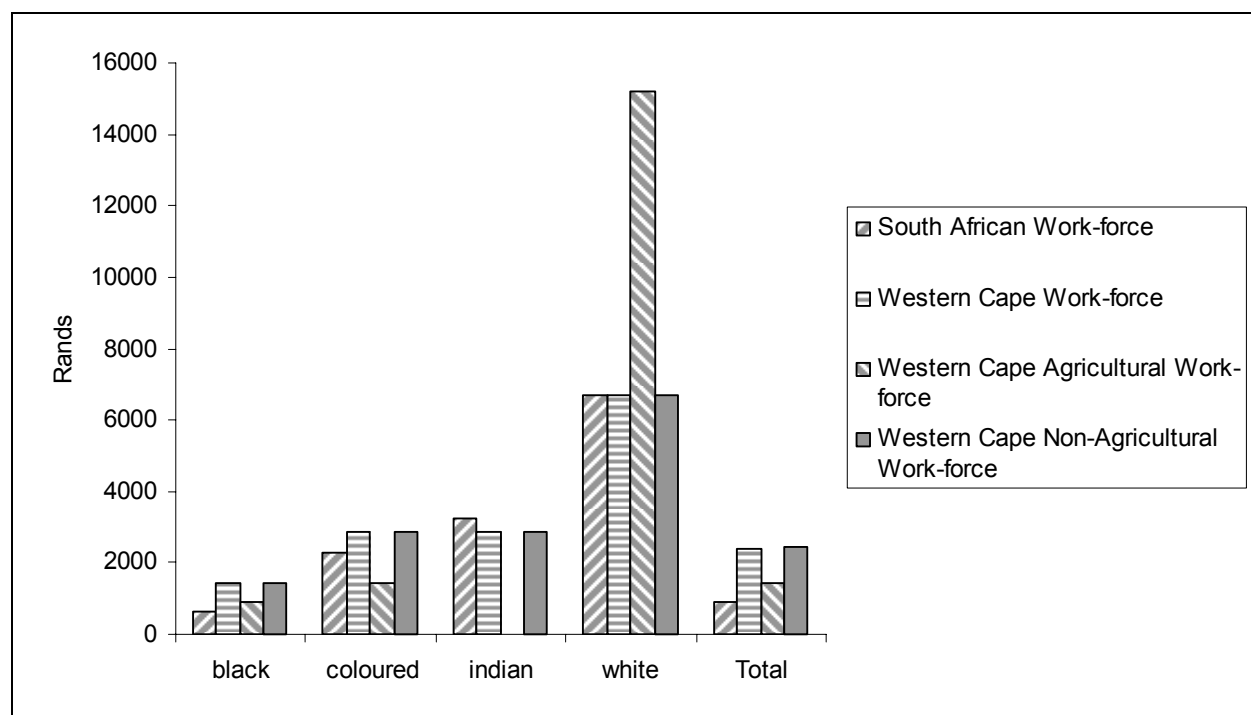
Figure 25: Monthly median income for individuals by race for 2007

Source: Own calculation from Labour Force Survey 2007

The median incomes are illustrated above in Figure 25 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 50th percentile, meaning 50% of the individuals receive equal or less than the mentioned income. Hence this figure shows a lower income across all population groups. The trend remains the same, with Whites earning the most and Africans earning the least. White agricultural households also have the highest median income, and also the Western Cape is doing financially better than South Africa concerning White incomes. Across the other races, incomes in the Western Cape are comparable to that of South Africa, while the agricultural sector is earning a lower median income.

Figure 26 illustrates the monthly median incomes for households in 2007 by population group. Like the previous figure (Figure 25), the White households have the highest median income for 2007 across all work-forces. The Western Cape households are doing financially better than the whole of South Africa except in the Indian households. Agricultural households are worse off than non-agricultural households with the exception of White households with a relatively high median income (R15 176).

Figure 26: Monthly median incomes for households by race for 2007

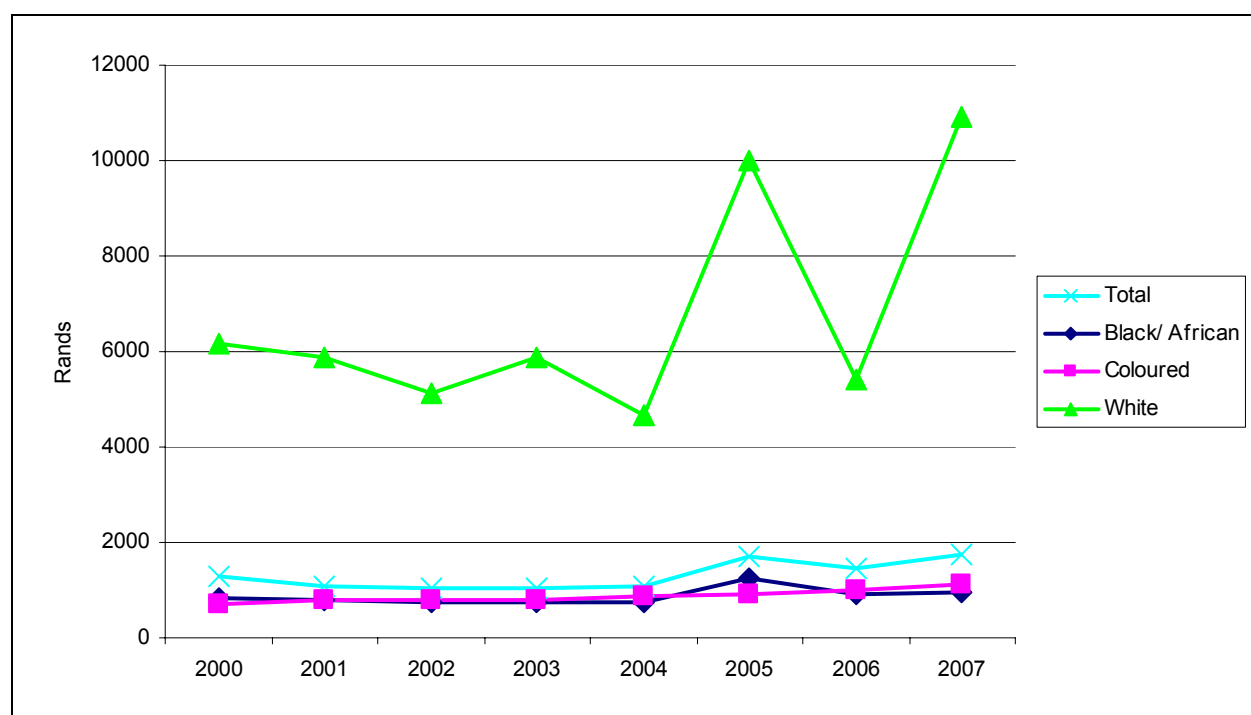


Source: Own calculation from Labour Force Survey 2007

4.2. Western Cape agricultural work-force

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

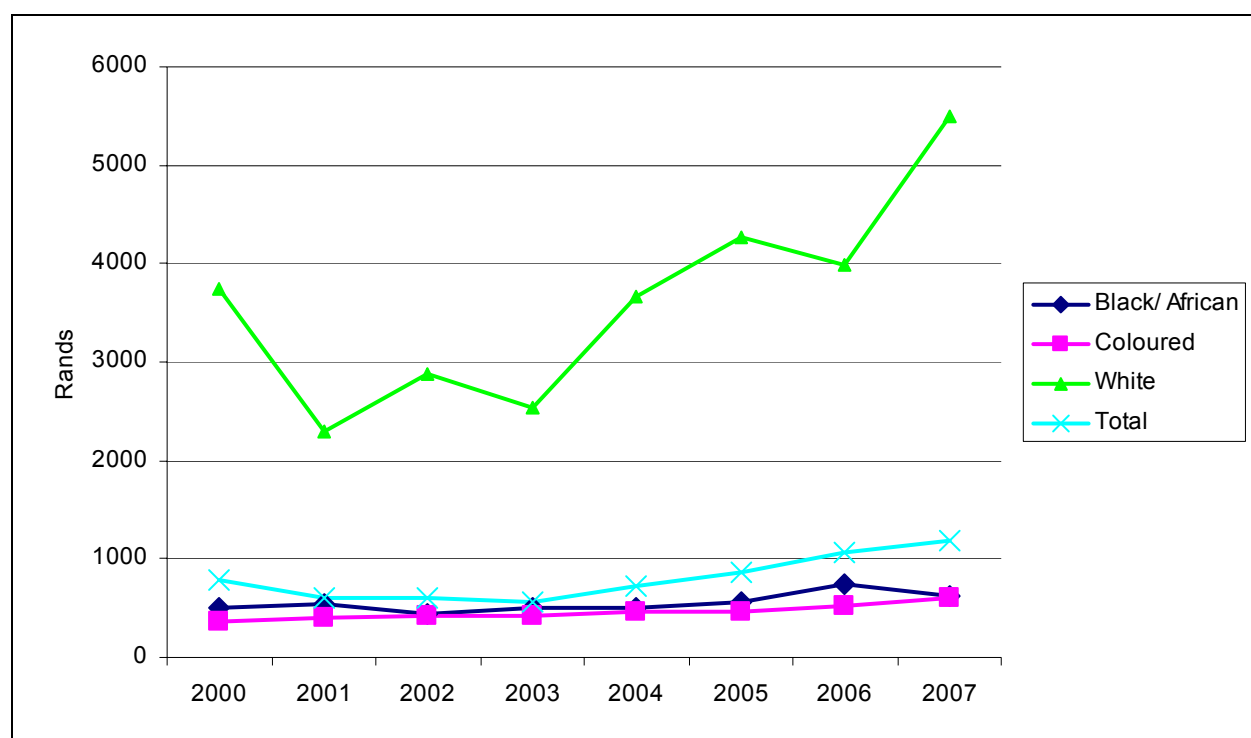
Figure 27: Real monthly mean income for individuals working in agriculture from 2000



Source: Own calculation from Labour Force Survey 2000-2007

Above figure (Figure 27) clearly indicates the huge 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, whereas the White's income differs immensely from period to period. This large up- and downswings can be due to measurement error, and can be seen throughout the income profiles. Figure 21 indicates that White individuals in the Western Cape agricultural sector are mainly self-employed. This might explain the disparity between the mean incomes of White individuals and the other population groups, but also the movements within the White groups' income. Self-employed individuals do not receive a constant income as employees do, and thus income will differ with time.

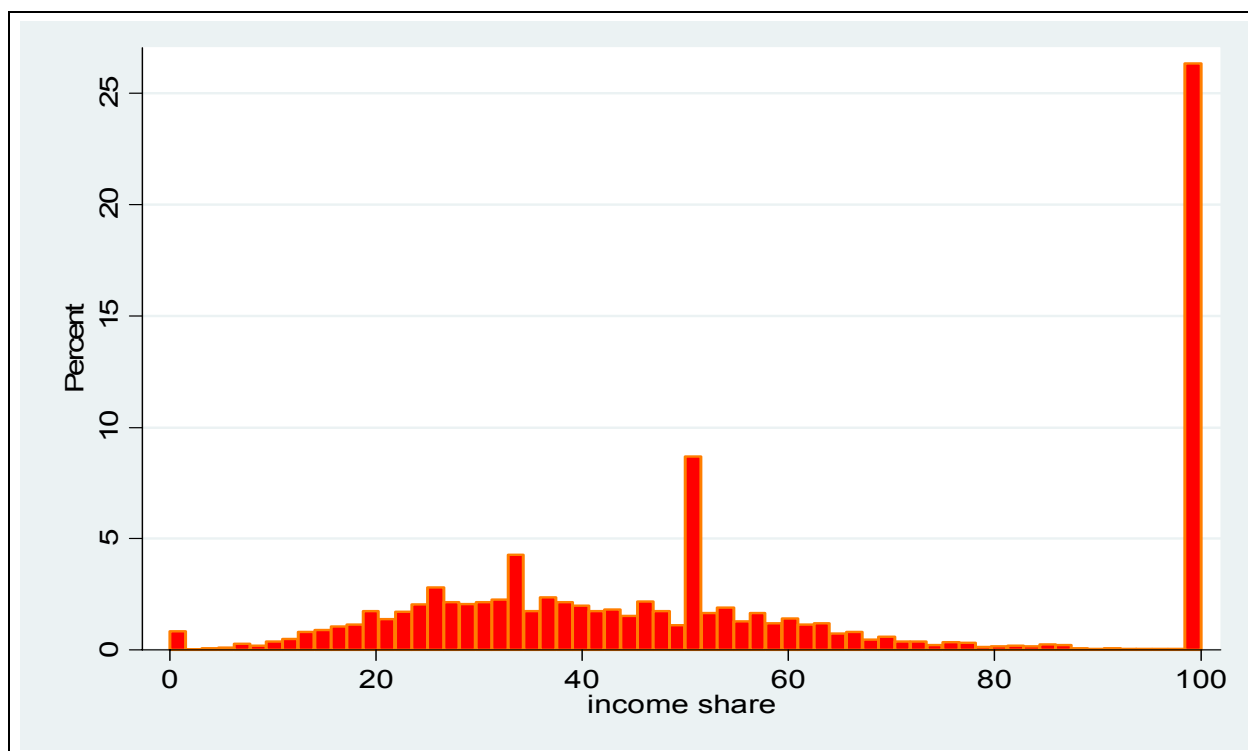
Figure 28: Real mean household income per capita for all agricultural households since 2000



Source: Own calculation from Labour Force Survey 2000-2007

The household earnings are presented above (Figure 28) for all agricultural households, thus all households that have a member / members in the agricultural sector. The figure signifies a similar trend than the individual earnings profile. This indicates that households are very much dependent on the agricultural individual earnings within the household. The next figure (Figure 29) indicates the income share of agricultural earnings as a percentage of total household. A total 26.3% of households earn all income from agriculture, i.e. solely depends on agricultural income. 28.7% of households obtain 75% or more from agricultural activities, whereas 52.5% earn 50% or more.

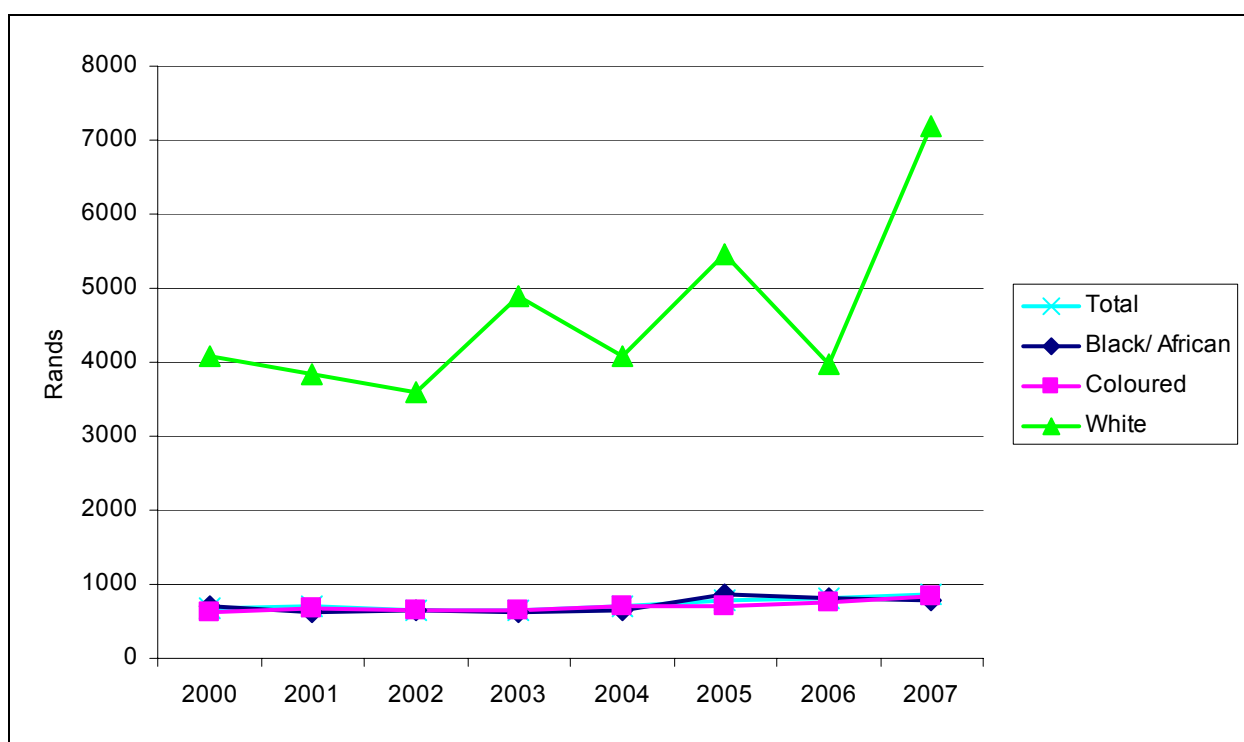
Figure 29: Income share of agricultural earnings to total household earnings for Western Cape



Source: Own calculation from Labour Force Survey 2000-2007

This figure thus indicates that households do depend, but not solely depend, on agricultural activities.

Figure 30: Monthly median incomes of individuals in agriculture since 2000



Source: Own calculation from Labour Force Survey 2000-2007

The trend stays the same within the median income (Figure 30) as for mean income, showing a wide disparity between White's incomes and the Coloured and African population. The conclusion from above four figures is that there is a clear "advantage" apart from just being self-employed with regards to income for the White population. The Coloured and African incomes remain constant over time, showing no improvement. This "advantage" that the White workers have will be investigated in the next section. The hypothesis that will be tested is that White workers have higher education or skills levels, and therefore earn a higher mean and median income according to the knowledge/skills they possess.

4.2.1. *Oaxaca-Blinder and Juhn-Murphy-Pierce decomposition between Coloured and White workers in agricultural households*

4.2.1.1. *Oaxaca-Blinder decomposition as foundation*

This technique is typically used to distinguish between productive characteristics of workers with regards to mean wage differences. It allows researchers to recognize the part of the mean wage gap that can be attributed to productive characteristics⁴ while the remaining gap between wages is attributable to discrimination (Burger and Jafta, 2006:9). The Oaxaca-Blinder decomposition commences by estimating the log of wages as being dependent on individuals' characteristics, x_i . The wage equation is therefore

$$\begin{aligned} \ln W &= \alpha + \sum x_i \beta + \varepsilon \\ &= x\beta + \varepsilon \quad (\text{in matrix notation}) \end{aligned} \tag{1}$$

Where a wage gap exists between Coloured workers and White workers, the difference in the mean log of wages is denoted by

$$\ln W_W - \ln W_C = X_W \beta_W - X_C \beta_C \tag{2}$$

where W_i is the mean wage for workers belonging to population group i , X_i is a vector of the productive characteristics evaluated at the mean for population group i , and β_i is a vector of coefficients signifying the value that the market places on characteristics X_i .

If $\beta_W \neq \beta_C$, then it is clear that the labour market rewards identical productive qualities in a different way for these two population groups. Therefore wage differentiation occurs in the labour market.

Equation 2 may be rewritten as

⁴ Productive characteristics are dependent variables in a regression and subjected to the researcher's judgment, as long as regression results are satisfactory.

$$\ln W_W - \ln W_C = (X_W - X_C)\beta^* + X_W(\beta_W - \beta^*) + X_C(\beta^* - \beta_C) \quad (3)$$

with β^* a vector of coefficients that would exist if there were no discrimination in the labour market (Burger and Jafta, 2006: 10). There are thus three components to the wage gap between the Coloured and White population groups:

1. $(X_W - X_C)\beta^*$ signifies the differences in mean wages due to differences in mean demographic/productive characteristics between the two groups.

2. $X_W(\beta_W - \beta^*)$ represents that difference between what White wage earners would earn in the absence of discrimination in the labour market and what they in fact receive;

3. $X_C(\beta^* - \beta_C)$ represents the difference between what Coloured wage earners would earn in the absence of discrimination in the labour market and what they actually receive (Burger and Jafta, 2006: 10).

This brief explanation gives rise to the next decomposition that will be investigated: the Juhn-Murphy-Pierce decomposition.

4.2.1.2. Juhn-Murphy-Pierce decompositions

The Oaxaca-Blinder technique decomposes the difference in labour market outcomes between the average White and average Coloured earner, but the Juhn-Murphy-Pierce technique allows the wage gap to be decomposed at different points of the wage distribution (Burger and Jafta, 2006: 13).

The Juhn-Murphy-Pierce decomposition denotes the wage differential at quantile q of the wage distribution to be

$$\begin{aligned} \ln W_{Wq} - \ln W_{Cq} &= X_{Wq}\beta_W + \varepsilon_{Wq} - X_{Cq}\beta_C - \varepsilon_{Cq} \\ &= (X_{Wq} - X_{Cq})\beta^* + X_{Wq}(\beta_W - \beta^*) + X_{Cq}(\beta^* - \beta_C) + (\varepsilon_{Wq} - \varepsilon_{Cq}) \end{aligned} \quad (4)$$

where q represents the mean value for quantile q (Burger and Jafta, 2006: 13).

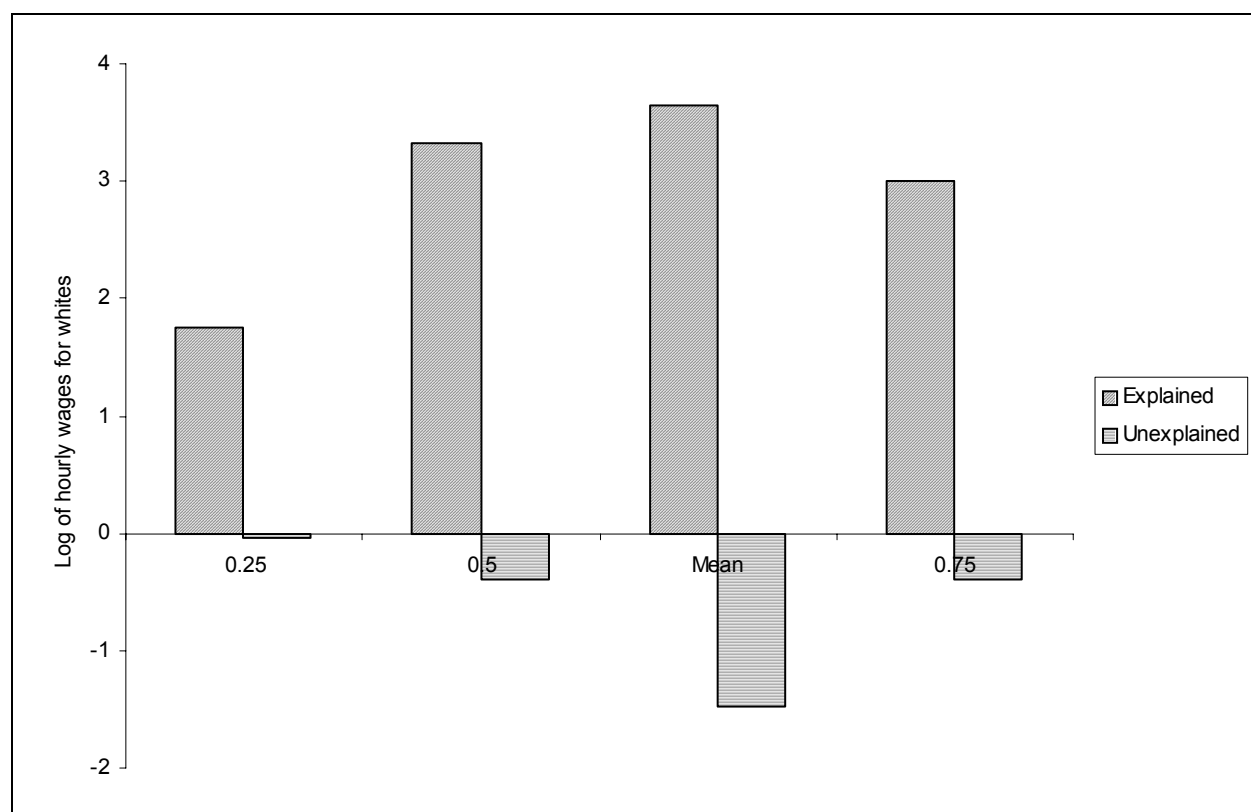
This equation states that there are three sources which contribute to the difference in mean wage between the two groups. The first term $(X_{Wq} - X_{Cq})\beta^*$, refers to the 'endowment effect'. This is the differences in observable characteristics of individuals. It can be seen as the human capital each individual possesses. Thus if there is a change in the 'group specific endowments' such as higher human capital, the gap will decrease. This is why the 'endowment effect' is

negative. The second and third terms, $X_{Wq}(\beta_W - \beta^*) + X_{Cq}(\beta^* - \beta_C)$, reflect the way that observable (hence demographic) characteristics are rewarded, therefore a change in β 's. This is referred to as the 'observable price effect' and reflects the way how endowment is rewarded for each population group.

The fourth and final term is a change in the distribution of the residual (Juhn et al., 1993: 428). This effect is a combination of firstly the 'gap effect' which results from a change in the relative position of Coloured workers within the wage distribution of White workers after the observed differences in endowments has been adjusted for. The second component is called the 'unobserved price effect' and occurs as a result of a change in the variance of wages. This term is zero for the mean (thus at the Oaxaca-Blinder decomposition) but it might help with our understanding of the wage distribution.

The following figure indicates the Oaxaca-Blinder and Juhn-Murphy-Pierce Decompositions for the wage gap between White and Coloured workers⁵. The Juhn-Murphy-Pierce was done on the 25th, 50th and 75th quantiles.

Figure 31: Oaxaca-Blinder and Juhn-Murphy-Pierce decompositions



Source: Own calculation from Labour Force Survey 2007

⁵ See appendix for regression results. Dependent variables include education, experience, gender, household size, trade union membership, work status and hours worked overtime. Variables such as self-employment, age, type of business and asset ownership was not included due to either a too small sample or lowering of the R-squared making the regression output irrelevant.

The hypothesis that is tested states that Whites earn on average more than Coloureds because of skills or education levels. The hypothesis is tested only between Whites and Coloureds and not between White and Africans because Coloureds are dominating within the agricultural sector in the Western Cape. Africans are thus the minority. Regarding the interpretation of Figure 31, if the bar is of a positive value, it is in favour of the White workers, and if it is of a negative value, it is in favour of the Coloured population. Because this method decomposes the mean wage gap, if the bar is positive it means that part of the mean wage gap accrues to the White worker. If it is a negative value, that part of the mean wage gap accrues to the Coloured worker. In terms of discrimination, as describe by Burger and Jافتا (2006), if both the explained and unexplained components are positive, it means the White worker have better education/skills levels, but also benefits from discrimination against Coloured workers. The opposite is true for Coloured workers. The total wage gap is hence the explained plus the unexplained parts, making it in favour of the subgroup with either both components and the component that achieves the maximum.

It can be seen that the White workers earn more than their Coloured counter parts, but it can be attributed to explained characteristics such as education levels and experience. The unexplained component is in favour of the Coloured population, which indicates that the wage gap decreases because of some unexplained occurrences. This can be due to minimum wages or empowerment programmes that reward Coloured (and African) workers disregarding their explained characteristics. Discrimination, in terms of the Burger and Jافتا (2006) explanation, is thus in favour of Coloured workers. The hypothesis can thus be accepted that White workers earn on average more due to their educational levels and skills.

4.2.2. *Beneficiaries from agricultural activities*

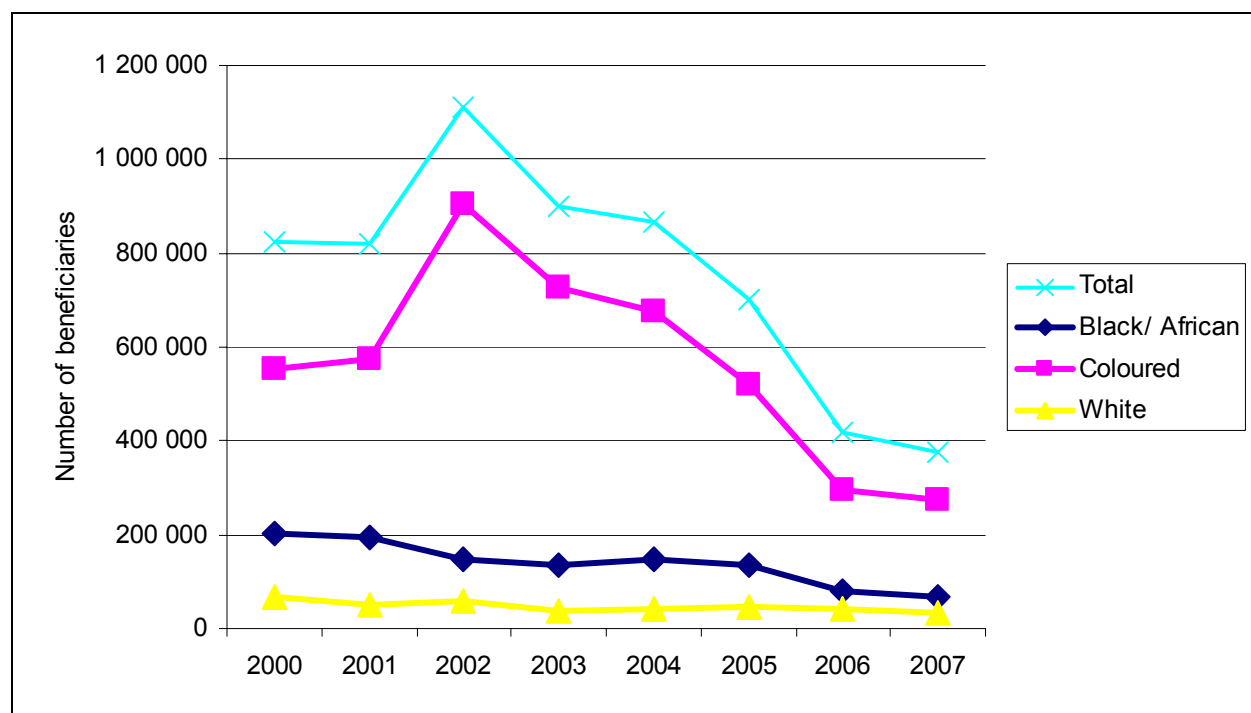
Considering the number of beneficiaries of the agricultural workers, the following table and figure were obtained. Beneficiaries were defined as the number of people in a household with an agricultural employee amongst them. But there are two different reporting measures. The first measures all beneficiaries, 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
African	66147	17.63%	51124	23.01%
Coloured	275415	73.41%	150396	67.68%
White	33619	8.96%	20690	9.31%
Total	375181		222210	

Source: Own calculation from Labour Force Survey 2007

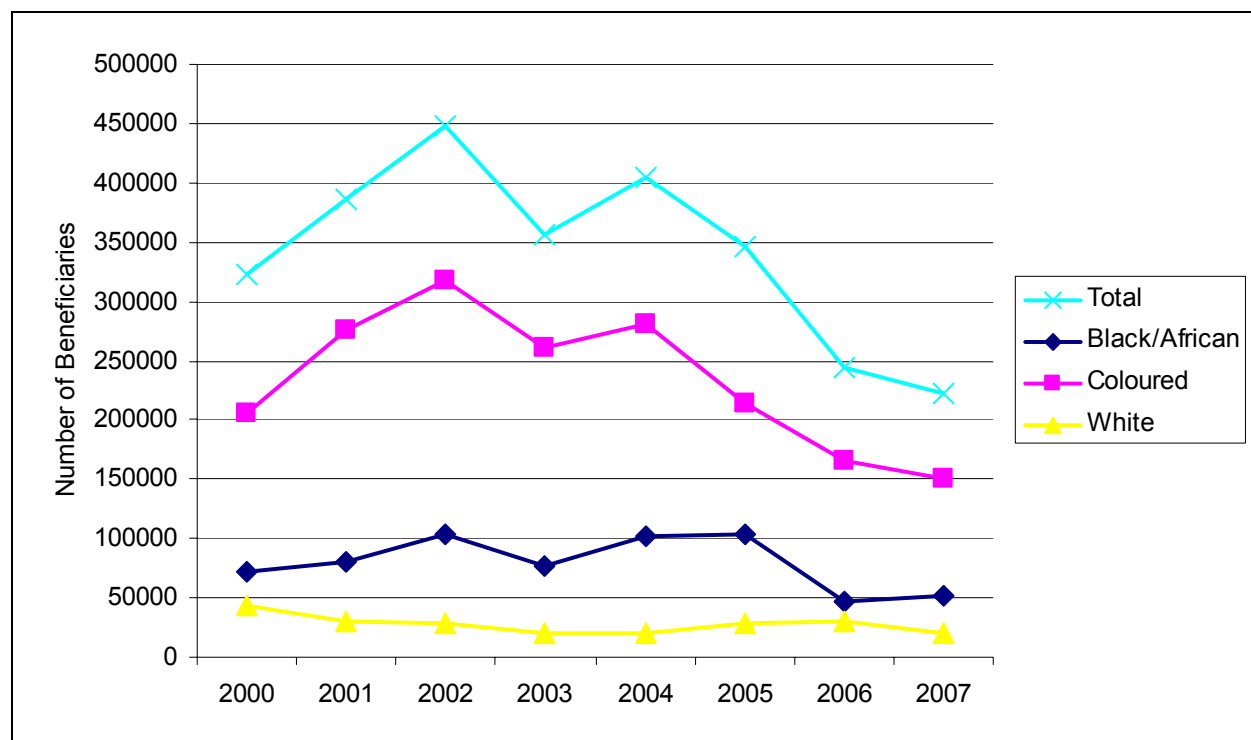
Table 12 indicates that the Coloured population have the highest number of beneficiaries in the Western Cape agricultural sector, dominating by 73.41% and 67.68% respectively. Investigating the trend over years in Figure 32, the total number of beneficiaries and the Coloured households follows a similar trend; there is first an increase and then a decrease from 2002. The African and White beneficiaries decrease over time since 2000 (202 683 to 66 147 for African households and 68 595 to 33 619 for Whites). There can also be seen that the Coloured population have the highest number of beneficiaries from agricultural activities (275 415 beneficiaries in 2007). Relating this to the poverty profile that will be discussed in section five, poverty within this population group can be understood. A single worker needs to care for more relatives than in other population groups due to the higher number of dependents or as Figure 4 suggest due to greater household sizes. A single wage of a Coloured worker must support more household members, resulting in a higher level of poverty. The declining trend within the Coloured 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 32: Number of all beneficiaries from 2000 till 2007

Source: Own calculation from Labour Force Survey 2000-2007

Taking incomes from other industries into consideration, Figure 33 indicates the number of beneficiaries in households that obtain more than half of their household income from agricultural activities. The trend over time follows the same path as for all beneficiaries, declining over time (from 321 915 to 222 210 in total). The only significant difference is that in Figure 32 the African households decreased over time, whereas in Figure 33 they increase until 2005 (from 72 182 to 103 408), and then decrease significantly till 2007 (51 124). Again the Coloured households have the most beneficiaries (150 396 in 2007).

Figure 33: 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 2002 and is now at the lowest point for all races.

5. Poverty indices of Western Cape 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 more poor 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 α symbolizes the aversion to poverty parameter. By adjusting α , 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:

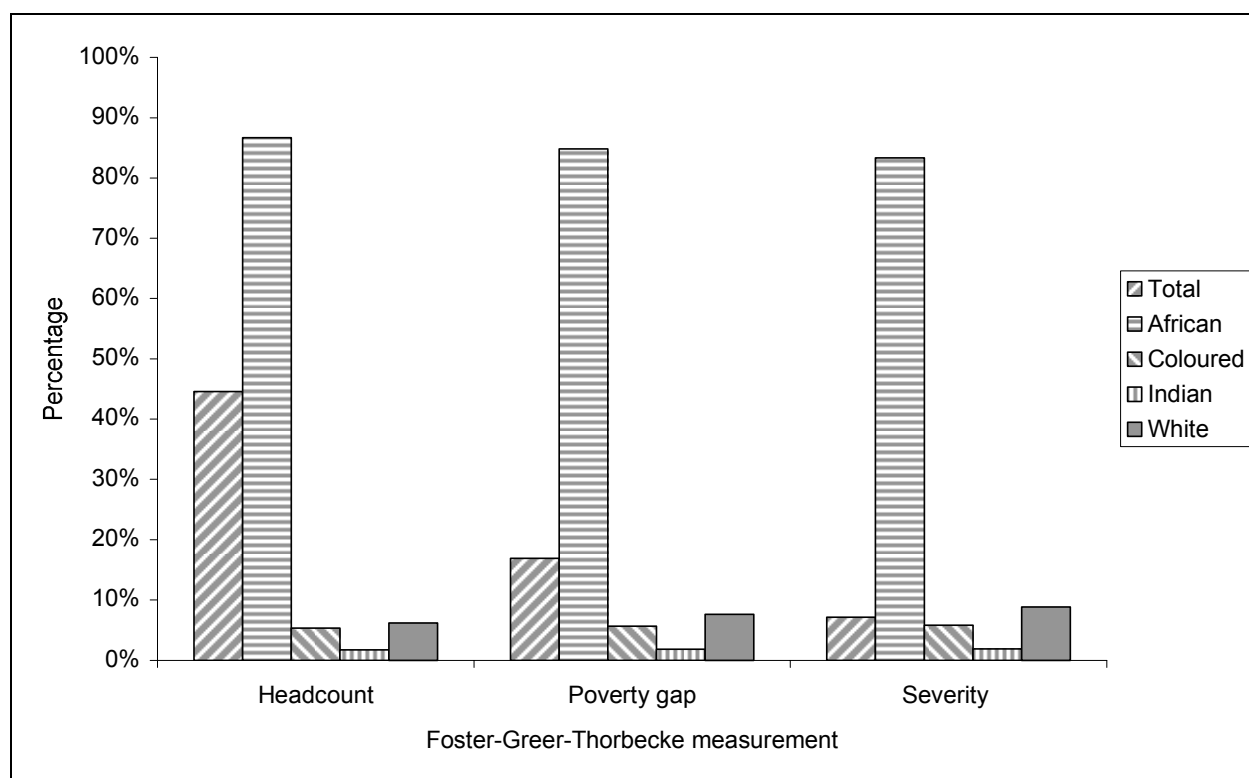
$$E = 1 + 0.5(A) + 0.3(K) \quad (6)$$

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, Western Cape and the agricultural households in the Western Cape is given together with each population group's share towards the total.

Figure 34: Poverty rate for South Africa and shares of population groups

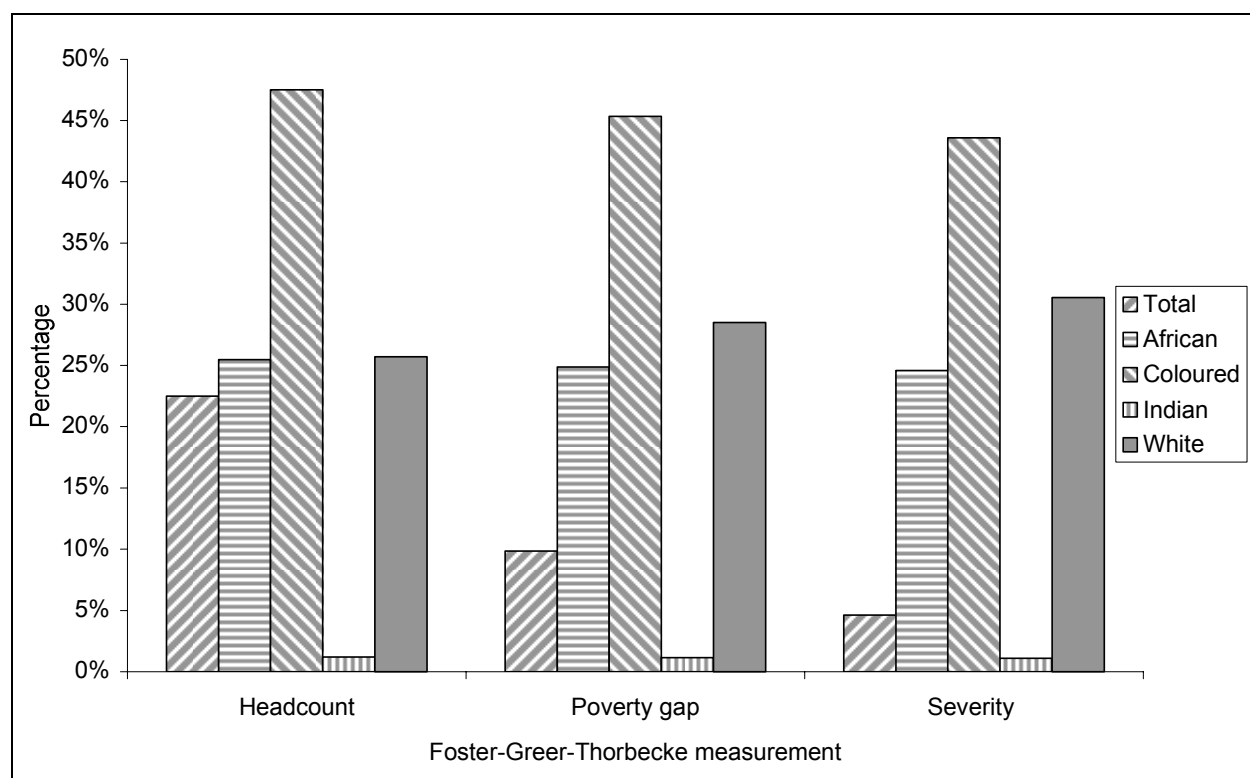


Source: Own calculation from Labour Force Survey 2007

In Figure 34 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%). Thus 86.63% of the poor population is African and 1.7% is Indian according to the headcount ratio. This translates into 21 million people in households earning less than R322 per month per adult equivalent (44.57% of 47 million) 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 Western Cape in Figure 35, a different trend can be identified. The African population is not dominating the poverty measures anymore; the Coloureds are ranked the highest with a share of 47.51%, 45.34% and 43.6% correspondingly. The total poverty rates for the different measures in the Western Cape are respectively 22.5%, 9.73% and 4.62%. According to headcount ratio this corresponds to just over 1 million people that are living below the poverty line. The significant difference is the rise of White poverty within the province. They have the second largest share in all three poverty measures, topping the African population in the province. This can be explained by referring back to section 2.1. In the Western Cape, the sample size of the White population living under poverty decreases to 4 usable entries (thus entries with information). The rest of the entries (355) are missing values. These missing values are coded as zero in calculating the household income. Household income for the remaining 355 entries is thus lower which results in lower per capita earnings in the household. Households are thus more inclined to fall under the poverty line if information is withheld. If the missing values are disregarded, the White population will only have a poverty headcount ratio of 0.07%. This problem occurs across all population groups, but is less visible because of bigger sample sizes in the other population groups.

Figure 35: Poverty rate of the Western Cape and shares of population groups

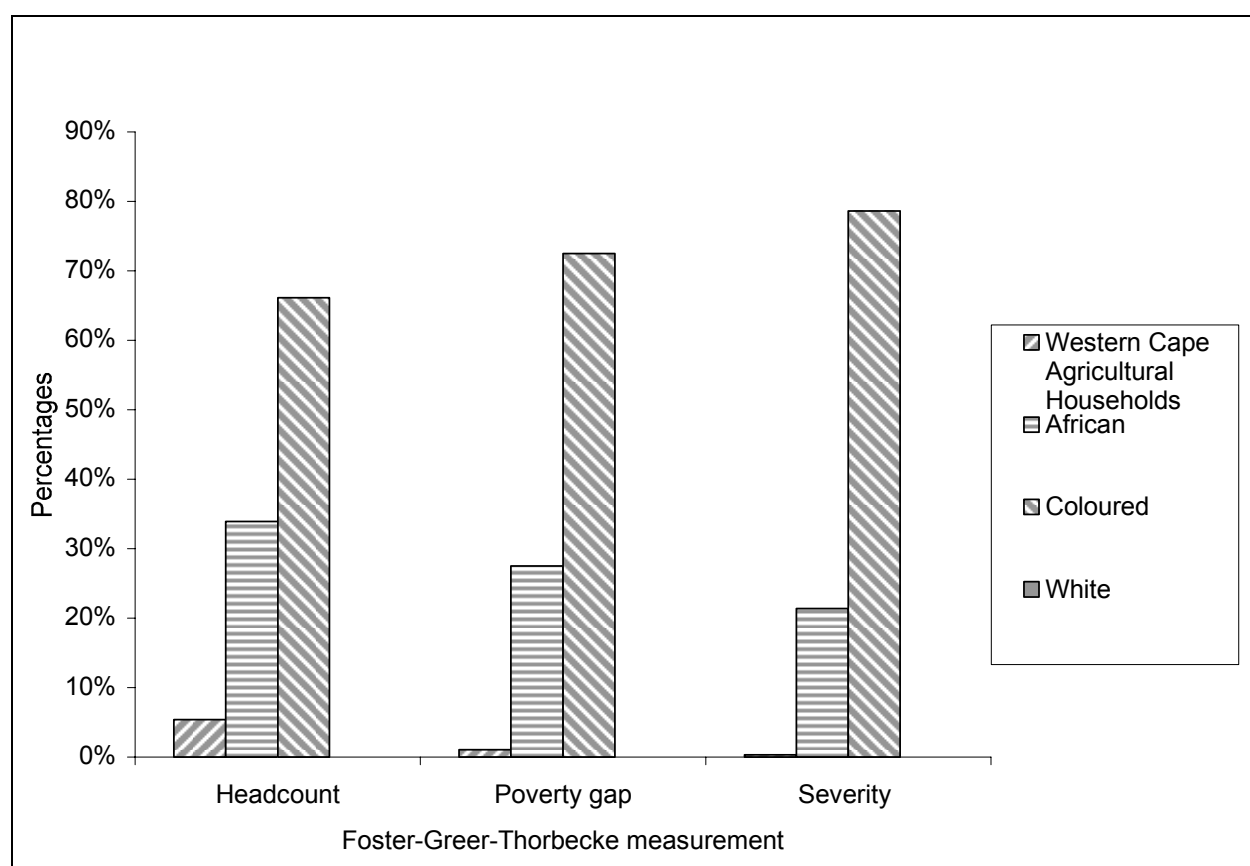


Source: Own calculation from Labour Force Survey 2007

The Western Cape agricultural households (more than 50% of income from agricultural activities) were also analysed in Figure 36, and the results shows a different pattern as that of the rest of the Western Cape. The White population is not present (0% poverty, but this is

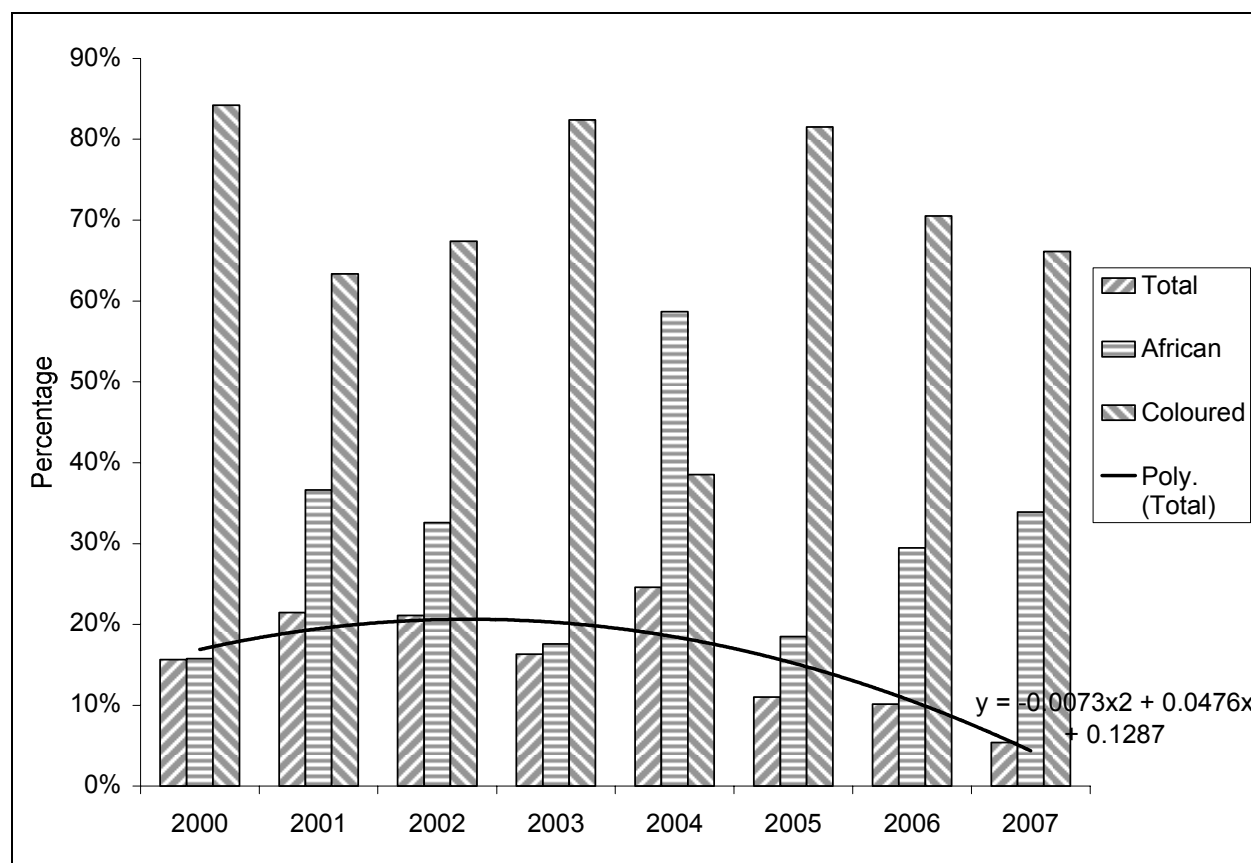
because of sample design of only 600 observations) and the total poverty rates are 5.4%, 1% and 0.3% for respective measures. This translates into around 3 942 agricultural households that are living below the poverty line. The highest share of these is the Coloured population with a 66.12% (2 606 households) share in headcount ratio. Their share increase as the poverty measure change from $\alpha=0$ to $\alpha=2$. It must be kept in mind that poverty profiles can be lower due to the subsample used. The subsample only takes households which earn between 50 and 100 percent of their income from agricultural activities. Thus all households with zero to 50 percent incomes from agriculture are not regarded, excluding the households of lower income agricultural workers that contribute less than 50% to the household income.

Figure 36: Poverty rate for the Western Cape agricultural households and shares of population groups



Source: Own calculation from Labour Force Survey 2007

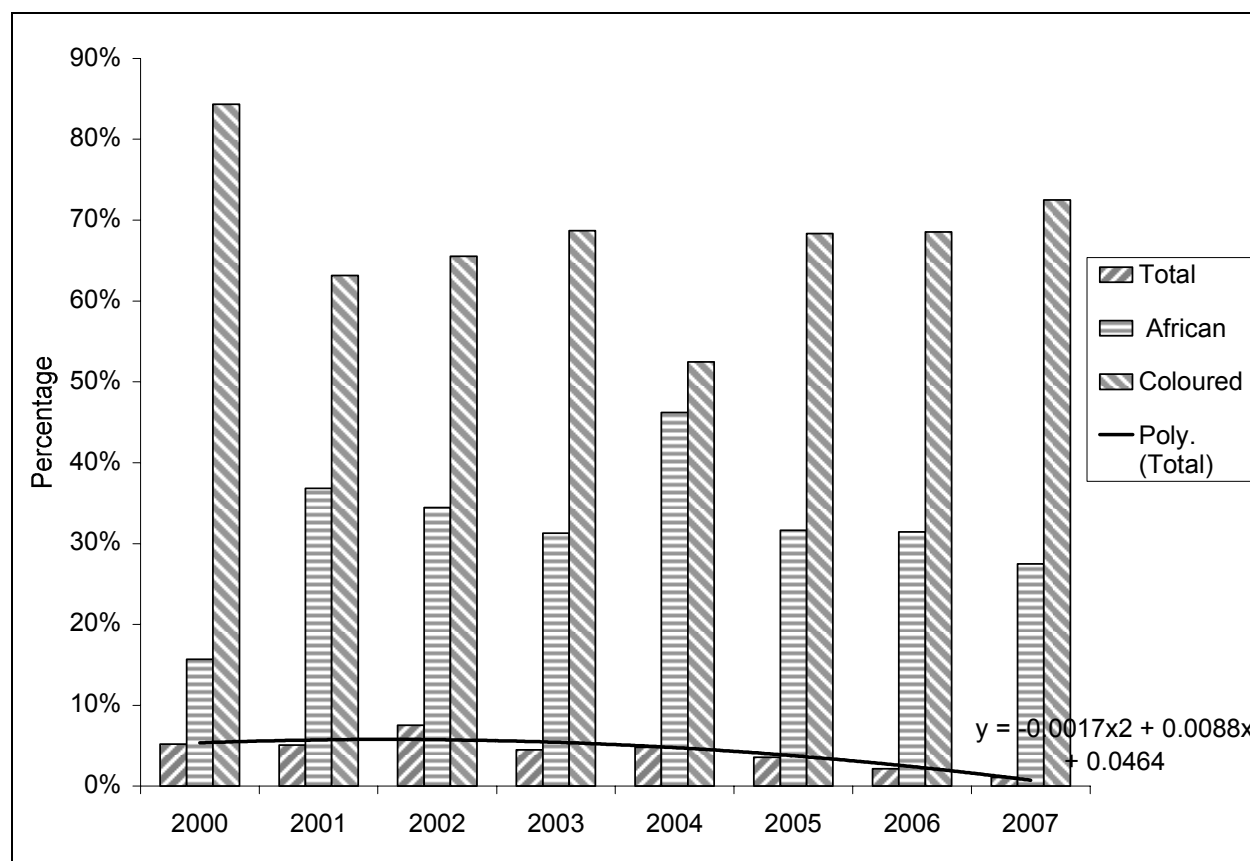
Investigating the trend over years (2000 till 2007) of the Western Cape agricultural households, the subsequent figures were obtained:

Figure 37: Poverty headcount by year for Western Cape agricultural households

Source: Own calculation from Labour Force Survey 2000-2007

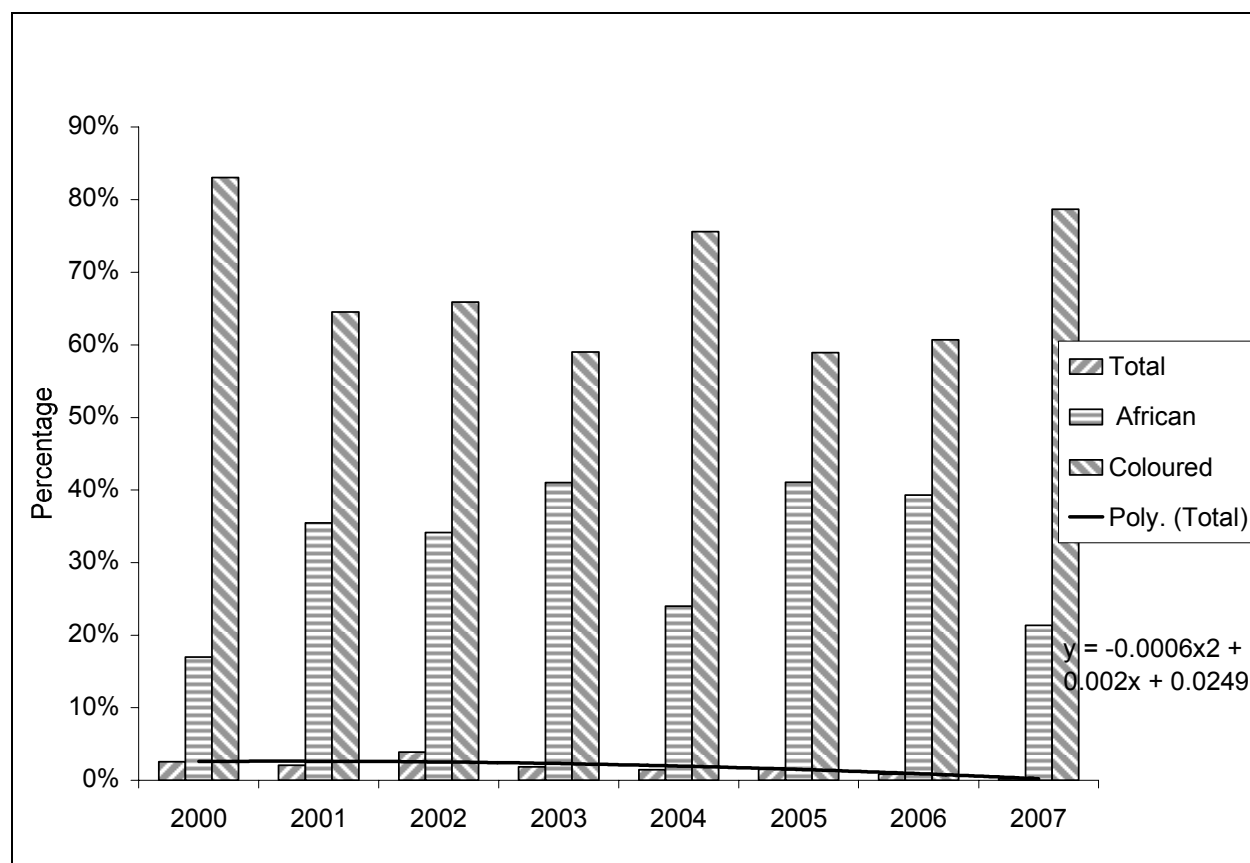
Above figure (Figure 37) indicates the headcount ratio of individuals in the Western Cape agricultural households and the share of African and Coloured households towards the total headcount ratio. It is clear that Coloured individuals contribute the most to overall poverty dominating each year except 2004. This can be due to measurement error or underreporting of incomes from African individuals in that year of the survey or the over reporting of income from the Coloured households. There is also a slight increase and then decrease in total poverty, as the trend line indicates, ranging from a poverty of 15.65% to a 5.39% over time.

The next figure (Figure 38) indicates the poverty gap ratio:

Figure 38: Poverty gap by year for Western Cape agricultural households

Source: Own calculation from Labour Force Survey 2000-2007

The poverty gap ratios over time indicate that individuals in Coloured households have the highest inequality amongst the poor in the province with the highest share in the poverty gap measurement. The total poverty gap increased until 2002 (7.55%) after which it decreased to 1%. 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 39: The severity of poverty by year for Western Cape agricultural households

Source: Own calculation from Labour Force Survey 2000-2007

Again, a similar trend can be seen in Figure 39 as the previous figure with increases and decreases. Total severity of poverty has decreased since 2000 and Coloured individuals are the dominant population group in this poverty measure. The low poverty gap and severity of poverty in the Western Cape agricultural households can be connected with inequality in the next section. It will be stated that within group inequality is relatively low compared to between group inequalities. The inequality of poverty (poverty gap) and the severity of poverty will be lower, because all poor individuals are on a relative similar scale. The poverty rates according to all measures decreased through time within the Western Cape agricultural households, as indicated by the polynomial lines for the totals in Figures 37 to 39.

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

Investigating the 2007, the following table represents the Gini and Theil inequality measurements by race for South Africa, the Western Cape and the Western Cape 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		Western Cape		Western Cape agriculture	
	Gini	Theil	Gini	Theil	Gini	Theil
African	0.79	3.19	0.96	4.26	0.27	0.12
Coloured	0.55	0.56	0.52	0.49	0.39	0.27
Indian	0.57	0.6	0.5	0.53		
White	0.47	0.4	0.43	0.33	0.41	0.29
Total	0.75	2.25	0.88	3.73	0.67	1.07

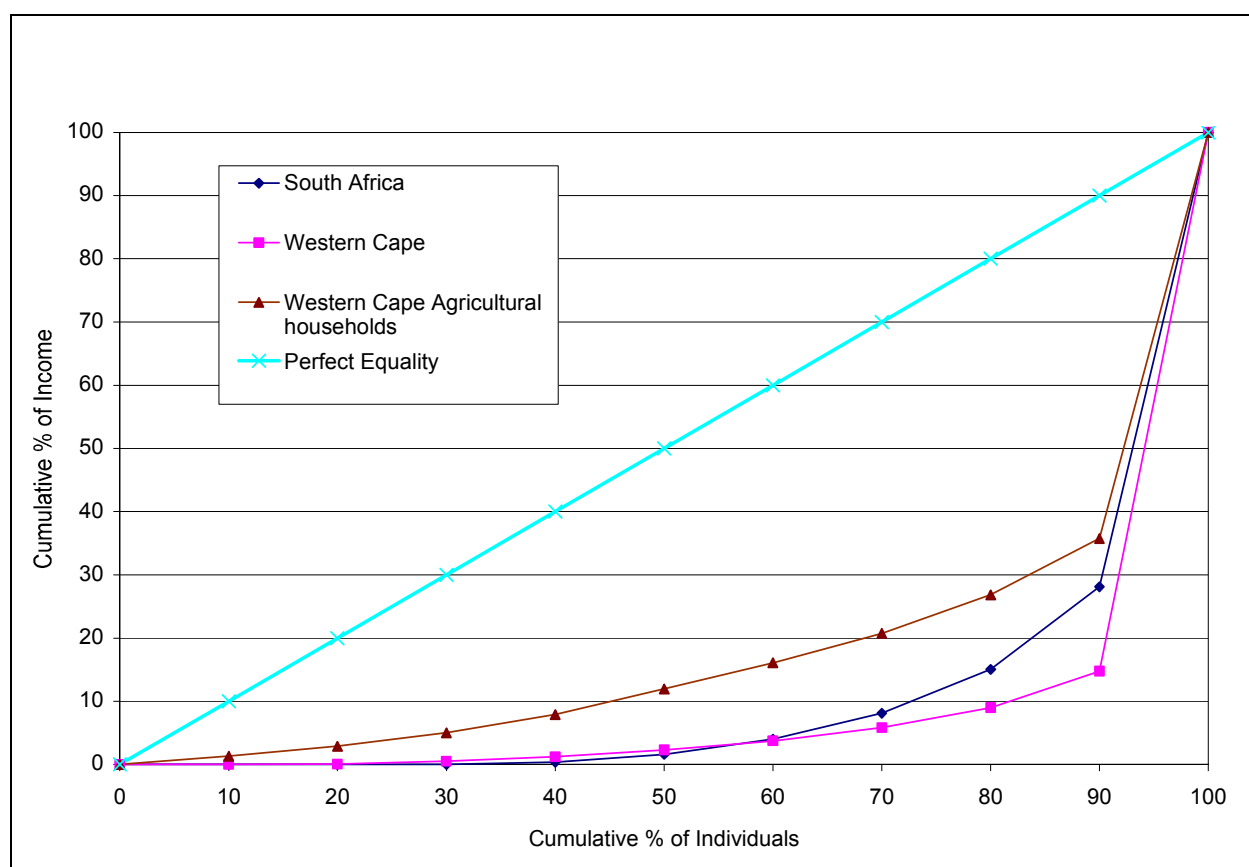
Source: Own calculation from Labour Force Survey 2007

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 in the White subgroup with 0.47 and 0.4 respectively, and the average for South Africa is 0.75 and 2.25. In the Western Cape, the Africans dominate again, but in agriculture the White is the highest. What is interesting to note is the low inequality within race in the Western Cape agriculture households, but the total inequality is high. This

indicates that between races inequality is high. The Western Cape average is also very high, signifying that there is high inequality within the province.

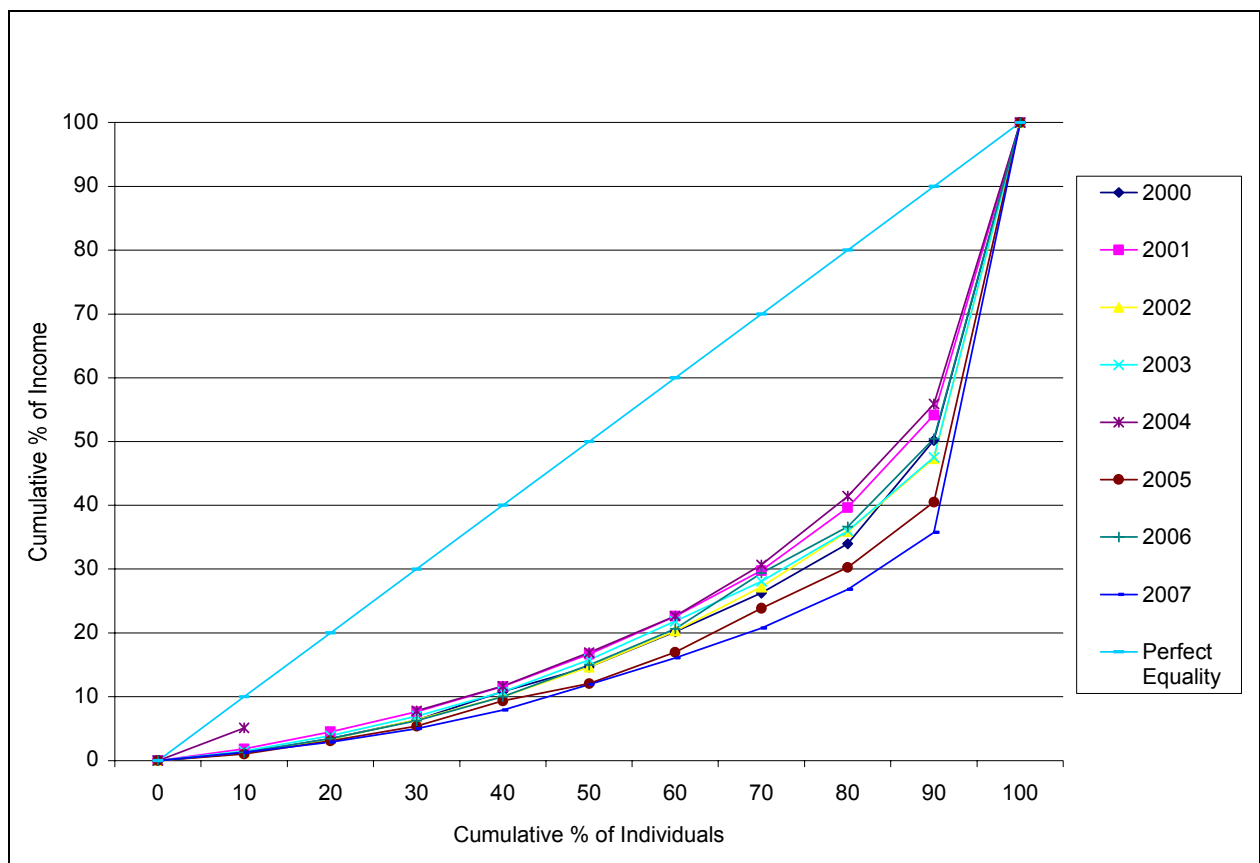
Looking at the Lorenz curve in Figure 40, the Western Cape agricultural households have the lowest inequality. 90% of all individuals in households that earn more than 50% of their income from agriculture, receive 35% of total income of these households. In contrast, 90% of all individuals in the Western Cape receive only 15% of the total income, indicating a higher level of inequality.

Figure 40: Lorenz curve for individuals in South Africa, Western Cape and Western Cape agricultural households in 2007



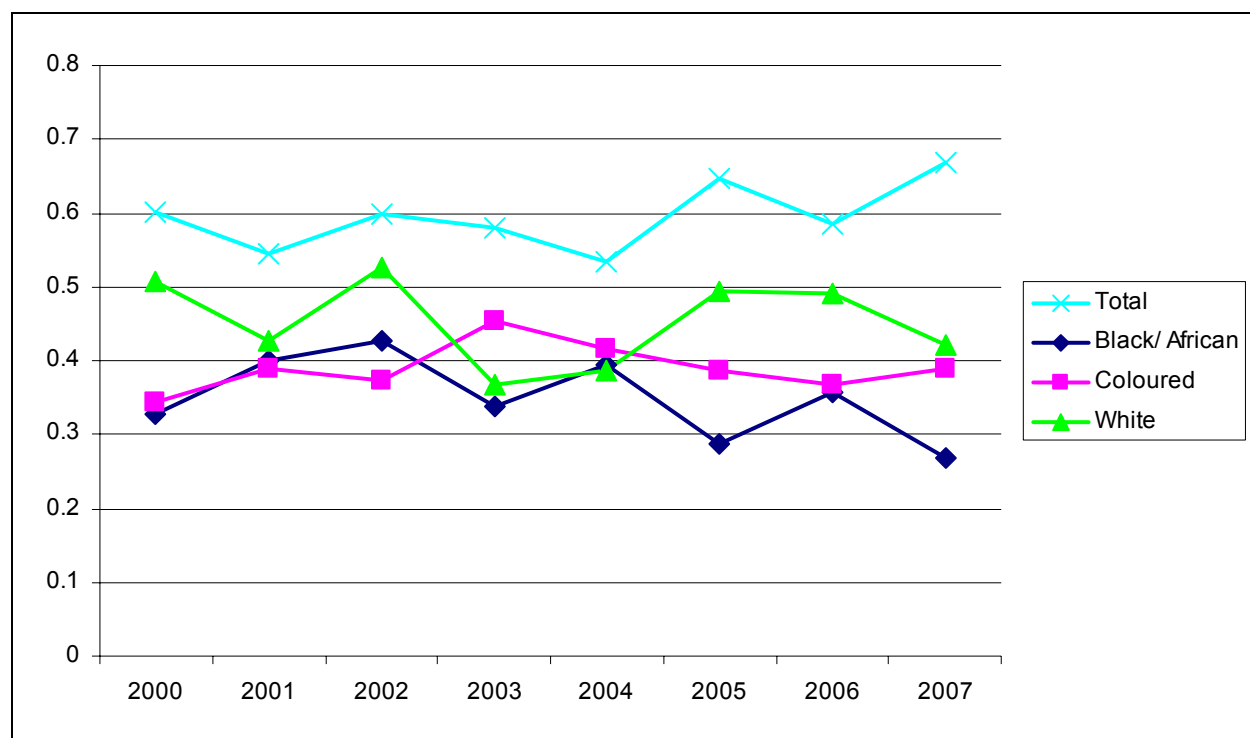
Source: Own calculation from Labour Force Survey 2007

The following 2 figures represent the Lorenz curve and Gini coefficients for the Western Cape agricultural households from 2000 till 2007. It can be observed in Figure 41 that inequality has increased over time as indicated by the fact that the curve for 2007 lies furthest from the equality line. The lowest inequality was recorded for 2004 and it can be seen that during 2004 90% of all individuals in households that earn more than 50% of their income from agriculture, received 55% of total income of these households, as opposed to 35% of income in 2007.

Figure 41: Lorenz curve for Western Cape agricultural households by year

Source: Own calculation from Labour Force Survey 2000-2007

The Gini coefficient in Figure 42 also shows a slight upward pattern for the total (from 0.6 to 0.66). The Coloureds' Gini coefficient increased from 0.34 to 0.38 while the Whites' Gini decreased from 0.5 to 0.42. The Gini of the Africans varied through time, but just looking at 2000 and 2007, the Gini decreased (0.32 and 0.26 respectively). The up and down movements of the Coloured and White households counteracts each other which creates a more smooth trend in the total inequality. This is corresponding to above figure of the Lorenz curves where there is no significant change in inequality.

Figure 42: Gini coefficient for Western Cape agricultural households by year

Source: Own calculation from Labour Force Survey 2000-2007

Inequality within the Western Cape agricultural work-force since 2000 has not decreased which indicates that there is still a large gap between the rich and poor within the sector.

7. Conclusion

The Western Cape agricultural sector is a vital player in the economy of the Western Cape 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 Coloured population is dominant in this sector, while the Africans take that position in South Africa. The total number of individuals in respective economic segments, i.e. South Africa, Western Cape and Western Cape 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. Incomes are lower across the board except for those of the White population, but the White population also possesses more skills. Conducting decompositions into the wage gap, there was evidence that White does get a higher wage within the sector, but it's mainly due to demographic characteristics such as education and experience levels. The wage gap gets reduced due to a positive unexplained part for the Coloured population, maybe due to discrimination or empowerment programmes.

Unemployment rates are being driven by the high unemployment within the African population in both South Africa and the Western Cape. This reflects in the high share of the Africans in the total poverty rate throughout the country. Share of total poverty levels are extremely high amongst the Coloureds in the Western Cape agricultural sector, reflecting the need for poverty alleviation. Poverty levels have been decreasing during the past 7 years when using the poverty line of R322 per capita per adult equivalent as measure.

Income inequality paints a rather grim picture indicating that equality has not increased over the past 7 years for the agricultural sector. The sector is also characterised by more between-race inequality and not so much by within-race inequality as the rest of the country.

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

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9. Appendix

9.1. Oaxaca-Blinder and Juhn-Murphy-Pierce decomposition

Table 14 Regression output for log of Real Hourly wage for White and Coloured Workers in the Western Cape Agricultural sector

Log of Real Hourly Wage	White Workers	Coloured Workers
Education	.8216279	-.0422679
	(7.49)**	(-26.72)**
Education Squared	-.0180017	.0082295
	(-4.63)**	(70.96)**
Experience	.0975451	.0211522
	(28.24)**	(50.04)**
Experience Squared	-.0022185	-.0002334
	(-28.61)**	(-29.09)**
Female	-.4707513	-.0933067
	(-28.31)**	(-30.85)**
Household Size	-.0065859	.0110566
	(-0.83)	(18.16)**
Union	-.9461881	.4252128
	(-12.88)**	(81.39)**
Fixed Period Contract	(dropped)	-.1137026
		(-8.06)**
Temporary	.7449957	-.0588767
	(13.62)**	(-8.74)**
Casual	(dropped)	.0887688
		(16.93)**
Seasonal	(dropped)	.0309405
		(7.68)**
Hours overtime	-.0080092	-.0188294
	(-9.64)**	(-122.77)**
Constant	-4.649297	1.862315
	(-5.94)**	(157.75)**
No of observations	4693	99914
R-squared	0.8720	0.3669

t-statistics in parentheses

** significant at 1%

* significant at 5%

Table 15 Oaxaca-Blinder Decomposition Results:

	Coefficient	z P>z
W=1		
Explained	3.646087	16.78
Unexplained	-1.483661	-6.83

Table 16 Juhn-Murphy-Pierce Decomposition results:

Quantile	T	P	Q	U
p25	-1.711	-0.537	-1.219	0.045
p50	-2.937	-1.971	-1.352	0.386
p75	-2.617	-1.651	-1.352	0.386

T = Total difference (Coloured - White)

Q = Contribution of differences in observable quantities

P = Contribution of differences in observable prices

U = Contribution of differences in unobservable quantities and prices

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