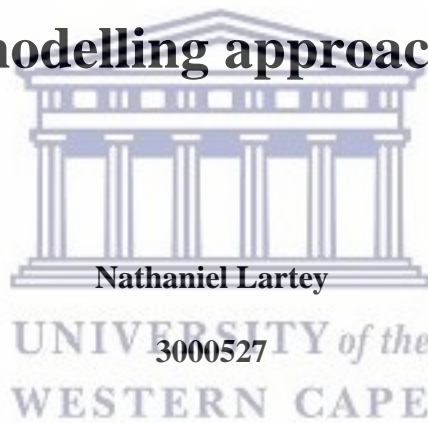# Differentials in unemployment duration across households in South Africa: A two-level modelling approach

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A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Population Studies, Department of Statistics and Population Studies, Faculty of Natural Sciences, University of the Western Cape.

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Dedication

I dedicate my thesis to my God who gave me grace, strength and wisdom to reach this level. This is also dedicated to my family especially my lovely sister Josephine Lartey and my daughters Precious Lartey and Syolise Nyoka whom I deprived their tender fatherly care in order to accomplish this thesis. I will always appreciate your incredible patience you exhibited while I was away from you.

Declaration

I, Nathaniel Lartey, the undersigned, hereby declare that this Full-Thesis entitled Differentials in unemployment duration across households in South Africa: A two-level modelling approachis my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

Signed --

Date --

ABSTRACT

This study aimed to examine the structural changes affecting the duration of unemployment across households in South Africa. It made use of existing datasets from the Labour Force Survey produced by Statistics South Africa, covering a period of six years (2011-2016). Relations among demographic and household variables were explored to determine how they related to unemployment duration. On the basis of the relations identified, a predictive analysis of unemployment duration was attempted using two-level modelling. The results suggest a significant difference in the duration of unemployment, according to the individual socio-demographic characteristics and the household moderating variables. More specifically, the greatest share percentage of both men and women experiencing long-term unemployment were found within the age group 25-34 years. The study also found that the percentage share of Non-White population groups experiencing longer duration of unemployment was more than for the White population group. Another variable found to have great influence on the duration of unemployment was the individual's previous work experience.

Going beyond the individual's socio-demographic characteristics to consider household variables. It was found that unemployed workers living in households headed by a female are more vulnerable to longer unemployment duration. The study found individuals living in smaller households displaying longer unemployment duration. Also, it was found that individuals living in less endowed households (households where no one or few people were in gainful employment) were more vulnerable to experiencing longer unemployment spells. The study concluded with some recommendations for employment policy and follow-up research.

Key words: Labour Force Survey, socio-demographic characteristics, labour market segmentation, labour market discrimination, Job search theory, sustainable livelihood, household head, population group, household variable, levels of education, gender, ethnicity

CHAPTER ONE: INTRODUCTION

1.1 The purpose of the study

The purpose of the study was to predict the duration of unemployment with regard to the social-demographic and household variables over a six-year period (2011 to 2016). This was done specifically to assess the impact of personal characteristics (age, levels of education, gender, ethnicity, employment history) as well as the household moderating variables (household size, gender of the household headship and the number of working people in a household), on the duration of unemployment. The examination of these variables was important to this study because it was hoped it would be possible to identify factors contributing to significant differences in duration of unemployment.

1.2 Background to the study

Unemployment is a complex observable fact and many statistics have been employed to analyse its determinants and dynamics. Difficulties in deciding how to define and measure the supply of labour and demand for labour, arise from selecting between the narrow and broad definitions and estimates of unemployment. In terms of the narrow definition, if people are without employment, but do not desire employment or take reasonable steps to find employment, they are considered to be voluntarily unemployed. In developing countries, one of the difficulties in defining and estimating unemployment is that a characteristic of the labour force in these countries is the existence of discouraged work seekers. They are no longer looking for work because they believe it is impossible to get a job. This study based its analysis of unemployment on the official definition of unemployment stipulated in the official document of the South African Labour Force Survey. This definition classifies unemployed persons as those who, being 15 years and older:

- were not in paid employment or self-employed (i.e. Worked 5 hours or less for wages or salary or for profit or family gain, in cash or in kind) during the reference week i.e. 7 days preceding the interview;

- were available for paid employment or self-employment during the reference week;

- took specific steps during 4 weeks preceding the interview to find paid employment or self-employment;

- had the desire to work and to take up employment or self-employment.

The unemployment rate measures the proportion of the workforce, which, although not presently employed, is vigorously looking for employment. The unemployment rate in the last quarter of 2018 stood at 27.5% (Stats SA, 2018). While such a ratio is a key indicator of the average severity of the predicament facing an entire population, it masks the dynamic nature of the labour market by failing to capture the length of time individuals spend unemployed. In order to propose appropriate policies to alleviate the growing crisis of unemployment in transition economies, it is imperative to know the unemployment rate, but it is more valuable to know the length of time that individuals stay unemployed. In the Labour Force Survey (LFS), duration of unemployment refers to the current incomplete spell of unemployment for an unemployed person. Duration of unemployment is defined as the period of time from when an unemployed person began looking for work, until the end of the survey reference week.

Within the context of South Africa in particular and in developing countries in general, studies on the duration of unemployment are few especially on the characterization of duration of unemployment. Moreover, there is evidence of very long mean unemployment duration for a high proportion of the jobless in South Africa, suggesting depth as well as breadth (as it appears in various government policy documents). For example, in 1997, 37%

of the narrowly defined unemployed had been out of work for more than three years and another 30% had been unemployed for between one and three years (Geeta Gandhi Kingdon and John Knight, 2001). According to Moller (1992), close to 70% of the South Africa unemployed had been out of work for a period of twelvemonths or more or had never worked. These studies did not delve into the details of the differentials in individual socio-demographic characteristics with regard to unemployment duration or on the impact of the household variables. There was a need for a study that would predict the hidden factors determining the high rate of unemployment in South Africa. This study filled the gap by investigating and examining the individual variables as well as the household characteristics (size, number of people working in the household and the gender of the household head) to predict its impact on the duration of unemployment. While previous studies have emphasized the influence of individual variables such as age, gender, ethnicity and education, this study contributed by looking at both the individual and the household level characteristics to determine their impact on the duration of unemployment, about which little had been done to explain the high rate of unemployment.
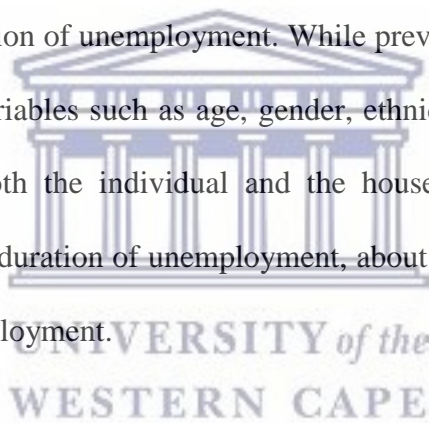
Various theories support the argument that there is a negative relationship between education and unemployment duration. According to the job search theory, highly educated unemployed individuals can have problems in finding acceptable jobs (Groot & Oosterbeek, 1990). On the contrary, Wolbers (2000) delved into the dominance of the positive effect of education on decreasing unemployment spells. Here, it was demonstrated that whether in the short-term or in the long-term, unemployed individuals with higher education spend less time to find a job even though they hold a higher reservation wage. Kiefer (1985) estimated the effect of education on the duration of unemployment using the years of schooling as an explanatory variable and found a negative relationship between education and unemployment

duration. This implies that as the level of education increases, one would expect decrease in the duration of unemployment.

Kingdon and Knight (2004) explored changes in the relationship between education and unemployment with probit analysis of the 1995 October Household Survey and the 2003 September Labour Force Survey data. They found that relative to those who had no educational training, labour force participants with primary or secondary education were more probable to experience longer periods of unemployment in 2003 than in 1995. Gangl (2002) concluded that highly skilled labour and educated young graduates have a shorter unemployment duration than the low skilled labour and young people without education.

Differentials in the unemployment duration in terms of gender have also been documented in the literature on unemployment duration. Foley (1997) used a competing-risk and discrete-time waiting model to analyse unemployment duration in Russia. This was done to examine the role of demographic characteristics, alternative income support and local demand conditions in explaining unemployment. The results showed that married women experience longer unemployment than men. Highly skilled or educated individuals have a lower unemployment duration than their opposite counterparts. Foley (1997) noted that female long unemployment duration happens as a result of lack of job search. He explained that females, especially those with children, are more likely to devote their efforts to full-time childcare- a course of action that is more socially acceptable for women than for men in the African traditional context. Abraham and Shimer (2002) added their view that rising unemployment duration is concentrated among women as a result of the increase in women's labour market participation in recent times.

In South Africa, Kingdon and Knight (2001) used the probit model to analyse unemployment. The results of their study indicated that the unemployment duration is determined by among

others race, education, gender, age and location. Kingdon and Knight (2004) provided a cross-sectional analysis of how the incidence of unemployment duration varies among the age groups, and found the longest spell of unemployment duration among the older labour force participants. Mukoyama and Sahin (2009) also found out that older unemployed individuals were staying longer in unemployment than younger people.

In developed countries, it has been observed that minority ethnic groups are more vulnerable to prolonged unemployment spells (Dawkins and Sanchez, 2005). Seekings and Nattrass (2005) noted that the distributional regime in South Africa has long served to privilege one section of the population above the others. Nevertheless, it is undeniable that the labour market participation rate is increasing and this might possibly be attributed to the rising points of poverty within families, and possibly to increased levels of unemployment among traditional family breadwinners. These can play a significant role in the duration of unemployment of individuals living in the household. This research sought to examine the characteristics of the household heads in relation to the unemployment duration of those who depend on the household for their livelihood while hunting for a job.

In the South African context, the emphasis is placed on the gross rate of unemployment. This focused instead on the structural dimensions of the duration of unemployment. While previous studies have demonstrated variations in the duration of unemployment with regard to individual characteristics such as age, education, gender and ethnicity, but little has been known about how these observations remain valid if we introduce the household effect. The study proposed that the duration of unemployment may be affected by co-residence, transfer of household resources or both the unemployed and those working in the household sharing the household. Drawing from the livelihood strategy, we would expect that unemployed individuals from households without or with less connection to the labour market will exhibit

longer duration of unemployment. The study assumed that households headed by a woman are likely to affect household formation and the job prospects of the unemployed individuals more negatively than household headed by a man.

In most countries, whether industrialized, developing or in transition, the economically active population suffers from lower access to the labour market (Kingdom and Knight, 2001). South Africa is no exception, exhibiting a very high rate of unemployment. The high rate of unemployment in South Africa is influenced by two major components, which have received little attention in the local unemployment literature. The first of these is the stock flow of unemployment, which measures the flows of individuals into and out of unemployment. The average rate of unemployment will remain high if the rate of inflows is greater than the rate of outflows into unemployment.

The second component is the length of time that individuals stay looking for a job. The Labour Force Survey (LFS) does not capture detailed and comprehensive information on the stock flow component which makes it difficult to directly analyse the movement of individuals into and out of unemployment. Nevertheless, this data provides an insight and opportunities to look at the duration of unemployment. With this in mind the study presented the argument that the high level of unemployment (of approximately 25% and 26% as reported by Statistics South Africa) is the reflection of the cumulative effect of the longer duration of unemployment. (See Kingdon and Knight, 2001; Mukoyama and Sahin, 2009). Yet, this view of the influence of unemployment duration on the high rate of unemployment has received little attention over a long period, most especially in the context of South Africa.

This study was rooted in investigating how different variables influence the length of time people have stayed looking for a job. The LFS data provides insight on the duration of unemployment over a long period at different dates of observation. The decomposition of the

duration of unemployment shows variation with respect to the different dates of observation. This variation is supposedly influenced by social-demographic variables such as gender, age, education, ethnicity and individual's employment history. The long history of apartheid in South Africa suggests that ethnicity along with gender, age, education plays a critical role in an individual's active participation in the labour market (see, Kingdon & Knight, 2000; Klasen & Woolard, 2009). It would therefore be valuable for policy purposes to analyse and to determine what variables greatly influence the duration of unemployment.

As a first step in analysing the impact of the socio-demographic variables on the duration of unemployment, the development of a conceptual framework is of paramount importance. The purpose of the framework is to guide the study by explaining the differentials in the duration of unemployment with regards to these variables. The primary theoretical framework used by economists for analyzing the determinants of unemployment duration is the job search. However, in conceptualizing the unemployment situation in South Africa due to her long standing history of segregation, this study drew some insight from the job search, segmentation and discrimination theories and the sustainable livelihood framework.

1.3 The research problem statement

The contribution of this thesis is to find the relationship between the characteristics of various social groups, household moderating variables and the duration of unemployment, as a way to explain the hidden factors underlying the high rate of unemployment. The household response to the needs of the unemployed members is likely to take some of the unemployed away from employment opportunities, and thus will lower their employment prospects. This research looked at the effects of the household composition and the degree of support from the household on the individual duration of unemployment, not taking into consideration the social grant which has been dealt with by previous researchers.

According to Baicher, Goldin and Katz (1998), unemployment insurance and whatever form of support is given to unemployed people, have the potential to lengthen the duration of unemployment. Baumol and Wolff (1998) were not in support of this view. They examined the effect of institutional changes on the duration of unemployment, and concluded that the generosity of unemployment insurance cannot account for the observed increase in unemployment duration. Some unemployed individuals might well be tempted to fully depend on the benefit obtain from the household to compensate for their lost earning capacity. This might cause them to choose leisure time instead of intensifying their job search. According to ILO (2004), timely policy interventions are urgently needed to rescue the most vulnerable social groups affected by longer unemployment spells. This study aimed to go further by identifying not only the vulnerable unemployed individual but trying to account for the contributions of the different compositions and status of households towards the long duration of unemployment. This would suggest that the type of households the unemployed individuals attach themselves to for their livelihood play a critical role in their duration of unemployment.
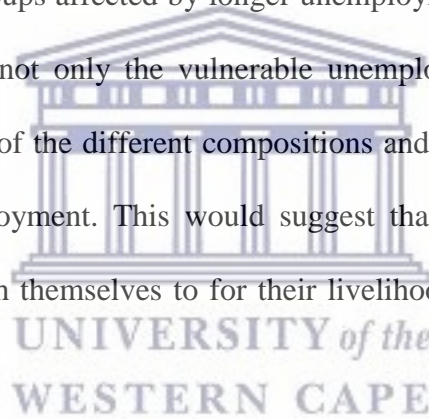
The burgeoning rate of unemployment causes social distress, crime and violence which is a topical issue in South Africa. This phenomenon has not only attracted academic research, public attention and debate, but has also attracted numerous policy initiatives and state interventions to curb unemployment. South Africa is confronted with the challenges of extraordinarily high rates of unemployment, poverty and inequality when compared to other developed countries. Little can be understood about the unemployment situation in South Africa by focusing exclusively on the crude unemployment rate figures without giving attention to the structural content of unemployment by scrutinizing its characteristics.

The variation in duration of unemployment for individuals with different characteristics and the impact of household variables are both critical in finding answers to questions related to the design of active labour market policies for alleviating unemployment problems in South Africa. The motivation for this study was that the high rate of unemployment is indicative of the length of time people spend out of work, but on which very little research has been done. The cumulative effect of long durations of unemployment is a high rate of unemployment. This study explored and sought to predict how the individual and the household level variables impact on the duration of unemployment. The study also looked at changes over time in the effect of the individual and the household variables on the duration of unemployment, using the 2011 to 2016 Labour Force Survey data.

As indicated by Bhorat and Oosthuizen (2005), the high rate of unemployment for the younger population groups in South Africa remains largely unexplained. Over the decades, many researches have been conducted to explain the determinants and the consequences of the burgeoning rate of unemployment that is affecting these young population groups. The issue of youth unemployment has also been investigated to a large extent in international literature, focusing on its causes as well as on the different ways of inserting young people in employment (see, ILO, 2015; Caporale & Gil-Alana, 2014; Blanchflower & Freeman, 2000; ILO, 2004, 2006, 2008). Yet, so far, little attention has been paid to the subject of the youth unemployment duration in South Africa.

1.4   Research questions

Although empirical research has taken significant strides towards understanding how household labour supply may drive unemployment rates, important questions have remained unexplored. In this thesis, theoretical arguments were developed to predict and demonstrate the impact of the individual and the household variables on the duration of unemployment.

To shed more light on the dynamic processes between unemployment duration and the individual and household characteristics, this thesis was guided by the following research questions.

- To what extent does gender influence the duration of unemployment?

- To what extent does the level of education influence the unemployment duration?

- To what extent does previous work experience influence the duration of unemployment?

- To what extent does ethnicity influence the unemployment duration?

- Are there differences in unemployment duration across the age groups?

- Are there differences in unemployment duration across the provinces?

- To what extent does household size influence the average duration of unemployment?

- To what extent does the number of people who are working in the household impact on the average duration of unemployment?

- To what extent does the gender of the household head affect the average duration of unemployment?

1.5   Aims and objectives

The aim of the study was to demonstrate that the variables at individual and household levels have an impact on the duration of unemployment. Although individual level variables might explain the duration of unemployment in South Africa, examining the effect of household level variables could contribute to better understanding the duration of unemployment. On the face of it, the household provides some supportive mechanism so that people who are surrounded by a household where individuals are working are likely to remain unemployed longer than people without support from the household. This aim was to be achieved through the following specific objectives:

- To examine the effect of gender on the duration of unemployment.

- To examine the effect of the levels of education on the unemployment duration.

- To examine the effect of previous work experience on the duration of unemployment.

- To examine the effect of ethnicity on the unemployment duration.

- To examine the effect of age on the duration of unemployment.

- To examine the differences in unemployment duration across the provinces.

- To examine the effect of household size on the average duration of unemployment.

- To examine the impact of the number of people who are working in the household on the average duration of unemployment.

- To examine the impact of the gender of the household head on the average duration of unemployment.

1.6   Theoretical perspectives on the study

To answer the research questions the study did not set out to test a specific theory but rather built a conceptual framework around the existing set of labour market theories such as job search, discrimination, segmentation and the sustainable livelihood framework. These theories provide methods of identifying groups of workers who are most likely to be vulnerable to long-term unemployment.

The literature review to come in chapter two provides the technical details of the conceptual framework by motivating the testable hypotheses.Job search theory asserts that the probability of exiting unemployment depends on the probability that the worker receives a job offer or the probability that the job offer is acceptable (Foley, 1997). Some individuals may opt for a long search based on preferences, wage reservation, social networks or based on the household assets where they attached themselves for a support (Kingdon and Knight, 2001; Klasen and Woodard, 2000)

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Discrimination in the labour market plays a critical role in determining the workers' unemployment spell, especially of the most vulnerable workers. According to discrimination theory the individual characteristics such as gender, ethnicity, age, and education could act as discriminatory variables in the labour market. (Rospabe, 2002; Moll, 2000).

The labour market is dichotomized between primary and secondary segments. The primary segment includes firms with structured internal labour markets and jobs that are characterized by high earnings, good working conditions and employment stability while the secondary segment have firms with open internal labour markets and jobs that are low paying, offer few fringe benefits, poor working conditions and involve menial and repetitive work (Joll *et al.,* 1983). The barriers to labour market mobility may prevent some individuals from taking advantage of employment opportunities available to others with similar characteristics (Gunther and Launov, 2006; Heintz and Posel (2007;)

With regard to the sustainable livelihood framework, the study focused on the household formation as well as a unit of decision making to protect and support unemployed individuals living in the household and at the same time protecting the household assets against stress and shocks. The household assets and support would impact on the duration of unemployment (Klasen and Woodard, 2000).

Based on the insights drawn from the different theoretical perspectives on unemployment, the study assumed that the individual's characteristics may impact on the duration of unemployment. Beside the individual's characteristics, the study also assumed that the household moderating variables are likely to influence individual's job search behaviour and efforts to find a job. This would in turn affect the duration of unemployment.

1.7   Research hypotheses

Drawing from the conceptual framework announce above, the specific hypotheses raised in the study were tested at 0.05 or 0.01 level of significance.

This research aims to test the following hypotheses in line with the research questions:

Individual level hypotheses

- The lower the level of education the longer the unemployment duration

- Women have longer unemployment duration than men.

- The adult age group (30-64 years) has longer unemployment duration than

  the youth age group (15-29 years).

- There is shorter unemployment duration amongWhites than the non-White racial

  groups.

- Unemployed individuals without previous work experience would display longer

  unemployment duration than those with previous work experience.

- The province with the highest unemployment rate also has the highest average

  unemployment duration.

Household level hypotheses

- The bigger the household size, the longer the average duration of unemployment.

- The larger the number of people who are working in the household the longer the

  unemployed individuals are likely to stay unemployed.

- Individuals living in a household headed by a female stay longer unemployed than

  households headed by a male.

1.8 Significance of the study

The theories of job search, discrimination, segmentation and household labour supply have been used extensively to examine relationships between personal characteristics and unemployment duration. Though most of the factors considered in the literature are relevant, they have overlooked potential variables that can also be derived from the theories to explain unemployment.

Despite the abundance of data on the labour force made available by Statistics South Africa, there is still limited use of these data. There is heavy reliance on one labour market indicator (the crude rate of unemployment) to explain the unemployment situations in South Africa but we do not know much about the manifestation of the duration of unemployment within the household context in South Africa. This study was intended to make additional contributions to the existing stock of knowledge by providing rich information on the impact of the household moderating variables on the duration of unemployment. Policies aiming to alleviate poverty and unemployment will be more effective if they target the household. This will enable policy makers to identify households with the potential to exhibit high rates of unemployment and poverty.

1.9 Delimitations

- The study focused on the Labour Force Survey data 2011 to 2016.
- The study considered only individuals who were without work, available to work and actively looking for a job during the period of the survey data.
- The study pooled all the sampled household from the nine provinces without looking at differentials between households located in rural and urban areas.

1.10   Definition of Key terms

1.10.1 Unemployment duration

To be classified as unemployed, a respondent in the survey needed to satisfy each of the following criteria during the survey reference week: was not employed; had actively looked for work in the previous four weeks; and was available to start work in the reference week. Respondents who satisfied these criteria were asked further questions to determine their duration of unemployment. In the Labour Force Survey (LFS), duration of unemployment refers to the current incomplete spell of unemployment for an unemployed person. Duration of unemployment is defined as the period of time from when an unemployed person began looking for work, until the end of the survey reference week.

1.10.2 Employment

The ability to work is the only asset held by many of the world's poor. Work or employment is said to be the main connection between economic growth and poverty reduction, since it enables people to take command over their lives and their economy. Employment in a broad sense means all ways of securing a livelihood, not just wage employment, and includes subsistence farming and self-employment among other things. In the extended definition of employment contained in the 1996 Human Development Report, work is not even limited to paid employment. The unpaid activities of the household and community that people engage in, such as raising children and caring for the sick and elderly, contributes in a valuable way to society's welfare. People value their work for many reasons besides income. Work enables people to exercise skills and creativity and to make a productive contribution to society, which in turn fosters self-respect and dignity. Moreover, work contributes to social interaction and participation in collective effort. Therefore, employment does not just

empower people economically, but also socially and politically. Sinfield (1976) defined full employment simply as having more vacant jobs than unemployed men, not slightly fewer jobs. It means that the jobs are at fair wages, of such a kind and so located that the unemployed men can reasonably be expected to take them; which consequently, reduces the normal interval between losing one job and finding another.

1.10.3 Unemployment

Unemployment is defined as a situation where someone of working age is not able to get a job but would like to be in full time employment. Periods of idleness have been a common phenomenon in the life passage of humankind and have been known since olden times. Even though unemployment has frequently been an unavoidable portion in the life and beliefs of many workforces, the jargon 'unemployment' and its meaning has changed over time.

In the primordial times, people without work were considered to be divergent social groups of very poor persons who had no money to pay for basic necessities (food, clothing and shelter). For instance, the Bible identified people having difficulties looking for jobs, although, they had the capabilities and the drive to work as unemployed "For the kingdom of heaven is like a landowner who went out early in the morning to hire men to work in his vineyard. He agreed to pay them a denarius for the day and sent them into his vineyard. About the third hour he went out and saw others standing in the marketplace doing nothing. He told them, 'You also go and work in my vineyard and I will pay you whatever is right.' So they went. He went out again about the sixth hour and the ninth hour and did the same thing. About the eleventh hour he went out and found still others standing around He asked them 'Why have you been standing around here doing nothing?' 'Because nobody has hired us,' they answered. He told them 'You also go and work in my vineyard.'(NIV, Mathew, 20:1-7).

Cawker and Whiteford (1993) defined unemployment to exist whenever the demand for labour in an economy is unable to match the supply of labour in that economy. The demand for labour refers to the number of employment opportunities which exist while the supply of labour refers to the number of people who are available to fill the existing job opportunities. According to the international statistical definition the unemployed are the people who are without work, available to work and actively seeking work. This is called a strict or narrow definition of unemployment as it excludes many unemployed people who are without a job and are available to work but not actively looking for employment from the labour force.

1.10.4 Unemployed new entrants to the labour force

New entrants into unemployment are identified as persons who were unemployed during the reference period who had never worked before and were currently looking for work.

1.10.5 Unemployed re-entrants to the labour force

Re-entrants into unemployment are unemployed persons who worked before and who were currently looking for work, and whose main activity before looking for work was any of the following: managing a home or going to school.

1.10.6 Long-term unemployment

Persons in long-term unemployment are those individuals among the unemployed who were without work and trying to find a job or start a business for one year or more.

1.10.7   Household

Is defined as one person or a group of people who dwell under the same roof and compose a family or a social unit composed of those living together in the same dwelling as their only or main residence. They are sharing at least one meal a day.

1.10.8   Household size

Household size is a new variable created, which describes the number of household members in each household. This was categorized into three groups such as average household size (between 4 and 5 members in the household), below average household size (less than 4 members in the household) and above average household (at least 6 members in the household).

1.11   Data and methods

The study used a quantitative research methodology since the aim was to examine the relationship between the outcome variable (duration of unemployment) and the background variables (personal and household characteristics), and also to predict the outcome variable under investigation.

The empirical results of this thesis come in three parts. Firstly, the study made use of frequency distributions to describe the percentage share of the unemployed individuals who were experiencing long spells of unemployment, with regard to the social-demographic characteristics, over the six year period. Secondly, ANOVA and T-tests were used to test the significance of the dependencies found in the mean unemployment duration over the six year period. And thirdly, two-level modelling was used to predict the average duration of

unemployed according to the influence of the social-demographic and the household variables.

The study used secondary data obtained from the Labour Force Survey produced by Statistics South Africa. As with all studies making use of questionnaire, the data might have sampling and non-sampling errors, this study, however, relied on the truthfulness and accuracy of the 2011 to 2016 Labour Force Survey as collated by Statistics South Africa, which made it certain that the applied dataset does not give a false positive result for this study. Other secondary sources of data came from the selection of books especially journals, newspapers and magazine article, related case studies and the internet.

1.12   Structure of the thesis

This thesis is structured into six chapters. Chapter one has provided an introductory orientation to the study. It dealt with the background to the study revealing the historical unemployment situation in South Africa. It also highlighted the purpose of the study, the objectives, and the research questions, significance of the study and its delimitation.

Chapter two provides an expository analysis of previous empirical studies and labour market theories on which the study stood, which helps in explaining the research questions formed. The study is informed by the job search theory, labour market segmentation and discrimination theory and pivoted by the sustainable livelihood framework. This chapter also gives a brief outline of the current unemployment situations faced by South Africa as well as government policy interventions and a discussion of how the formation of labour unions can influence unemployment.

Chapter three discusses the methods employed in this work and some general data issues as well as a description of the data used. The results from the various statistical models used in analysing available data from the study are presented in chapter four.

Chapter five is a discussion of the implications of the study findings and their contributions to the existing stock of knowledge. Chapter six gives a summary of the thesis and recommends possible policy making and future research.

CHAPTER TWO: REVIEW OF LITERATURE

2.1   Introduction

This chapter reviews literature on the theoretical and the empirical explanations of unemployment duration. The first section provides the theoretical literature related to unemployment duration. These theories are discussed in line with the duration of unemployment in order to assess their significance to this study.

The second part looks at the empirical literature on unemployment situations in South Africa discussed by different researchers. This begins with the unemployment situation in South Africa as well as government employment creation strategies in reducing unemployment. The study also discusses the relevance of the formation of trade union and the unemployment insurance scheme to the persistent increase of unemployment.

Lastly, based on the theoretical and empirical literature, the conceptual framework (Sustainable livelihood framework) which guided the whole research, is described. The sustainable livelihood framework guiding this study was developed around the stated hypotheses in order to conceptualize the variables of interest.

2.2 Theoretical consideration on unemployment duration.

2.2.1   Unemployment duration

The length of time for which an individual remains unemployed depends both on the rate at which he receives job offers and on the extent to which these offers are accepted (Nickell, 1980). It is clear that most identifiable variables have an impact on both the demand and supply sides of the labour market e.g. certain types of jobs such as manual work. Younger people may be more likely to receive job offers than older people if they are seen as

physically more capableand have a wider range of networks (. Younger people may also be more likely to accept job offers in so far as they are more flexible and have less stringent ideas about what is suitable employment (Kingdon and Knight 2000).

In discussing the reasons for Britain's higher unemployment rate and longer average duration than of the United States, Pencavel (1994) pointed to the differences in the level and extent of unemployment benefits between the two countries. The chances of an unemployed individual leaving unemployment to take up a job or for other reasons will vary with the characteristics of the individual concerned and over time (Steward, 1995). Changes in the aggregate unemployment rate can under certain assumption be decomposed into changes in the inflow rate into unemployment and changes in the average duration of unemployment (Layard *et al.,* 1991). The exceptional characteristic of South African unemployment is lengthy unemployment duration. In the mid-1990s, it was shown that nearly two thirds of the unemployed had never worked for pay (Standing *et al*., 1996). This characteristic of the unemployed has persisted. This finding is in agreement with of Lam and co-workers (2008) who found that the 2005 Labour Force Survey indicated that 40% of unemployed individuals (by the strict definition) had unemployment durations exceeding three years, while 59% had never had a job at all.

Explanations in the theoretical literature on the determinants of duration of unemployment involve personal characteristics such age, gender, education, skill level, prevailing labour market situations, job accessibility with respect to location of the unemployed, alternative income support and local demand conditions. The cost of being unemployed and the length of time staying unemployed can be explained by the individual level of financial commitment. Different theoretical models may be significant for an examination of the determinants of

unemployment duration. A frequently selected framework is the job search model, labour market segmentation theory and the labour market discrimination theory.

Various techniques have been employed to determine unemployment level and duration. Foley (1997) used competing-risk and discrete-time waiting models to analyse unemployment duration in Russia. This was done to examine the role of demographic characteristics, alternative income support and local demand conditions in explaining unemployment. Results showed that married women experience longer unemployment than men. Highly skilled or educated individuals have lower unemployment duration than their opposite counterparts. In South Africa, Kingdom and Knight (2001) used the probit model to analyse unemployment. Their results indicated that unemployment duration was determined by among others race, education, gender, age and location. Bhorat (2007) analysed a number of labour economic and social choice theories and identified common variables that determine the probabilities of an individual exiting unemployment. The variables identified were education, gender, age, household composition and family wealth.

2.2.2   Job search theory

Job search theory asserts that the transition or probability of exit from unemployment depends on two factors: firstly, the probability that the worker receives a job offer; and secondly, the probability that the job offer is acceptable. The probability of receiving a job offer will be determined by factors which make a specific worker more attractive to an employer such as education, skill level, experience, and local demand conditions (Rasool & Botha, 2011; Foley, 1997). An acceptable job offer is a random offer drawn from the wage distribution that exceeds the worker's reservation or minimum acceptance wage i.e. the wage that makes the individual indifferent to being employed or unemployed. In a stationary

framework, this wage is constant and inversely related to search and opportunity costs (Banks, 1985 cited in Knight, 2001).

It has also been argued that the unemployed worker will be willing to accept any job offer even if it is below the unemployed worker's wage reservation. The reason given is that job seekers have access to imperfect information about available job opportunities, and that it will thus take them some time to find an appropriate job. Also, the status of the household could account for the decision of individuals whether to accept job offer below their wage reservation that is, the minimum wage that the individual will take as a condition with respect to a new job i.e. expecting a relatively high wage. The longer people unemployed, however, the more likely they are to lower their reservation wage as the reality of job opportunities and the financial pressure of unemployment impact on decisions (Banks, 1985 cited in Knight, 2001).

Similarly, the longer one searches for a job the better the job that the unemployed individual is likely to find. The unemployed individual chooses to take a job when the best offered position equals or exceeds the reservation wage. Nattrass and Walker (2005) using regionally specific data, found that reported reservation wages of the unemployed were 15.0% lower on average than their predicted earnings. At the national level, questions about reservation wages were included in only two of the earliest household surveys. Kingdon and Knight (2001) warned that caution must be exercised in interpreting the data collected. Although, they found that more than half of the unemployed reported reservation wages in excess of their predicted wages, they did not view the stated reservation wage as "a reliable criterion for judging willingness to work". Rather, they suggested other explanations "based on the reporting of expected wages rather than reservation wages and on lack of information" to account for their result (Kingdon and Knight; 2001).

The level of reservation wage can be determined by the type and level of occupational qualifications and the demand for those skills. Unemployed workers with higher qualifications and higher skills which are in demand, will likely not be accepting any job offer below their wage reservation, so will stay longer unemployed. The unemployed job seeker would rather remain unemployed while looking for better job opportunities. Since it is believed that with higher skills and qualifications one stands a better chance of landing on a good paying job. With this caveat in mind, it is assumed that the unemployment duration among young graduates and the highly skilled worker will be higher than for low skilled labour.

Unemployed persons may reject a job offer and stay unemployed if the wage offer is lesser than their financial commitment in terms of transportation, accommodation and other basic necessities. More so, individuals who have attached themselves to well-endowed households are likely to wait for their dream job seeing that they are getting financial support from the household. The probability that a worker receives a job offer is determined by personal and demographic characteristics and also on prevailing labour market conditions. These factors equally influence whether a job offer is acceptable. Those who have previously worked enter into unemployment voluntarily or involuntarily. Involuntarily unemployment may be due to retrenchment, illness or end of temporary job. There is no data on people quitting work voluntarily but a possible explanation given by Kingdon and Knight (2002) related to one's financial commitments. They argued that voluntary quitting into unemployment depends on the prospect for alternative wage and job opportunities. Young graduates would have lower income loss from voluntarily quitting into unemployment because they normally receive financial support from the household while unemployed.

Gang (2002) argued that the probability of exiting from unemployment by those who have worked is higher than by new job seekers. Unemployed individuals who have just completed their education have little or no work experience so are less likely to find a job than those who were previously in gainful employment.

Kingdon and Knight (2002) argued that if there is scarcity of educated labour or if there is racial discrimination by employers, more educated people or persons belonging to the favoured racial group, will be more likely to quit voluntarily in search of better wage opportunities because their probability of re-employment is higher. Descriptive analysis in the 1999 October Household Survey (OHS) showed that younger, well-educated and white groups had higher probability of exiting unemployment than their opposite counterparts. Comparing the 1995 OHS and the September 2003 LFS, more working age individuals in South Africa were becoming better educated; especially younger Africans and they demonstrated a decrease in the unemployment rate with educational attainment (Dias and Pose, 2007). Conversely, Bhorat (2004) and Moleke (2006) analyzing data from 1995 October Household Survey and the 2002 February Labour Force Survey noted a rising unemployment rates among graduates. They observed that the high rates of unemployment among graduates were influenced by their field of specialization. Gang (2002) concluded that highly skilled labour and educated young graduates had lower unemployment duration than the low skilled labour and young people without education.

Education has been shown to be one of the key factors serving as a determinant of unemployment duration. Kingdon and Knight (2001) showed that the probability of employment increased very considerably with education i.e. the unemployment rate was much lower among the more educated. Since more educated persons have a higher prospect of employment, education should raise the expected success of job search. They further

suggested that unemployment arises not by choice but through impediments to entry into informal work hence, unemployment should be seen as involuntary. Kingdon and Knight (2001) further cited examples of lack of information about the labour market – the result of living in remote areas, lack of education, or lack of previous work experience, which cause people to be ignorant about their market worth. Dias and Posel (2007) also mentioned that mismatches in the labour market determine the unemployment duration of educated graduates. They explained that graduates may not be specializing in the field of study required by employers and this will cause graduates to stay longer in unemployment.

Mismatches in the labour market have become an acute issue illustrated by the large number of working poor in the world (Altbeker and Storme, 2013:1; Hindenborg, 2006). There is obviously an imbalance between the rapidly changing skills requirements of the demand side, and the very slow changes on the supply side. It is important to stress that there is no immediate and standardized solution for overcoming the mismatch problem. Kingdon and Knight (2005) investigated the relationship between education and unemployment in South Africa using probit analysis of the 1995 October Household Survey and the 2003 September Labour Force Survey. They found that relative to those who had no education, labour force participants with primary or secondary education were more likely to have a long period in unemployment in 2003 than in 1995. More so, they were of the view that many educated young workers did not transit into the labour force but instead remained unemployed for a long period of time because of their inability to obtain their first job. This suggests the vital role of high search cost and high reservation wages due to family support. However, it is the presence of broad-based qualifications that offers the greatest reduction in the probability of remaining unemployed (Collier, 2003). Personal characteristics such as age, gender, human capital and household composition play a vital role in determining individual preferences and hence, the formulation of an appropriate reservation wage. These factors are also likely to

reinforce an individual's job search behaviour and related efforts to find employment in surrounding local labour markets (Longhi & Taylor, 2013:1;Rospabe, 2002).

Voluntary Unemployment

Workers become voluntarily unemployed when they have no hope of getting a job, since they believe there are no job openings for them in the labour market (ILO, 2004). From the Labour Force Survey, the population aged between 15-64 years who are unemployed but stop searching for job are considered to be voluntary unemployed, notwithstanding the theoretical difficulties. Clark and Oswald (1994) and Theodossiou (1998) approached the question of voluntary unemployment by examining the utility levels of the jobless. They found that unemployed persons in various developed countries have much lower levels of happiness or wellbeing than those in work, and accordingly, rejected the hypothesis that unemployment is voluntary. The dominant view of unemployment in developing countries is that much open unemployment is due to job search and is voluntary (Harris and Todaro, 1970; Harris and Sabot, 1982).
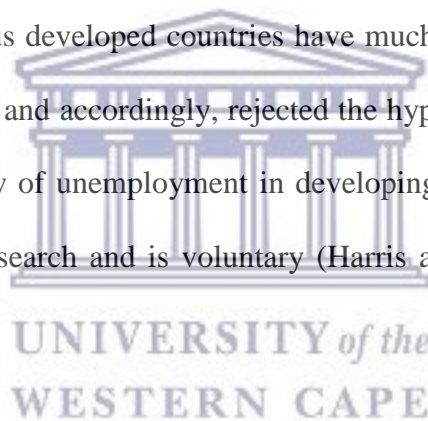
The nature of unemployment in South Africa has been a subject of great interest. In the early 1980s, there was a debate over whether unemployment in rural areas was voluntary or involuntary. Gerson (1981) argued that it was voluntary because with part of the labour market cleared, rural dwellers chose to be unemployed because of the income available from household agriculture. This view was challenged by Knight (1982) and Simkins (1982) who pointed to the lack of productive activities available at the margin to rural-dwellers. Kingdon and Knight (2001) suggested three possible ways that an individual can be voluntarily unemployed; namely self-unemployment, wage unemployment and unemployment. Firstly, they questioned why then do the unemployed not choose to search in the self-employment sector? One possible explanation is that job-search is more efficient if undertaken while

unemployed. In that case, unemployment might properly be regarded as voluntary. Secondly, the distribution of household income according to need creates an incentive for a member to remain needy and is thus a disincentive to work. Thirdly, people become voluntary unemployed if they lack information about job opportunities.

In the South Africa context, Abhijit and co-workers (2007) attributed voluntary unemployment and discouraged job seekers to the costs involved in job search. They explained that firms are likely to be reluctant to train people for jobs knowing that they will be replaced soon, and if employees had to find a job without quitting, this would place limits on how much time and travel they could put into the job search. Another explanation offered was that the history of apartheid was inherently a history of apartness. They explained that many Blacks were banished to distant homelands, and only allowed to come to the 'White' areas if they had a job. As a result, a substantial part of the African population of South Africa grew up far from the centres of business and industry. Therefore, workers from rural areas needed to search for jobs far from their homes, and this was typically a major discouragement. They also suggested that the history of racial prejudice may be another reason why job search is a particular problem in South Africa. Some white employers might have strong beliefs about what Africans can and cannot do, which might make them unwilling to give a chance even to someone apparently qualified. Knowing that such discrimination exists might also discourage Africans from job searching, thereby becoming classifiable as "unemployed voluntarily". Other explanations offered for low search effort speculated that job-search might be hampered by impediments such as poverty, cost of search, long duration of unemployment, and adverse local economic conditions. At high unemployment rates, unemployed persons may stop actively searching for work because they are discouraged by the high prevailing rate of unemployment or the long duration of their own unemployment.

Job search and neighbourhood effects

Job inaccessibility is one of the major problems in South Africa. The history of apartheid when Blacks were banished to distant homelands and only allowed to the White areas if they had a job still remains a determining factors of the differentials in unemployment duration by race. Abhijit and co-workers (2007) were of the view that people from the homelands would prefer to stay unemployed rather than step into some distant unknown world where they are not sure of getting a job hence, this will determine their unemployment duration. Individual exit rates are also likely to be influenced by labour market mobility. The greater the distance and prospective travel time an individual is willing to consider, the greater the perceived wage offer distribution and the probability that an acceptable job offer arrives (Foley, 1997). Partly because of these historical circumstances, the degree of exposure to unemployment is very unequally distributed in the South African population. Low skilled workers and those with a low level of education are by far the main victims.
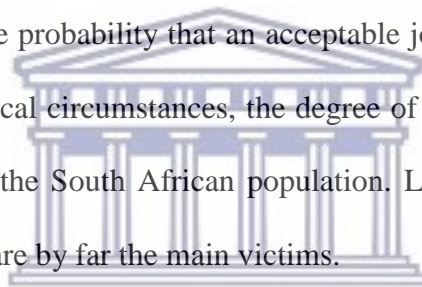
Many urban economists and sociologists argue that low skilled workers' unemployment durations are also partly caused by two specifically urban factors: poor job accessibility and exposure to the negative externalities of concentrated poverty in deprived neighbourhoods. Earlier studies of the effects of poor job accessibility and exposure to high-poverty neighbourhoods on unemployment duration showed that US cities have distinctive characteristics which contribute to both poor job accessibility and to neighbourhood effects (Posel et al., 2014:69; Foley, 1997). Many cities in South Africa have experienced urban sprawl over the past few decades, affecting both jobs and housing. The urban riots that occur periodically, ostensibly driven by xenophobia, and protests about job creation and quality service delivery, remind us of the existence of high-poverty neighbourhoods with intense populations suffering social and economic distress. A critical look at the social and spatial

structure of cities in South Africa reveals that they possess the basic distinctiveness that creates risks of pitiable job accessibility and rigorous poverty.

Job search could be correlated with a person's location. McLafferty and Preston (1997) suggested that the negative effects of poor job accessibility might be offset in two ways: accept a longer travel in order to increase the number of available job offers or move to residential areas with improved job accessibility. However, both these strategies are extremely costly. Massot and co-workers (2008) argued that traveling to and from work is costly and complicates daily life; this will especially affect job search for workers with families, hence prolonging their duration of unemployment. They pointed out that the unemployed worker in an area where unemployment rate is very high will face a particular problem of securing a job seeing that his likelihood of finding a job depends on whether members of his family or his social network are employed may therefore possess information on job opportunities or be able to influence potential employers' decisions about who they hire.
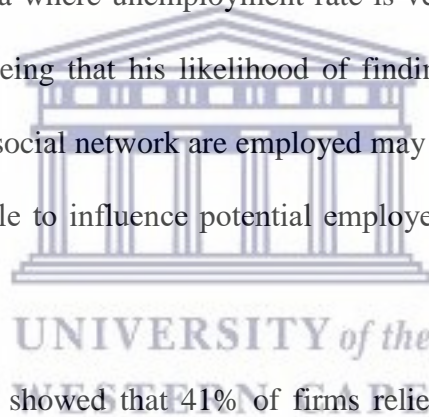
A 1995 survey of employers showed that 41% of firms relied on friends and relatives of existing workers for their recruitment (Standing *et al*., 1996). A good deal of unskilled labour recruitment in South Africa has conventionally been through employers arriving in the rural areas by truck to recruit people on the spot. The main way for Africans living in the former 'homeland' areas to secure employment is then to wait, either for word of a job from an employed relative or friend living in the non-homeland parts or for recruiters to visit (Kingdom and Knight, 2002).

Blanchflower and Bell (2011) mentioned that individuals in long-term unemployment are at a particular disadvantage when trying to find work. The effects of unemployment appear to depend a lot on how long the person has been unemployed for. The morale of individuals

looking for a job goes down as their duration of unemployment rises hence; their probability of exiting unemployment becomes low. If individuals remain unemployed for a long period of time without any gainful income, they may well experience the hardships of poverty (Mahadea and Simson, 2010). This increases their fear of becoming unemployed in the future hence, lowers their subjective wellbeing (Di Tella *et al.,* 2001; Blanchflower, 2007; Knabe & Ratzel, 2008). Arulamplam and co-workers (2001) argued that a predictor of an individual's future risk of remaining in unemployment for a long period of time depends on their past history of unemployment.

Long unemployment duration causes permanent scars rather than temporary blemishes (Blanchflower and Bell, 2011). This suggests that local labour market conditions are important determinants of exit to jobs and that unemployment duration in a country might be lower if fewer barriers such as registration, high transportation and housing expenses hindered people from moving to regions where labour market conditions are more favourable (Foley, 1997). This means that one can reasonably deduce that the negative effects of poor job accessibility could be offset if workers in areas with high unemployment concentration can readily move to residential areas with better job accessibility or if they accept a longer commute in order to increase the number of available job offers. A good level of accessibility increases the number of job opportunities available to a jobseeker and may consequently shorten the job search period.

While Foley (1997) agreed that jobseekers living in neighbourhoods with low employment accessibility may be expected to face longer periods of unemployment relative to jobseekers from neighbourhoods with better access, it is conceded that the occurrence and duration of unemployment are not geographically homogeneous. The advent rate of job offers depends on the existing demand conditions in the labour market. Areas where the demand for labour is

increasing will experience a rising set of job opportunities thereby, exerting a positive effect on the coming rates of offers (Collier, 2003).

2.2.2 Relationship between labour market segmentation theory and unemployment duration

Segmented labour market models were initially developed in response to the failure of traditional economic analyses to adequately explain urban poverty, labour market disadvantage of minority groups and in particular, failure to recognize how far social and institutional constraints restrict the options of many workers. Segmented labour market economists have been able to explain widespread and substantial discrimination against women, racial and ethnic minorities over time, in direct contradiction to neo-classical theories of discrimination (Joll *et al.,* 1983). They further argued strongly that those at the lower end of the labour market are not there because they lack the skills and motivation necessary to operate in better paid employment.
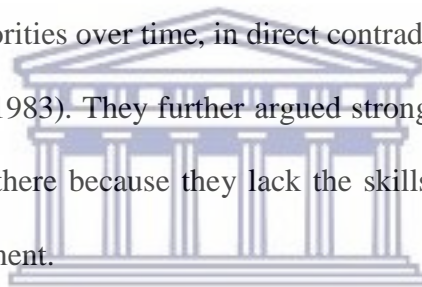
The labour market is dichotomized between primary and secondary segments. The primary segment includes firms with structured internal labour markets and jobs that are characterised by high earnings, good working conditions and employment stability (Joll *et al.,* 1983). Doeringer and Piore (1971) showed that the primary sector contains the privileged members of the labour force, which is governed by an internal labour market. Relatively high wages are paid; there is stable employment with good working conditions, job security and good promotion prospects, mobility along seniority tracks, equity and due process in the existence and administration of work rules and regulations. The forming of trade unions and the protection they offer workers is a further important characteristic of primary sector employment. Within this sector, there are opportunities for training and promotion, and the rules of government works are well established and administered fairly.

In contrast, the secondary segment have firms with open internal labour markets and jobs that are low paying, offer few fringe benefits, poor working conditions and involve menial and repetitive work (Joll *et al.,* 1983). In this sector, job management is entitled to complete control because there is a larger turnover. Jobs in this sector are mostly low-skilled, require relatively little training and can be learned relatively quickly even while on the job. There are few barriers to job mobility within this sector because the jobs are unattractive.

Mobility of workers from the secondary segment to the primary segment becomes difficult or is sometimes restricted because secondary workers lack industry-specific skills given the low level of on-the-job training in their segment (Joll *et al.,* 1983). The lack of upward mobility primarily arises because of institutional and social barriers unrelated to human capital. Certain groups of workers in the secondary segment can be singled out as having the least chance of achieving upward mobility. They are excluded not because they lack productive potential but because they are regarded as inferior labour (Joll *et al.,* 1983).

Since mobility across segments is restricted, individuals' lifetime income opportunities are crucially determined by whether they can get into the primary segment at the bottom level in the early stages of labour market participation, seeing that firms use work histories to decide between applicants hence, this eliminates secondary segment workers and first job seekers. Due to these barriers, many young graduates and skilled labour will prefer to stay in unemployment and keep on hunting for jobs in the primary segment, which may then be used to determine their unemployment duration. Dual market theorists have argued that primary sector jobs are rationed and that in particular, women, blacks and minority groups find it difficult to obtain primary employment (Berger and Piore, 1980). All participants in the labour market want the better jobs, but good jobs are available only for a fraction of the

labour force. Those who do not get the good jobs must either take up a bad job or remain unemployed (Fields, 2008).

The Harris-Todaro model featured a spatial distinction: to be hired for a formal (primary) sector job, it was necessary for a worker to be physically present in the urban areas where these jobs are assumed to be located. Therefore, in the Harris-Todaro model, more workers search for formal sector jobs than are hired. Employers hire some of the searchers but not all of them. Those not hired end up unemployed (Field, 2008). All labour market segmentation theorists have identified limited mobility among sectors as an important ingredient of their theory. More importantly, they have argued the issue around access to higher paying jobs i.e. moving from the secondary segment to the primary segment.

Segmented labour market theory has helped to explain the wage differential theory in the labour market. Higher wages may facilitate worker discipline and deter job quit (Dickens and Lang, 1992). Longer duration of unemployment arises because some workers may receive no job offers because raising wages reduce the expected length of a vacancy (Dickens and Lang, 1992). Unions may raise workers' wages but the union wage will be related to technology and market structure. Labour market segmentation is closely related to models of unemployment. These models are natural vehicles for examining questions about the composition and distribution of unemployment and its response to active labour market policies (Dickens and Lang, 1992).

Heintz and Posel (2007) concluded that if employment and labour market outcomes are to play a role in reducing income inequality and poverty, then barriers which prevent individuals from taking advantage of economic opportunities as they emerge must be identified and their adverse effects minimized. Without such efforts, policies that are successful in increasing

gainful employment may fail to enhance equity and improve the welfare of economically disadvantaged communities.
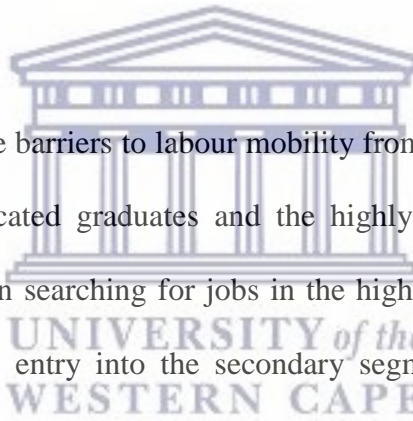
Relevance of the labour segmentation theory to the South African labour market

Major economic challenges in a less developed country such as South Africa lies in overcoming the crippling dualism between high-productivity, high-wage modern sectors and the low-productivity subsistence sectors (Uys & Blaauw, 2006 cited in Knight, 2007). Kingdon and Knight (2007) suggested that one way of describing the South African labour market is in terms of formal 'insiders' and informal or unemployed 'outsiders'. South African insiders fall within the scope of the industrial relations regulations, including recognition of trade unions and collective bargaining, the right to strike, protection against dismissal, and minimum standards concerning hours of normal and overtime work, minimum wages and minimum leave provisions (Heintz and Posel, 2007).

The dualistic nature of South Africa labour market theory helps to explain the high unemployment rate and the long term duration of unemployment in South Africa. The wage reservation theory, search theory and social capital theory play a tangential role in the South African fragmented labour market in relation to unemployment duration. The barriers to labour market mobility prevent some individuals from taking advantage of employment opportunities available to others who have similar characteristics (Gunther and Launov, 2006). They were of the view that the secondary labour market segment accounts for a larger share of total employment than is typically assumed.

Heintz and Posel (2007) analysed the South African segmented labour market and concluded that there was a barrier of entry and mobility within the two segments, which was an important contributing factor explaining South Africa's high rates of open unemployment.

They further concluded that if employment and labour market outcomes are to play a role in reducing income inequality, poverty and unemployment, then barriers to labour mobility and patterns of segmentation are potentially critical issues to be incorporated into the formulation of employment policy in South Africa. Employees who become redundant in one segment of the market will not necessarily find employment in another segment, even if there is a labour shortage in the segment, and even if the person is willing to work at a lower wage. These segments differ with respect to the required level of training and specialized skills. Therefore, a skilled and experienced worker who becomes unemployed in one segment does not necessarily possess the necessary skills to find employment in an entirely different segment of the market. This might well extend the duration of unemployment by the unemployed worker.

As discussed earlier, due to the barriers to labour mobility from the secondary segment to the primary segment, young educated graduates and the highly skilled labour will prefer to remain unemployed to keep on searching for jobs in the higher paying primary sector jobs. This suggests that barriers to entry into the secondary segment are a powerful factor in explaining long term duration of unemployment. A possible objection to this inference is that unemployed primary segment job-search can be interpreted as an investment in future higher incomes and people may be willing to endure temporary poverty and deprivation in order to engage in full-time job-search. Bell and co-workers (1999) cited substantial evidence of labour market segmentation, which provides a rationale for the unemployed to wait for the so-called 'good' jobs.

From supply and supply considerations there are two main possible reasons why the unemployed do not enter the informal sector. One reason is that they choose not to do so because they prefer unemployment and can afford it. The other reason is that the unemployed

are constrained from entering because of barriers to entry (Kingdon and Knight, 2001). It has been identified that unemployed people remained longer in unemployment because they expect a high wage job in the primary segment. The slow growth of formal (primary) sector employment in relation to the growth of the labour force has further caused unemployment to rise over time in South Africa, thereby affecting the length of stay in unemployment.

2.2.4   Labour market discrimination and its effects on the duration of unemployment

The legacy of apartheid is reflected by large racial inequalities in access to the labour market in addition to a well-established racial occupational and wage hierarchy (Rospabe, 2002). Kingdon and Knight (2001b) explored the pattern of incidence of unemployment in South Africa and demonstrated a very large black-white gap in the unemployment rate. In the African group (the group that suffers intolerably high unemployment rates), human capital characteristics such as education and work experience dramatically reduced the chances of unemployment and unemployment duration. Possession of higher education reduced an African's predicted probability of unemployment to nil. This was also true to a large extent for the coloured group. Blacks were shown to have lower levels of employment-enhancing characteristics such as education, and were unfavourably located in areas of high unemployment (Kingdon and Knight, 2001). More so, the high rate of unemployment and high level of unemployment duration among Blacks was driven by differential treatment in the schooling system that subjected Africans to poorer access to education, and differential treatment in apartheid location policies that forcibly confined Africans to the former homeland regions which offer little employment. Most high paying jobs are still being filled by highly qualified whites, while the majority of the unemployed labour pool remains less educated Africans.

Racial wage inequalities are a well-defined aspect of the South African labour market. Despite their substantial decrease during the three past decades, in 1999, African male workers still earned about one fifth of White males' wage. Rospabe (2002) explained that Africans earn less than White workers do because they do not have the same individual productive characteristics. Governmental policies aimed at combating labour market discrimination between 1993 and 1999 have been successful in combating discrimination in access to the labour market, but have remained unsuccessful in the area of occupational and wage discrimination. In 1993, 22.7% of the wage differential was shown to be due to discrimination, but this increased to 28.6% in 1999 and may be attributed to the endowments discrepancies (Rospabe, 2002).

Mwabu and Schultz (1998) explained the differences in wages across races in South Africa, accounting for differences in endowments, but solely by tracing the differentials in the length of education. They concluded that the wage differential is almost 50% explained by differences in the duration of education of the non-white compared to white groups. They also suggested that apart from quantity, one should account for education quality, which differs significantly across the population groups.

Fallon and Lucas (1998) expanded the research on discrimination considering it not only in terms of wage disparities, but also access to the South African labour market, since the disparity in the incidence of unemployment by race was highly differentiated, with a 33.6% unemployment among black males, compared to 3.6% among white males (with national average 29.8% at the time), which strongly suggests that discrimination by race and barriers to mobility are important drivers of wage differentials.

Legislative measures to promote labour market equality was included the Labour Relations Act of 1995, which mandated fair labour practices and, therefore, prohibited unequal pay for

equal work. Additionally, the Employment Equity Act 1998 instituted a system of judiciary proceedings to bring to trial allegations of employer discrimination. Studies of wage discrimination against African workers seem to have decreased in the post-apartheid era (Knight & McGrath, 1987; Moll, 2000; Allanson *et al.,* 2001; Rospabe, 2000). The South African Constitution (1996) requires the government to redress the injustices of the past, while adhering to the principle of good governance. The ultimate ideal envisaged in the constitution is a non-racial, non-sexist democracy for South Africa and also it seeks to redress discrimination in the labour market.

Rospabe (2002) concluded that gender and racial differences in employment are the result of hiring discrimination from the employers and these cause women to stay longer in unemployment than men. This analysis revealed strong evidence of discrimination against women in both wage employment and self-employment. Both race and gender cases of labour market discrimination are a likely determinant of unemployment duration with the disadvantaged groups likely to have lower rate of exiting unemployment.

In contrast, Foley (1997) argued that female long unemployment duration occurs as a result of lack of job search, especially by females with children who are more likely to devote their efforts to full-time childcare – a course of action that is more socially acceptable for women than for men. The traditional gender roles presumably place some pressure on men to settle for sub-optimal jobs in order to support their families and on women to stay at home or, if they choose to enter the labour force, to accept employment that does not over-stress family responsibilities. It is logical to expect marriage and children to have differing effects on male and female behaviour in the labour market and thus, differing effects on unemployment duration (Foley, 1997)

2.3 Empirical consideration on unemployment

This part discussed the available empirical literature and started with the unemployment situations faced by South Africa. This gave some discursions around the high rate of unemployment and the methodological approach in measuring unemployment.

2.3.1 Unemployment situation in South Africa

The high rate of unemployment in South Africa is of a major concern to researchers, policymakers, as well as the international community. When unemployment is very high, its classification itself becomes an issue. The measurement of unemployment rate in South Africa is problematic considering its two definitions i.e. the narrow and the broad definitions. The narrowly defined unemployed include only those who, when questioned, had actively looked for work in the preceding four weeks. The broadly unemployed also include those who expressed the desire to work, but who had not actively been looking for work in the preceding four weeks. The issue is whether people who are not actively searching for job should be regarded as unemployed or excluded from the labour force in other words, whether the non-searching unemployed should be considered as economically active or not. Statistics South Africa (Stats SA) uses the narrow definition to estimate the rate of unemployment and this brings disparities and exaggeration in the reporting of unemployment rates in the country. The choice of definition has a massive effect on the final unemployment rate in South Africa with a reported gap between unemployment rates in the order of 15 percentage points during the 1990s (Kingdom and Knight, 2000).

Tansel and Tusci (2004) found that the unemployment rate increased by four percentage points in each of 2000 and 2001 using the Labour Force Survey data when the broad definition of unemployment is used for Turkey. Byrne and Strabl (2004) also found out that

the Trinidad and Tobago unemployment rate increased by about 3.6 percentage points for men and about 7.2 percentages for women, when they moved from the narrow definition to the broad definition of unemployment.

The choice of a definition of unemployment can therefore have important effects on empirical studies. The South African government's adoption of the narrow definition as the country's 'official' definition notwithstanding, Kingdon and Knight (2000) argued that the broad definition was more suitable for South Africa, since an analysis of the non-searching unemployed showed that on average they bear a closer resemblance to discouraged job-seekers than to the voluntarily unemployed. Their argument was justified by characterizing the lack of job-searching among persons claiming to be unemployed as a "taste for unemployment hypothesis and discouraged worker hypothesis". They explained that at high unemployment rates, unemployed persons may stop actively searching for work because they are discouraged by the high prevailing rate of unemployment or the long duration of their own unemployment. Kingdon and Knight (2000) argued that the narrow measure may be endogenous in that the number actively seeking work itself depends upon the broad unemployment rate. In these circumstances, it may be misleading to use the job-search test for identifying the unemployed.

The great discrepancy between broad and narrow definitions of unemployment rates indicates that a large proportion of jobless persons who say they want work are not actively looking for it, and this has impacted on unemployment levels with respect to duration. Some analysts argued that many such persons are not labour force participants but others have convincingly argued that the broad definition is the more relevant because tests suggest that in South Africa, non-searching persons are 'discouraged' workers (Kingdon and Knight, 2000; Poswell, 2002).

South Africa's national unemployment rate in 2006 stood at 37.28% according to the broad definition of unemployment, while the narrow definition of unemployment, twelve years after democracy stood at 25.54% (Bhorat, 2009). Moreover, according to the Labour Force Survey, it had been high in the preceding years i.e. 36.9%, 41.8%, 41.0% and 38.8% in 2000, 2002, 2004 and 2005 respectively (Stats SA, 2005). In 1998, it was officially measured at 39.0% on the broad definition and 26.0% on the narrow definition (Stats SA, 2000 cited in Knight, 2000). The 1998 official unemployment rate was 13 percentage points lower than the unemployment rate calculated according to the expanded definition (Kingdon and Knight, 2000). These wide discrepancies contributed to the controversy surrounding the true level of unemployment in the country. Owing to the long history of unemployment in South Africa, all those unemployed would not necessarily comply with official definition in that discouraged workers constitute a large percentage of the labour force.

The very high unemployment rate reported by Statistics South Africa as produced by the Labour Force Survey has naturally generated a debate about its reliability. The report measures the overall rate not the time people stay unemployed. For instance, ADCORP has claimed that its Employment Index is more reliable than the employment data from the Quarterly Labour Force Survey released by Statistics South Africa. ADCORP argued that due to major periodic revisions, no single coherent long-term time series of employment exists, leading to estimates of the unemployment rate in 1994 to vary from 7.0% to 31.0%. ADCORP substantiated its argument by mentioning that the Quarterly Labour Force Survey does not capture certain section of the population most especially foreign nationals (Pike, 2011). This assertion was counteracted by Lehohla (2011) who claimed that the Quarterly Labour Force Survey is reliable due to its accuracy, accessibility, methodological soundness and integrity. He further explained that the Quarterly Labour Force Survey (QLFS) is a

household-based survey that targets private dwellings and workers' hostels in all settlement types, including commercial farms. This was corroborated by Nattrass' (2000) assertion that there was little reason to believe that the official statistics on unemployment level release by Statistics South Africa were significantly wrong.

Unemployment is clearly a matter of serious concern due to its effects on economic welfare, production, erosion of human capital, social exclusion, crime, and social instability. However, its potential costs depend on the nature of unemployment itself (Kingdon and Knight, 2001). Their data showed that unemployment varied dramatically by race: Africans had an unemployment rates of 41.0% but the rate for Whites was a low 6.0%. Unemployment decreased monotonically by age, ranging from 51.0% for the youngest group to 17.0% for the eldest group. The incidence of unemployment also varied importantly by region, gender, and education. For example, people with higher education faced an unemployment rate of 6.0% but those with primary education or less suffered a rate close to 40.0% (Kingdon and Knight, 2000-2). Similarly, descriptive statistics for 2005 showed that the aggregate African unemployment rate was 45.0%, while it stood at 8.0% for Whites, when using the expanded definition of unemployment. In 2006, the unemployment rate for youths aged between 15-24 years stood at 63.72%, while for those aged between 25-34 years, the figure was 40.2%. Demographic dominance was revealed by the fact that in 2006, youth aged between 15-34 years constituted about 72.0% of all the unemployed (Bhorat, 2009).

Entry into unemployment in South Africa is mainly dominated by those who have never previously held a job. The incidence of direct entry into unemployment (without an intervening period of work) varies by several factors e.g. it differs substantially by race. African unemployed persons are more than twice as likely as Whites never to have had work. While this could be partly due to the inferior employment-enhancing characteristics of

Africans againstWhites, it could also be partly due to racial discrimination in employers'
hiring practices (Kingdon and Knight, 2000-2).

2.3.2   Government employment creation strategies in reducing unemployment

Effective growth strategies have never been fully applied in South Africa, despite various
economic development programmes compiled by the government until 1994. In South Africa,
state intervention consists only of temporary measures which fall into positive, supportive
and defensive categories. Positive measures include promoting economic growth through
specific programmes to create employment and stop-gap measures such as public works and
emergency relief projects. Supportive measures include training programmes, mobility
programmes to assist workers to relocate to areas offering better employment prospects, and
labour market information programmes. Defensive strategies include population and
migration control, work-sharing, part-time employment, multiple shifts and social benefits
including incentives for retraining.
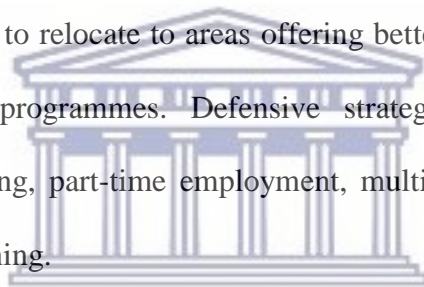
2.3.2.1 Public Works Programmes and the Expanded Public Works Programmes

Public Works Programmes (PWPs) are labour market interventions traditionally aimed at
providing unskilled and semi-skilled labour with short-term employment during periods when
unemployment and also poverty are critical problems. Public Works Programmes are seen to
be most effective when unemployment has the characteristics of being transitional rather than
structural. The intention of these programmes is both to alleviate poverty and to create
sustainable jobs. The workers within these programmes are employed with wages lower than
the market wage in order to attract the target group, in programmes that are labour intensive,
so that as many people as possible can be employed. Public Works Programmes have
traditionally been concentrated on infrastructure, such as road construction and maintenance.

Public Works Programmes have, since the first nationwide program was launched in 1994, played an important role in the South African government's aim to fight the massive unemployment problem in the country. Former President Thabo Mbeki's main priority in instituting PWDs was to alleviate poverty and unemployment. This plan was put forward through the hosting of the Growth and Development Summit (GDS) in 2003 where the government emphasized that the main route to reducing poverty and unemployment was by the means of an Expanded Public Works Programme (EPWP).

The Expanded Public Works Programmes is a part of the nationwide PWP which was launched in 2004. It sprang out of the Community Based Public Works Programme (CBPWP) which was launched in 1994. However, the CBPWP focused mainly on enhancing the country's infrastructure and not much was achieved in terms of job creation. The government wanted to change this and at the GDS in 2003, it was decided that the country should create a Public Works Programmes that focused more on job creation and skills development. In an address to the National Council of Provinces on 11th November 2003, President Mbeki announced an expanded public works programme, targeting a million people in the first five years, using labour-intensive methods to create infrastructure. It can be argued that a more promising approach to deal with current labour market conditions is for the government to expand social security expenditure plus a public works programmes. The following year this idea was concreted and the Expanded Public Works Programmes were born. These programmes cover all spheres of government and state-owned enterprises and the goal is to create one million job opportunities until the end of 2009 (www.epwp.gov.za).

The micro-level aim of the EPWP is to draw poor, unemployed people into work opportunities and to give them some sort of training that will enable them to move from the second to the first economy. Among races, blacks were prioritised because of the vast

joblessness within the group. Unemployment among youths is recognised as a big problem in South Africa and that group is a prioritised target within the Expanded Public Works Programmes. According to Moller (1993), some of these programmes include a component which aims at rebuilding self-confidence and a sense of personal worth.

The failure of some positive and supportive intervention programmes, including training programmes, may be attributed to their not being able to provide the full spectrum of job experience (Moller, 1993). They do however, provide distraction and temporal relief. The Expanded Public Works Programmes gives temporary relief from unemployment (Phillips, 2004). McCord (2003) noted that participating in the programme does not enhance the individual's chances of finding a sustainable job. Phillips (2004) argued that Public Works Programmes will not solve the unemployment problem in South Africa but should rather be viewed as one of an array of short to medium-term interventions aimed at alleviating poverty associated with unemployment, with a particular focus on able-bodied but unskilled adults.

McCord (2002) considered the programme to be cost-effective in terms of transferring resources from the state to recipients, the proportion of programme costs spent on labour and the cost of the creation of a day's work The NPWP had two strategic thrusts: a community-based public works programme (CBPWP) intended to provide rapid and visible relief for the poor; and to build the capacity of communities for development. At its peak, the CBPWP was allocated approximately R 350 million per annum. The programme ultimately resulted in the creation of approximately 130 000 work opportunities between 1998 and 2004 (Phillips, 2004).

2.3.2.2 Formation of Trade Unions

The role of trade unions is a large element in a political economy analysis. Trade unions, first exclusively for Whites, then Coloureds and Asians and finally Africans, have been a constituency that cannot be ignored in South Africa. Their interests have been incorporated in the state through the Department of Labour. Union interests and government labour policies have exhibited varying degrees of similarity, and have been able to supersede other interests in the wider society. For instance, during the early days of apartheid, minority unions could negotiate with employers and have agreements extended to non-unionised parts of the relevant industries without having to deal with representatives of African workers. If the substantial labour surplus view is right, then union interests and other interests in the wider society may again not be harmonious, even in the absence of racial discrimination in the formation and representation of union interests.

Labour legislation enacted since 1994 has been appropriate to a society with a discriminatory past, but near to full employment, with the result that we now have extensive protection of workers in the primary sector against unfair labour practices, a commission for conciliation and mediation, employment equity legislation, minimum wages even for domestic and agricultural workers, a revamped industrial training system and a unemployment insurance fund rescued from bankruptcy. However, these developments offer no solution to high unemployment; on the contrary, in the short run they worsen it by increasing labour costs.

The role of the trade unions may be decisive in mobilizing the unemployed. So far it appears that trade unions are preoccupied with the quality of life of those presently in jobs. Their main aim is the right to a living wage campaign and the protection of the rights of workers in the process of being laid off. However, efforts are under way to close the gap between the unemployed and the other groups, which may prevent further marginalization of the

unemployed (Moller, 1993). South Africa's strong trade union movement has often been said to be a key determinant of South Africa's high unemployment levels. Bhorat (2009) argued representative trade unions in South Africa, over time have engendered a highly segmented labour market, thereby ensuring that large numbers of the unemployed are excluded from work opportunities through the protection (in terms of wages & benefits) which trade unions offer to their members. According to Bhorat (2009), an over-zealous and possibly state-sanctioned trade union movement has resulted in high and rising unemployment levels within the economy.

2.3.2.3 Unemployment Insurance Fund

The origin of unemployment insurance dates back to 1953. The unemployment insurance schemes proved to be extremely helpful for the millions of individuals who lost their jobs following the Great Depression. This insurance scheme turned out to be a great source of financial relief for the families of the unemployed workers. The unemployment insurance schemes also help business organizations, disadvantaged groups in the population and in the less developed economies, to tackle financial crises to some extent. The unemployment insurance scheme is aimed at fighting a number of social ills. However, its main objectives are to minimize the adverse effect of unemployment; to retain the purchasing capacity of workers; to prevent the effects of unemployment from spreading through the different layers of the society; to lower the burden of debt of the unemployed mass of population and to keep the experienced and skilled section of the unemployed workforce ready to be absorbed by the local employers.

Arguably, unemployment benefits do not reduce mental illness and depressed well-being among affected groups. Psychologically as well as economically, unemployment is a condition of forced dependence; even if the stigma of poverty is removed, it still does not

make the unemployed a positive reference group (Moller, 1993). The South African unemployment insurance fund is considered inadequate to meet the needs of the unemployed. Tokman (1986) hypothesized that the informal sector operates as a sort of unemployment insurance financed by the less well-off sectors of society. It transfers income from the poor to the very poor and widens inequalities overall. However, the most controversial of all government activities in relation to the unemployed is the income maintenance scheme. A persistent question has always been about the effect that income support for the out of work has on the incentive to work. Concern is not confined to the motivation of the unemployed alone. Sinfield (1981) argued if benefits are too generous, workers will give up their jobs when it suits them and will generally be less responsible. In contrast, Moller (1993) pointed to the inadequacy of income support and stressed the effect of deprivation and poverty on the unemployed and their families, and the extent to which the problems of the loss of work are compounded by loss of income. More so, he expressed his fear that the unemployed may be insufficiently protected from employers who pay inadequate wages for poor jobs, thus reinforcing the link between low pay and poverty both in and out of work.

2.4.1 Sustainable livelihoods framework

Empowerment is a principal key to alleviating poverty and promoting development. All humanity is believed to be empowered economically, as well as socially. For individuals and households to enjoy sustainable livelihood and employment is said to be the main bridge between economic growth and opportunities for human development (UNDP, 1996). Before we consider the significance of the phrase 'sustainable livelihood', it would be proper to take a brief but vital look at the employment and unemployment situation in South Africa in the point under study (2011-2016). From Table1 below it can be seen that especially, from 2008 to 2009, there has been a drastic reduction in formal and informal employment in South

Africa. Despite the number of people in employment increasing between 2008 and 2014 (13 844 000 to 15 320 000) the rate of employment declined from 44.8% to 43.0%. This occurred as a result of the increase in the labour force. This implies that more jobs were not created to meet the increasing number in the labour force. As a result of this inadequate job creation, the labour market participation rate reduced from 57.3% to 56.8% between 2008 and 2014. Similarly, the rate of unemployment drastically increased from 2008 to 2014. The data in Table 1 show that the rate of unemployment never went below 20% after the 2008/2009 global economic crisis had hit the country. The unemployment rate went up from 21.9% to 24.3% of the labour force. This shows that the growth in employment did not contribute to a reduction in poverty and unemployment. Perhaps the growth in unemployment between 2008 and 2014 might be best be illustrated by the increasing proportion of households that were adopting a variety of coping strategies, many of which may not have been socially or economically sustainable. According to UNDP's Human Development Report 1996 the right kind of employment that can generate opportunities to empower people is one that covers all ways of securing a livelihood, not just wage employment.
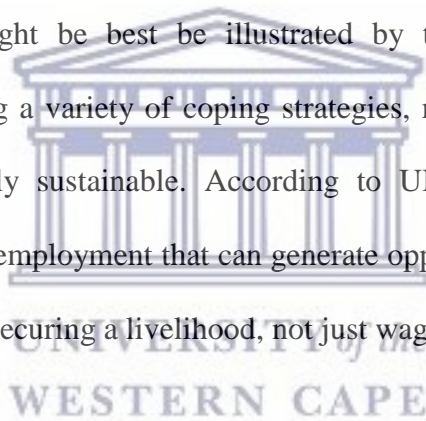
Table 1: Labour market indicators

Indicators		2008	2009	2010	2011	2012	2013	2014
Pop 15-64		30894	31261	32193	32670	33128	35022	35489
Labour force		17718	17138	17269	17741	18078	20007	20268
Employed		13844	12974	13132	13497	13577	15177	15320
Formal(non-Agric)		9537	9114	9163	9616	9611	10773	10911
Informal (non-Agric)		2246	2109	2225	2134	2205	2446	2448
Agric		764	615	627	630	685	713	742
Private household		1298	1135	1117	1118	1076	1244	1219
Employed		3873	4165	4137	4244	4501	4830	4909
Discouraged		1168	1686	2150	2315	2257	2200	2403
Rates								
Unemployment (%)		21.9	24.3	24.0	23.9	24.9	24.1	24.3
Employment (%)		44.8	41.5	40.8	41.3	41.0	43.3	43.0
Participation (%)		57.3	54.8	53.6	54.3	54.6	57.1	56.8
Sex								
Pop 15-64	Women	16169	16333	16589	16797	16995	17808	18093
	Men	14725	14928	15604	15873	16133	17130	17550
Labour force	Women	8172	7818	7762	8050	8164	9046	9090
	Men	9546	9321	9507	9692	9914	10839	11138
Employed	Women	6102	5785	5698	5920	5885	6670	6676
	Men	7724	7189	7434	7577	7693	8507	8643
Formal(non-Agric)	Women	3833	3741	3711	3982	3944	4485	4582
	Men	5704	5372	5452	5634	5668	6228	6329
Informal (non-Agric)	Women	1001	944	922	874	874	971	924
	Men	1245	1166	1303	1260	1331	1475	1524
Agric	Women	238	208	209	198	227	210	228
	Men	526	407	418	432	458	503	514
Private household	Women	1030	891	856	866	840	1004	942
	Men	268	244	261	251	236	241	276
Employed	Women	2070	2033	2064	2129	2297	2376	2414
	Men	1804	2131	2073	2115	2222	2454	2495
Discouraged	Women	681	990	1156	1281	1268	1175	1276
	Men	487	697	953	1034	988	1069	1127
Rates								
Unemployment	Women	25.3	26.0	26.6	26.5	27.9	26.3	26.6
	Men	18.9	22.9	21.8	21.8	22.4	22.4	22.4
Employment	Women	37.7	35.4	34.3	35.2	34.6	37.5	36.9
	Men	52.6	48.2	47.6	47.7	47.7	49.4	49.2
Participation	Women	50.5	47.9	46.8	47.9	48.0	51.2	50.2
	Men	64.8	62.4	60.9	61.1	61.5	63.7	63.5

Source: Labour Force Survey (Stats. SA)

2.4.2 The concept of sustainable livelihood and the impact of household characteristics on the average duration of unemployment.

The sustainable livelihoods framework has been adopted for international development to address the issues related to poverty alleviation in a holistic manner. This framework provides a simple but critical and comprehensive way to analyse complex problems. Various approaches can be taken to the questions of what sustainable livelihood means and how it can be achieved, ideally and practically. These approaches have their root in studies of differential capability of families and household coping with crises (droughts, food shortages, diseases etc.).

According to Conway (1992) sustainability is the ability of a system to maintain productivity in spite of a major disturbance which might occur as a result of intensive stress or shocks. Chambers and Conway (1992) explained livelihood as comprising the capabilities, assets and activities required for a means of living. A livelihood is said to be sustainable if it can cope with and recover from stress and shocks, maintain its capabilities and assets, and further provide sustainable livelihood opportunities for the next generation.

The concept of a livelihood seeks to bring together the critical factors that affect the vulnerability and strength of individual or household survival strategies. While using some insights from these theoretical frameworks, the study focused on the household formation as well as a unit of decision making to protect and support unemployed individuals living in the household and at the same time protecting the household assets against stress and shocks. Presumably, unemployed individuals who obtain their support from a household that maintain a sustainable livelihood are likely to have a shorter unemployment duration because the assets of the household would give them an opportunity to intensify their job search. Unemployed individuals who have less or no support from the household or are living in a

vulnerable household, might well become despondent and end up giving up in their job search. Households put together a livelihood on the basis of their response to their vulnerability context, their available assets, and within the constraints or opportunities provided by the institutional environment.

The sustainable livelihood framework shows many possible means of intervention to support livelihoods, reduce vulnerability and build on the household's existing asset base. The livelihoods framework identifies five main asset categories; these being the physical capital, financial capital, human capital, social capital and natural capital. This study focuses on the first four categories and their effect on individual unemployment duration. Some of the capital forms are tangible such as buildings, land, cash, etc. but other forms of capital accessed by households are intangible- social networks, knowledge, education, skills and so on. All the capitals identified are significant, although undoubtedly the balance will change from household to household and over time. While these assets have been separated out and measured in terms of the contributions they could make to the individuals and the family, it is likewise necessary to research the vulnerability context in which they exist (what are the trends, shocks and stresses). For example, household income and social networks can be volatile and depend on the migration of people into and out of the household. For example the members who are working to provide some kind of financial support to keep the household alive are themselves susceptible to retrenchment, death and pension, to mention but a few possibilities. Another point to note is the inter-household transfer of resources. Studies have shown that the availability of other household resources may also raise the wage reservation of the individual unemployed and this can prolong job search and unemployment duration (individuals receiving support from uncles, cousins etc.). According to Klasen and Woodard (2000), unemployment in many cases obviates the maintenance of an independent household and thus leads unemployed individuals to seek support in other households. They

argued that the unemployed might stay in, or move to rural areas basically for the economic support he or she can get there, rather than the labour market opportunities.

In the context of South Africa, Klasen and Woolard (2000) attributed the phenomenon of unemployed persons moving to the rural areas for a sustainable livelihood, to the apartheid residential policies which ensured that most families were forced to take up residence in rural areas and to the social pensions paid to the elderly who live predominantly in rural areas. They argued that this movement to rural areas would draw many unemployed individuals most especially the Non-White, away from most employment opportunities and therefore, would extend the unemployment duration.
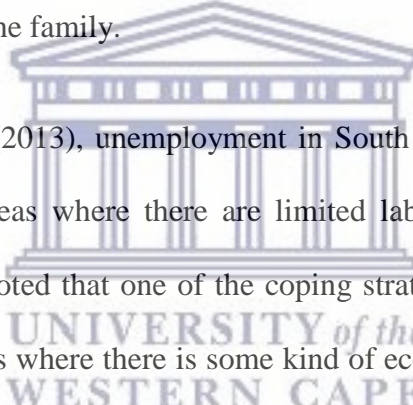
The physical assets of a household comprise of houses, cars, stores etc. McElroy (1985) considered a Nash-bargaining model of family behaviour that jointly determines work, consumption and household membership, in particular the decision whether a young male resides with the parents or stays on his own. The study assumed that the duration of unemployment may be affected by co-residence, transfer of household resources or both the unemployed and those working in the household sharing the household. Another important part of the scope of this study is to obtain a grasp of social networks (how individuals and household are connected with groups, unions, friends to have access to first-hand information on job opportunities) and how social networks could impact on duration of unemployment. Drawing from the livelihood strategy, we would expect that unemployed individuals from households without or with less connection to the labour market will experience longer duration of unemployment.

Human capital is a very widely used term with various meanings in the field of development studies. In the context of the sustainable livelihood framework, human capital is described as the skills, knowledge, ability to labour and good health that together enable people to pursue

different livelihood strategies to achieve their livelihood objectives (Department for International Development, 2000). Bearing this in mind, the study assumed that households headed by a woman are likely to affect household formation and the job prospects of the unemployed individuals more negatively than household headed by a man. Gender is central to the development of an equitable and sustainable land tenure system and improving the livelihood opportunities of the household members. Payne (2001) mentioned that traditionally there has been discrimination against women to the extent that they have not been able to gain access to land and shelter on equal terms with men. Females are more vulnerable to shocks and stresses in the labour market than their male counterparts. Rospabe (2002) reported that gender differences in employment are the outcome of hiring discrimination from the employers and these result in women staying unemployed longer than men. Adult females are more probable to be retrenched because they tend to dedicate lots of their time and efforts to full-time child care- a course of action that is more socially acceptable for adult females than for adult males. Household size can also have an impact on the duration of unemployment. For instance, the number of children and the number of elderly individuals living in the household can determine the individual's job search intensity. This presupposes that household with larger children and elderly to take care of will reduce the time for job search. On the other hand, it may happen that any feasible wage income has possibilities to be evaluated against care cost. This implies that even comparatively higher expected income may not be enough to inspire people to work if expected care costs are considered more eminent.

Women have limited opportunities for employment in the formal sector and a predominance in the informal sector (especially in petty trading in which incomes are low, and given their higher level of employment as unpaid family workers). All these instances may contribute to a higher prevalence of household poverty in households headed by adult females than adult

males. Gaining some insight from this conceptual framework, the study considered that unemployed persons living in households headed by a woman would experience longer durations of unemployment than household headed by a man. The study assumed that due to the higher vulnerability of a household headed by a woman, unemployed persons who are depending on the household for their livelihood are subject to a budget constraint that considers the assets available to that person in the various possible household arrangements. This will be a considerable hindrance to the unemployed person's job search and job opportunities. Nevertheless, poverty among women is not simply due to their want of livelihood-sustaining employment opportunities, but is also due to their lack of empowerment, determined partly by cultural and attitudinal factors that leaves them little scope for decision making in the family.

According to Woolard *et al*. (2013), unemployment in South Africa is concentrated among the youth and in the rural areas where there are limited labour market opportunities and access to information. They noted that one of the coping strategies of the unemployed is to bond themselves to households where there is some kind of economic sustenance. According to Becker *et al*. (2005), young people are delaying their move out from their parents' home to independent adult life. Weston *et al*. (2001) alluded that co-residence serves as a means through which parents transfer resources to the adult children in order to aid them to complete their education and also prepare them to enter the labour market. They explained that young adults prolong their stay with their parents because of the financial benefit they get from their parents. This might influence young adult's decision to leave their parents' homes to form their own household. The young unemployed adult's decision of co-reside with their parents will affect their job search and their length of unemployment. The decision of unemployed adults whether to leave the household may depend in part on the household

assets and the vulnerability context. This may in turn have implications for the relationship between those household members who are working and those unemployed.

Aquilino and Supple (1991) suggested that conflict between parents and co-residing adult children appear to be higher when those children are not working and so rely on their parents financially for their livelihood. Another point to note as argued by Fogli (2004) is that employment protection effectively transfers labour market opportunities from younger to older generations, and when there are credit market imperfections, unemployed individuals choose co-residence a coping strategy. In like vein, Becker *et al*. (2005) took the view that parental job insecurity will intensify the job search by unemployed members living and depending on the household for their livelihood. Ermisch (2003) put it forward that higher parental income is expected to increase the chances of co-residence because it increases the amount of housing services available in the parental home. Similarly, Manacorda and Moretti (2005) found that increased parental income reduced the propensity for young adult to leave their parents' homes. However, unemployed individuals can influence the efficiency of the process by deciding on how much effort to devote to job search and on which methods to use, taking into account the amount of income support they obtain from the household members who are working and the household assets.

Using a multinomial logit model to examine the effect of unemployment on relationship to household head, Klasen and Woolard (2009) found that unemployed individuals were more likely to attach themselves to a household for economic support rather than being a household head themselves. This corroborates the findings of Keller (2004) who used a modified Heckprobit selection model to determine household head status and employment. However, drawing insight from the sustainable livelihood framework, the decision of unemployed persons to co-reside or share household assets will be determined by the household budget

constraints and the vulnerability context. In this framework, it is more appealing for those without a job to experience shorter duration of unemployment if they attach themselves to households capable of providing a sustainable livelihood, because the unemployed would then have access to household capital to enable them to intensify job search, and also to connect to a wider social network through the members of the household who are working in key positions. This network will keep the unemployed informed about employment opportunities.

Arguing the contrary, Klasen and Woolard (2009) concluded that these safety nets will take the unemployed away from the labour market opportunities. Taking a critical look at their assertion, their studies were limited to unemployed youth in the rural areas where in the South Africa context, location is a very significant role plays on job opportunities. Most of the rural communities are located far from business centres and industries. With this caveat in mind, the study hypothesized that unemployed persons obtaining some form of financial support will experience shorter unemployment duration.

In the context of South Africa, Klasen and Woolard (2009) examined household formation and household response to the unemployed members with regard to their access to household resources. They argued that co-residence and sharing the household resources, will delay the unemployed from setting up their own household, so affecting the duration of unemployment. The presence of unemployed individuals in the household exerts more pressure on the household assets which, according to Klasen and Woolard (2000) can drag into poverty many households that support the unemployed. An unemployed individual living in a household that is more vulnerable to shocks and stresses is likely to experience longer unemployment duration. In other words, the cost of an unemployed person being attached to a household may be influenced by the resources of the household and may thereby impact on labour

market opportunities, depending on how the livelihood of the household is being sustained. Another fascinating point is that the extended family system practice in Africa enables most household's members who are not working to attach to other households or receive remittance income from relatives who are working abroad as a coping strategy.

Klasen and Woolard (2000) used two stage least squares to estimate the contributions of remittance income and labour market behaviour. They found that remittance income to support a household affected labour force participation, search activities, and employment prospects of the household members. In this vein, this study assumed that unemployed members in the household who receive financial support from other household or remittances from families and from friends abroad are likely to intensify their job search and in turn, have a shorter duration of unemployment. At the same time, households having a sustainable livelihood will ensure and create conditions under which unemployed members will be able to secure adequate means of livelihood and employment opportunities.

Conceptual Framework

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┌─────────────────────┐        ┌─────────────────────┐
│ Household headed by  │        │ Household headed     │
│ female               │        │ by male              │
└─────────────────────┘        └─────────────────────┘
           │                              │
           ▼                              ▼
        ┌────────────────────────────────────┐
        │ Household assets                    │
        │   • Financial capital               │
        │   • Human capital                   │
        │   • Social capital                  │
        └────────────────────────────────────┘
```

Household assets
- Financial capital
- Human capital
- Social capital

Members who are working ◄──► Household members (size) ──► Members who are not working (*receiving support*)

Sector of employment

Formal sector

Informal sector

Ever work

First time job seeker

Main industry
Agricultural, mining, manufacturing, construction, retail trading, transport, finance, private household, community and social services etc.

Income earned to support the household

Duration of unemployment

Main occupation
Managers, professional, clerk, service worker, skilled agriculture worker, craft worker, plant operator, domestic worker, elementary occupation etc.

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The diagram above attempts to summarize the conceptual framework and the interrelationships between the household and individual characteristics and their influences on the duration of unemployment. Drawing some insight from the theory of the sustainable livelihood framework, this study focused on the household human resource and the aggregate income of the household to explain their impact on the duration of unemployment.

The coping strategy of the unemployed individuals of attaching themselves to the household has been documented in international literature (See Atkinson and Mickleright, 1991; Klassen and Woolard, 1998). Klasen and Woolard (2009) noted that the decision of the unemployed to attach themselves to household for support and sharing in the household assets, leave some of the unemployed and the households supporting them in abject poverty and facing destitution. Incorporating this assertion into the sustainable livelihood framework and with regard to the size and the quality of the household human capital and the level of household vulnerability and its response to shocks and stresses, the study proposed that unemployed persons living in households with larger number of unemployed and with low level of education, are likely to display longer duration of unemployment than those living in households with fewer unemployed, endowed with quality and higher education.

The household members who are employed but work in a low pay jobs cannot ensure sustainable livelihood in the household if their financial contributions are inadequate to satisfy the minimum basic needs of the household. The employment sector is incorporated in the model to assess its influence on the individual duration of unemployment. Social capital theory sees social networking as a significant mechanism in job search and job opportunities. Household members working in more reputable positions are more likely to be connected and so have access to first-hand information about job opportunities in the labour market which they will in turn share firstly with the unemployed members in the household.

It has been suggested that household structure and its location in South Africa have major impacts on individuals' decisions to participate in the labour market and their success in looking for a job in the absence of unemployment insurance. Unemployed persons have to live in a household where they can share in wage income and other household assets (Klasen & Woolard, 2000). The apartheid policies caused many households most especially among African population groups to be headed by women. Kingdon and Knight (2004) mentioned that most female household heads are grandmothers who get their source of income from their adult children who are working in the cities.

Klasen and Woolard, (2000) put it forward that the head of a female headed household was more likely to be a grandmother than the mother of the children. He explained that many females headed households rely only on the income of the mother of the children under her care for a living. This supposes the female household head has an income from child support grants from government, or remittances from relatives. He also found that many heads of female-headed households find it difficult to pursue better employment opportunities because they devote most of their time to child care. In some cases, women find it convenient to combine petty trading with household chores and child bearing and rearing. With this caveat in mind, the study proposed that unemployed individuals living in a household headed by females are likely to exhibit longer duration of unemployment than unemployed individual living in a household headed by a male.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1   Perspective of the study

In this chapter, detailed methods of testing the various research hypotheses are presented. The chapter comprises five sections. The first section gives the scope of the study. The second section presents the source of data and gives a brief description of the study area, while the third section presents and explains the variables that were used for data analysis. The fourth and final section explores the stated hypotheses and the statistical methods used in finding relationship or associations between the dependent variables and the independent variables as well as the two level modelling used.

Quantitative research is interrogating an identified problem, based on testing a theory, using number measurements and statistical techniques. The goal of quantitative methods is to ascertain whether the predictive generalizations of a theory hold true. According to Walliman (2005) quantitative research is used to resolve doubts about relationships among measurable variables in order to explain, predict and control phenomenon. It makes use of standardized instruments like questionnaires and makes deductive analysis. Burns and Grove (1993) describe quantitative research as a formal, objective, orderly process to describe and test relationships and examine cause and effect interactions among variables.

For the purpose of this study, a quantitative research design was implemented. This was consistent with the purpose of the study, which is to determine whether there are significant correlations between or among specific contextual and the outcome variables. Multiple methods allow the different research objectives and questions to be fully explored. In the first stage of the research secondary data from researches was used to build the whole picture of unemployment duration in South Africa. Quantitative data was derived from the collected

responses of each participant in a household that responded through the survey instrument conducted by Stats SA from the Labour Force Survey (2011-2016). Inferences were made by testing statistical hypotheses. Although progress in this field is being made in including household into socio-economic models, systematic empirical evidence is currently scarce. Undoubtedly, this reflects the data constraints and methodological problems that arise when examining the impact of household characteristics on individuals' decision making about employment.

In some parts of the world unemployment has been perceived as an individual fate. However, in this present post-Apartheid democratic South Africa, unemployment is seen as a collective fate, as it has rapidly affected a large fraction of the population. As a result, being unemployed is not stigmatized and is no longer hidden secret. However, in an attempt to conduct a comprehensive research regarding such a socially damaging issue as unemployment, particular aspects of its harmful consequences for employment as well as the effectiveness of a proposed solutions against it, need to be examined. In this context, this study looked at the household characteristics and their effects on the duration of unemployment, in order to explain the high rate of unemployment in South Africa.

3.2   Scope of the study

The study covered the population in the labour force between ages 15-64 years, who by the

standard definition of Statistics South Africa:

- were not in paid employment or self-employed (i.e. worked 5 hours or less for wage

  or salary or for profit or family gain, in cash or in kind) during the reference week,

  which is 7 days preceding the interview;

- were available for paid employment or self-employment during the reference week;

- took specific steps during the last 4 weeks preceding the interview to find paid

  employment or self-employment;

- Had the desire to work and to take up employment or self-employment;

- Had actually stopped searching for job

- Had members in the household who were working

3.4   Sources of data

The study made use of data from the Quarterly Labour Force Survey (QLFS) conducted by

statistics South Africa (2011 to 2016). The comprehensive data sets consist of population

about 68000 South Africans and foreign nationals aged 15 and above. The results for the

QLFS are given for people aged 15 to 64 years who are referred to as the population of

working age. The sample size for the QLFS is roughly 30 000 dwellings per quarter. Stats

SA's household-based surveys use a master sample of primary sampling units (PSUs) which

comprises enumeration areas (EAs) that are drawn from across the country. The sample is

designed to be representative at provincial level and within provinces at metro/non-metro

level. Within the metros, the sample is further distributed by geography type. The current

sample size is 3080 PSUs. The sample for the redesigned Labour Force Survey (i.e. the

QLFS) is based on a stratified two-stage design with probability proportional to size (PPS)

sampling of PSUs in the first stage, and sampling of dwelling units (DUs) with systematic sampling in the second stage. (STATS SA, 2016).

The information comprises household and individual demographic and socio-economic characteristics, details of unemployment and involvement in active labour market programs. The main objective of this is to look at the structural changes of unemployment by examining the determinants of unemployment duration in terms of individual and household characteristics which will help explain the unemployment situation in South Africa. During the survey the following questions are asked: (1) in the last four weeks were you looking for any kind of job? (2) For how long have you been without work and trying to find a job or start a business? (3) How long ago was it since you last worked? (4) Have you ever worked for pay or profit or helped unpaid in a household business? (5) What was the main reason why you did not try to find work or start a business in the last four weeks? (6) What is the highest level of education that you have successfully completed? (7) In the last four weeks what have you done to search for work or to start a business? (8) How do you support yourself?
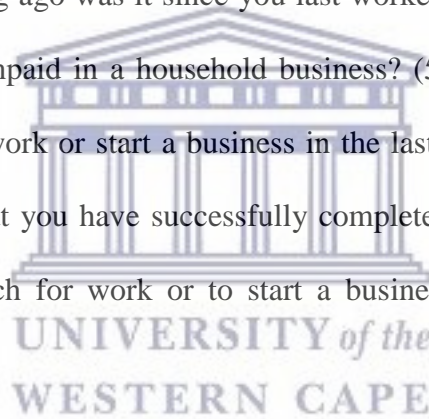
Secondary sources of data came from the selection of books especially journals, newspapers and magazine article, related case studies and the internet. Among these sources journal and research papers were prioritized since they provided the most recent as well as more reliable information. Data collated from these sources were subjected to content analysis. These served also to cultivate the participation of the researcher as an important element in achieving the objectives.

3.5   Description of study area

The study was focused on the unemployment duration in South Africa. South Africa is constitutionally divided into nine provinces namely: Western Cape, Eastern Cape, KwaZulu-Natal, Northern Cape, Free State, North West, Gauteng, Mpumalanga and Limpopo. According to the population census conducted in 2011, a population of 51 770 550 people were living in South Africa; of which 79.2% were classified as Africans, 8.9% as Whites, 8.9% as Coloureds, 2.5% as Indian/Asian and 0.5% as other (Stats SA, 2012).

Figure 3.1: The map of the South African provinces
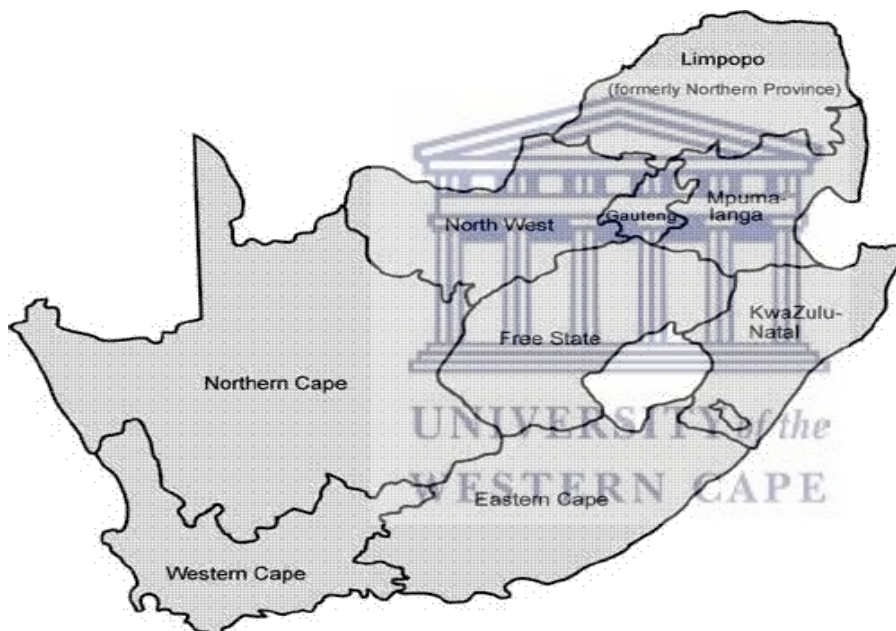
Source: www.SA.Venues.com

3.6 Variables

Individual and household variables

Variables were extracted at two levels of interest for this study. First, the individual level variables which focused on the individual's age, education, gender, ethnicity and job experience. The second, or household level variables looked at number of people employed in the household, number of people unemployed in the household, household size, the type of household head and the amount of money earned by those who were working to support the household. Another variable derived from the questionnaire was the duration of unemployment.

Table 3.2: Demographic parameters of respondents according to the Labour Force Survey

Code	Dependent Variable	Socio-demographic Variables					
	Unemployment Duration	Age	Education	Gender	Work experience	Race	Province
1	< 3 months	15 - 24	No schooling	Male	ever worked	African / Black	Western Cape
2	3 - < 6 months	25 - 34	Less than primary	Female	Never worked	Coloured	Eastern Cape
3	6 - < 9 months	35 - 44	Primary Completed			Indian / Asian	Northern Cape
4	9 - < 1 year	45 - 54				White	Free State
5	1 - < 3 years	55 - 64	Secondary not completed				KwaZulu- Natal
6	3 - < 5 years		Secondary completed				North West
7	> 5 years		Tertiary				Gauteng
8							Mpumalanga
9							Limpopo

3.7   Approach to hypotheses testing

Based on the literature reviewed, the following hypotheses were formulated for testing using the currently available data obtained from Statistics South Africa from the 2011 to 2016 Labour Force Survey, which was the key data source for this study. This research aimed to test the following hypotheses based on the theories reviewed.

Hypotheses at the individual level

Hypothesis 1*: the lower the level of education the longer the unemployment duration.*

Those who are highly educated may prefer to wait for jobs in the formal and the public sectors, which offer much higher wages and more generous non-wage benefits. It is assumed that well-educated people have higher risk of becoming employed. To maintain their status-quo, they will prefer an employment not below their expected wage reservations. Room (2002) showed higher levels of education would allow faster entry into employment, while Kupets (2005) argued that unemployment duration in the case of people with low levels of education would be lower given the kind of employment they are looking for.

Hypothesis 2: *women have longer unemployment duration than men.*

One of the vital dimensions of the labour market that attracts particular attention is the gender differential between male and female workers regarding labour market participation issues. To test this hypothesis, the unemployment period and the incidence of unemployment duration was analysed for each gender jointly and separately.

Hypothesis 3: *the adult age group (30-64 years) has longer unemployment duration than*

the youth age group (15-29 years).

There are several reasons for the relatively greater concern over youth unemployment duration compared to adult unemployment duration. Firstly, an early spell of unemployment may increase the duration of future unemployment because youths are not yet firmly rooted into the labour market and secondly, they may be stigmatized by an early spell of unemployment.

Hypothesis 4: *There is shorter unemployment duration among Whites than in other*

non-White racial groups

Improving the distribution of income was an intrinsic part of the East and South East Asian economic miracle. Taiwan, for instance, reduced income inequality as measured by the Gini coefficient from 0.56 in 1953 to 0.33 in 1964. This was followed by exceptionally high rates of economic growth (Chenery *et al.,* 1974). The focus of an unemployment strategy in South Africa was similarly directed at increasing the purchasing and producing power of a greater percentage of the population through the redistribution of income after the collapse of apartheid. This notion brought about empowering disadvantaged blacks and women through black economic empowerment (BEE) and affirmative action.

Apartheid entrenched discrimination in the participation of the labour market with Whites getting greater opportunities than non-White ethnic groups. Although post-apartheid policies sought to bring about equal opportunities in the participation in the labour market, it is expected that this bias is persistent.

***Hypothesis 5:** Unemployed individuals without previous work experience would display longer   unemployment duration than those with previous work experience*

The risk of suffering a longer duration of unemployment is related to the employability of those in the household and the quality of the household composition. This presupposes that those who live in jobless households are more likely to have no or low educational qualifications, to have never worked or to be in the unskilled social class. On the other hand, unemployed individuals living in a jobless household with lower educational or are unskilled may also display longer duration of unemployment due to spatial disparities in the distribution of employment.

The Labour Force Survey provides the question "have you ever worked for pay or profit or helped unpaid in a household business? The assumption is that previous work experience constitutes a significant mechanism of skills acquisition, leading to better labour market opportunities. Job experience may enhance unemployed workers' prospects of securing a job above those of new job seekers. It is assumed that employers may be more likely to employ individuals with some work experience, which would imply fewer introductions to on the job training and an increased potential for contributions in comparison with individuals with little or no work experience. Past experience also implies that the individual has already been proven competent in the labour market. The data gathered provides some questions that may be associated with the individual's unemployment duration irrespective of their employment history. For example, the expected responses to the question "what was the main reason why you did not try to find work or start a business in the last four weeks"? were (i) awaiting the season for work (ii) lack of money to pay for transport. For the question "How do you support yourself?" The responses considered were (i) supported by persons in the household (ii) receive unemployment insurance fund. Hence, irrespective of the individual's

employment history, the person's skill acquisition does have a relationship with their duration of unemployment.

Gurney (1979) suggested that someone who is unemployed is unlikely to see his current status as a result of a personal issue, but, looks for other factors in the environment that he can hang the blame on. As a result of being able to place the blame for unemployment outside of one's personal realm of influence, there is then little change in one's occupational self-image. Jones (1985) found that young people with the greatest confidence in obtaining the sort of job they wanted tended to persist in their attempts to find that job. Therefore, consider the reasons given by respondents to the questions "Were you looking for any kind of job. Unemployed people may also develop various negative behavioural or cultural responses to help them cope with unemployment. Their expectations of finding work may then be lowered and their attitudes towards looking for a job may become less positive.

Hypothesis 6: *The province with the highest unemployment rate will also record the highest average unemployment duration*

General economic conditions at the provincial level also affect substantially, the duration of unemployment. Factors such as regional differences in industry composition, neighbourhood effects affecting the equilibrium rate of unemployment, various shocks to aggregate demand and institutional settings all have important roles in explaining provincial unemployment patterns. The occurrence of a high proportion of long-term unemployment reflects profound dysfunction in a local labour market area. Indeed, studies on unemployment differentials that take into account the provincial perspective and use simultaneous modelling are based on the hypothesis that provincial or regional unemployment are both affected by regional factors of labour supply, labour demand and wages (Elhorst, 2003). In other words, there might well be some regional factors such as unemployment rate, job opportunities, or other circumstances

that affect unemployment duration of individuals regardless of their qualification, age, gender and race (Tolciu, 2009).

Hypothesis at the household level

Hypothesis 7: *The bigger the household size the longer the individual's duration of*

Unemployment.

The complexity of a jobless household is reflected in its composition and size. In a household where no one is working or only a few are working, the individuals who are not working are likely to exhibit shorter duration of unemployment. In this vein, Khan and Yousaf (2013) reported that larger household size favours an individual to suffer less unemployment duration. They reasoned that an individual belonging to a large family suffers lesser unemployment duration because the individuals accept job offers readily available due to the responsibility burden of a large family.

Hypothesis 8: *The larger the number of people who are working in the household the longer the unemployed individuals are likely to stay unemployed.*

The debate around the unemployment problem in South Africa with regard to the household influence is centred on the quality and size of the household. Klasen and Woolard (2005) mentioned that households with few initially employed members and large numbers of unemployed find it difficult to improve their incomes subsequently. This suggests that large households with a poor initial asset endowment are likely to have poor employment access. Similarly, Leibrandt, Bhorat and Woolard (2001) demonstrated that a majority of unemployed individuals in South Africa live completely in a household with largely unemployed members. Seekings and Nattrass (2003) took the view that poor households with a large number of unemployed individuals are susceptible to a range of psychological, social
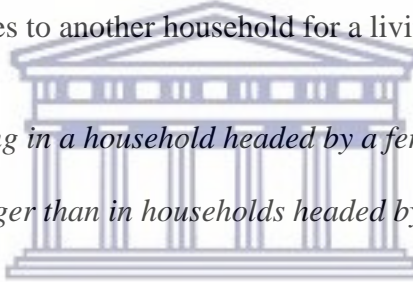
and motivational problems which leads them into depression, low self-esteem and hinder their future employment prospects. However, their study hypothesized that households with more unemployed members are likely to display shorter duration of unemployment because poverty in the household would force them to intensify their job search and also to accept any job just for survive whereas unemployed individuals living with a number of household members who are working to support them, would avoid accepting low paying jobs.

Although the large number of working household members have access to job opportunities and wider range of social networking, the unemployed individuals in the household are assumed to be having a higher wage reservation and intend to accept high pay jobs probably in the primary segment since they have support from the household. Those who are highly educated may prefer to wait for jobs in the formal and the public sectors, which offer much higher wages and more generous non-wage benefits. It is assumed that well-educated people have a higher probability of becoming employed. To maintain their status-quo, they will prefer an employment not below their expected wage reservations.

Room (2002) showed that higher levels of education would allow faster entry into employment, while Kupets (2005) argued that unemployment duration in the case of people with low levels of education is lower given the kind of employment they are looking for. Income support during periods of unemployment would be expected to weaken the effort to job search and the willingness to accept low pay job offers. This support will give backbone to the unemployed individuals when negotiating a wage offer. Previous research has shown that the generosity of unemployment insurance benefits (safety net) may crowd out job search efforts of the unemployed, thereby prolonging unemployment spells.

Jackson and Warr (1984) put it forward that due to the financial responsibilities of middle age persons, employment becomes their number one priority as compared to younger and older

persons. This presupposes that there are both younger and older unemployed persons in a larger household. This concurs with the argument made by Gurney (1980) that the social and emotional stress associated with the transitional period from adolescence to adulthood in conjunction with the stresses of being unemployed may be an obstacle to their job hunts and have the effect of prolonging the duration of unemployment. Unemployment rates for younger population groups has been relatively high in many countries during the last decades (see Fryer, 1997; Kingdon & Knight, 2004). The understanding of being affiliated with a deprived group with respect to the labour market opportunities may upsurge the duration of unemployment. However, the assumption of high career commitment and high financial responsibilities among middle aged workers, makes them likely to form their own household rather than attaching themselves to another household for a living.

Hypothesis 9: *Individuals living in a household headed by a female are likely to remain unemployed longer than in households headed by a male.*

It has been suggested that household structure and a household's location in South Africa has major impacts on individuals' decisions to participate in the labour market and their success in looking for a job in the absence of unemployment insurance. Unemployed persons need to live in a household where they can share in wage income and other household assets (Klasen & Woolard, 2000).

Over the years in the traditional setting, females do not have the opportunity to participate in the labour market. It was believed that men were the sole bread-winners of their families while their female counterparts stayed at home to take care of the household chores. The apartheid policies caused many households most especially among African population group to be headed by women. Kingdon and Knight (2004) noted that most households headed by

females are grandmothers who get their source of income from their adult children who are working in the cities.

Aliber (2001) put it forward that female headed households are headed by a grandmother rather than the mother of the children. He explained that many females headed households rely for a living only on the income of the mother of the children under her care. This supposes the female household head has an income from child support grants from government, or remittances from relatives. He likewise found that many heads of female-headed households find it difficult to pursue better employment opportunities because they dedicate most of their time to child care. In some instances, women find it convenient to combine petty trading with household chores, such as child bearing and raising. With this caveat in mind, the study proposed that unemployed individuals living in a household headed by females are likely to exhibit longer duration of unemployment than unemployed individual living in a household headed by a male.

One of the vital dimensions of the labour market that attracts particular attention is the gender differential between male and female workers regarding labour market participation. The unemployment duration of unemployed individuals living in a household headed by female and male were analysed to ascertain which household type was more vulnerable to longer duration of unemployment. Psychological research into unemployment has postulated that unemployed males exhibit stronger distress than unemployed females because of belief that the core roles and the responsibility of a man is to provide for the family (Komarovsky, 1973). This is in line with the argument made by Shamir (1985) that men supposedly have a higher commitment to the work role than women, leading them into deeper agony when they are deprived of this role. Shamir (1985) considered that in contrast, women have another role that can serve as a substitute to employment. Furthermore, the stigmatization of unemployed

men for not playing adequately the role of responsible fatherhood in the family, forces men to intensify their job search or accept any job just to earn income to support the family (Shamir, 1985). With this caveat in mind, unemployed persons living in a household headed by a female are likely to suffer longer duration of unemployment due to the high household vulnerability.

3.8   Multilevel modelling (two level modelling)

Many research problems are inherently multilevel in nature. Early applications of multilevel analysis applied to the study of pupil academic achievement, which proved to be influenced by several contextual or higher-level factors, such as the size of the class as well as by teacher's knowledge and skills (Goldstein, 2003, 2008; Raudenbush & Bryk, 2002). In this study a micro-level analysis was performed of the duration of unemployment, to estimate how much of the observed individual-level heterogeneity was due to unemployed individual-specific characteristics as opposed to the household characteristics. In order to extract the relative variability of the individual characteristics versus household characteristics, the study employed multilevel analysis methods. For this study, multilevel modelling presents a number of benefits compared to other traditional approaches of analysis such as ordinary least squares regression. It provided better descriptions of the household for a household level analysis. This helped to analyse individuals in terms of their household context.

Another point to note is that multilevel modelling looks at intra- household similarities and differences. The model overtly admits the hierarchical nature of the research problem. By doing so, multilevel modelling provides a coherent model that simultaneously incorporates both individual and the household level models. For instance, the study considered the differentials in the duration of unemployment displayed by unemployed individuals not only due to their individual characteristics, but also considering the influence of the characteristics

of the household where the unemployed were nested. Turning a blind eye to the hierarchical structure of the data by using a traditional approach could have affected the reliability of the empirical outcome and estimates of the study.

Furthermore, when the individual level and the household level variables are entered in the same equation, it violates the assumption of ordinary least squares regression which consider the individual variables to be independent. In contrast, multilevel modelling can allow for measuring the effect of variation of a higher or grouped level. The intercept and the slopes in the level-1 model become the outcome variable at level-2 (Raudenbush & Bryk, 2002).

Multilevel modelling bypasses the assumptions of endogeneity, multicolinearity, and outlier issues so critical in ordinary least squares regression. Finally, multilevel modelling does away with the assumption of zero-intra-class correlation common to ordinary least squares approaches. This implies that the covariance of error terms of two unemployed individuals within one household is not zero. It means that their duration of unemployment is correlated, partially because they are living in the same household influenced by the same household variables.

3.9   Empirical strategy

The study assumed that the unemployed individual duration of unemployment was taken under the influence of the household structure hierarchically organized, where the individual characteristics occupied the first level and the household variables occupied the second level of the hierarchy. The differentials in the duration of unemployment were then assessed and estimated due to factors whether observed or unobserved at the individual level, compared to factors observed or unobserved at the second level (household) in the multilevel model. To

understand the multilevel model (mixed linear model) it is good to conceptualize the first-level units as individuals and the second level units as groups.

$$Y_{ij} = \beta_{0j} + \beta_{ij}X_{ij} + \tau_{ij} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots..1$$

Where

Y_{ij} = Duration of unemployment measure for unemployed individual i in household j

X_{ij} = Characteristics for unemployed individual i in household j such as age, level of education, gender, ethnicity and labour market history.

β_{0j} = is the intercept

β_{ij} = regression coefficient associated with unemployed individual characteristics of the jth household. (Regression slope)

τ_{ij} = Random error associated with the unemployed in household j

The subscript j was thus for the household ($j= 1 \ldots j$) and the subscript i for unemployed individual ($i = 1 \ldots n_j$). The intercept and the slope coefficients were random variables that varied across the households. For instance, a household with high intercept was estimated to have longer duration of unemployment for unemployed individuals in the households than households with a low value for the intercept. Similarly, differences in the slope coefficient for the unemployed individuals with regard to their characteristics showed that the relationship between the unemployed characteristics and their predicted unemployment duration was not the same in all households. To explain the variation of the regression coefficient (β_j) across all households hierarchical regression was employed.

$$\beta_{0j} = \gamma_{00} + \gamma_{01}z_j + \mu_{0j} \quad \ldots\ldots\ldots.. 2$$

$$\beta_{ij} = \gamma_{10} + \gamma_{11}z_j + \mu_{1j} \quad \ldots\ldots\ldots.. 3$$

Equation two estimated the average duration of unemployment in a household (the intercept β_{0j}) by the household variables z_j such as the household size, type of household

head, household income, number of people working in the household and the number of people who were not working, and the type of occupation of those who were working. From the second equation, the interpretation implied that the relationship, as expressed by the slope coefficient β_{ij} between the duration of unemployment (Y) and the unemployed individual characteristics depended on the effect of the household variables. For instance, the number of employed members in the household acted as a moderating variable in the relationship between unemployment duration and the unemployed individual characteristics such as age, level of education, work history and gender. The μ_{0j} and μ_{1j} terms were residual error terms at the household level assumed to have a mean of zero, and to be independent of the residual errors τ_{ij} at the unemployed individual level.

This model can be written as a single complex regression equation by substituting equations 2 and 3 into equation 1. Rearranging terms gives:

$$Y_{ij} = \gamma_{00} + \gamma_{01}z_j + \mu_{0j} + \gamma_{10}X_{ij} + \gamma_{11}X_{ij}z_j + \mu_{1j}X_{ij} + \mu_{0j} + \tau_{ij}$$

As mentioned above, the assumption that sustains the multilevel approach is that the covariance of error terms of two unemployed individuals within one household is not zero. This implies that their unemployment durations are correlated, partially because they are living in the same household and being influenced by a common household variable. However, the analysis was conducted in stages, starting with the estimation of an 'empty' model without explanatory variables in order to establish the general variability across the household with regard to the household impact on the individual duration of unemployment.

The null model was applied not only to assess whether the household variables differed in the duration of unemployment, but also to estimate the degree of non-independence in the unemployment duration across individual-level variables. The question one may ask is; do households differ, on average, on the individual duration of unemployment? This was

answered by estimating the intra-class correlation. The intercept-only model is derived from the equation 1and 2 as follows:

Level 1 : $Y_{ij} = \beta_{0j} + \tau_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

This enabled the study to explain any variance in the duration of unemployment. It decomposed the variance into two independent components: σ_τ^2 being the variance of the individual level errors, and $\sigma_{\mu0}^2$, being the variance of the household level errors μ_{0j}. The intra-class correlation (ρ) was then manually estimated by the equation:

$$\rho = \frac{\sigma_{\mu0}^2}{\sigma_{\mu0}^2 + \sigma_\tau^2} \; .$$

This indicated the proportion of the variance explained across the households. This could be interpreted as the expected correlation between two randomly selected unemployed individuals who are in the same household.

The next step of the analysis was to enter the individual variables (explanatory variables) and the household variables (moderating variables) into the model. This enabled the study by answering particular questions, ending with a relatively complicated model that estimated the duration of unemployment for individuals in the household as a function of the unemployed individual's characteristics and the influence of the household variables. The significance of using the multilevel approach in this study was the estimation of variance components. Based on the observed data from the Labour Force Survey, the study used maximum likelihood estimators in estimating the parameters of the model, which provided values for the population parameters. The vector (β) was a parameter vector to be estimated by the maximum likelihood method. The maximum likelihood estimators enabled significance testing of the random effect by computing the Wald statistic.

3.10 Data analysis

The data analysis started by presenting descriptive evidence on the duration of unemployment. The results were described using the mean and the percentage. The individual's social demographic characteristics as well as the household moderator variable were separately cross-tabulated with the corresponding duration of unemployment to examine the degree of association. Analysis of variance (ANOVA) and the T-test was conducted to ascertain if there is a significance difference in the average duration of unemployment. The statistical test was conducted to test the formulate hypotheses.

Beyond the descriptive analysis, and to give further insight, the study used a multilevel approach. Two sets of explanatory variables were considered to estimate their impact on the outcome variable. The outcome variable (dependent variable) was the duration of unemployment derived from the dataset by computing the mid-point of each category in months. Using the information obtained from the Labour Force Survey, a household dataset was created using the individual's unique household number. The raw data collected for each household member were aggregated and summarized at the household level in order to generate the household statistics underlying this analysis. Households were identified in order to compute statistics that related to characteristics of the household. Counts of the number of the household members and number of earners were computed by examining each household member's detailed information. A second set of control variables was constructed, which gave some insight into the relationship between household specific variation and the individual's duration of unemployment. The set of explanatory and moderator variables entered into the multilevel model were dummy coded as follows:

1. Age group: 15 – 29 (youth) =   1   ;   0   otherwise

                      30 -54 (middle age)=   1   ;   0   otherwise

                      55+ (older age) =   1   ;   0   otherwise

2. Gender   male = 1   famele = 0

3. Educational level :   below secondary (low level) =   1   ;   0   otherwise

                             Secondary (middle level) =   1   ;   0   otherwise

                             Diploma and degree (high)   =   1   ;   0   otherwise

4.   Gender of household head: male = 1   ;   female = 0

5. Number of persons who are working in the household: 1; 2 ; 3 ; …..

6. Household size: number of members in the household

4.1   Duration of unemployment by individual characteristics

This section presents a preliminary descriptive analysis of the differentials in the duration of unemployment with regard to the individual characteristics. The variable considered were gender, education, population group, age groups and work experience. Also job accessibility with respect to location (provinces) of the unemployed were taken into consideration to determine special differentials in the duration of unemployment. The data consisted of six pooled cross-sections of the Labour Force Survey from 2011 to 2016 which contained a representative sample of 41 563 unemployed individuals consisting of 20 071 females and 21 492 males.

The ultimate social ideal envisaged in the South African constitution is of a non-racial, non-sexist democracy while the constitution also seeks to redress discrimination in the labour market. Rospabe (2002) concluded that gender and racial differences in employment are the result of hiring discrimination from the employers and these make women to stay longer in unemployment than men. Foley (1997) argued that female long unemployment duration occurs as a result of lack of job search, especially females with children who are more likely to devote their efforts to full-time childcare – a course of action that is more socially acceptable for women than for men. The traditional gender roles, presumably place some pressure on men to settle for sub-optional jobs in order to support their families and on women to stay at home or, if they choose to enter the labour force, to accept employment that does not over-stress family responsibilities. It is then logical to expect marriage and children to have differing effects on male and female behaviour in the labour market and thus, differing effects on unemployment duration (Foley, 1997).

4.2   Gender and longer duration of unemployment

Table 4.1 presents information about the proportion of male and female experiencing longer duration of unemployment and Figure 4.1 provides information about the average duration of time they were experiencing being unemployed. It is clear from Table 4.1 that the proportion of females displaying longer duration of unemployment was greater than for males. Similarly, females tended to experience longer average duration of unemployment than their male counterparts as shown in Figure 4.1 below. However, the trend for the proportion of both male and female experiencing longer duration of unemployment decreased steadily over the period of five years (2011 to 2015) from 63.4% to 59.1% and 70.5%to 67.3% for males and females respectively. In 2016, however, the proportion of males exhibiting long spell of unemployment increased by 1.3 percentage points while the female proportion increased by 1.8 percentage points between 2011 and 2016.

Table4.1 Percentage of people who have stayed unemployed for more than one year by gender (2012-2016)

Year	Male	female
2011	1968 63.4%	2419 70.5%
2012	2147 63%	2565 70.6%
2013	2147 60.1%	2560 68.5%
2014	2001 60.3%	2469 69.6%
2015	2018 59.1%	2474 67.3%
2016	1965 60.4%	2394 69.1%

Overall, during this six-year period, females displayed longer duration of unemployment than males. The highest average duration of unemployment exhibited by females was two years and eight months and two and half years for males, recorded in the year 2012. On that point, there was a consistency in the percentage share of women experiencing longer duration of unemployment than men over the periods under study. The trend of males' average duration of unemployment was similar to that of the females but merely differing in the respective degree of increase or decrease.

Figure4.1 Average duration of unemployment by gender from 2011 to 2016 (in months)
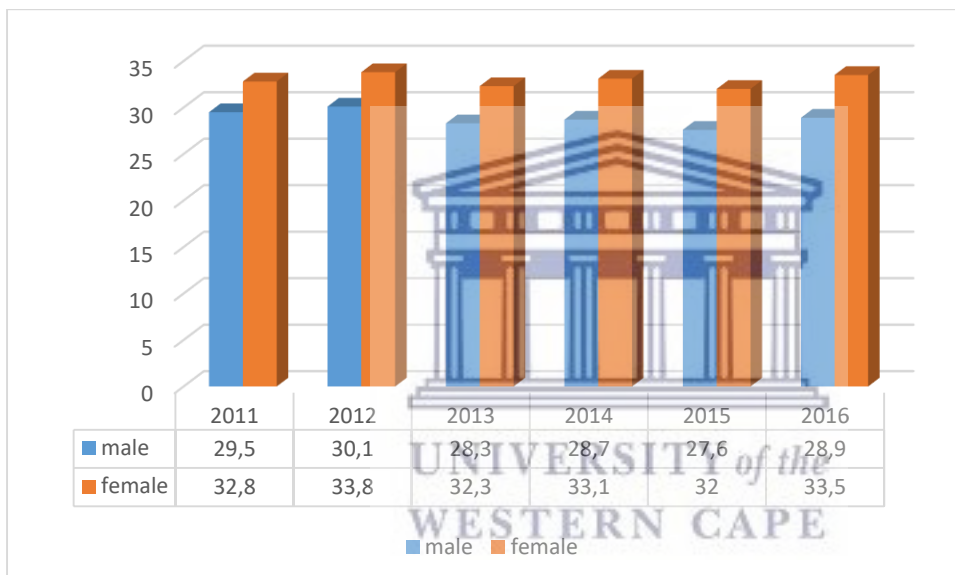
Using an alpha level of 0.05, an independent sample t-test was conducted to evaluate whether the percentage share of males and females experiencing longer unemployment spell and their corresponding average duration of unemployment differed significantly over the six year under observation. The results $t(10) = 9.403 > t_{0.025} = 2.228$ and $t(10) = 8.900 > t_{0.025} = 2.228$ (p<0.05) for the percentage share and the average unemployment duration showed that there was a statistically significant difference between males and females regarding their duration of unemployment. More specifically, looking at the group means, the

study concluded that the percentage share of females (70%) experiencing longer spell of unemployment was significantly higher than the equivalent proportion of males (51%). Similarly, the average duration for females (two and three quarter years) was significantly longer than for their male counter parts (two and half years). The distribution of long unemployment duration and odds of long average unemployment spells amongst women, supported the perception that discrimination against women still exists in their labour market participation. Similarly, to the findings of Hanson and Pratt (1995), women had less job accessibility than men, presumably due to their numerous household responsibilities.

Table 4.2 Statistical output (Description, of variances and t-Test) for gender and longer duration of unemployment (2011-2016)

t-Test: Two-Sample Assuming Equal Variances		
	female	male
Mean	69,27	61,05
Variance	1,58	3,003
Observations	6	6
Pooled Variance	2,29	
Hypothesized Mean Difference	0	
df	10	
t Stat	9,40	
P(T<=t) one-tail	1,39E-06	
t Critical one-tail	1,81	
P(T<=t) two-tail	2,79E-06	
t Critical two-tail	2,23	

Table 4.3 Statistical output (Description, of variances and t-Test) for gender and average duration of unemployment (2011-2016)

t-Test: Two-Sample Assuming Equal Variances		
	female	*male*
Mean	32,92	28,85
Variance	0,48	0,775
Observations	6	6
Pooled Variance	0,63	
Hypothesized Mean Difference	0	
df	10	
t Stat	8,90	
P(T<=t) one-tail	2,29E-06	
t Critical one-tail	1,81	
P(T<=t) two-tail	4,57E-06	
t Critical two-tail	2,23	
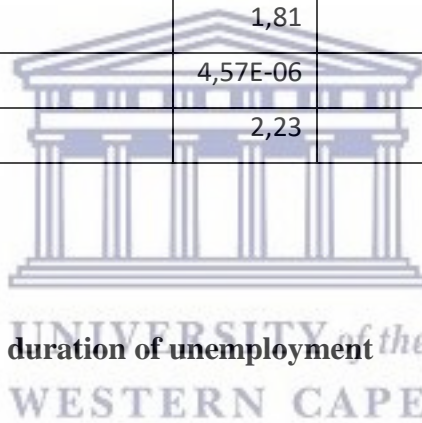
4.3 Education and longer duration of unemployment

The role of education over the life cycle of an individual has been seen as an investment in human capital. Studies have shown the effects of the level of education on the individual's unemployment duration. Estimating the effect of education on the duration of unemployment using the level of education as an explanatory variable, the study categorized the level of education into three groups namely a lower level qualification (all unemployed individuals having no certificate or metric), middle level qualification (unemployed individuals holding metric certificate, post metric certificate and diploma) and higher level qualification (unemployed individuals holding a higher diploma and degrees).

Table 4.4 compares the proportion of unemployed individuals displaying longer duration of unemployment, according to their level of educational qualification over the period of six years between 2001 and 2016. It is well-defined from Table 4.5 that approximately about two-thirds of the unemployed individuals holding lower and middle level qualifications were experiencing longer duration of unemployment as against the individuals having higher level of educational qualifications. This showed that approximately, half of them were experiencing longer unemployment duration.

Yet, as can be ascertained from Table 4.4, the proportion of unemployed individuals displaying longer unemployment spell for all the three tiers of educational qualifications, fluctuated over the six year period and peaked at 65.6%(2016), 67.1% (2012) and 58.5% (2012) for lower, middle and higher qualifications respectively. However, during this six-year period, the higher proportion of unemployed individuals experiencing longer spell of unemployment remained the biggest challenge among workers holding middle level educational qualifications.
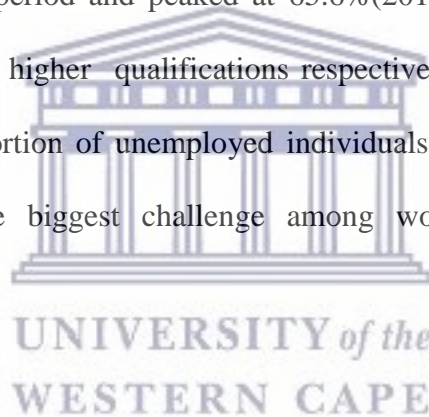
Table 4.4 Percentage of people who have stayed unemployed for more than one year by education(2011-2016)

Year	Lower level of education	Middle level of education	Higher level of education
2011	63.4% 2612	67% 1727	52.2% 35
2012	63% 2773	67.1% 1864	58.8% 60
2013	64.9% 2727	64.4% 1472	48.6% 51
2014	65% 2603	66.2% 1739	50.5% 53
2015	64.6% 2692	62.2% 1664	48.3% 57
2016	65.6% 2475	64.7% 1750	50.4% 58

Figure 4.2 gives information about the average duration of unemployment displayed by unemployed workers over the period under study with regard to their level of educational qualifications. From the figure 4.2 it is clear that since 2011, the average duration of unemployment across the three levels of educational qualifications has fluctuated. In the year 2011, the average length of time that unemployed workers were unemployed was two years and nine months, two years and three months and roughly one and half years for lower level, middle level and high level qualification holders respectively. From 2012 to 2015, however, the trend in the average duration of unemployment across the three levels of education decreased steadily and then slightly increased in 2016. Unemployed workers in the lower level category saw a reduction in the average unemployment duration by approximately two months in 2015 but thereafter, unemployed duration increased by one and half months in 2016 (from 31.1 months to 32.7 months). A significant and dramatic decrease in the average duration of unemployment was seen amongst the individuals holding higher level of educational qualification of about three months from 2011 to 2016. This evidence suggested that education plays a pivotal role in determining ones' unemployment duration. This was consistent with Kingdon and Knight (2002) who showed that unemployed individuals with higher education were better informed about the labour market and were likely to display shorter unemployment spells than unemployed who had less or no educational qualifications.

Figure4.2 Average duration of unemployment by level of education from 2011 to 2016 (in months)

	2011	2012	2013	2014	2015	2016
■ lower leve of education	32,5	33	31,7	31,9	31,1	32,7
■ middle level of education	27,2	30,6	28,8	27,9	28,3	29,8
■ higher level of eduation	19,4	26,3	21,8	25,3	23,2	21,8

■ lower leve of education ■ middle level of education ■ higher level of eduation
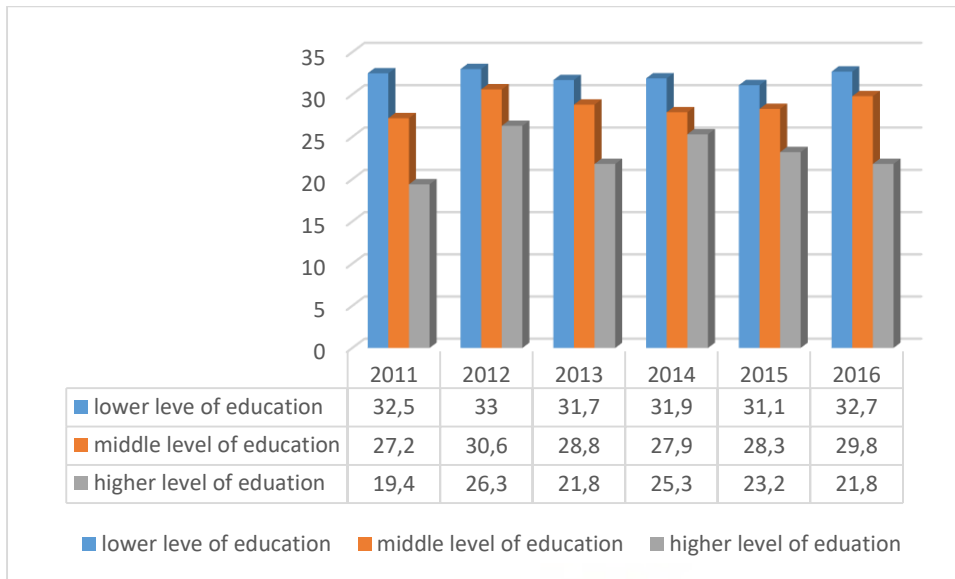
To verify the difference in the sample means of unemployment duration, and to ascertain whether there was a significant difference among unemployed workers' educational levels in South Africa with respect to their average unemployment duration and the proportion of these individuals experiencing longer unemployment spell over the six-year period, ANOVA was deployed. The differences were found to be significant. Since $F(55.27) > F_{cv}(3.68)$ and $p < 0.05$ it was concluded that there was a statistically significant difference between the percentage share of unemployed individuals experiencing longer duration of unemployment between 2011 and 2016. On the same note, the test result of $F(45.76) > F_{cv}(3.68)$ of their corresponding average duration of unemployment over six years attested as significant. This implied that education played a very crucial role in determining an individual's unemployment duration. Also, the lower the unemployed individual's educational qualifications the higher their likelihood of experiencing a longer duration of unemployment.

Table 4.6 Statistical output (Description, of variances and ANOVA) for Education and longer duration of unemployment (2011-2016)

ANOVA: Single Factor						
SUMMARY						
Groups	*Period of years*	*Sum*	*Average*	*Variance*		
lower level of education	6	386,5	64,42	1,017		
middle level of education	6	391,6	65,27	3,54		
higher level of education	6	308,8	51,47	14,93		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	717,73	2	358,86	55,27	1,20E-07	3,68
Within Groups	97,395	15	6,49			
Total	815,125	17				

Table 4.7 Statistical output (Description, of variances and ANOVA) for Education and average duration of unemployment (2011-2016)

SUMMARY						
Groups	*Count*	*Sum*	*Average*	*Variance*		
lower level of education	6	192,9	32,15	0,503		
middle level of education	6	172,6	28,77	1,571		
higher level of education	6	137,8	22,97	6,411		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	258,84	2	129,42	45,762	4,12E-07	3,68
Within Groups	42,42	15	2,831			
Total	301,26	17				

4.4   Population group and longer duration of unemployment

Although post-apartheid policies have been aimed at bringing about equal opportunities for labour market participation by all racial groups, it was expected that the proportion of the white population group experiencing a longer spell of unemployment would be lower than for the non-white population group. A remarkably high percentage share of long-term unemployment duration were found among non-white population groups most especially the Blacks. Table 4.9 provides information about the proportion of the population groups exhibiting longer duration of unemployment from 2011 to 2016. During these years the percent share of Blacks displaying longer duration of unemployment constituted about two-thirds of the total Blacks unemployed individuals. However, the percentage share of the Indian/Asian group fell substantially between 2011 and 2016. In 2011, the percentage share of Blacks, Coloureds, and Indian/Asians who were experiencing a long spell of unemployment was at least 60%, while the proportion of White population groups exhibiting longer unemployment duration was 55.4%. However, observing the trend of percentage shares of the various population groups between 2011 and 2014, that of the White population groups grew to 57.8 percent, whereas the proportions of the Indian/Asian population groups dramatically decreased to 46.9 per cent (that is a decrease of 26.7 percentage points), before peaking at 54.4 per cent in 2016. On the other hand, the Black and the Coloured population groups also saw a slight decrease in the percentage share of the unemployed workers experiencing longer duration of unemployment during these periods. There was a decrease of about 2.4 and 5.8 percentage points in the proportion of Blacks and Coloureds displaying longer spells of unemployment respectively.

Table 4.9 Percentage of people who have stayed unemployed for more than one year by population groups (2011-2016)

Year	Black	Coloured	Indian/Asia	White
2011	68.6%	60.2%	73.6%	55.4%
	3779	473	53	82
2012	68.4%	58.1%	66%	57.1%
	4103	482	35	92
2013	65.5%	58.8%	56.9%	58.5%
	3993	577	37	100
2014	67.2%	54.7%	46.9%	57.8%
	3845	498	38	89
2015	64.3%	57.9%	57.5%	54.3%
	3961	411	50	70
2016	66.2%	54.4%	55.3%	56.8%
	3922	324	42	71

Looking at the length of time these groups were staying unemployed during these periods, Figure 4.3 provides information about their average duration of unemployment. Comparing two Table 4.9 and Figure 4.3, an increasing relationship was distinctly apparent between the percentage share of unemployed individuals experiencing a longer duration of unemployment and the corresponding average duration of unemployment. In 2011, unemployed workers from the Indian/Asian population group displayed the longest average duration of unemployment followed by the Black population group. However, by 2014, the gap in the average duration of unemployment between the Blacks and the Indian/Asian had widened considerably. For instance, the average duration of unemployment calculated for the Indian/Asian population group decreased dramatically by 13 months (34.5 to 21.5 months) whereas the Blacks recorded an increase in the average duration of unemployment by fifteen days (from 2011 to 2014). In 2015, both the Blacks and the Indian/Asian unemployed groups' average duration of unemployment increased and then dropped in 2016 for the Blacks but remained constant in the Indian/Asian group. Although, there were fluctuations in the average

duration of unemployment across all population groups, the data showed an increasing trend across all the population groups except the Indian/Asian groups.

Figure4.3   Average duration of unemployment by population groups from 2011 to 2016 (in months)

	2011	2012	2013	2014	2015	2016
Black	31,4	32,8	30,9	32	30,3	31,9
Coloured	27,2	27,8	28	26,2	27,3	26,7
Indian/Asian	34,5	26,2	24,7	21,5	26,1	26,1
White	25	27,1	27,3	27,5	26,3	27,6
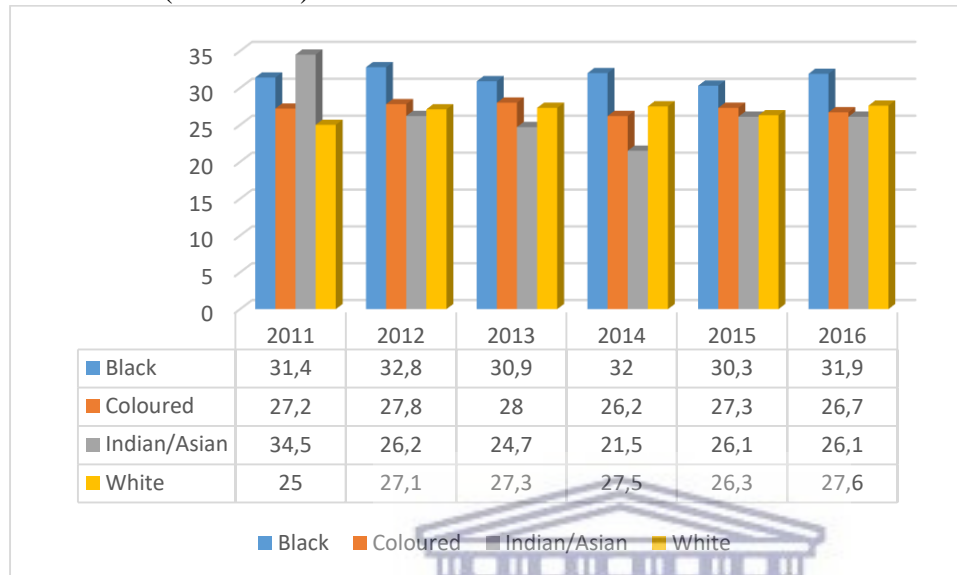
The ANOVA test showed a sample significance of 0.008 $[F(5.282) > F_{cv}(3.0985)]$ for the percentage share of unemployed experiencing a longer unemployment duration over the six year period. Similarly, the ANOVA test found a significance of 0.003 $[F(6.508) > F_{cv}(3.0985)]$ for the corresponding average duration of unemployment over the six year period with regard to the individual's racial group. This study therefore, concluded that the differentials in the mean duration of unemployment between 2011 and 2016 were indeed influenced by the unemployed individual's racial identity.

In a nutshell, over this six-year period, the Black population group remained the one where the greatest proportion of the unemployed worker were experiencing a longer spell of unemployment and in addition, Blacks remained predominantly the group with the longest average duration of unemployment. On first sight, these outcomes regarding longer

unemployment duration for the Black majority seem to be aligned with figures from various labour market literatures.

The differentials in the average duration of unemployment among the population groups may be partially accounted for by the legacy of apartheid era spatial separation, when a substantial part of the Black population grew up in areas far from industries and business hubs. This geographical segregation may still hamper the access of Blacks to the labour market irrespective of the improvements in the labour policies promoting equal access to the labour market.

There is paucity of evidence to explain why the vast majority of black Africans exhibited a longer duration of unemployment instead of seizing the wide range of opportunities created by the post-apartheid government under the BEE policy, to become self-employed. On this note, this study partially conceded to the views of Kingdon and Knight (2006) that restrictive legislation under the apartheid regime have persistently inhibited the development of black South Africans entrepreneurial and social skills and social networks. Indeed, the differentials in the duration of unemployment across the population groups and the longer unemployment spell found among the non-white population groups demand to be probed further. In this regard, another crucial factor influencing the unemployed individual's duration of unemployment is therefore discussed further in the context of the household characteristics.

Table 4.10   Statistical output (Description, of variances and ANOVA) for population group and longer duration of unemployment (2011-2016)

ANOVA: Single Factor						
SUMMARY						
Groups	*years*	*Sum*	*Average*	*Variance*		
Blacks	6	400,2	66,7	2,84		
Coloured	6	344,1	57,35	5,363		
Indian/Asian	6	356,2	59,37	85,62		
Whites	6	339,9	56,65	2,41		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	381,21	3	127,07	5,28	0,007	3,10
Within Groups	481,18	20	24,06			
Total	862,39	23				
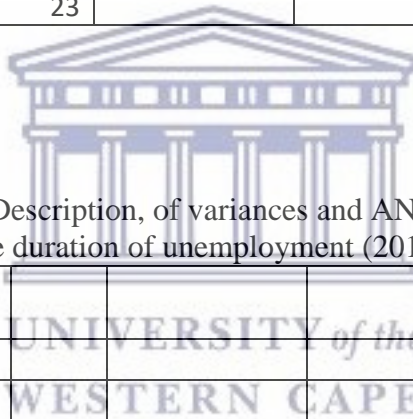
Table 4.11 Statistical output (Description, of variances and ANOVA) for population group and average duration of unemployment (2011-2016)

ANOVA: Single Factor						
SUMMARY						
Groups	*Period of years*	*Sum*	*Average*	*Variance*		
Blacks	6	189,3	31,55	0,779		
Coloured	6	163,2	27,2	0,452		
Indian/Asian	6	159,1	26,52	18,53		
Whites	6	160,8	26,8	0,992		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	101,29	3	33,76	6,51	0,003	3,102
Within Groups	103,76	20	5,19			
Total	205,05	23				

4.5   Previous work experience and longer duration of unemployment

The prospects of an unemployed individual leaving unemployment to take up a job or for other reasons, will vary with the characteristics of the individual concerned and over time (Steward, 1995). Changes in the aggregate unemployment rate can under certain assumption be decomposed into changes in the inflow rate into unemployment and changes in the average duration of unemployment (Layard *et al.,* 1991). The exceptional characteristic of South African unemployment is lengthy unemployment duration. In the mid-1990s, it was shown that nearly two thirds of the unemployed had never worked for pay (Standing *et al.,* 1996). This characteristic of the unemployed has persisted. This finding is in agreement with the work of Lam and co-workers (2008) who noted that the 2005 Labour Force Survey indicated that 40.0% of unemployed individuals (by the strict definition) had unemployment durations exceeding three years, while 59.0% of those unemployed had never had a job at all.

Empirical evidence substantiates that the chances of gaining employment or exiting from unemployment are related to the unemployed individual's labour market history. It is assumed that an unemployed individual's prior work experience will be attractive to employers as they can potentially invest less time in their training. This implies that the majority of unemployed individuals without previous work experience have a greater risk of longer duration of unemployment than those with previous work experience. To verify the relationship between work experience and the duration of unemployment, the study considered the responses to the question in the survey data "ever work before?" and calculated the proportion of first time job seekers who were experiencing unemployment for longer than one year and compared it with those unemployed who had previous work experience.

As shown in Table 4.12, in 2012, the proportion of individuals exhibiting longer duration of unemployment with no previous work experience stood at 82.5% whereas those with previous work experience stood at 55.8%. Over the six-year period, the trend in the percentage share of unemployed individuals who were first time job seekers decreased significantly by about 3.5 percent. Although there were fluctuations in the percentage share over the six-year sampling period the percentage share of the unemployed, having previous work experience remained relatively stable.

Table 4.12 Percentage of people who have stayed unemployed for more than one year by work experience (2011-2016)

Year	Ever work	
	Yes	No
2012	55.8% 2297	82.5% 2415
2013	55% 2465	79.3% 2242
2014	54.8% 2370	82.6% 2500
2015	55% 2452	77.6% 2040
2016	55.7% 2263	79% 2096

Having shown the growing proportion of the unemployed individuals who had no previous work experience, displaying longer duration of unemployment, Figure 4.4 compared their average duration of unemployment. There was a relationship between the proportions of unemployed displaying longer unemployment and their average unemployment duration. Having said that it is clearly seen from the Figure 4.4, that unemployed workers without any previous work experience had longer average duration of unemployment than individuals who had prior work experience. In 2012, the average unemployment duration for first time job seekers stood at three years and three months, which dramatically decreased by one year in 2016. On the other hand, the average duration of unemployment increased marginally by six days for individuals with previous work experience, between 2012 and 2016.

Figure4.4 Average duration of unemployment by work experience from 2012 to 2016 (in months)
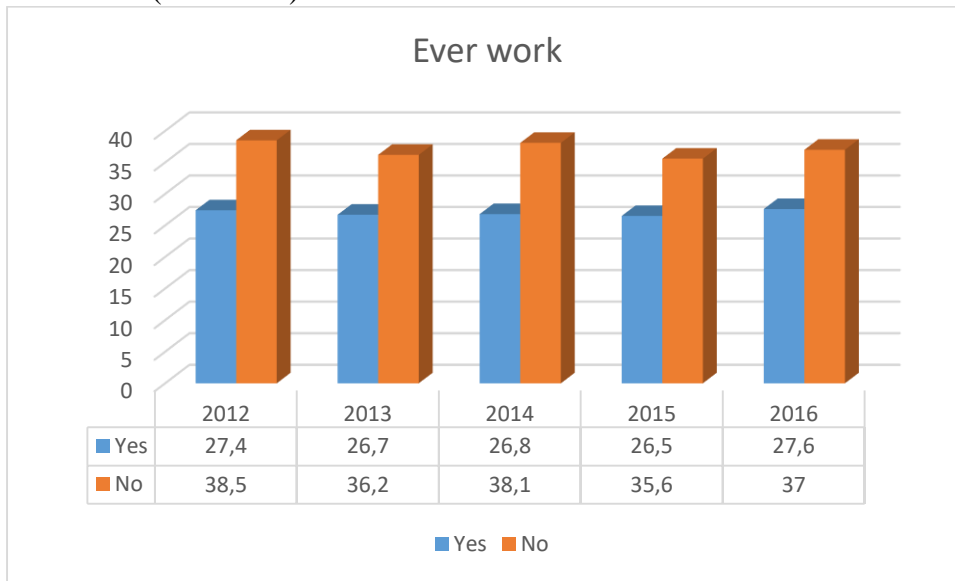
Using an alpha level of 0.05, an independent sample t-test was conducted to evaluate whether the percentage shares differed significantly, of unemployed workers with previous work experience and those without any previous work experience displaying longer unemployment spell and their corresponding average duration of unemployment. The results $t(10) = 24.402 > t_{0.025} = 2.306$ and $t(10) = 17.127 > t_{0.025} = 2.306$ (p<0.05) for the percentage share and the average unemployment duration show that there was a statistically significant difference between these two social groups regarding the duration of unemployment. The study therefore, concluded that statistically, the differentials in the duration of unemployment between individuals with and without previous work experience did occur due to their labour market history.

Overall, it can be reasoned that unemployed individuals who happen to be first time job seekers without any previous work experience are more vulnerable to exhibiting longer duration of unemployment. Therefore, the assumption that job experience plays a pivotal role in exiting unemployment into employment may hold true, as postulated by some researchers.

Table 4.13 Statistical output (Description, of variances and t-Test) for previous work experience and longer duration of unemployment (2011-2016)
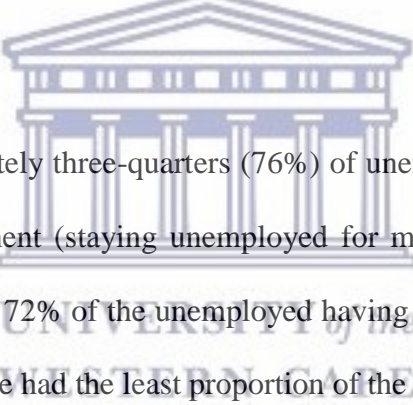
t-Test: Two-Sample Assuming Equal Variances		
	Variable 1	*Variable 2*
Mean	80,2	55,26
Variance	5,015	0,208
Observations	5	5
Pooled Variance	2,612	
Hypothesized Mean Difference	0	
df	8	
t Stat	24,40	
P(T<=t) one-tail	4,25E-09	
t Critical one-tail	1,86	
P(T<=t) two-tail	8,49E-09	
t Critical two-tail	2,31	

Table 4.14 Statistical output (Description, of variances and t-Test) for previous work experience and average duration of unemployment (2011-2016)

t-Test: Two-Sample Assuming Equal Variances		
	Variable 1	*Variable 2*
Mean	37,08	27
Variance	1,507	0,225
Observations	5	5
Pooled Variance	0,866	
Hypothesized Mean Difference	0	
df	8	
t Stat	17,13	
P(T<=t) one-tail	6,87E-08	
t Critical one-tail	1,86	
P(T<=t) two-tail	1,37E-07	
t Critical two-tail	2,31	

4.6   Province and longer duration of unemployment

General economic conditions at the provincial level substantially affect the transition rate from and into employment. Factors such as provincial differences in industry composition, neighbourhood effects affecting the equilibrium rate of unemployment, various stocks to aggregate demand and institutional settings; all play important roles in explaining provincial unemployment patterns. Due to inequalities in the distribution of natural and economic resources in the country, it can be expected that there will be variations in the duration of unemployment across the provinces. Table 4.15 below gives information about the proportion of unemployed individuals exhibiting longer duration of unemployment and Table 4.16 provides the average length of time these groups of individuals stayed unemployed, between 2011 and 2016.

In 2011 in Gauteng approximately three-quarters (76%) of unemployed workers experienced longer duration of unemployment (staying unemployed for more than one year). This was followed by Mpumalanga with 72% of the unemployed having a longer unemployment spell. In the same year, Northern Cape had the least proportion of the unemployed exhibiting longer spell of unemployment, but still, the figure was more than half of the total unemployed worker population.

There were fluctuations in the proportions of the unemployed workers displaying longer duration of unemployment over the six-year periods across all the nine provinces. Generally though, there was a decrease in the percentage share of 2011 to 2016 across all the provinces except Eastern Cape which showed an increase of about four percent. The biggest decrease in percentage share of the unemployed experiencing longer duration of unemployment was found in Limpopo a significant decrease of about thirteen percentage points followed by Mpumalanga with a decrease of nine percentage points between 2011 and 2016.

Table 4.15 Percentage of people who have stayed unemployed for more than one year by province (2011-2016)

	WC	EC	NC	FS	KZN	NW	GT	MPL	LMP
2011	60.5%	60.8%	57.7%	63%	66.7%	67.7%	75.9%	71.5%	64.2%
2012	58.1% 519	64.6% 443	56.3% 255	70.7% 621	67.5% 516	65.5% 319	73.8% 1203	69.5% 541	62.6% 295
2013	61.4% 641	65.4% 522	53.3% 241	67.3% 612	62.7% 542	58.1% 291	69.3% 1082	67.2% 534	63% 242
2014	64.4% 629	61% 414	49.6% 245	67% 584	63.2% 497	68.6% 367	70.4% 985	68.5% 580	63% 249
2015	59% 412	62.7% 500	55.7% 225	69.5% 374	60.8% 560	64.9% 289	65.5% 1530	66.4% 381	58.8% 221
2016	55.5% 348	64.7% 445	44.4% 110	63.3% 342	61.8% 474	64.8% 243	73.1% 1814	63% 398	51% 185

WC: Western Cape; EC; Eastern Cape; NC: Northern Cape; FS: Free State; KZN: Kwa-ZuluNatal; NW: Northern West; GT: Gauteng; MPL: Mpumalanga; LMP: Limpopo.

Knowing only the proportion of unemployed individuals who experienced a longer duration of unemployment, may not be enough evidence to understand the challenges faced by them if attention is not given to the average length of time they stayed unemployed. With this caveat in mind, the Table 4.18 gives detailed information about the average duration of unemployment experiencing by these social groups across the provinces. Undoubtedly, the data in tables 4.15 and 4.16 show that the proportion of the unemployed workers experiencing longer duration of unemployment across the provinces also indicated their corresponding average duration of unemployment. In 2011, the longest average duration of unemployment occurred in Gauteng (approximately three years) followed by Mpumalanga (two years and nine months) and North West (two years and eight months). A similar picture appeared for the percentage share of unemployed displaying longer duration of unemployment in Table 4.15. In Gauteng over the six-year period, the average duration of unemployment experienced by these social groups remained the longest and the biggest challenge. It is clear from the Table 4.16 that Gauteng's average duration of three years in 2011 dramatically decreased to two and half years in 2016. On the other hand, the Northern

Cape showed the least average duration of unemployment over the years at about two years and four months in 2011, dropping to less than two years in 2016. Limpopo had the second least followed by the Western Cape. In 2011, the average duration of unemployment for Limpopo stood at about two years and four months but decreasing gradually till it reached about two years in 2016.

Table 4.16 average duration of unemployment (in months) by province from 2011 to 2016

	WC	EC	NC	FS	KZN	NW	GT	MPL	LMP
2011	26	29.6	27.4	28.2	29	33.5	37	33.6	27.4
2012	26.9	31.2	26.8	34.7	30.9	32.6	35.7	33.9	28
2013	27.9	30.8	25.6	33.6	29.7	28.2	32.2	32.2	27.4
2014	29.2	29.2	25	33.7	29.3	34.3	34	32.2	25.9
2015	27.3	28.7	26.6	33.9	27.8	31.1	31.6	31.5	25.3
2016	25.6	30.8	21.9	31.6	28.9	32	36.2	28.8	23.2

To test whether there was a significant difference in the mean duration of unemployment among the provinces over the six year period, ANOVA test was used. A significance of 0.000 $[F(13.277) > F_{cv}(2.152); p < 0.05]$ was found for the percentage share of unemployed workers experiencing longer duration of unemployment, while a significance of 0.000 $[F(17.685) > F_{cv}(2.152); p < 0.05]$ was found for their corresponding average duration of unemployment from 2011 to 2016. However, both results showed significant differences in the longer duration of unemployment experienced by unemployed workers across the provinces, which can be attributed to spatial disparities in the distribution of natural and economic resources in the country.

In conclusion, was clearly shown that differentials in the average duration of unemployment across the nine provinces between 2011 and 2016 needs policy attention. The data also showed disparities in the percentage shares of unemployed workers experiencing longer

unemployment spell, with Gauteng having the highest proportion of unemployed workers

suffering more than one year of unemployment.

Table 4.17 Statistical output (Description, of variances and ANOVA) for provinces and longer duration of unemployment (2011-2016)

ANOVA: Single Factor						
SUMMARY						
Groups	*Period of years*	*Sum*	*Average*	*Variance*		
Western Cape	6	358,9	59,8	9,2		
Eastern Cape	6	379,2	63,2	4,0		
Northern Cape	6	317	52,8	25,1		
Free State	6	400,8	66,8	9,9		
Kwa-Zulu Natal	6	382,7	63,8	7,3		
North West	6	389,6	64,9	13,6		
Gauteng	6	428	71,3	13,8		
Mpumalanga	6	406,1	67,7	8,5		
Limpopo	6	362,6	60,4	24,7		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1372,0	8	171,5	13,3	1,3E-09	2,1
Within Groups	581,3	45	12,9			
Total	1953,318704	53				

Table 4.18 Statistical output (Description, of variances and ANOVA) for provinces and average duration of unemployment (2011-2016)

ANOVA: Single Factor						
SUMMARY						
Groups	*Period of years*	*Sum*	*Average*	*Variance*		
Western Cape	6	162,9	27,15	1,71		
Eastern Cape	6	180,3	30,05	1,04		
Northern Cape	6	153,3	25,55	3,94		
Free State	6	195,7	32,62	5,73		
Kwa-Zulu Natal	6	175,6	29,27	1,04		
North West	6	191,7	31,95	4,63		
Gauteng	6	206,7	34,45	4,90		
Mpumalanga	6	192,2	32,03	3,35		
Limpopo	6	157,2	26,2	3,20		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	464,6	8	58,1	17,7	1,44E-11	2,15
Within Groups	147,77	45	3,3			
Total	612,4	53				

4.7   Age groups and longer duration of unemployment

Several economic explanations were given for the relatively high youth unemployment duration compared to adult unemployment. In trying to identify which age group is more vulnerable to longer unemployment duration, the data in Table 4.19 provides the variations in the proportion of the various age groups experiencing longer duration of unemployment and their corresponding average duration of unemployment is given in Table 4.20.

Table 4.19 shows that the age groups 25-29 years and 45-49 had more than half of the unemployed workers exhibiting longer unemployment spells; of which the greatest percentage share were recorded by the age groups 45-49 years. In 2011, the percentage share of unemployed individuals in the age groups 45-49 years was 76%. This decreased to 66% in 2015 and then rose to 69% in 2016. The pattern was similar for all the other age groups between 2011 and 2016. Moreover, the percentage share of unemployed workers among the

age groups 15-19 remained the least over the six-year period. In other words, in 2011, less than half of the unemployed individuals in the age groups 15-19 years experienced a longer duration of unemployment. However there was a fluctuation in the percentage share; the proportion decreased from 43% in 2011 to 39% in the year 2016. The study categorized these age groups into three that is 15-29 years called the youths, 30-49 years called the middle age groups, while 50 years and over made up the older age group.

Then, looking at the picture in this broader perspective, although, the unemployment rate reported by Stats SA (Stats SA, 2016) was that the youth group had the highest exposure to longer unemployment, on the contrary it appears that the age groups that suffered the most longer duration of unemployment was the middle age group. The percentage share of younger age groups experiencing longer unemployment spell decreased from 59% to 56% in 2016. Similarly, the percentage share for unemployed workers in the middle age group decreased by about 2 percentage points between 2011 and 2016. Nonetheless, different patterns were portrayed by the older group. The percentage share of this groups substantially increased to 76%$in 2016 from 63% in 2011. This reflects the assertion that as the national rate of unemployment has increased, the older group has stood the highest risk of experiencing longer duration of unemployment.

Table 4.19 Percentage of people who have stayed unemployed for more than one year by age groups (2011-2016)

Year	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
2011	42.9% 136	64.4% 1073	70.8% 1113	69% 679	68.8% 472	67% 343	72.5% 293	71% 184	65.5% 78	71.4% 10	42.9% 6
2012	39.8% 127	65.6% 1133	70.8% 1134	67.2% 741	68.7% 541	70.5% 438	71.1% 322	68.9% 186	57.1% 72	65.2% 15	27.2% 3
2013	42.8% 125	60.9% 1102	68.4% 1121	64.9% 741	66.5% 547	66.6% 434	66.8% 298	69.3% 214	64.4% 103	60.9% 14	57.1% 8
2014	44.3% 108	64.3% 1009	69.7% 1117	65.2% 765	61.6% 484	65.3% 382	66.9% 291	67.9% 197	64.1% 100	50% 15	100% 6
2015	37.5% 124	62.5% 999	64.2% 1000	65.2% 816	65.7% 525	66.8% 408	66.1% 297	65.7% 201	65.5% 95	60% 18	57.1% 4
2016	39.1% 106	63.7% 949	65.9% 1021	67% 749	66.8% 526	65.2% 351	68.8% 300	65.4% 212	70.1% 117	69.7% 29	100% 1

Studying the trend of the average duration of unemployment across the age groups, the most notable trend is that the unemployed, aged between 15-19 years had the lowest average duration of unemployment regardless of the fact that their unemployment rate was the highest. Table 4.20 shows that the average duration of unemployment experienced by the age group 15-19 years remained the lowest over the six year period (from 2011 to 2016). In 2011, their average duration of unemployment was one year and four months, which decreased by a month in 2016. All age groups saw a decrease in the average duration of unemployment by 2015 and slightly, increased in 2016 except for the 15-19 years group, where it remained the same. In 2011, the average duration of unemployment for the age group 45-49 years was three years and four months, which was the longest, though it and gradually decreased by a month in 2016.
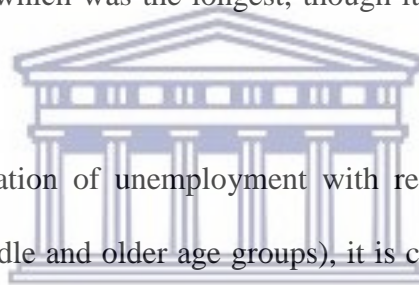
Aggregating the average duration of unemployment with regard to the three critical age groups of interest (youth, middle and older age groups), it is clear that the middle age group and the older group stood the highest risk of staying longer unemployed. The average duration of unemployment for the youth remained at approximately about two years between 2011and 2016 while for the middle age and older group it stood at approximately three years over the six year period.

Table 4.20 Average duration of unemployment (in months) by age groups from 2011 to 2016

Year	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
2011	16	25.1	32.7	34.6	35.5	33.8	38.8	37.8	36.3	32.4	25.6
2012	15.8	26	33.9	34.3	35.9	36.5	37.6	36.4	31.3	34.6	19.5
2013	16.7	24.6	31.8	32	34.3	34.6	34.4	36.3	34.6	31.2	32.8
2014	17.7	25.9	33	32.7	31.2	34.1	34.3	34.3	34.3	26.7	52
2015	14.9	24.6	30.8	32.1	32.5	34	34.9	35	34.6	32.7	29.4
2016	14.9	25.9	31.7	33.8	33.8	34.6	37	35.6	37.9	32.5	60

The ANOVA test for the percentage share of unemployed workers experiencing longer unemployment spell over the six year period showed significance of 0.000 $[F(33.502) > F_{cv}(2.073); p < 0.05]$and that of the average duration of unemployment revealed a significance of 0.000 $[F(82.057) > F_{cv}(2.073); p < 0.05]$. This rejects the null hypothesis that there was no significant difference among the younger age group, the middle age group and the older groups in South Africa regarding their level of unemployment duration. The age group 15-19 years showed total average unemployment duration of one year and four months between 2011 and 2016 which was below the average total level of unemployment duration (two years and five months). The age group 45-49 years had an increased total average level of unemployment duration (three years) therefore, it can be concluded that age had a significant effect on the duration of unemployment.

Overall, there were variations in the proportion of the unemployed workers exhibiting longer duration of unemployment across the age groups. Similarly, there were disparities in the average length of time they experienced being unemployed. The middle age and older groups stood the highest risk of staying longer unemployed as compared to the youth group. The high risk of experiencing longer duration of unemployment by the middle and older groups, can presumably be traced from the apartheid era where the majority were denied access to quality education to acquire the necessary skills to empower them to cope with the current changes and advances in technology.

The decrease in the youth average duration of unemployment over the six years, could undoubtedly be attributed to the profound political, social and economic transformation that has taken place under the post-apartheid system of government in South Africa, which has given the youth wide variety of opportunities to have access to the labour market and job

opportunities through favourable labour market policies. Thanks to this effect, it can be concluded that age has had a significant influence on the duration of unemployment.

Table 4.21 Statistical output (Description, of variances and ANOVA) for age group and longer   duration of unemployment (2011-2016)

ANOVA: Single Factor						
SUMMARY						
Groups	*Period of years*	*Sum*	*Average*	*Variance*		
15-19	6	246,4	41,07	7,00		
20-24	6	381,4	63,57	2,73		
25-29	6	409,8	68,3	7,41		
30-34	6	398,5	66,42	2,58		
35-39	6	398,1	66,35	6,95		
40-44	6	401,4	66,9	3,70		
45-49	6	412,2	68,7	6,76		
50-54	6	408,2	68,03	4,71		
55-59	6	386,7	64,45	17,65		
60-64	6	377,2	62,87	60,52		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	3618,7	9	402,07	33,50	3,6E-18	2,07
Within Groups	600,1	50	12,00			
Total	4218,7	59				

Table 4.22 Statistical output (Description, of variances and ANOVA) for age group and average duration of unemployment (2011-2016)

ANOVA: Single Factor						
SUMMARY						
Groups	*Period of years*	*Sum*	*Average*	*Variance*		
15-19	6	96	16	1,16		
20-24	6	152,1	25,3	0,44		
25-29	6	193,9	32,3	1,21		
30-34	6	199,5	33,2	1,28		
35-39	6	203,2	33,9	3,19		
40-44	6	207,6	34,6	0,97		
45-49	6	217	36,2	3,58		
50-54	6	215,4	35,9	1,49		
55-59	6	209	34,83	4,89		
60-64	6	192,1	32,02	10,16		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	2096,9	9	232,98	82,06	8,2E-27	2,07
Within Groups	141,9	50	2,83			
Total	2238,8	59				

4.9   Descriptive analysis: household moderating variables

Unlike in developed countries, little or no scholarly attention has been given to the differentials of unemployment duration with respect to household characteristics in countries like South Africa. Understanding the effects of household characteristics on the unemployed individual's duration of unemployment, might well contribute towards understanding the reason why the unemployment rate in South Africa is substantially high and keeps on increasing every quarter of the year as reported by statistics South Africa from the Quarterly Labour Force Survey.

In the first place, one needs to bear in mind that being jobless does not necessarily mean that those unemployed have no way of surviving financially. Unemployed workers have to enjoy normal livelihoods; the question is how? The Unemployment Insurance Fund is set up to support the unemployed workers for a specific period of time. The Quarterly Labour Force Survey data show that less than 1% of those unemployed benefit from the scheme. This corroborates the findings of Amin, Woolard and Leibbrandt (2013) that only 0.1% of the unemployed in 2012 received payments from the Unemployment Insurance Fund. They explained that the fund only makes available insurance to those who previously contributed to it while working. The family becomes the financial mainstay for the greater majority of unemployed individuals. In many instances unemployed workers have to attach themselves to the household where they can get some support while looking for a job. On the other hand, supporting this group of individuals creates a huge challenge for the household; putting pressure on its assets and thereby making the household livelihood more vulnerable to shocks and stresses.

Most unemployed individuals who attach themselves to the household, share the household resources with the other household members. This may create challenges for the unemployed

individuals when the household assets are not adequate to provide them with the necessary financial support for their job hunt. Another risk factor here is that over reliance on this private safety net may cause the unemployed individuals to feel reluctant to detach themselves from the household where they are provided for everything they need. Woolard and Klaasen (2000) noted that more and more people were involuntarily crowded into households where they had to share the resources available. On the same note, Cross, Zyl and Donovan (2008) took the view that households with higher vulnerability context were likely to pile up with jobless individuals who were being supported by the earnings or pensions of their parents. On the other side of the coin, they mentioned that households with adequate resources could remain viable and continue extending a supporting hand to the unemployed members with reasonable success as long as income levels remained sufficient.
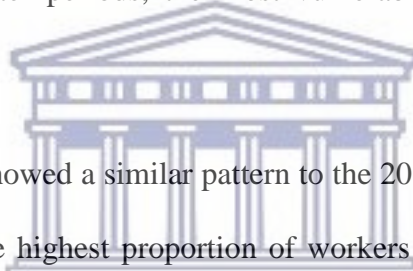
The following section motivates the multilevel modelling used in this study and gives some descriptive analysis of the effects of the household characteristics on the individual's differentials while unemployed. This was studied by looking at the household size, average number of people who were working in the household and the gender of the household head. ANOVA and t-tests were used to verify whether there was a significant variation in the mean proportion of unemployed workers experiencing long-term unemployment over the six year period under study.

4.10 Household size and the duration of unemployment

Although sparse, other studies have assessed the impact of household formation on unemployment, but in most of these studies attention was paid to the rate of unemployment. This study went further to look at the effects of the number of people living in the household on the unemployed individual's duration of unemployment. Using the average household size as a moderating variable presented by the research instrument, it was found that the larger a

household size the greater the proportion of the unemployed individuals in it who were experiencing longer duration of unemployment.

In 2011, of the unemployed individuals living in a households where there were at least ten members, 13% had been unemployed less than three months, 3.6% had been unemployed between nine months and one year, while approximately three quarters (76%) of them had been unemployed for over one year and 32% had been unemployed for over five years. It is clearly shown from Table 4.29 (see appendix B) that in the households with eight members, about 82% of unemployed workers had been unemployed for over one year. Although, irrespective of the household size, a higher proportion of unemployed workers had longer unemployment than had shorter periods, the most vulnerable were those living in larger households.

The data from 2012 to 2016 showed a similar pattern to the 2011 data. This attests that larger households accommodated the highest proportion of workers who had long unemployment rather than short unemployment spells. Assessing unemployed workers living in a household with at least ten members, from 2012 to 2016, approximately three quarters of those unemployed had been unemployed for over a year. Specifically, over those years, these figures were 73%, 68%, 71%, 67% and 73%. Looking at smaller households and still at the proportion of unemployed who had been unemployed longer than a years, the proportions were 76% for nine members, 82% for eight, 64% for two and 62% for one member households.

In 2011 and in a household of one, 62% of the unemployed workers had been unemployed for more a year. In 2012 this fell to 56% in 2012 and remained the same in 2014. The proportion further decreased dramatically to 45% in 2015, but then increased substantially by 15 percentage points to 60% in 2016.

Analysing the problem of long-term unemployment among labour market participants living in a household size of two, three or four using the 2011 to 2015 dataset showed that between half and three quarters had been in long-term unemployment duration. These findings may be said to be related to the insight drawn from the sustainable livelihood framework whereby a larger household size with limited economic resources is an obstacle to job hunt.

Table4.27: Percentage of people who have stayed unemployed for more than one year by household size (2011)

	Household size										total
	1	2	3	4	5	6	7	8	9	10+	
Less than 3 months	99 19.4%	111 14.1%	127 12.7%	155 13.9%	108 12.0%	124 15.9%	66 12.7%	40 12.5%	16 6.8%	46 12.4%	892 13.6%
3-6 months	40 7.9%	68 8.6%	76 7.6%	93 8.3%	64 7.1%	52 6.7%	40 7.7%	20 6.2%	7 3.0%	22 5.9%	482 7.4%
6-9 months	30 5.9%	56 7.1%	61 6.1%	62 5.5%	54 6.0%	36 4.6%	28 5.4%	19 5.9%	12 5.1%	11 3.0%	369 5.6%
9months -1year	23 4.5%	50 6.3%	74 7.4%	70 6.3%	66 7.3%	44 5.6%	33 6.4%	17 5.3%	17 7.3%	12 3.2%	406 6.2%
1–3 years	95 18.7%	189 24.0%	244 24.5%	265 23.7%	256 28.5%	209 26.8%	142 27.4%	90 28.1%	61 26.1%	92 24.7%	1643 25.1%
3-5 years	58 11.4%	105 13.3%	147 14.7%	172 15.4%	120 13.4%	113 14.5%	73 14.1%	51 15.9%	38 16.2%	71 19.1%	948 14.5%
5 year plus	164 32.2%	210 26.6%	268 26.9%	302 27.0%	230 25.6%	202 25.9%	136 26.3%	83 25.9%	83 35.5%	118 31.7%	1796 28.0%
total	509 100.0%	789 100.0%	997 100.0%	1119 100.0%	898 100.0%	780 100.0%	518 100.0%	320 100.0%	234 100.0%	372 100.0%	6536 100.0%

Table 4.28: Percentage of people who have stayed unemployed for more than one year by household size (2012)

| | Household size | | | | | | | | | | total |
	1	2	3	4	5	6	7	8	9	10+	
Less than 3 months	115 20.0%	103 11.9%	112 10.4%	140 11.7%	101 9.7%	88 11.3%	42 8.8%	41 9.8%	21 8.1%	36 10.2%	799 11.3%
3-6 months	69 12.0%	100 11.5%	91 8.5%	136 11.4%	97 9.3%	64 8.2%	52 10.9%	29 6.9%	21 8.1%	27 7.6%	686 9.7%
6-9 months	31 5.4%	64 7.4%	56 5.2%	76 6.3%	57 5.5%	50 6.4%	25 5.2%	24 5.7%	15 5.8%	9 2.5%	407 5.8%
9months -1year	38 6.6%	54 6.2%	72 6.7%	77 6.4%	59 5.7%	50 6.4%	27 5.6%	24 5.7%	13 5.0%	23 6.5%	437 6.2%
1–3 years	92 16.0%	185 21.3%	244 22.7%	273 22.8%	227 21.8%	187 24.0%	128 26.8%	97 23.2%	64 24.8%	80 22.7%	1577 22.4%
3-5 years	71 12.3%	126 14.5%	188 17.5%	169 14.1%	173 16.7%	139 17.8%	70 14.6%	70 16.7%	42 16.3%	64 18.1%	1112 15.8%
5 year plus	159 27.7%	236 27.2%	312 29.0%	321 27.1%	325 31.3%	201 25.8%	134 28.0%	133 31.8%	82 31.8%	114 32.3%	2023 28.7%
total	575 100.0%	868 100.0%	1075 100.0%	1198 100.0%	1039 100.0%	779 100.0%	478 100.0%	418 100.0%	258 100.0%	353 100.0%	7041 100.0%

Table 4.29: Percentage of people who have stayed unemployed for more than one year by household size (2013)

| | Household size | | | | | | | | | | total | |
	1	2	3	4	5	6	7	8	9	10+		
Less than 3 months	126 22.3%	132 15.1%	135 13.0%	153 11.8%	131 12.4%	81 10.4%	66 10.8%	39 11.4%	28 12.6%	61 11.8%	952 13.0%	
3-6 months	48 8.5%	69 7.9%	85 8.2%	112 8.6%	86 8.1%	53 6.8%	36 5.9%	23 6.7%	15 6.7%	31 6.0%	558 7.6%	
6-9 months	37 6.5%	75 8.6%	85 8.2%	106 8.2%	80 7.6%	67 8.6%	44 7.2%	22 6.4%	9 4.0%	33 6.4%	558 7.6%	
9months -1year	38 6.7%	57 6.5%	84 8.1%	88 6.8%	76 7.2%	55 7.1%	45 7.4%	28 8.2%	24 10.8%	39 7.5%	534 7.3%	
1–3 years	100 17.7%	183 20.9%	251 24.1%	320 24.6%	257 24.3%	193 24.9%	148 24.2%	89 26.0%	51 22.9%	139 26.9%	1731 23.7%	
3-5 years	63 11.1%	98 11.2%	120 11.5%	170 13.1%	145 13.7%	116 14.9%	88 14.4%	55 16.1%	30 13.5%	72 13.9%	957 13.1%	
5 year plus	154 27.2%	261 29.8%	282 27.1%	351 27.0%	282 26.7%	211 27.2%	184 30.1%	82 25.2%	66 29.6%	142 27.5%	2019 27.2%	
total	566 100.0%	875 100.0%	1042 100.0%	1300 100.0%	1057 100.0%	776 100.0%	611 100.0%	342 100.0%	223 100.0%	517 100.0%	7309 100.0%	

Table 4.30: Percentage of people who have stayed unemployed for more than one year by household size (2014)

	Household size										total	
	1	2	3	4	5	6	7	8	9	10+		
Less than 3 months	81 18.1%	123 15.8%	145 13.7%	140 12.4%	151 15.0%	75 10.3%	55 10.3%	52 12.9%	25 9.4%	54 10.1%	901 13.1%	
3-6 months	47 10.5%	66 8.5%	87 8.2%	83 7.4%	59 5.9%	47 6.4%	43 8.1%	33 8.2%	19 7.1%	27 5.1%	511 7.4%	
6-9 months	38 8.5%	49 6.3%	75 7.1%	84 7.5%	63 6.3%	51 7.0%	19 3.6%	16 4.0%	16 6.0%	31 5.8%	442 6.4%	
9months -1year	29 6.5%	57 7.3%	75 7.1%	94 8.3%	91 9.1%	71 9.7%	42 7.9%	27 6.7%	19 7.1%	44 8.3%	549 8.0%	
1–3 years	86 19.2%	143 18.3%	254 24.0%	256 22.7%	243 24.2%	182 24.9%	127 23.8%	104 25.9%	71 26.7%	124 23.3%	1590 23.1%	
3-5 years	48 10.7%	121 15.5%	134 12.7%	140 12.4%	139 13.8%	100 13.7%	99 18.5%	54 13.4%	28 10.5%	91 17.1%	954 13.9%	
5 year plus	119 26.5%	231 28.1%	284 27.2%	329 29.2%	258 25.7%	202 28.0%	149 27.9%	116 28.9%	88 33.1%	162 30.2%	1933 28.1%	
total	448 100.0%	780 100.0%	1057 100.0%	1126 100.0%	1004 100.0%	730 100.0%	534 100.0%	402 100.0%	266 100.0%	533 100.0%	6880 100.0%	

Table 4.31: Percentage of people who have stayed unemployed for more than one year by household size (2015)

	Household size										total
	1	2	3	4	5	6	7	8	9	10+	
Less than 3 months	170 28.9%	189 20.4%	179 17.7%	226 18.5%	186 18.1%	98 13.2%	99 18.3%	55 13.9%	23 11.5%	80 17.7%	1305 18.4%
3-6 months	64 10.9%	91 9.8%	85 8.4%	91 7.5%	80 7.8%	41 5.5%	28 5.2%	18 4.6%	11 5.5%	23 5.1%	532 7.5%
6-9 months	29 4.9%	42 4.5%	62 6.1%	74 6.1%	47 4.6%	28 3.8%	26 4.8%	18 4.6%	15 7.5%	18 4.0%	359 5.1%
9months -1year	42 7.1%	36 3.9%	61 6.0%	71 5.8%	62 6.0%	42 5.7%	32 5.9%	23 5.8%	11 5.5%	27 6.0%	407 5.7%
1–3 years	105 17.8%	209 22.5%	238 23.6%	253 20.7%	233 22.7%	185 25.0%	124 22.9%	108 27.3%	48 24.0%	90 19.9%	1593 22.4%
3-5 years	60 10.2%	129 13.9%	134 13.3%	176 14.4%	140 13.6%	125 16.9%	83 15.3%	63 15.9%	36 18.0%	79 17.5%	1025 14.4%
5 year plus	118 20.0%	230 24.8%	250 24.8%	324 26.6%	275 26.8%	220 29.7%	148 27.4%	105 26.6%	55 27.5%	134 29.6%	1859 26.2%
total	589 100.0%	928 100.0%	1010 100.0%	1220 100.0%	1027 100.0%	741 100.0%	541 100.0%	395 100.0%	200 100.0%	452 100.0%	7103 100.0%

Table 4.32: Percentage of people who have stayed unemployed for more than one year by household size (2016)

	Household size										total
	1	2	3	4	5	6	7	8	9	10+	
Less than 3 months	**141** 22.0%	**142** 15.7%	**149** 14.0%	**181** 16.4%	**130** 13.8%	**108** 15.7%	**87** 19.0%	**53** 15.4%	**20** 10.5%	**51** 13.0%	**1062** 15.8%
3-6 months	**57** 8.9%	**83** 9.2%	**98** 9.2%	**84** 7.6%	**75** 8.0%	**43** 6.2%	**32** 7.0%	**18** 5.2%	**12** 6.3%	**22** 5.6%	**524** 7.8%
6-9 months	**27** 4.2%	**56** 6.2%	**58** 5.5%	**58** 5.3%	**44** 4.7%	**35** 5.1%	**19** 4.2%	**14** 4.1%	**14** 7.3%	**19** 4.8%	**344** 5.1%
9months -1year	**34** 5.3%	**71** 7.9%	**79** 7.4%	**66** 6.0%	**57** 6.0%	**57** 8.3%	**23** 5.0%	**22** 6.4%	**10** 5.2%	**14** 3.6%	**433** 6.4%
1–3 years	**136** 21.2%	**170** 18.8%	**193** 18.2%	**271** 24.5%	**212** 22.5%	**140** 20.3%	**91** 19.9%	**80** 23.3%	**45** 23.6%	**88** 22.4%	**1426** 21.2%
3-5 years	**81** 12.6%	**109** 12.1%	**147** 13.8%	**138** 12.5%	**122** 12.9%	**111** 16.1%	**71** 15.5%	**53** 15.4%	**43** 22.5%	**78** 19.9%	**953** 14.2%
5 year plus	**164** 25.6%	**270** 29.9%	**331** 31.2%	**302** 27.4%	**300** 31.8%	**193** 28.0%	**132** 28.9%	**104** 30.2%	**46** 24.1%	**120** 30.6%	**1962** 29.2%
total	**641** 100.0%	**902** 100.0%	**1062** 100.0%	**1104** 100.0%	**943** 100.0%	**689** 100.0%	**457** 100.0%	**344** 100.0%	**191** 100.0%	**392** 100.0%	**6725** 100.0%

An ANOVA test for the percentage share of unemployed individuals experiencing longer unemployment duration over the six year period showed significance of 0.000 $[F(9.226) > F_{cv}(2.073); p < 0.05]$, which attested that over the six year period, there was a significant variation in the proportion of unemployed workers who had been unemployed for more than a year, and the size of the household they were attached to.

Table 4.33: Statistical output (Description, of variances and ANOVA) household size and average duration of unemployment (2011-2016)

SUMMARY						
household size	*Period of years*	*Sum*	*Average*	*Variance*		
1	6	338	56,3	23,07		
2	6	370	61,7	32,27		
3	6	389	64,8	6,17		
4	6	396	66	7,6		
5	6	399	66,5	6,7		
6	6	405	67,5	6,7		
7	6	406	67,7	5,07		
8	6	428	71,3	30,27		
9	6	427	71,2	16,17		
10+	6	427	71,2	9,77		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1193,75	9	132,6	9,23	4,48E-08	2,07
Within Groups	718,8	50	14,4			
Total	1912,6	59				

Overall, the size of the household was found to play a crucial role in the unemployed member's length of time they remained unemployed. Larger household sizes led to unemployed workers having longer unemployment than workers attached to smaller household for survival while looking for a job. This is similar to the findings of Sher Verick (2012) who postulated that a larger household was associated with a lower probability of employment and a higher likelihood of joblessness.

4.11 The number of employed members in the household and the average duration of unemployment.

For unemployed individuals and other household members to enjoy a sustainable livelihood, employment is considered to be the main bridge between economic growth and opportunities for human development (UNDP, 1996). This study looked at the differentials in the duration

of unemployment in relation to the average number of people working in the household where the unemployed had attached themselves to. The study hypothesized that the larger the number of people working in the household, the longer the unemployed individuals are likely to stay unemployed. This is based on the notion that poverty in the household will compel the unemployed members to intensify their job search and also to accept any job just for survival whereas unemployed individuals living in households where a number of members are working to support the household, will be less motivated to job search. With the high rate of unemployment faced in South Africa, one will then expect a larger proportion of unemployed individuals living in households where there is enough financial support, to be experiencing a long spell of unemployment.

Results from the 2011 data (see, Table 4.34) show that approximately 43% of the unemployed individuals living in households where on an average, five members in the household were gainfully employed, had been unemployed for longer than a year. Whereas in households with an average number of four people working, 52% of the unemployed had been unemployed longer than a year and about one-third had been looking for a job for at least three years. Some households naturally receive support from other household or depend on social grants for their livelihood. The analysis showed that in households where no one was working, the proportion of unemployed workers experiencing longer duration of unemployment was 66%. Where only one person was employed, about 69% of the unemployed workers experiencing long-term unemployment.

The 2012 data gave a shocking result(see,Table 4.35). In households where four people were working a dramatic increase occurred in the proportion of unemployed individuals experiencing a longer duration of unemployment; from 43% in 2011 to 94% in 2012. On the other hand, in households with only non-working member, the proportion of unemployed

suffering long-term unemployment showed a slight increase of about one percentage point between 2011 and 2012. Also the proportion of unemployed individuals who had been unemployed longer than a year and who lived in a household where one, two or three members were employed, was 69%, 66% and 62% respectively. These figures slightly increased in 2012 by three, one and three percentage points respectively. In 2013 a similar pattern to the 2012 results was found (see, Table 4.36). The proportion of unemployed individuals who had been unemployed longer than a year and were living in a household with four or five employed members, remained the highest. In 2014, the proportion of unemployed (85%) who were living in a household with four members working to support the household remained the largest with regard to a longer unemployment spell (see, Table 4.37). On a different note, the 2014 data gave a surprising results for the proportion of unemployed individuals with long term unemployment who were living in a household where five members were gainfully employed. This proportion plummeted from 83% in 2013 to 43% in 2014, then decreased to 33% in 2015. The 2016 data gave a difficult-to-believe proportion of unemployed workers with long-term unemployment duration and living in a household with five employed members (see, Table 4.39). Nearly all of them reported to have been looking for a job for over one year. This suggests that there might be a reporting or recording error. But as far as the validity and the reliability of the national quarterly Labour Force Survey data is ensured, one has to accept this as a true reflection of what is happening in the South African labour market. Although the proportion of unemployed individuals suffering long-term unemployment and living in a household where none, one, two or three members in the household were working, fluctuated between 2011 and 2016, their proportion was around 60% to 65%. Above all, from 2012 to 2016 the data showed a substantial decrease of 36% in the proportion of unemployed individuals living in a household with four members in employment who had been unemployed for over one year.

The analysis so far has suggested that the number of members in the household who are gainfully employed and so are giving economic support to the unemployed, greatly influence the unemployed job search. However, in households with at least three employed members, the proportion of unemployed who were experiencing longer unemployment, was more than in households with less than three working members. This might be because households with more members gainfully participating in the labour market may have a wider employment network and first-hand information on employment opportunities. Granovetter (1974) and Kanter (1977) have long argued that social networks are important for getting a job. This is also in line with the findings of O'Regan and Quigly (1993) that employed adults have more to draw upon for employment information (thus gaining inside information about jobs). This implies that each employed member offers a set of employment contacts to the unemployed members in the household. Sher Verick (2012) noted that discrimination in the labour market compelled individuals to rely on social networks that provide access only to a limited set of job opportunities. However, even though limited, this could reduce the unemployment duration of those living in the household surrounded by working members.

The presence of available and sufficient resources in the household may well assist the unemployed to broaden their tentacles of job search. On the other hand, unemployed people from well-endowed households are likely the set their wage reservation high and may not be willing to accept any job below their wage reservations. In the alternative line of reasoning, it is likely that these unemployed workers would like to work in the primary segment where there are social benefits. In this case, they may prolong their job search.

Table 4.34: Percentage of people who have stayed unemployed for more than one year by Average number of people who are working in the household (2011)

Duration of unemployment	Average number of people who are working						total
	0	1	2	3	4	5	
Less than 3 months	459 14.4%	292 11.9%	104 14.6%	30 20.8%	6 26.1%	1 14.3%	892 13.6%
3-6 months	243 7.6%	183 7.5%	41 5.8%	11 7.6%	3 13.0%	1 14.3%	482 7.4%
6-9 months	184 5.8%	131 5.3%	47 6.6%	6 4.2%	0 .0%	1 14.3%	369 5.6%
9months-1year	188 5.9%	155 6.3%	52 7.3%	8 5.6%	2 8.7%	1 14.3%	406 6.2%
1–3 years	736 23.0%	671 27.3%	187 26.3%	43 29.9%	5 21.7%	1 14.3%	1643 25.1%
3-5 years	457 14.3%	361 14.7%	113 15.9%	14 9.7%	2 8.7%	1 14.3%	948 14.5%
5 year plus	928 29.0%	663 27.1%	167 23.5%	32 22.2%	5 21.7%	1 14.3%	1796 27.4%
Total	3195 100.0%	2456 100.0%	711 100.0%	144 100.0%	23 100.0%	7 100.0%	6536 100.0%

Table 4.35 Percentage of people who have stayed unemployed for more than one year by Average number of people who are working in the household (2012)

Duration of unemployment	Average number of people who are working						total
	0	1	2	3	4	5	
Less than 3 months	431 12.1%	269 10.3%	77 11.7%	20 11.4%	1 5.6%	1 16.7%	799 11.3%
3-6 months	347 9.7%	257 9.8%	67 10.2%	15 8.6%	0 .0%	0 .0%	686 9.7%
6-9 months	197 5.5%	156 5.9%	41 6.2%	13 7.4%	0 .0%	0 .0%	407 5.8%
9months-1year	204 5.7%	171 6.5%	47 7.2%	13 7.4%	0 .0%	2 33.3%	437 6.2%
1–3 years	746 20.9%	605 23.1%	172 26.2%	46 26.3%	6 33.3%	2 33.3%	1577 22.4%
3-5 years	562 15.8%	425 16.2%	93 14.2%	28 16.0%	3 16.7%	1 16.7%	1112 15.8%
5 year plus	1074 30.2%	741 28.2%	160 24.4%	40 22.9%	8 44.4%	0 .0%	2023 28.7%
Total	3561 100.0%	2624 100.0%	657 100.0%	175 100.0%	18 100.0%	6 100.0%	7041 100.0%

Table 4.36 Percentage of people who have stayed unemployed for more than one year by Average number of people who are working in the household (2013)

Duration of unemployment	Average number of people who are working						total
	0	1	2	3	4	5	
Less than 3 months	**498** 14.5%	**348** 12.5%	**84** 10.1%	**19** 8.9%	**3** 8.3%	**0** .0%	**952** 13.0%
3-6 months	**262** 7.6%	**214** 7.7%	**65** 7.9%	**16** 7.5%	**1** 2.8%	**0** .0%	**558** 7.6%
6-9 months	**243** 7.1%	**211** 7.6%	**84** 10.1%	**18** 8.5%	**2** 5.6%	**0** .0%	**558** 7.6%
9months-1year	**233** 6.8%	**215** 7.7%	**63** 7.6%	**19** 8.9%	**3** 8.3%	**1** 16.7%	**534** 7.3%
1–3 years	**740** 21.5%	**691** 24.7%	**233** 28.1%	**50** 23.5%	**13** 36.1%	**4** 66.7%	**1731** 23.7%
3-5 years	**432** 12.6%	**366** 13.1%	**121** 14.6%	**35** 16.4%	**3** 8.3%	**0** .0%	**957** 13.1%
5 year plus	**1026** 29.9%	**747** 26.8%	**178** 21.5%	**56** 26.3%	**11** 30.6%	**1** 16.7%	**2019** 27.2%
Total	**3434** 100.0%	**2792** 100.0%	**828** 100.0%	**213** 100.0%	**36** 100.0%	**6** 100.0%	**7309** 100.0%

Table 4.37 Percentage of people who have stayed unemployed for more than one year by Average number of people who are working in the household (2014)

Duration of unemployment	Average number of people who are working						total
	0	1	2	3	4	5	
Less than 3 months	**441** 13.4%	**311** 12.1%	**128** 15.7%	**17** 10.8%	**2** 5.1%	**2** 28.6%	**901** 13.1%
3-6 months	**264** 8.1%	**172** 6.7%	**57** 7.0%	**15** 9.5%	**2** 5.1%	**1** 14.3%	**511** 7.4%
6-9 months	**212** 6.5%	**174** 6.7%	**39** 4.8%	**16** 10.1%	**1** 2.6%	**0** .0%	**442** 6.4%
9months-1year	**249** 7.6%	**219** 8.5%	**66** 8.1%	**13** 8.2%	**1** 2.6%	**1** 14.3%	**549** 8.0%
1–3 years	**697** 21.3%	**607** 23.5%	**233** 28.5%	**37** 23.4%	**16** 41.0%	**0** .0%	**1590** 23.1%
3-5 years	**459** 14.0%	**371** 14.4%	**103** 12.6%	**13** 8.2%	**6** 15.4%	**2** 28.6%	**954** 13.9%
5 year plus	**957** 29.2%	**726** 28.3%	**191** 23.3%	**47** 29.2%	**11** 28.2%	**1** 14.3%	**1933** 27.9%
Total	**3279** 100.0%	**2580** 100.0%	**817** 100.0%	**158** 100.0%	**39** 100.0%	**7** 100.0%	**6880** 100.0%

Table 4.38 Percentage of people who have stayed unemployed for more than one year by Average number of people who are working in the household (2015)

Duration of unemployment	Average number of people who are working						total
	0	1	2	3	4	5	
Less than 3 months	**641** 19.3%	**459** 16.3%	**163** 21.4%	**35** 21.2%	**3** 10.3%	**4** 66.7%	**1305** 18.4%
3-6 months	**281** 8.5%	**187** 6.6%	**50** 6.6%	**12** 7.3%	**2** 6.9%	**0** .0%	**532** 7.5%
6-9 months	**166** 5.0%	**136** 4.8%	**48** 6.3%	**7** 4.2%	**2** 6.9%	**0** .0%	**359** 5.1%
9months-1year	**210** 6.3%	**150** 5.3%	**41** 5.4%	**3** 1.8%	**3** 10.3%	**0** .0%	**407** 5.7%
1–3 years	**677** 20.4%	**664** 23.6%	**197** 25.8%	**46** 27.9%	**9** 31.0%	**0** .0%	**1593** 22.4%
3-5 years	**449** 13.5%	**439** 15.6%	**108** 14.2%	**22** 13.3%	**6** 20.7%	**1** 16.7%	**1025** 14.4%
5 year plus	**892** 26.8%	**769** 27.3%	**154** 20.2%	**39** 23.6%	**4** 13.8%	**1** 16.7%	**1859** 26.2%
Total	**3324** 100.0%	**2816** 100.0%	**763** 100.0%	**165** 100.0%	**29** 100.0%	**6** 100.0%	**7103** 100.0%

Table 4.39 Percentage of people who have stayed unemployed for more than one year by Average number of people who are working in the household (2016)

Duration of unemployment	Average number of people who are working						total
	0	1	2	3	4	5	
Less than 3 months	**543** 16.7%	**397** 14.9%	**95** 14.7%	**23** 18.1%	**4** 15.4%	**0** .0%	**1062** 15.8%
3-6 months	**267** 8.2%	**201** 7.5%	**44** 6.8%	**9** 7.1%	**3** 11.5%	**0** .0%	**524** 7.8%
6-9 months	**164** 5.0%	**133** 5.0%	**35** 5.4%	**9** 7.1%	**3** 11.5%	**0** .0%	**344** 5.1%
9months-1year	**205** 6.3%	**181** 6.8%	**36** 5.6%	**10** 7.9%	**1** 3.8%	**0** .0%	**433** 6.4%
1–3 years	**646** 19.9%	**577** 21.7%	**165** 25.5%	**27** 21.3%	**7** 26.9%	**4** 44.4%	**1426** 21.2%
3-5 years	**421** 12.9%	**408** 15.3%	**99** 15.3%	**15** 11.8%	**6** 23.1%	**4** 44.4%	**953** 14.2%
5 year plus	**996** 30.6%	**762** 28.6%	**167** 25.9%	**34** 26.8%	**2** 7.7%	**1** 11.1%	**1962** 29.2%
Total	**3252** 100.0%	**2665** 100.0%	**646** 100.0%	**127** 100.0%	**26** 100.0%	**9** 100.0%	**6725** 100.0%

To verify if the impact of the number of working household members on the mean proportion of unemployed members who had been out of work longer than one year, an ANOVA test was conducted. Using an alpha level of 0.05, the ANOVA test showed to be insignificant of 0.8969 $[F(0.3202) < F_{cv}(2.5336)]$. This suggests that the variations in the mean proportion of the unemployed individuals experiencing longer duration of unemployment over the six year period, did not depend on the number of employed members in the household.

Table 4.40: Statistical output (Description, of variances and ANOVA) of average number of household members who are working and the proportion of the unemployed experiencing longer duration of unemployment (2011-2016)

ANOVA: Single Factor						
SUMMARY						
Groups	*Period of years*	*Sum*	*Average*	*Variance*		
no employed	6	386	64,3	4,7		
one employed	6	399	66,5	1,9		
two employed	6	386	64,3	5,9		
three employed	6	379	63,2	6,2		
four employed	6	429	71,5	261,1		
five employed	6	385	64,2	772,2		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	280,7	5	56,1	0,32	0,90	2,5
Within Groups	5259,3	30	175,3			
Total	5540	35				

4.12 **The gender of the household head and the average duration of unemployment.**

There have been a paradigm shift in this present generation whereby equal right and share responsibilities have led to some households to be headed by women, in place of the traditional concept of the man as breadwinner and household head. Due to frequent war, migration, poverty, mobility of labour, to mention but a few, some households are now headed by women including in South Africa. The apartheid policies led to many households among African population groups being headed by women. This study analysed the influence of the gender of the household head on the duration of unemployment of unemployed people who had attached themselves to the household for their livelihood. As with the findings on the effects of the number of working household members, the gender of the household head might well have a critical role to play for the unemployed individual's long-term unemployment duration. More specifically, it was hypothesised that in a woman-headed household the proportion of unemployed members experiencing longer duration of unemployment would be larger than in those living in a household headed by a man. In that way this study brought gender of the household head to the forefront of the analysis.

The results from the Labour Force Survey data show that in 2011, 65% of the unemployed worker living in a household headed by a man had experienced long-term unemployment duration as compared to 71% for those in a household headed by a woman(see,Table 4.41). The results of the 2012 data show that these proportions were 67% and 68% for unemployed members with long term unemployment in households headed by men and women, respectively(see,Table 4.42). Between 2012 and 2013there was then a substantial decrease of 5% in the proportion of such members in male-headed households(see,Table 4.43). This slightly increased by two percentage points in 2014 and peaked at 64% in 2016(see,Table 4.46). For woman-headed households, the proportion of unemployed individuals

experiencing long-term unemployment duration also fluctuated over the six year period under study. From 2011, the percentage share slightly decreased from 71% to 68% in 2012, then decreased marginally to 67% in 2013 and remained constant in 2014. The proportion again decreased to 65% in 2015 and finally peaked at 67% in 2016. Over the six year period the pattern for female-headed households was then similar to that in male-headed households, merely differing in their respective degree of increase or decrease. Unemployed workers in female-headed households consistently demonstrated a higher proportion of long-term unemployment at every stage between 2011 and 2016. To establish if this reflected a significant trend, a t-test analysis was conducted.

Table 4.41: Percentage of people who have stayed unemployed for more than one year by household head (2011)

	Household head			Total
	Male	Female		
Less than 3 months	**497** 14.8%	**363** 12.0%		**860** 13.5%
3-6 months	**257** 7.6%	**206** 6.8%		**463** 7.2%
6-9 months	**213** 6.3%	**149** 4.9%		**362** 5.7%
9months-1year	**220** 6.5%	**178** 5.9%		**398** 6.2%
1–3 years	**798** 23.8%	**810** 26.7%		**1608** 25.1%
3-5 years	**459** 13.7%	**475** 15.7%		**934** 14.6%
5 year plus	**916** 27.2%	**853** 28.1%		**1769** 27.1%
total	**3360** 100.0%	**3034** 100.0%		**6394** 100.0%

Table 4.42: Percentage of people who have stayed unemployed for more than one year by household head (2012)

	Household head		Total
	Male	Female	
Less than 3 months	**429** 12.1%	**330** 10.2%	**759** 11.1%
3-6 months	**331** 9.3%	**334** 10.3%	**665** 9.8%
6-9 months	**212** 6.0%	**179** 5.5%	**391** 5.7%
9months-1year	**213** 6.0%	**212** 6.5%	**425** 6.2%
1–3 years	**756** 21.2%	**769** 23.7%	**1525** 22.4%
3-5 years	**544** 15.3%	**529** 16.3%	**1073** 15.8%
5 year plus	**1075** 30.2%	**898** 27.7%	**1973** 29.0%
total	**3560** 100.0%	**3251** 100.0%	**6811** 100.0%

Table 4.43: Percentage of people who have stayed unemployed for more than one year by household head (2013)

	Household head		Total
	Male	Female	
Less than 3 months	**569** 14.9%	**339** 10.5%	**908** 12.9%
3-6 months	**305** 8.0%	**233** 7.2%	**538** 7.6%
6-9 months	**296** 7.8%	**239** 7.4%	**535** 7.6%
9months-1year	**274** 7.2%	**241** 7.5%	**515** 7.3%
1–3 years	**892** 23.4%	**777** 24.1%	**1669** 23.7%
3-5 years	**471** 12.3%	**453** 14.0%	**924** 13.1%
5 year plus	**1007** 26.4%	**943** 29.2%	**1950** 27.7%
total	**3814** 100.0%	**3225** 100.0%	**7039** 100.0%

Table 4.44: Percentage of people who have stayed unemployed for more than one year by household head (2014)

		Household head		Total
		Male	Female	
Less than 3 months		**475** 13.9%	**385** 12.0%	**860** 13.0%
3-6 months		**269** 7.9%	**212** 6.6%	**481** 7.3%
6-9 months		**225** 6.6%	**198** 6.2%	**423** 6.4%
9months-1year		**267** 7.8%	**261** 8.1%	**528** 8.0%
1–3 years		**797** 23.3%	**731** 22.8%	**1528** 23.0%
3-5 years		**448** 13.1%	**484** 15.1%	**932** 14.1%
5 year plus		**943** 27.5%	**937** 29.2%	**1880** 28.2%
total		**3424** 100.0%	**3208** 100.0%	**6632** 100.0%

Table 4.45: Percentage of people who have stayed unemployed for more than one year by household head (2015)

	Household head		Total
	Male	Female	
Less than 3 months	**750** 19.4%	**509** 16.7%	**1259** 18.2%
3-6 months	**305** 7.9%	**211** 6.9%	**516** 7.5%
6-9 months	**192** 5.0%	**159** 5.2%	**351** 5.1%
9months-1year	**220** 5.7%	**178** 5.9%	**398** 5.8%
1–3 years	**817** 21.1%	**735** 24.2%	**1552** 22.4%
3-5 years	**551** 14.2%	**449** 14.8%	**1000** 14.5%
5 year plus	**1040** 26.8%	**799** 26.3%	**1839** 26.6%
total	**3875** 100.0%	**3040** 100.0%	**6915** 100.0%

Table 4.46: Percentage of people who have stayed unemployed for more than one year by household head (2016)

	Household head		Total
	Male	Female	
Less than 3 months	**585** 16.3%	**429** 14.6%	**1014** 15.6%
3-6 months	**294** 8.2%	**212** 7.2%	**506** 7.8%
6-9 months	**198** 5.5%	**136** 4.6%	**334** 5.1%
9months-1year	**225** 6.3%	**198** 6.8%	**423** 6.5%
1–3 years	**720** 20.1%	**648** 22.1%	**1368** 21.0%
3-5 years	**492** 13.7%	**441** 15.1%	**933** 14.3%
5 year plus	**1077** 29.8%	**866** 29.6%	**1933** 29.7%
total	**3581** 100.0%	**2930** 100.0%	**6511** 100.0%

Using an alpha level of 0.05, the t-test results $t(10) = 1.628 < t_{0.025} = 2.228$ show to be insignificant. This suggests that the variations in the mean proportion of the unemployed individuals experiencing longer duration of unemployment over the six year period, did not depend on the gender of the household head.

Table 4.47: Statistical output (Description, of variances and t-test) of the effect of gender of the household headship on the proportion of the unemployed who are experiencing long-term unemployment duration

t-Test: Two-Sample Assuming Equal Variances		
	Household head	
	female	*male*
Mean	72,5	64
Variance	159,9	3,6
Observations	6	6
Pooled Variance	81,75	
Hypothesized Mean Difference	0	
df	10	
t Stat	1,628	
P(T<=t) one-tail	0,067	
t Critical one-tail	1,812	
P(T<=t) two-tail	0,134	
t Critical two-tail	2,228	

4.13   Two-level modelling

To optimise the analysis of data in this thesis, the analysis was divided into two parts. The first part added only the individual characteristics of unemployed persons, in order to explore and hopefully predict their impact on the average duration of unemployment. The second part included the household moderator variables in order to assess and to predict their impact on the average duration of unemployment.

The Labour Force Survey data used in this study were collected at the household level. It was assumed that the hierarchical structure of the household and the members of it, might influence the unemployed individuals' duration of unemployment. Individual characteristics

occupied the first level and the household moderator variables occupied the second level of the hierarchy. These individuals were then considered to be nested in the household. It was presumed that the household variables had a linear relationship with the duration of unemployment. The following household variables were obtained from the dataset to assess their effect on the outcome variable (duration of unemployment): household size, gender of the household headship, number of employed members in the household. The variables considered at the individual level were age, gender, level of education, work history and ethnicity of the unemployed individuals.

As explained in the methodology (Chapter three), the two level model was developed to analyse hierarchically structured data. Each unemployed individual nested in the same household was considered likely to be influenced similarly by the household variables. The prime aim of deploying this two-level modelling was to fully explore all levels of the data hierarchy. This took into account the fixed effects and the random effect. The fixed effect primarily, had only a single value and applied to each individual characteristics in the analysis regardless of the household characteristics under which the individual was nested. The random effect in the model allowed the analysis of variations across the household. This included the random intercepts to determine the unobserved heterogeneity in the overall mean duration of unemployment. However, the random coefficient determined the unobserved heterogeneity in the effect of the individual's characteristics on the duration of unemployment. The study presumed that unemployed individuals from the same household would tend to be more similar than individuals selected from other households.

Tables 4.48 to 4.53 give a review of the individual and household variables used in the two level modelling for each of the years 2011 to 2016(see appendix B). These results display significant differences in the duration of unemployment by gender, education, age group,

household size, number of people working in the household and gender of the household headship.

4.13.1 Part one: individual level variables

(a) Gender of the unemployed individuals

The role of gender differences in participation in the labour market has long been a bone of contention in the labour market literature. One focus of this study was to investigate the differentials in the duration of unemployment between men and women. Although many policies and programs have been implemented by government and non-governmental organizations to elevate female participation in the labour market, this study proposed that the proportion of women experiencing longer duration of unemployment was higher than their men's counterpart. Also, the study proposed that women experienced longer unemployment spells than men.
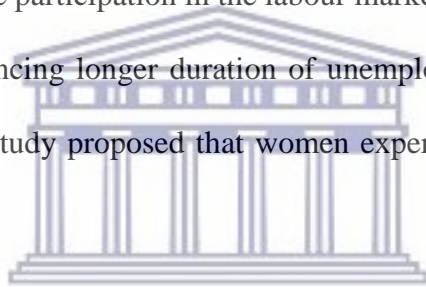
The two level model results suggest a significant relationship between gender and the average duration of unemployment, at the 0.05 level of significance. The results for the 2011 data show that holding all other variable constant, the effect of a female on the average duration of unemployment in a household was estimated at 3.3 percentage points and this substantially increased to 4.75 percentage points in 2014, then slightly decreased to 4.5 percentage points in 2016. This implies that a one percentage increase of unemployed women in a household would increase the average duration of unemployment by 4.5 percentage points more than a percentage increase of men in the same household. In other words, the model suggests that as the number of female unemployed individuals in the household increases, one should observe an increase in the average duration of unemployment, more than their male counterparts.

This result confirmed the stated hypothesis that unemployed women are likely to exhibit longer unemployment spells than men. This corroborates the findings of other researchers as documented in the unemployment literature (see Nickell, 1980; Jones, 1988; Gorter & Gorter, 1993; Abraham and Shimer, 2002). This finding could rationally be connected with the circumstance that over the decades, women have been discriminated against in the labour market. On the other hand, one could also argue that women's participation in the labour market has tremendous increased in the years after the collapse of the apartheid regime (even though women are still being discriminated in the job market).

(b)   Education level of the unemployed individuals

The challenge presented by the high rate of unemployment in South Africa is an indication of the tight labour market. In a dire situation when the labour market becomes tight, as argued by Aggestan and Hallberg (2004), the demand for higher education becomes a strong driving force to enable individuals to secure employment. With this in mind, the study proposed that individuals with higher education were more likely to exit unemployment than those with lower levels of educational qualification. However, the model was extended by adding levels of education. This explanatory variable was considered to be one of the critical determinant of the individual's employability. Education level was categorised and dummy coded as lower level qualification, middle level qualification and high level qualification. The results show to be statistically significant.

Evidently, the estimates derived from the two level modelling shows that the impact of educational level inversely affects the average duration of unemployment. In 2011 (Model 1), the estimated coefficient showed that, a percentage increase of unemployment individual in the household with lower levels of education would decrease the average duration of unemployment by 13.2 percentage points as compared to middle and higher level

qualification holders decreasing the average duration of unemployment by 10.7 and 1.7 percentage points respectively. The estimates from the other dates under observation produced a similar result. For instance, in 2016, the estimated coefficient showed-3.2, -0.1 and 8.3 for lower, middle and higher level qualification holders. This implies that a percentage increase of unemployed individuals with lower and middle level educational qualifications was likely to decrease the average duration of unemployment by 3.2 and 0.1 percentage points respectively, while a percentage increase of those holding higher education in the household was expected to increase the average duration of unemployment by 8.3 points.

This last result might support the skill mismatch hypothesis opined by Seers (1971), that a longer unemployment spell presented a prolonged job search for highly educated individuals because the organisation of instruction does not equip them with the skills relevant to the labour marketplace. Another interesting possible explanation could be job queuing behaviour. This insight was drawn from the theory of market segmentation. The job search of individuals with higher education may prolong due to the search for well paid jobs (see Bell *et al.*, 1991). This view was echoed by Gunatilake *et al.* (2010) that educated unemployed individuals, wait for a well-paid job or good job as befitting their educational qualification.

(c)   Age of the unemployed individuals

In the descriptive analysis, age was found to have a strong effect on the duration of unemployment. Hence, the study included age in order to explore whether individuals in the same age group could be assumed to display the same unemployment duration across different households. Ages were classified into youth, middle age and older age groups. The analysis started by fitting a fixed effect for age groups. Thereafter, both the intercept and the slope were allowed to vary randomly across households.

Holding all other variables constant, the estimated coefficient suggested that an increase in the youth unemployment would significantly increase the average duration of unemployment more than for unemployed individuals in the middle and the older age groups. The empirical results of the 2011dataset displayed estimated coefficients of 8.2 and 0.57 for youth and middle age group respectively (see, Table 4.48). The results of the other yearly dataset showed similar results. Thus In 2016, the estimated coefficients were 7.9 and 1.0 respectively, for the youth and the middle age group. This meant that a percentage increase in the unemployed youth would increase the average duration of unemployment by 7.9% points more than the unemployed individuals in older age groups. Likewise, a percentage increase of unemployed individuals in the middle age group would increase the average duration of unemployment by 1.0% points more than a percentage increase of the unemployed individuals in the older age group.

This result confirmed the stated hypothesis that the youth are more vulnerable to exhibiting longer unemployment duration than are unemployed individuals in the other age brackets. This suggests that matters concerning unemployment are more critical for the youths who are attaching themselves to the household for their livelihood than for the older unemployed persons. Based on these results, the study, however, shared the views of Verick (2009) that the majority of the young unemployed workers in South Africa have no previous work experience and have little hope of finding a job, which eventually discourages them from the job search. The vulnerability of young peoples' unemployment has been documented in the employment literature (see Kingdon and Knight, 2006; Abhijit and co-workers, 2007; Leibbrandt and co-workers, 2010).

(d)   Population group of the unemployed individuals

In South Africa, ethnicity has been consistently found to be a substantial determinant of the individual's active participation in the labour market. In other words, the individual's ethnic background is a driving force for their employability, which is surely intimately related to the long history of racial segregation in South Africa. The debate around this issue is, generally, about the disadvantaged majority population group who were discriminated against with regard to social and economic benefits in the country (see Kingdon and Knight, 2006; Abhijit and co-workers, 2007; Leibbrandt and co-workers, 2010). In the present post-apartheid era, the debate around ethnicity in the labour market is still a bone of contention. With this caution in mind, the study added ethnicity to the model in order to explore whether individuals belonging to the same population group but living in different households will display the same average duration of unemployment. Although equal opportunities have been created by the post-apartheid government in the labour market participation without any prejudices, this study proposed that unemployed individual belonging to the non-white population groups were likely to experience longer unemployment duration than the white population group.

The empirical results of the two level modelling gave an estimated coefficient of (-9.3), (-1.2), (-9.5) for the 2011 datasets respectively for Blacks, Coloured and Indian/Asians. This implied that holding all other variable constant, a percentage increase in unemployed Black, Coloured and Indians, would decrease, respectively their average unemployment duration by 9.3, 1.2, and 9.5 percentage points compared with a percentage increase of unemployed white. The 2016 results were results except for the estimated coefficient of the Coloured population group. Thus the estimated coefficients for Black, Coloured and Indians/Asian groups were -3.7, 2.1 and -0.1 respectively.

The descriptive analysis gave a convincing result that the proportion of unemployed individuals belonging to the non-white population groups who were out of work longer than a year was greater than for Whites as well as their average duration of unemployment being longer, and these results corroborated the previous literature that has shown the predominance of non-white population group in unemployment (see Kingdon and Knight, 2006; Banerjee *et al*., 2008). On the contrary, the two level regression modelling indicated that a percentage increase amongst unemployed non-whites would decrease their average duration of unemployment. Statistically then, we reject the hypothesis that the non-white population group are likely to experience a longer unemployment spell than the white population group. This suggests that the post-apartheid employment policies do have the potential in the future, to bridge the employment gap between the racially segregated majority population group and the advantaged white minority group in the labour market. This was in line with the study done by Dias and Pose (2007), who compared the 1995 OHS, and the September 2003 LFS to find that the working age population in South Africa are becoming more educated especially younger Africans and demonstrated a decrease in the unemployment rate with educational attainment. Nevertheless, this finding can encourage future research and review of employment policy.

4.13.2 Part two: household level variables

The prior analysis provided evidence of between-household heterogeneity in the relationship between individual's socio-demographic characteristics and the length of time they stayed looking for a job. But, it left unanswered the question what, if anything accounted for the different durations of unemployment between households. The argument raised by this thesis is that unemployed individuals are not living in isolation but in households with varied characteristics. The question is then, to what extent do the household moderator variables

interact with the individual's characteristics to impact on the average duration of unemployment? Answers to this question would be the key contribution of this study to the existing stock of knowledge in the South African employment literature.

To determine whether any of the heterogeneity was accounted for by any confounding variables, the study now added the household moderator variables into the model. This took into account the household size, the number of people who working to support the household and as well as the gender of the household head. The study hypothesized that a larger household size would tend to prolong the duration of unemployment. In the same vein, households having fewer employed members to support the household, would increase the duration of unemployment. Also, the study posited that the gender of the household headship would influence the duration of unemployment so that in female-headed households the duration of unemployment would be longer than in male-headed households.

The three household moderator variables used were categorised as follows. Household size was categorized as below household, average household size and above household. The number of people gainfully employed and supporting the household, ranged from none working to at least four people working. The gender of the household headship was naturally binary.

(a) Household size

The analysis began by first considering the household size followed by the number of people who are working in the household and finally adding gender of the household headship. Based on the literature reviewed, this study hypothesis was that the larger the household size the longer would be the individual's duration of unemployment. Although the stated

hypothesis proposed that the larger the household size the longer would be the average duration of unemployment, our empirical analysis had not substantiated this.

Tables 4.50 to 4.55 (see appendix B) present the parameter estimates and the standard errors for the model. The 2016 result showed (model 2) that a percentage increase in number of unemployed individuals living in a household of below household size and of average household size would be expected to increase the average unemployment duration by 2.55% and 1.1% respectively longer than a percentage increase of unemployed individuals living in an above household size. The results of 2011, 2012, and 2015, showed the same pattern except the 2013 estimated value was -0.45 for average household size. The estimated coefficient was statistically significant. Established along with the evidence brought forth by this effect, the study, however, rejected the stated hypothesis that the larger the household size, the longer the unemployed individuals duration of unemployment. With this in mind, the empirical results of this study demonstrated a different view raised by earlier researchers that a larger household size is susceptible to accommodating a larger number of unemployed members who are prone to poverty and they in turn, create a barrier to job search for unemployed individuals attaching themselves to these households for their livelihood (see Case and Deaton, 1998; Klasen and Woolard, 2000). However, supported by the findings of Klasen and Woolard (2000) that larger households tend to be headed by pensioners with limited or inadequate resources, the researcher took the view that these households will be more prone to poverty. It would then be reasonable to explain the decreasing effect of the larger household as that the unemployed members are compelled to intensify their job search and also accept any job offer regardless of the wage offer in order to make their contributions in support of the household.

(b)   Number of people who are working in the household.

The effect of the composition of the household on individuals, employment and unemployment status has long been debated in the employment literature (Leibbrandt and co-workers, 2000; Samson and co-workers, 2001; Nickell, 1979). Based on insights drawn from the sustainable livelihood framework and other reviewed literature, the study hypothesised that the larger the number of working people in the household the longer unemployed individuals would stay unemployed. To affirm this, model 3 involved an addition to the household variables of the number of working people in the household. This was added to assess its effect on the outcome variable (the duration of unemployment).

Commencing with the 2016 results, it was distinctly ascertained from the estimated coefficient that a percent increase in the number of households with two working people would be required to reduce the average duration of unemployment by 2.7% less than in households having at least four employed people. Likewise, a percentage increase in households with no employed person, with one working person and three working people, were estimated to reduce their average duration of unemployment by 1.4%, 2.7%, 2.5%, and 0.8% respectively, compared with households containing four or more working persons. The equivalent 2011 results were 8.17%, 9.17%, 9.1% and 4.7%. A similar pattern was displayed by the 2012 to 2015 results. These results confirm the hypothesis that the larger the number of working people in the household the longer the unemployed individuals are likely to stay unemployed. An explanation for this could be that in a household having many working people likelihood, unemployed members would relax their job search since they are living in a secured and comfort zone.

In another common line of reasoning, unemployed individuals may set themselves higher wage reservations and be unwilling to accept any job below their wage reservations. In other

words, they may not be willing to apply for jobs or accept a job offer in the secondary segment which has no social benefits. Since these individuals are surrounded by working people who provide adequate financial support in their job search, they may prefer to land a well pay job rather than accepting any job just for a living. This will prolong their job hunt and hence, the duration of unemployment (see Amaza *et al*., 2009; Cahuc and Zylberberg, 2004).

(c)   Gender of the household headship

Model 4 added the gender of the household headship as a new variable that was considered to be a potential predictor of the duration of unemployment. Analysing the results, the 2016 data show that on average, a percentage increase of male-headed households would be expected to reduce the average duration of unemployment by 0.3% lower than a percentage increase of female-headed households. The results from 2011 to 2015 attest to the 2016 result. For instance, in 2013 and 2015 a percentage increase of male-headed households was estimated to reduce the average duration of unemployment by 1.5% and 0.2% points respectively, lower than a percentage increase of female-headed households.

The analysis between 2011 and 2016 thus far has brought to light that the duration of unemployment was significantly related to the individual's age, sex, level of education and ethnicity as well as to household variables such as gender of the household headship, number of working people in the household and the size of the household. However, the study considered only the main effects of these variables. In practice, the relationship between the outcome variable and an explanatory variable may depend on the value of another moderator variable. With this caveat in mind, the study further tested for cross-interaction between gender of the unemployed individuals (level-1 variable) and the size of the household as well as the number of working members and the gender of the household headship (level-2

variables). This was done to explore whether a gender-household variable type interaction could explain the differences between households' duration of unemployment.

For this analysis the study only considered the 2016 datasets in order to make a prediction of the duration of unemployment into 2017. Comparing the estimates with the model without interactions, the results of the analysis showed that the estimate for the fixed coefficients were almost similar to the effect of gender, levels of education and population group, but the regression slopes for average household size in the household where no-one was working, where one was working and the gender of the household headship, was considerably larger in the cross-level model. The regression coefficient for the cross-level interaction was (0.68), (2.4), (3.15), and (-5.78) for gender*belowaverageHHS (below average household size), gender*averageHHS (average household size), gender*genderHHH (the gender of the household headship) and gender*workingnone (household where no one is working) respectively, which showed a big and statistically significant difference with p-value less than 0.001. This implied that the effect of gender on the duration of unemployment differed depending on household composition.

To shed more light on the nature of this interaction effect, the estimated coefficient of the study, considered for an instant, the fixed part of the model that contained individual gender and the gender of the household headship (Equation 1). This implied that a percentage increase of male-headed households, would increase the duration of unemployment by 4.2% for female unemployed individuals than unemployed males living in the same household. On the other hand, Equation 2 indicated that a percentage increase of female-headed households would increase the average duration of unemployment 7.35% for unemployed females more than unemployed males living in the same household.

Similarly, there was a variation in the duration of unemployment according to the different household sizes. These show a similar pattern as displayed by the gender of the household headship. For instance, the interaction effect for the variable working-non (household where no one is working), reduces the equation. Thus equation 3, indicated that a percentage increase of households where no one is working, would reduce the average duration of unemployment for unemployed males by 1.58% more than their female counterparts. In a nutshell, the analysis showed that the mean unemployment duration was higher in a female-headed household than a household headed by a male. The expectation of reducing the future unemployment duration by a certain percentage points is likely to be higher for people living a household where no one is gainfully employed than in households where one or more members are working to support the household.

Equation 1

$$4.2(gender) - 1.55(genderHHH) + 3.15(gender * genderHH).$$

For genderHHH=0 (household headed by male), the equation increases to

$$4.2(gender) - 1.55 \times 0 + 3.15(gender) \times 0 = 4.2(gender).$$

Equation 2

genderHHH=1 (femaleHH), this equation increases to

$$4.2(gender) - (1.55 \times 1) + 3.15(gender) \times 1 = 7.35(gender) - 1.55$$

Equation 3

$$4.2(gender) + 1.17(workingnone) - 5.78(gender * workingnone)$$

for workingnone=1(where no one in the household is working), the equation reduces to

$$4.2(gender) + (1.17 \times 1) - 5.78(gender) \times 1 = -1.58(gender) + 1.17.$$

Table 4.48: Models with explanatory variables (2011)

Model	Model 1	Model 2	Model 3	Model 4
Fixed components		Coefficient (s.e)	Coefficient (s.e)	Coefficient (s.e)
intercept	4.998747E1***	46.86 (9.42)***	69.43 (16.22)***	70.29 (16.2)***
female	3.314667E0***	3.17 (0.52)***	3.13 (0.53)***	2.84 (0.53)***
Youth	8.164126E0***	8.48 (1.8)**	8.52 (1.80)**	8.75 (1.8)***
Middle age	.574841	.67 (.08)**	.66 (.08)**	.71 (.08)**
Low qualification	-1.322114E1***	-13.30 (3.66)**	-13.41 (3.65)**	-13.52 (3.65)**
Middle qualification	-1.073097E1***	-11.54 (3.67)**	-11.63 (3.67)**	-11.73 (3.66)**
High qualification	-1.717492E0	-2.30 (.51)**	-2.14 (0.51)**	-2.44 (0.5)**
Black	-6.311573E0***	-6.31 (1.92)**	-6.55 (1.92)**	-6.36 (1.92)**
Coloured	-1.166859E0	-1.21 (.08)**	-1.55 (.08)**	-1.41 (.07)**
Indian/Asian	-9.548511E0**	-9.68 (3.33)**	-9.84 (3.33)**	-9.70 (3.32)**
White		0[a]	0[a]	0[a]
Below HHS		4.26 (.132)**	4.70 (.16)**	4.49 (.16)**
Averag HHS		4.02 (.16)**	4.46 (.17)**	4.46 (.17)**
Above HHS		0[a]	0[a]	0[a]
None workong			-8.17 (.43)**	-7.73(.43)**
One working			-9.17 (.42)**	-9.09 (.42)**
Two working			-9.10 (.47)**	-9.09 (.47)**
Three working			-4.71 (.79)**	-4.62 (.78)**
Four plus working			0[a]	0[a]
Gender of HH male				-1.86 (0.06)**
Variance of random components		173.96(11.8)	173.11 (11.8)	171.60 (11.8)

$p <0.1.*$; $p < 0.05**$ $p < 0.01***$

Table 4.49: Models with explanatory variables (2012)

Model	Model 1	Model 2	Model 3	Model 4
Fixed components		Coefficient (s.e)	Coefficient (s.e)	Coefficient (s.e)
intercept	1.645410E1	13.61 (.67)***	-10.92 (.74)***	-9.80 (.74)***
female	3.693471E0***	3.58 (0.52)***	3.55 (0.52)***	3.78 (0.53)***
Youth	2.689129E0**	3.00 (.77)***	3.03(.77)***	2.79 (.77)***
Middle age	-4.100867E0**	-4.01 (.77)**	-3.97 (.77)**	-4.08 (.77)***
Low qualification	3.440408E0**	3.22 (.47)**	3.29 (.47)**	3.31 (.47)**
Middle qualification	5.158454E0**	4.94 (.49)**	5.02 (.49)**	5.03 (.49)**
High qualification	1.036650E1**	9.98 (.98)**	9.98 (.98)**	9.89 (.98)**
Black	-4.931543E0**	-4.34 (.84)**	-4.42 (.85)**	-4.56 (.85)**
Coloured	.035512**	.85 (1.2)**	.75 (1.20)**	.70 (1.2)**
Indian/Asian	-.025664**	.58 (.069)**	.42 (.069)**	.51 (.069)**
White		0^a	0^a	0^a
Below HHS		3.14 (.12)**	3.15 (.15)**	3.34 (.15)**
Averag HHS		.82 (.15)**	.78 (.16)**	.87 (.16)**
Above HHS		0^a	0^a	0^a
None workong			-7.90 (.75)**	-7.51 (.75)**
One working			-7.34 (.75)**	-7.15 (.75)**
Two working			-8.80 (.8)**	-8.64 (.79)**
Three working			-8.42 (.03)**	-8.40 (.03)**
Four plus working			0^a	0^a
Gender of HH male				-1.35 (0.06)**
Variance of random components				
$\hat{u}_{00}$		1.562262E2(12.2)	1.561633E2(12.2)	1.56 (12.2)

p <0.1.*; p < 0.05** p < 0.01***

Table 4.50: Models with explanatory variables (2013)

Model	Model 1	Model 2	Model 3	Model 4
Fixed components		Coefficient (s.e)	Coefficient (s.e)	Coefficient (s.e)
intercept	2.164107E1**	20.89 (6.59)***	12.06 (1.97)***	10.64 (1.97)***
female	3.451443E0**	3.63 (0.5)***	3.63 (0.51)***	3.35 (0.51)***
Youth	0	8.21 (1.61)***	8.22 (1.61)***	8.35 (1.61)***
Middle age	0	1.49 (.60)**	1.50 (.60)**	1.56 (.6)**
Low qualification	-1.278914E0**	-4.60 (.93)**	-4.59 (.93)**	-4.54 (.92)**
Middle qualification	2.026469E0**	-2.71 (.96)**	-2.68 (.96)**	-2.62 (.96)**
High qualification	7.369574E0**	3.93 (.87)**	4.06 (.88)**	4.08 (.88)**
Black	-1.784810E0**	-2.89 (.082)**	-2.99 (.083)**	-2.70 (.083)**
Coloured	1.232019E0**	.21 (.01)**	.13 (0.01)**	.31 (.01)**
Indian/Asian	2.289108E0**	2.31 (.036)**	2.17 (.056)**	2.16 (.036)**
White		0ᵃ	0ᵃ	0ᵃ
Below HHS		1.27 (.05)**	1.03 (.09)**	.83 (.09)**
Average HHS		-.45 (.08)**	-.64 (.09)**	-.70 (.09)**
Above HHS		0ᵃ	0ᵃ	0ᵃ
None working			-3.56 (.79)**	-3.98 (.79)**
One working			-3.53 (.78)**	-3.76 (.78)**
Two working			-4.12 (.83)**	-4.221952(0.83)**
Three working			-1.44 (.07)**	-1.57 (.07)**
Four plus working			0ᵃ	0ᵃ
Gender of HH male				-1.58 (.06)**
Variance of random components				
$\hat{u}_{00}$		169.38 (11.5)	168.98 (11.5)	168.97 (11.5)

p <0.1.*; p < 0.05** p < 0.01***

Table: 4.51: Models with explanatory variables (2014)

Model	Model 1	Model 2	Model 3	Model 4
Fixed components		Coefficient (s.e)	Coefficient (s.e)	Coefficient (s.e)
intercept	1.697426E1***	16.16 (.65)***	18.70 (.52)***	18.52 (.53)***
female	4.754160E0***	4.47 (0.52)***	4.43 (0.52)***	4.39 (0.53)***
Youth	6.622657E0**	6.45 (1.66)***	6.50(1.66)***	6.54 (1.67)***
Middle age	2.170882E0**	1.93 (.65)**	1.98 (.65)**	2.00 (.65)**
Low qualification	-3.552818E0**	-3.47 (.95)**	-3.50 (.95)**	-3.49 (.95)**
Middle qualification	-1.210626E0**	-1.36 (.099)**	-1.39 (.099)**	-1.39 (.099)**
High qualification	1.988933E0**	1.99(.091)**	2.02 (.092)**	2.02 (.092)**
Black	-3.125365E0**	-3.36 (.091)**	-3.44 (.092)**	-3.40 (.093)**
Coloured	2.682885E0**	2.48 (.05)**	2.40 (.05)**	2.42 (.05)**
Indian/Asian	4.863538E0**	4.84 (.2)**	4.76 (.2)**	4.76 (.2)**
White		0^a	0^a	0^a
Below HHS		1.93 (.03)**	1.95 (.07)**	1.91 (.07)**
Averag HHS		1.27 (.06)**	1.26 (.07)**	1.24 (.07)**
Above HHS		0^a	0^a	0^a
None workong			.45 (.097)**	.51 (.097)**
One working			-.64 (.096)**	-.61 (.096)**
Two working			-1.11 (.06)**	-1.12 (.06)**
Three working			-8.73 (1.29)**	-8.67 (1.29)**
Four plus working			5.49 (.7)**	5.43 (.7)**
Gender of HH male				-0.28 (0.006)**
Variance of random components				
$\hat{u}_{00}$		167,91 (11.8)	167.83 (11.8)	167.72 (11.8)

p <0.1.*; p < 0.05** p < 0.01***

Table 4.52: Models with explanatory variables (2015)

Model	Model 1	Model 2	Model 3	Model 4
Fixed components		Coefficient (s.e)	Coefficient (s.e)	Coefficient (s.e)
intercept	1.838984E1**	14.16 (.82)***	24.99 (1.34)***	24.72 (1.36)***
female	4.591062E0***	4.30 (0.52)***	4.14 (0.52)***	4.18 (0.53)***
Youth	7.535423E0***	8.32 (1.67)***	8.39 (1.67)***	8.36 (1.67)***
Middle age	.887877**	1.56 (.67)**	1.68 (.66)***	1.67 (.66)**
Low qualification	-1.875605E0**	-1.29 (.97)**	-1.32 (.96)**	-1.33 (.97)**
Middle qualification	.350732**	.76 (.1)**	.74 (.1)**	.73 (.1)**
High qualification	5.410808E0**	5.81 (.84)**	5.59 (.84)**	5.60 (.84)**
Black	-3.227319E0**	-2.92 (.06)**	-2.75 (.07)**	-2.76 (.07)**
Coloured	.176331**	.68 (.06)**	.75 (.23)**	.73 (.23)**
Indian/Asian	-.235533**	-.12 (.026)**	.032 (.025)**	.024 (.025)**
White		0[a]	0[a]	0[a]
Below HHS		3.96 (.09)**	4.43 (.13)**	4.48 (.13)**
Averag HHS		.95 (1.12)**	1.27 (.14)**	1.29 (.14)**
Above HHS		0[a]	0[a]	0[a]
None workong			-3.93 (.24)**	-3.92 (.24)**
One working			-5.63 (.23)**	-5.59 (.23)**
Two working			-2.30 (.28)**	-2.25 (.28)**
Three working			-3.80 (.57)**	-3.73 (.58)**
Four plus working			0[a]	0[a]
Gender of HH male				-0.23 (0.06)**
Variance of random components				
$\hat{u}_{00}$		141.18 (11.8)	139.15 (11.8)	139.11 (11.8)

Table 4.53: Models with explanatory variables (2016)

Model	Model 1	Model 2	Model 3	Model 4	Model 5: with interaction
Fixed components		Coefficient (s.e)	Coefficient (s.e)	Coefficient (s.e)	Coefficient (s.e)
intercept	1.56784E1***	15.20 (1.04)***	20.72 (1.57)***	20.70 (1.58)***	17.06 (1.78)***
female	4.52503E0***	4.51 (0.53)***	4.45 (0.53)***	4.45 (0.54)***	4.20 (.5)***
Youth	7.917694E0**	9.71 (1.60)***	9.83 (1.6)***	9.83 (1.6)***	10.12 (1.6)***
Middle age	1.042739E0**	2.89 (.59)**	2.92 (.59)**	2.92 (.59)**	3.08 (.59)**
Low qualification	-3.157116E0**	-4.13 (.98)**	-4.11 (.98)**	-4.11 (.98)**	-4.06 (.98)**
Middle qualification	-.113655**	-1.74 (.01)**	-1.68 (.01)**	-1.68 (.01)**	-1.61 (.011)**
High qualification	8.298984E0**	6.29 (.88)**	6.38 (.88)**	6.39 (.88)**	6.33 (.88)**
Black	-3.701732E0**	-3.43 (.15)**	-3.69 (.15)**	-3.69 (.15)**	-3.73 (.15)**
Coloured	2.067462E0**	2.10 (.35)**	1.91 (.36)**	1.91 (.36)**	1.97 (.35)**
Indian/Asian	-.099674**	.289 (.041)**	.19 (.041)**	.189 (.041)**	.188 (.041)**
White		0ᵃ	0ᵃ	0ᵃ	0ᵃ
Below HHS		2.55 (.20)**	2.52 (.24)**	2.52 (.25)**	2.46 (.27)**
Averag HHS		1.06 (.24)**	1.19 (.26)**	1.19 (.26)**	-.11 (.27)**
Above HHS		0ᵃ	0ᵃ	0ᵃ	0ᵃ
None workong			-1.44 (.24)**	-1.44 (.24)**	1.17 (.4)**
One working			-2.46 (.24)**	-2.46 (.24)**	.20 (.02)**
Two working			-2.73 (.3)**	-2.73 (.3)**	-2.45 (.4)**
Three working			-.81 (.069)**	-.81 (.069)**	-.61 (.05)**
Four plus working			0ᵃ	0ᵃ	0ᵃ
Gender of HHH				-0.28 (0.62)**	-1.55 (0.89)**
female* belowaverageHHS					.68 (0.09)**
female * averageHHS					2.40 (0.03)**
female * aboveaverageHHS					0ᵃ
female * genderHHH					3.15 (0.13)**
female * workingnone					-5.78 (0.17)**
female * workingone					-5.15 (0.17)**
female * workingtwo					-5.43 (0.29)**
female * workingthree					-.18 (0.08)**
female * workingfourplus					0ᵃ
Variance of random components					
$\hat{u}_{00}$		1.812014E2(12.1)	1.812778E2(12.1)	1.812870E2(12.1)	1.813295E2(12.1)

p <0.1.*; p < 0.05** p < 0.01***

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.1 Introduction

The purpose of the study, therefore, was to analyse and predict the duration of unemployment with regard to the social-demographic and household variables over the six year period under investigation. This was done specifically to assess the impact of age, levels of education, gender, ethnicity, employment history as well as household size, gender of the household headship and the number of working people in a household on the duration of unemployment. In order to achieve these stated objectives, the study made use of the Quarterly Labour Force Survey data produced by Statistics South Africa (2011 to 2016).

The empirical results of this thesis come in three parts. Firstly, the study made use of frequency distributions to describe the percentage share of the unemployed individuals who were experiencing long spells of unemployment, with regard to the social-demographic characteristics, over the six year period. Secondly, ANOVA and T-tests were used to test the significance of the dependencies found in the mean unemployment duration over the six year period. As with all studies making use of questionnaire, the data might have sampling and non-sampling errors, this study, however, relied on the truthfulness and accuracy of the 2011 to 2016 Labour Force Survey as collated by Statistics South Africa, which made it certain that the applied dataset does not give a false positive result for this study.

Little can be understood about the unemployment situation in South Africa if one focuses exclusively on the crude unemployment rate figures without also paying attention to the structural content of unemployment. The duration of unemployment experienced by individuals with different characteristics and the composition of the households that support them, are critical in finding answers to questions leading to the design of active labour market policies for alleviating unemployment problems in South Africa. The motivation for this

study was that, while the high rate of unemployment is indicative of the length of time people spend out of work, very little research has been done in this regard, most especially in the South African context. Even though the macroeconomic policy of the South African government through the Growth, Employment, and Redistribution (GEAR) strategy anticipated an annual economic growth rate of 6 percent, this did not affect the labour market positively as those entering the labour force consistently exceeded those finding jobs. The 2010 Labour Force Survey report indicated an overall fall of employment across the sectors due to the recession (Stats SA, 2011). The report indicated a drop of 6.1 percentage points from the second quarter of 2008 to the third quarter of 2009, driven by layoffs especially in the manufacturing sector and as a result, the employment absorption rate dropped from 44.7% to 41.3%. The manufacturing sector declined by 21.6% over the period 2007-2008, shedding almost 80 000 jobs, with job losses being most pronounced in the textile, clothing and leather sectors. In the last quarter of 2008, about 42 400 jobs were lost in the private sector, of which 20 700 jobs were in manufacturing, 4 000 in mining and 11 200 in the financial sector over the same period, clearly indicating a structural change (SARB, 2009).

Almost a decade after the outbreak of the global financial crisis, growth in the labour market conditions in South Africa continues to remain at a low level, although it was anticipated to pick up modestly in 2017 (OECD, 2016). According to OECD Employment Outlook (2016), the employment rate recorded in South Africa in 2015 was 42%, while in the first quarter of 2016, unemployment affected 26.5% of the labour force, which was far above the OECD average unemployment rate of 6.4%. However, it was stated in the report that the high unemployment rate and the lack of job opportunities has led to very long unemployment spells. Comparing the percentage share of unemployed individuals in South Africa who were experiencing long term unemployment duration to the OECD figures in 2015, about 57% of

the unemployed in South Africa were exhibiting very long unemployment spell as against the OECD average of 33.8%.

There have been numerous policies initiated to curb poverty, inequality and unemployment. One of these policies (Accelerated and Shared Growth Initiative for South Africa) aimed to reduce unemployment by half by the year 2014, which did not materialize (Leibbrandt and co-workers, 2010). The government is fighting tooth and nail and using all possible means to grow the economy and to create job opportunities. To this effect, many economic and labour policies have been implemented in the hope of being drivers of growth. The tax amendment bill recently proposed in the South African parliament was robustly debated. However, drawing insight from some of the concerns raised by its opponents, in line with this study, one should be cautious about increasing taxes in this dire situation of an underperforming economy because that might hinder the creation of jobs and as a result, escalate the unemployment rate. Numerous studies have shown a relationship between the level of tax and unemployment. In particular, that an increase in tax decreases economic growth and consequently reduces the total growth of employment rate (Disney, 2000). In the same vein, Tullio (1987) used the OLS method to calculate the effect of taxation policy on unemployment across ten OECD countries over the period 1960-1983. The estimated coefficient showed that a 1% increase in tax reduced economic growth by a 0.17% and a 1% increase in labour tax reduced the growth of the total employment by a 0.03% (see, Layard and co-workers, 1995; Nickell, 1997; Scarpetta, 1996).

Along this general line of thinking, the high rate of unemployment faced by South Africa is influenced by two major components, which have largely been overlooked in the South African unemployment literature. Firstly, the stock flow of unemployment, which measures the relative flows of individuals into and out of unemployment. This suggests that the average

rate of unemployment will remain high if the rate of inflows is greater than the rate of outflows into unemployment. And the second component is the length of time that individuals stay looking for a job. The Labour Force Survey data do not capture detail and comprehensive information on the stock flow component which makes it inappropriate to analyse the movement of individuals into and out of unemployment. Nevertheless, these data provide insights and possibilities to look at the duration of unemployment. With this in mind, the study presents the argument that the high level of unemployment, revolving around 25% and 27% as reported by Statistics South Africa, is the cumulative effect of the longer duration of unemployment. (See, Kingdon and Knight, 2001; Mukoyama and Sahin, 2009). Yet, this view of the influence of unemployment duration on the high rate of unemployment has not been properly investigated over a long period, most especially in the context of South Africa.

5.2   The contributions of the study to the existing stock of knowledge

Apart from the household labour supply theory, many of the labour market theories reviewed in the literature touched on the individual characteristics and institutions to explain unemployment and why people stay longer unemployed. This study made a contribution by linking the variables in the household to the characteristics of the individuals to explain unemployment and the duration of unemployment. The contributions made were an additional input to the theories of labour market segmentation, discrimination and job search to explain unemployment and more specifically, the duration of unemployment in the context of South Africa.

This study took root in the aspect of the duration of unemployment to investigate how, over the years, household variables have influenced the length of time people stay looking for a job. The LFS data provides insight on the duration of unemployment over a long period and at different dates of observation. The decomposition of the duration of unemployment shows

variation with respect to the different dates of observation. The study demonstrated that this variation was influenced by social-demographic variables such as gender, age, education, ethnicity and individual's employment history, as well as by household moderating variables (such as household size, number of people in the household who are working and the gender of the household headship).

The findings on the differentials in the duration of unemployment are consistent with previous research, with duration of unemployment found to be associated with individual socio-demographic characteristics. Further to this, the study has provided empirical contributions by establishing the influence of the household moderating variables on the average duration of unemployment. The long history of apartheid in South Africa has impacted on gender, age, education, ethnicity and the composition of households, which all play a critical role in the active participation in the labour market (see, Kingdon and Knight, 2000 & Klasen and Woolard, 2009). It is, therefore, valuable for policy purposes to analyse and to determine the variables that greatly influence the duration of unemployment. While there are limited statistics on the effects of household moderating variables on the duration of unemployment, it is essential that the debate around unemployment policies be informed by careful analysis of the empirical evidence.

5.3   Answers to the research questions

As a first step in analysing the impact of the socio-demographic variables on the duration of unemployment, the development of a conceptual framework was of paramount importance. The purpose of the framework was to guide the study by explaining the role of variables in creating differentials in the duration of unemployment. The main theoretical framework employed by economists for analysing the causal factors of unemployment duration is the job search. Taking into account the long history of segregation in South Africa, this study

considered and drew some insights from the job search, segmentation and discrimination theories and was also guided and pivoted by the sustainable livelihood framework. Making use of a two-level modelling tied closely to sustainable livelihood framework and other unemployment theories, the results revealed that individual characteristics and household's moderator variables do significantly influence the duration of unemployment.

Although, empirical research has taken significant strides to understand how the social-demographic variables may drive unemployment rates, important questions have remained unexplored. In this study, theoretical arguments were developed to predict and demonstrate the impact of these variables on the duration of unemployment. To shed more light on the dynamic processes between unemployment duration and these variables, this study was guided by research questions. The following are the main findings on the duration of unemployment in relation to the individual's characteristics and the household moderating variables:
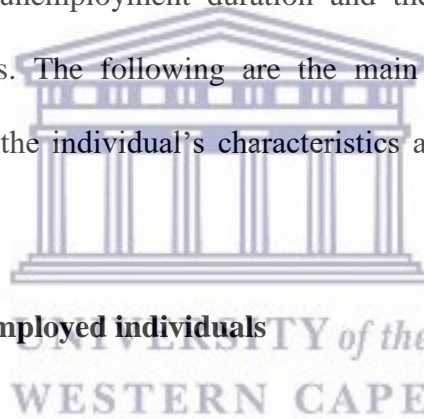
5.3.1   Education of the unemployed individuals

Research question: *To what extent does the level of education influence the unemployment duration?*

Hypothesis 1: *the lower the level of education the longer the unemployment duration.*

Education has long been considered one of the key indicators for employability. By relating existing literature to current results, the findings from this study were consistent with literature finding that the duration of unemployment varied according to the individual's level of education. The results of the ANOVA test and the two-level model confirmed the hypothesis that there was a significant relationship between the average duration of unemployment and levels of education. This study must be given credit for providing

empirical contributions to the existing statistical stock of knowledge that some graduates are finding it difficult to get the job they needed and as a result stay longer unemployed (See, Groot and Oosterbeek, 1990; Pauw and co-workers, 2008; Bhorat, 2009; van der Ber and co-workers, 2012; Oluwajodu and co-workers, 2015).

For access to the labour market, one needs education. This has been the leading prerequisite for every employer to extend employment to any applicant for whatever line of work. Recognition of this requirement has highly raised the expectations and motivation of every individual to educate and capacitate her/himself and so become a valuable asset and ready for any employment opportunities. Bogale and Shimelis (2009) noted that an educated person has the ability to think critically with regard to sustaining a certain standard of living since they have the essential knowledge and information. The high rate of unemployment faced by South Africa is an indication of a tight labour market. As argued by Aggestan and Hallberg (2004), in this dire situation the demand for higher education becomes a strong driving force to enable individuals to secure employment. Participation in the labour market is keenly competitive, and directly affected by the individual level and quality of education. Therefore, within a group of workers subject to higher risks of unemployment, the educational level is considered to be a significant tool for reducing risks of a long unemployment spell. With this in mind, the study proposed that individuals with higher education are less likely to exhibit longer unemployment than are those with lower levels of educational qualification.

Contrary to these views, other researchers were of the view that there is a positive relationship between education and unemployment duration. Job search models for labour market analysis have proposed a number of hypotheses suggesting education and duration of unemployment as decisive factors for accepting a job change (Van Den Berg, 1990). Using the job search theory as the basis of their argument, it has been claimed that highly educated

unemployed individuals can have problems in finding acceptable jobs (Groot and Oosterbeek, 1990). Rogerson and co-workers (2005) explained that an individual will lower his wage reservation after a number of weeks of unsuccessful job searching. This support the findings of Kiefer (1985), who estimated the effect of education on the duration of unemployment using the years of schooling as an explanatory variable and found a negative relationship between education and unemployment duration. Empirical evidences from the Labour Force Survey of 2011 to 2016 demonstrated that those assumptions are not entirely true in the South African context.

Ultimately, the empirical results showed a significant variation in duration of unemployment across the levels of education. The ANOVA test showed a statistically significant difference in the proportion of unemployed individuals experiencing longer durations of unemployment as well as their corresponding average duration of unemployment between 2011 and 2016. This implies that the variations in duration of unemployment with regard to educational level over the six year period under investigation did not happen by chance. This finding was consistent with Kingdon and Knight (2002) who argued that unemployed individuals with higher education are better informed about the labour market and are likely to display a shorter unemployment spell than unemployed who have few or no educational qualifications. This concurs also with the findings of Tasci and Tansel (2004) that individuals with higher levels of educational qualifications have significantly higher unemployment exit probabilities than individuals with lower level educational qualifications. It also corroborates Moleke (2003) who showed that in South Africa, the level of education had a direct effect on unemployed individuals' duration of unemployment. Kingdon and Knight (2005), while reviewing the unemployment situation in South Africa, explored changes in the relationship between education and unemployment with probit analysis of the 1995 October Household

Survey and the 2003 September Labour Force Survey data. They estimated that relative to those who had no educational training, labour force participants with primary or secondary education were more likely to have longer periods of unemployment in 2003 than in 1995. To add more light to this, Gangl (2002) mentioned that education is likely to make the skills of an individual more valuable in production and consequently, his or her employability prospects. They further explained that education may increase the efficiency of the matching process as more educated individuals are more mobile and have a broader range of search possibilities thus, decreasing their unemployment duration.

Although those with a low level educational qualification exhibited very long unemployment duration compared with those with high level education, one cannot posit that all things being equal, if opportunity were given to all unemployed to attain higher qualifications, the average duration of unemployment would substantially decrease. Moreover, the two level model analysis of the dataset used in this study (Labour Force Survey of 2011 to 2016) indicated that the level of education was a significant predictor of individual duration of unemployment. Surprisingly, education, which is traditionally considered to augment human capital and in effect enhance labour market opportunities, showed inconsistent influences in predicting levels of unemployment duration. Notwithstanding that the descriptive analysis painted a promising prospect picture for higher level education holders, the predictive coefficient derived from the two level modelling turned out to be positive for higher education and negative for lower and middle level education. This suggests that as more individuals are acquiring higher levels of education, the duration of unemployment will tend to increase. Even the best educated workforce appeared to be subject to increasing unemployment risk over time. (Leibbrandt and co-workers, 2010).

This result, however, could possibly be explained by the initiation of the public works program and other employment policies that offer short term employment to the youth; most especially those with lower levels of education. And on the other hand, this outcome could possibly be explained as the consequences of individuals with higher education having a prospect of job search in the primary segment as postulated by the job search and the labour market segmentation theories. However, policies aimed at the provision of training and improving workers' skills to support individuals with low levels of education, may exercise significant impacts on improving the long-term employability of the unemployed (Collier, 2003).

5.3.2   Gender of the unemployed individuals

Research question: *To what extent does gender influence the duration of unemployment?*
 Hypothesis 2: *women have longer unemployment duration than men.*

This discussion is based on the relationship between the average duration of unemployment and gender by looking at whether women were more vulnerable to longer unemployment spells. The results of the T-test and the Two-level modelling confirmed the hypothesis that there is a significance difference in the duration of unemployment with regard to gender. This study has provided an empirical contribution to the theories of labour market discrimination in explaining the longer unemployment duration affecting women than men. The study demonstrated and provided new statistical evidence that within the same household, women were likely to be affected by longer unemployment duration than men. This implies that at the household level, there is a reproduction of the gender discrimination which exists in the general labour market.

There has been a rising public debate over recent decades on the differences in the labour market behaviour of men and women. One of the most imperative dimensions of the labour market and one that traditionally attracts particular attention is the gender differential between males and females with regard to employment, labour market participation and the duration of unemployment. A large body of theories aim to explain gender-based differences regarding employment and unemployment. These, however, acknowledged that the labour market commitment of men and women varies, and some studies attribute longer unemployment duration of women to the issue of discrimination in the labour market. Women are less attached to the labour market since they are likely to quit working for childbearing, child-rearing and other domestic reasons. Women may subsequently join the ranks of the unemployed and therefore are less likely to re-enter employment. The empirical results demonstrated that the proportion of females experiencing a longer duration of unemployment was greater than for equivalent males.

It was also found that female tended to experience longer average durations of unemployment than their male counterparts. Specifically, the average unemployment duration for females (two and three quarter years) was significantly longer than their male counterparts (two and half years).The distributions of long unemployment spells and of average unemployment spells being biased against women, casts no doubts on the perception that discrimination against women still exists in the labour market participation. Consistently over the six year period (from 2011 to 2016), women were exhibiting longer unemployment duration than men. The findings of this study concurred with the arguments made by various researchers that females are discriminated against in labour market participation, which sometimes discourage them from job hunting and hence, they rather prefer to remain unemployed (Hanson and Pratt, 1995; Abraham and Shimer, 2002). Foley (1997) mentioned that female long unemployment duration happens as a result of lack of job search. He explained that

females, especially those with children, are more likely to devote their efforts to full-time childcare- a course of action that is more socially acceptable for women than for men in the African tradition. Abraham and Shimer (2002) argued that rising unemployment duration is intense among women as a result of the increase in women's labour market participation in recent times. This is true in the South African context. The notion that women stay at home and solely take care of the household chores is now considered an outmoded cliché. There has been a paradigm shift in the post-apartheid era where women have taken the bold step to participate in the labour market equally with their male counterparts, in order to be economically self-reliant. This can be confirmed by a report released by Statistics South Africa from the Labour Force Survey 2013 and 2014. The 2013 results showed that the male participation rate in the labour market was 63.7% as against 50.2% for females. In the same year, the employment absorption rate for males (49.4%) was higher than that of females (37.5%). In 2014 the employment absorption rate for men decreased to 49.2% while that of females increased by 0.4%, while both male and female participation rates decreased in percentage by 0.2 points and 1 points respectively between these two periods. Although the women's employment participation rate has fluctuated, empirical evidence from the Labour Force Survey shows that women's employment participation rate remained above 50% of the women labour force (Stats SA, 2016).

This thesis, in as much as it has provided some insightful viewpoints with regard to unemployment duration and gender differences in the South African context, raises several questions which could be a subject of further study. This study was unable to cover the issues of marriage in relation to unemployment duration, which certainly is a gender-related issue.

In order to check the generalization and robustness of the results, two level mixed modelling was employed. This modelling showed significant gender variations in the duration of

unemployment after holding other factors constant. These results were robust for both males and females, and were consistent with preceding studies that underscored the importance of relationships between individual characteristics and unemployment duration (Nickell, 1980; Jones, 1988; Gorter & Gorter, 1993). For the average household, the study predicts an increase in the long duration of unemployment for each additional female in a household. However, the study concluded that in the context of South Africa, as the number of female unemployed individuals in the household increases, one should observe an increase in the duration of unemployment compared with for their male counterparts. The reason may be that a male unemployed worker will accept any job offer as soon as possible because in our social situation males cannot avoid their household obligations. As with the findings of Hanson and Pratt (1995), women experienced job accessibility differently than men due to their numerous household responsibilities. Women may experience very long unemployment duration, possibly because they have a high opportunity cost of choosing household activities and thus a high reservation wage or it may be due to discrimination against women in the labour market (Tasci and Tansel, 2004). In the same line of reasoning, Manning (2003) noted that the movement of women in their job search is more regulated by household tasks, resulting in women, restricting their job search to a more distinct area, and thus limiting the range of job opportunities.

5.3.3 Age groups of the unemployed individuals

Research question: to what extent does age influence the duration of unemployment?

Hypothesis 3: the adult age group (30-64 years) has longer unemployment duration than the youth age group (15-29 years).

From a broader point of view, there are a number of indications that unemployment in South Africa has features in common with those of unemployment in developing nations. The above

mentioned hypothesis was tested and confirmed by the results of ANOVA test and two-level modelling which showed a significant relationship between the average duration of unemployment and age. The study demonstrated that the adult age group was more susceptible to longer unemployment duration than the younger age group. This empirical evidence should be credited as an additional contribution to improving the existing stock of knowledge.

Youth unemployment has been a major concern of the government and other stakeholders. Although many policies are underway to help curb the high rate of unemployment, it remains a challenge and a difficult task to achieve while South Africa's economic growth remains locked into a 3-4% range. One needs to understand that over the six year period under observation, the rate of unemployment has been consistently on the increase. Nevertheless, all said and done, South Africans cannot wait to see the government's turnaround strategies of radical economic transformation working to greatly upturn economic growth and to create more jobs. In 2012, out of the 4.5 million jobless, 71% were youth and 67% of them were experiencing a very long unemployment spell (Department of Labour, 2012). It was further mentioned in the report that the deteriorating labour market conditions involved a negative relationship between labour demand and the persistent high unemployment rate. The labour market is doubtless going to display an unemployment problem for a long time because of the collapse in labour demand while the GDP is still growing at a low level. The National Treasury (2011) report identified the younger unemployed South Africans as having little or no experience of formal employment making them more susceptible to high rates of unemployment and poverty.

To understand this phenomena, as mentioned earlier, one has to bear in mind that one of the possible explanations of this high rate of unemployment is the duration of unemployment.

One focus of the study was to analyse the differentials in the duration of unemployment across age groups. This study categorized age into three groups namely youth (15-29), middle age (30-55 years) and older age (65 plus). It was found that although the youth had high unemployment rates, their proportion of experiencing longer duration of unemployment was lower than for the middle and the older age groups. Aggregating the average duration of unemployment with respect to the three critical age groups of interest (youth, middle and old age groups), it was clearly shown that the middle age group and the older age group stood the higher risk of staying unemployed for a longer period of time. Using the ANOVA test, the variations recorded in the unemployment duration over the six year period (2011 to 2016) across the age groups proved to be significant under the 5% level of significance. From this viewpoint, the study confirmed existing literature by demonstrating that there were across-age group variations in the proportions of unemployed workers experiencing longer durations of unemployment. Similarly, there were disparities in their average length of unemployment. This suggests that policies addressing issues of poverty, inequality and unemployment in South Africa need to take into account the most vulnerable age groups. This corroborates the study done by Tansel and Tasci (2010) using hazard analysis of unemployment duration by gender in Turkey, to demonstrate that although the youth had high unemployment rates, their probability of exit from unemployment to employment was high as well. The youth average duration of unemployment was less than in the middle and the older age groups. Kingdon and Knight (2004) provided a cross-sectional analysis of how the incidence of unemployment duration varied among the age groups, and also found the longest spell of unemployment duration among the older labour force participants.

Numerous researches in this field have indicated that the youth unemployment rate was higher than the adult rate of unemployment; however overlooking the fact that adults remained longer unemployed once they had become unemployed. For example, the

unemployment rate in 2014 was 24.3%, of which 70% were youths (Stats SA, 2015). Data from this study showed that adults were experiencing longer unemployment spell than were the youths. This implies that older unemployed individuals have been at a disadvantage in the rapidly restructuring post-apartheid South African economy. The high risk of experiencing longer duration of unemployment by the middle and older age groups can presumably be traced from the apartheid era when the majority were denied access to quality education which would have given them the necessary skills to cope with today's changes and advances in technology. The decrease in the youth average duration of unemployment over the six years, can undoubtedly be attributed to the profound political, social and economic transformation that has taken place under the post-apartheid system of government in South Africa, giving the youth a wide variety of opportunities to have access to the labour market and job opportunities through favourable labour market policies.

Mukoyama and Sahin (2009) also found out that older unemployed individuals were staying longer in unemployment than the younger people. Numerous economic and social explanations have been given for the relatively short unemployment duration for youth compared to adult unemployment duration. One of the reasons for shorter unemployment durations for younger people mentioned is that younger people may be more likely to accept job offers because they are more flexible and have less stringent ideas about what is suitable employment (Kingdon and Knight, 2000). This may suggest that unemployed youths enter jobs of poor quality. Education and skills possessed by older job seekers, particularly specialized skills, depreciate over time and become outdated, making those individuals more immobile and less employable (Kingdon and Knight, 2000). This vulnerability can further be attributed to the change in the productive structure and the technology assimilation that South Africa had to face over this period, which caused the skills of adult unemployed individuals

who have been unemployed for longer, to become obsolete and hence, less attractive to employers.

Although the empirical results of the descriptive analysis showed that the odds are in favour of unemployed youths in terms of experiencing very long unemployment spells, one should not draw an inference without considering other intervening variables that might influence this outcome. With this caveat in mind, the study moved a step further to conduct two level modelling in which all the individual characteristics and the household moderator variable were considered. Ultimately, the estimated coefficient from the two level modelling indicated that successive increases of unemployed youth in a household would increase the duration of unemployment more than middle and older age population groups.

5.3.4 Unemployed individuals previous work experience

Research question: *To what extent previous work experience influences the duration of unemployment?*

Hypothesis 4: *the unemployed individuals without previous work experience would display longer unemployment duration than those with previous work experience*

Empirical evidences substantiated that the probability of entering or exiting from unemployment was related to the unemployed worker's labour market history. It is suggested that unemployed worker's prior work experience will be more attractive to employers because employers can potentially invest less in their training (Becker, 1964; Mincer, 1974). This implies that unemployed individuals without previous work experience have a greater risk of staying longer unemployed than have individuals with previous work experience. Hence the hypothesis that "the unemployed individuals without previous work experience would display longer unemployment duration than those with previous work experience," was tested and confirmed by the results of t-test statistics which indicated a significant

relationship between the average duration of unemployment and work experience. This supports Tasci and Tansel's (2010) argument that first time job seekers are likely to be young individuals who are more likely to attach themselves to the household for economic support while those with previous work experience are less likely to depend on the household resources. This study should be credited with providing statistical evidence that work experience matters in the labour market. This issue has been raised in many discourses which provided reasons to promote internship programs but had not been previously demonstrated statistically.

Consistently, the current results showed that over the period 2011-2016, very long unemployment spells predominantly affect unemployed individuals without previous work experience. The average length of unemployment for individuals who had never worked before was also longer than those with previous work experience. Having shown the growing proportion of the unemployed individuals who had no previous work experience and experienced longer durations of unemployment, the study also found a direct relationship between the proportions of unemployed displaying longer unemployment spells and the corresponding average unemployment duration. Having stated this, it was also shown that the unemployed workers without any previous work experience had longer average duration of unemployment than those with prior work experience.

The prolonged duration of unemployment faced by new entrants into the labour market may well be related to the burgeoning rate of unemployment facing South Africa as a whole, which is evident in the labour market literature. The large numbers of new entrants looking for their first jobs during a time of high unemployment rate are at particular risk because this group has already displayed a large risk of ongoing unemployment and finds it difficult to break into the labour market. Kingdon and Knight (2001) stated that work experience had a

great impact on employment prospects. Also, looking at it from an economic point of view, workers' frequent protests and struggles for wage increments could provide a plausible explanation to the very long unemployment spell among first time job seekers. This reasoning is in line with Gary (2000), who was of the view that increasing wages would lower job creation and consequently, affect first time job seekers in the sense that employers would preferably hire unemployed individuals with previous work experience in order to avoid training cost. Furthermore, numerous studies on the South Africa labour market literature have indicated that the problem in South Africa is structural unemployment. With this in mind, employers are demanding high level skill workers, which first time job seekers do not hold.

5.3.5   Population group of the unemployed individuals

Research question: *To what extent does ethnicity influence the unemployment duration?*

Hypothesis 5: *There is shorter unemployment duration among the Whites than in non-White racial groups*

In developed countries, it has been observed that minority ethnic groups are more vulnerable to prolonged unemployment spells (Dawkins and Sanchez, 2005). Taking individually, this hypothesis was tested and confirmed significant determinant of an individual's employability, most especially amongst the disadvantaged by the results of ANOVA. At the household level, looking at the average duration of unemployment this hypothesis was not confirmed. The empirical contributions should be considered an added contribution to the existing stock of knowledge. The confirmation of this hypothesis is once more adding its support on the generally admitted vulnerability in the labour market among the non-white population groups.

The varying level of unemployment duration across different population groups has had important implications for the incidence of crime and poverty. Though post-apartheid policies have sought to bring about equal opportunities for participation in the labour market, it was expected the unemployment spell for the white population group would be less than for the non-white population groups. The longer unemployment duration for non-white groups can be traced to the apartheid history of unequal access to jobs and labour discrimination. Leibbrandt and co-workers (2010) noted that unemployment was in the past much more predominant among the African and Coloured population while Whites enjoyed much higher levels of employment. They mentioned that the race gap was most prominent in government administration, where all but the lowest jobs were reserved entirely for whites. Job accessibility is one of the key contributing factors determining unemployed workers' length of unemployment. As earlier stated, the duration of an unemployed individual's job search could be influenced by job accessibility. Cervero and co-workers (1999) revealed that a good level of accessibility increased the number of job opportunities available for a job seeker and so may shorten the job search period. Wilson (1987) argued that when one is in daily contact with unemployed people who are consistently unable to find a job, it discourages one from their search. From this viewpoint, the study took the view that job seekers living in neighbourhoods with low employment accessibility may face longer periods of unemployment relative to job seekers from neighbourhoods with better access.

This geographical segregation still hampers the access of non-Whites to the labour market. The study showed that amongst the majority, non-whites were experiencing longer unemployment spells in the labour market. One of the focal areas of this study was to analyse the variations in the average duration of unemployment across race groups.

Notwithstanding policies such as affirmative action which attempts to restore the unequal distribution of employment by race, longer unemployment spells consistently remained predominant among Black population group over the six year period (from 2011 to 2016). The ANOVA test conducted to verify this trend proved to be significant under a 5% level of significance. There is a lack of substantial evidence to explain why the vast majority of Black Africans experiencing longer unemployment did not seize the wide range of opportunities created by the post-apartheid government under the BEE policy to become self-employed. On this note, this study partially accepted the views of Kingdon and Knight (2006) that the restrictive legislations under the apartheid regime have inhibited the development of black South Africans' entrepreneurial and social skills and social networks. This agreed with the argument of Abhijit and co-workers (2007) that people from the homelands would prefer to stay unemployed rather than stepping into some distant unknown world where they are not sure of getting a job. The cost of transport and accommodation may well be an impediment for travelling long distance from the homelands in search of a job. Also, Kain (1968) in the US. Kain robustly argued that the place of jobs for blacks was a poor predictor of their place of residence. He attributed the concentration of high unemployment rate among the blacks to racial discrimination in the residential housing market, which prevented them from moving to areas where jobs had moved to. This implies that distant jobs are not easy to pursue due to the cost of travelling to look for them. This would explain the situation in the South African context, where rents in places of more job opportunities are relatively expensive, so that most unemployed blacks cannot afford to relocate to those places in order to enhance their employability. It is likely that the other factors lead to the disparity between the Whites and other racial groups are compounded for Blacks living in the homelands with high rates of illiteracy and poverty.

The dual labour market theory postulated that good jobs are not only rationed but also present entry constraints to particular groups in society irrespective of their skills and educational level. The disparity in unemployment levels can also be attributed to the massive shedding of jobs in the agricultural and the mining sectors, which were the main employment avenues for poor non-white South Africans, most especially the black population group. The structural changes in these sectors reflected a shifting from a labour-intensive to a capital-intensive system.

The racial disparity in unemployment levels is at least partly a reflection of the wounds inflicted on the poor non-white population groups by the apartheid segregation policies, whereby, the African population groups were given low level of education and skills (Verick, 2009). This might also be used to explain the non-whites' longer duration of unemployment. The increasing crime rate in deprived communities with high rates of unemployment will also deter both local and foreign investment which will in turn prolong the length of time the unemployed stay in unemployment. There has been numerous literature demonstrating a positive relationship between crime and unemployment (see Block and Heineke, 1975; Gould *et al.*, 2002; Grönqvist, 2013).

Ultimately, the empirical results from the two level modelling showed a significant variation in the duration of unemployment across the population groups. One prediction of this study is that in the near future there is hope of bridging the employment gap between white and the non-white population group which was created decades ago by the apartheid regime. The National Development Plan (NDP) of the current government strives to address this challenging problem by implementing a number of policies to close the employment gap- social grants, youth wage policy, Reconstruction and Development Programme, public works programmes to mention but a few (National Planning Commission, 2012).

5.3.6 Provinces

Research question: Are the differences in unemployment duration across the provinces?

Hypothesis 6: The province with the highest unemployment rate will also record the highest
average unemployment duration

It has been debated robustly whether the occurrence and duration of unemployment are equally distributed across geographical regions of the economy. Job opportunities depend on the prevailing demand conditions in the labour market. Areas where there is a burgeoning demand for labour are expected to experience an increasing set of job prospects, thereby employing positive effect on the arrival rate of offers (Collier, 2003). Hence the hypothesis that "The province with the highest unemployment rate will also record the highest average unemployment duration," was tested and confirmed by the results of ANOVA test which indicated a significant relationship between the average duration of unemployment and the provinces. This finding should be credited as an additional contribution to empirical knowledge because generally, differentials in the duration of unemployment is statistically tested using a rural-urban perspective.
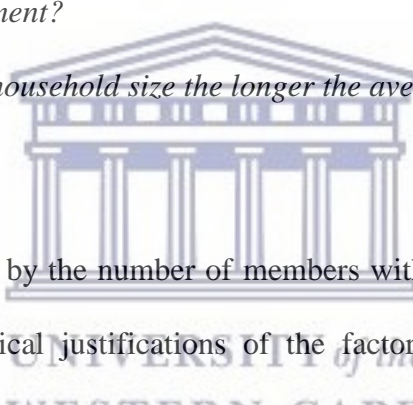
The empirical results affirmed that the duration of unemployment was not homogeneously distributed across the provinces. Provinces where the demand for labour are increasing will experience a growing set of job openings, thereby shortening the duration of employment for individuals living in those provinces. Corresponding to inequalities in the distribution of natural and economic resources in the country, it was expected that there would be variations in the duration of unemployment across the provinces. Evans and McCormick (1994) mentioned that regional differences in industry composition and institutional settings had a significant role in elucidating the differentials in unemployment pattern across the regions.

The impact of the apartheid legacy, when the non-white population was basically kept to tribal homelands and urban townships, distanced from business centres and industries, can possibly explain the differentials in the duration of unemployment across provinces. The most affected provinces were Eastern Cape and Limpopo (Transkei, Ciskei and Venda). Identifying the role of provincial differentials in the duration of unemployment, would have significant implications for policy.

5.3.7 Household Size

Research question: *To what extent does the household size influence the duration of*

unemployment?

Hypothesis 7: *The bigger the household size the longer the average duration of*

unemployment.

Household size was measured by the number of members within a household (Feleke *et al*., 2005). Empirical and theoretical justifications of the factors determining unemployment duration have been studied extensively in the economics literature. However only a few of these studies have integrated the household characteristics into these factors. This thesis aimed at contributing to this research gap by analysing the effect of household size on the duration of unemployment over the period 2011-2016. This has been an aspect where the study could be given credit for having made contributions to improving the existing stock of knowledge by demonstrating that the size of the household possibly influences the duration of unemployment. This has been left aside for many years in the study of labour market. The above mentioned hypothesis was tested and confirmed by the results of ANOVA test and two-level modelling which showed a significant relationship between the average duration of unemployment and household size.

The prevalence of high unemployment rate in South Africa has made it more difficult to keep a smaller household size. As the rate of unemployment has increased, more and more unemployed individuals have attached themselves to the household as their safety net. Pirouz (2005) found a decline in household size from 1995 to 2002 and argued that as the number of households increased in the face of rising unemployment and labour force participation rates, a larger proportion of individuals in any labour market state would head their own household. Nevertheless, empirical evidence from the Labour Force Survey data used in this study established an upward trend in the increase of household size between 2011 and 2016 (thus the period under study). The study categorized household size into three groups: below average household size (household members less than five), average household size (household members between 5 and 7) and above average household size (at least 8 household members).

The existing study projected that bigger household size would tend to go with longer unemployment, using the argument that an individual living in a large household size is likely to accept a job offer readily available regardless of the wage due to the burden of large household size, and thus would exit from unemployment sooner. The existence of such a burden was deduced from the findings of previous studies that bigger household are headed by pensioners (Case and Deaton, 1998; Klasen and Woolard, 2000). This indicates that with the already limited or inadequate pension money being shared among the members of the large household members, will push the unemployed to accept any job offer regardless of the wage, in order to make their contributions. It has been suggested that larger household are associated with poverty most especially in the rural communities (Klasen and Woolard, 2002). Klasen and Woolard (2009) viewed this issue from a different perspective. They argued that these households headed by pensioners are largely located in the rural areas so

that individuals attaching themselves to such households would have the effect of reducing their chances of landing on a job. However, linking this suggestion to the insights drawn from the sustainable livelihood framework and the cost of searching for a job, one might disagree with the assertion that unemployed individuals who attach themselves to households highly vulnerable to poverty are likely to suffer few unemployment durations (see De Cock, 2012; Olagunji *et al*., 2012). On the other hand theoretical models of job search postulate that unemployment benefits lower the costs of search thereby raising individual reservation wages and the duration of unemployment. Following all these debates and claims, the study hypothesized that unemployed individuals living in a household occupied by a larger number of members are likely to exhibit longer durations of unemployment.

To shed light on the differentials in the unemployment duration with regard to the influence of the household size, the study not only looked at the percentage share and the average duration of unemployment, but went further to do predictive analysis utilising two level modelling. The preliminary stage of the analysis showed that the size of the household played a critical role in the unemployed member's length of time they stayed unemployed. Empirically, a larger household size was found to be associated with longer duration of unemployment. The findings from this study then concur with the argument that individuals living in larger households are likely to suffer more from long unemployment spells than are those living in smaller households. This may be said to be related to the insights drawn from the sustainable livelihood framework, whereby, a larger household is more susceptible to poverty and has limited economic resources, which is an obstacle to finding a job.

Putting all the views of earlier researchers together and the empirical outcomes of this thesis with regard to the impact of household size on the duration of unemployment, the study, therefore, rejected the null hypothesis that the mean duration of unemployment remains the

same irrespective of the number of household members. This supported the argument by Sher Verick (2012) who postulated that a larger household is associated with a lower probability of employment and a higher likelihood of joblessness. In line with most theoretical and empirical work, this study agreed to accept that there exists disparity in the duration of unemployment across different household sizes.

5.3.8 Number of people who are working in the household

Research question: To what extent does the number of people who are working in the household impact on the duration of unemployment?

Hypothesis 8: The larger the number of people who are working in the household the longer the unemployed individuals are likely to stay unemployed.

This discussion is based on the relationship between the average duration of unemployment and the status of the household, looking at whether well-endowed households were more vulnerable to longer unemployment spell. The results of the ANOVA and the Two-level modelling confirmed the hypothesis that there was a significance difference in the duration of unemployment with regard to the number of people working in the household. This study then provided an empirical contribution to the theories of labour market discriminations, job search and human capital in explaining the longer unemployment duration affecting individuals living in well-endowed households. Although this findings came to the fore, one must be careful not to define the economic position of the household according to the number of working people in the household.

The duration of unemployment depends on many factors. To discuss this issue in an orderly manner, it is useful to look at Mortensen's (1986) fundamental framework for examining individuals' job search activities. Firstly, an unemployed individual has to wait for some time

before coming into contact with a job opportunity. Secondly, after applying for that job, it takes time for the employer to offer him/her the job. And lastly, the individual has his/her own prerogative to evaluate whether the wage offered is within his/her wage reservation before accepting the proposed job. With this framework in mind, job seekers who, on average, wait long before gaining contact with employers and who have few chances to transform their contacts into matching offers, should experience longer unemployment spells. However, drawing some insights from this framework and connecting it to the sustainable livelihood framework, the study proposed that unemployed individuals living in a well-endowed households where they have access to financial support are likely to experience longer duration of unemployment.

The study looked at this issue from the perspective of the number of people who are working in the household to provide financial support for the unemployed individual for their livelihood. This might influence their decision whether to accept a job offer or to continue searching for a well-paid job. As a proxy for household income (the total monthly income of households from all sources) this study used the number of working people in the household, since the LFS data did not capture the income of the participant. A household was considered less endowed if there was one or no working person in that household. The assumption here was that less endowed households are more prone to poverty than households with more working people. As mentioned by Amaza *et al*., (2009), the larger the number of unemployed individuals in a household the greater the likelihood of food insecurity. However, in this vein, the debate around household status in relation to unemployment has been a hard nut for scholars to crack.

Many researchers have expressed different views on this issue depending on the outcomes of their empirical research results. To mention but a few: Cahuc and Zylberberg (2004) noted

that an increase in the benefit of a household income for an unemployed individual, tends to increase the duration of unemployment because it increases the job seeker's reservation wage. This condition is expected to exist since these households have better-quality prospects to sustain active lifestyles for their members. On the other hand, Serneels (2008) used parametric and non-parametric estimation methods to determine the probability of leaving unemployment in urban Ethiopia. The results showed that the unemployed from affluent households stayed unemployed for longer. They argued that as this support is limited in time, the unemployed will be more enthusiastic about finding a job by lowering their reservation wages as the expiry date approaches.

Empirically, Sasaki, Kohara and Machikita (2013) found a positive relationship between reservation wage and the average length of an unemployment spell. However, substantial evidence has been presented that the unemployed discard very few job offers (Jones, 1989; van der Berg, 1990; Erens and Hedges, 1990). Other researchers held the view that the cost of searching for a job creates an obstacle to labour market entry (Ardington *et al*, 2013; Burns *et al*, 2013; Woolard, 2013). This presupposes that individuals who are living in the less endowed household are likely to exhibit longer unemployment spell since the cost of searching for a job will be an impediment.

One of the findings of Nickell (1979), using an econometric technique to estimate the conditional probability of a person exiting unemployment, was that of a negative relationship between the duration of unemployment and total household income. Nickell argued that beside the unemployment insurance benefits, household income also influences the reservation wage of unemployed individuals living in the household. On the same note, the work of Leibbrandt and co-workers (2000), showed that in South Africa, households crowded with unemployed members were living below the poverty line. They further suggested that

abject poverty was likely to be found in the growing number of households in which there were considerable numbers of jobless and no employed person.

More so, studying the trends in South African income distribution and poverty since the fall of apartheid, Leibbrandt and co-workers, (2010), noted that notwithstanding the strong all-inclusive economic growth the country enjoyed after the collapse of apartheid, poverty alleviation was still a challenge due to the fact that the growth had not pulled individuals from poor households into employment. Their findings showed that households without any worker had increased by 3% in the last 15 years, so increasing the number of households depending on social grants for their livelihood.

It is interesting to note Shockingly, Samson and co-workers (2001) used the 1999 October Household Survey data to show that 15,2 million people in South Africa, lived in households with no access to formal sector employment, and 10,3 million in households with only jobless members. Gaining some insight from all these arguments and suggestions put across by the various researchers, this study took the view of the sustainable livelihood framework with regard to household vulnerability context and hypothesised that unemployed individuals living in the less endowed household are likely to exhibit shorter durations of unemployment. For most of the unemployed, the only convincing work prospects take the form of survivalist activities in the informal sector (Leibbrandt and co-workers, 2000).

Analysing human behaviour is very complex and unpredictable. To add the researcher's voice to this robust debate, anecdotally based on my personal experience in Technical Vocational Education and Training (TVET) colleges with regard to the government support given to under privileged students for their transportation to and from college. I noted that drop-out, absenteeism and failure rate appeared to affect a greater proportion of the beneficiaries of the transportation funds. This would appear to support the argument that a

well-endowed household giving adequate support to unemployed members would be a hindrance to escaping long-term unemployment duration. Support of the household is primarily intended to assist the unemployed individuals to ease immediate suffering and to cover the cost of job search. In the long run this may be self-defeating by weakening the motivation to job search, stimulating laziness, and encouraging dependency on the household. As a result, it will prolong the duration of unemployment.

Another plausible explanation can be drawn from insights gained from the sustainable livelihood strategy which considers one of the household assets to be human and social capital. Essentially, the social network plays a tangential role by giving first-hand information on job opportunities to the unemployed, besides other platforms such as the internet and the media to mention but a few. It is more appealing for someone without a job to experience a shorter unemployment spell if he or she can attach to household that provides a sustainable livelihood, because this would also provide access to household capital to intensify the job search, and connect to a wider range of social networks through the members of the household who are working in key positions. The unemployed would then be informed about employment opportunities. This reasoning is in line with Machin and Manning, (1999) who posited that workers are unlikely to recommend worker they do not know for a job. This is in turn linked to discrimination in the labour market participation (nepotism and favouritism are difficult to uproot).

Granovetter (1974) and Kanter (1977) have long argued that social networks are important for getting a job. This is also in line with the findings of O'Regan and Quigly (1993) that employed adults had more to draw upon for employment information (thus gaining inside information about jobs). This issue is open for further research. Overall, the study took the view that although households occupied by many employed members will share and link the

unemployed members to a wider range of job openings through their social contacts, it will also limit the unemployed in exploring other avenues and as a result prolong the duration of unemployment.

5.3.9 Gender of the household headship

Research question: To what extent does the gender of the household head affect the duration of unemployment?

Hypothesis 9: The individuals living in a household headed by a female are likely to display longer duration of unemployment than in households headed by a male.

This discussion is based on the relationship between the average duration of unemployment and gender of the household head, looking at whether women-headed households are more vulnerable to longer unemployment spells. The results of the ANOVA and the Two-level modelling confirmed the hypothesis that there was a significant difference in the duration of unemployment with regard to gender of the household head. This study then provided an empirical contribution to the theories of labour market discriminations and job search in explaining the longer unemployment duration affecting individuals living in woman-headed households.

One of the supporting mechanisms for unemployed workers is unemployment insurance. Unemployment insurance systems provide financial support to unemployed job seekers, but only to those who have been contributors to the scheme. The amount of money paid to beneficiaries is normally determined by their previous income. Much research has shown that this safety net is associated with longer duration of unemployment. It is interesting to note that about 99% of participants in the Labour Force Survey responded they were not benefiting from the UIF.

Leibbrandt and co-workers (2010) noted that although the UIF clearly has a significant role to play in providing replacement income to the short-term unemployed who have work experience, the large majority of the unemployed fall outside of this system. After the expiration of the unemployment benefit, the household usually becomes the financier to the unemployed. Bearing that in mind, the study sought to account for the impact of the gender of the household headship on the duration of unemployment.

Leibbrandt *et al*. (2010) mentioned that South Africa had the highest prevalence of income inequality and this has persisted into the post-apartheid era. Van der Berg (2010) added that there was an unequal distribution of resources and opportunities in the country. Numerous studies have debated whether female-headed households are more susceptible to poverty than households headed by males (see De Cock, 2012; Olagunji *et al*., 2012). Franye *et al*., (2009) argued that in South Africa, households headed by a female were more vulnerable to food insecurity. Poor households are unable to consume sufficient food since they are generally unemployed, have low income and insufficient social transfer mechanisms (European Union, 2012). This is in line with the sustainable livelihood framework. It means that unemployed individuals living in households with higher vulnerability context are more likely to suffer very long unemployment spells.

An insight drawn from the sustainable livelihood framework attests that households headed by women are more vulnerable than household headed by men. Linking this argument to the findings of the Employment Outlook (2016) on gender gaps in emerging economies, which showed that on average, median earnings of women in South Africa were 29% lower than those of men. This showed that discrimination against women in the labour market still exists. With this discrimination in mind, the argument proposed by this study, added its voice to the debates around the issue of very long unemployment spells for unemployed individuals

attached to female-headed households. The findings of this study showed a consistent trend over the six year period under observation that the proportion of unemployed individuals living in female-headed households was greater than of those living in male-headed households. The average duration of unemployment followed a similar pattern.

On the contrary, Udall and Sinclair (1982) put it forward that reservation wages fall with time in unemployment, most especially for those aspiring for a job in the primary segment. This implies that the unemployed who live in well-endowed (male-headed?) households with less vulnerability, will be more willing to accept any job and in turn shorten their duration of unemployment. On the other hand, it should be highlighted that unemployed individuals who are living in a household that are more susceptible to poverty will be forced to accept any job in any sector of the economy. And this will also shorten the duration of unemployment.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1   Introduction

The main aim of this study was to examine the differential in the duration of unemployment across households in South Africa, making use of two level modelling. In other words, the study examined the impacts of the socio-demographic characteristics of unemployed workers as well as of the household moderating variables, on the duration of unemployment in South Africa. To keep the study within manageable proportions for robust analysis, three household moderating variables were considered. These variables summarised the potential household variables that can influence the duration of unemployment.

This outlined theoretical reasoning from four mainstream labour market theories with special reference to unemployment or its duration. The study was guided by nine research questions. To answer these research questions, a detailed review of potential empirical and theoretical literature was done and all potential predictors of duration of unemployment were identified. A quantitative model was developed to predict the duration of unemployment in relations to the personal and the household variables. This model and other statistic were used to test the stated hypotheses. The study proposed nine hypotheses and all were tested and confirmed. This chapter concluded with a discussion of the implication for policy and new research.

The findings confirmed that the duration of unemployment was strongly associated with both the unemployed workers socio-demographic characteristics and the household moderating variables. The socio-demographic variables used were gender, age, level of education and race. Other variables such as previous work experience and geographical locations were explored in order to find reasons for the existence of differentials in the duration of unemployment. The household moderating variables were household size, number of

working members in the household and the gender of the household headship. Recognizing the impact of the social-demographic characteristics and the household moderating variables on the duration of unemployment would have significant implications for policy. If the duration of unemployment is indeed predominantly attributable to the observed characteristics of the unemployed worker and the household variables, labour market policies should be directed at changing those characteristics in order to bring about substantial effects.

The period under observation was 2011 to 2016, using the data set concerning individual unemployment duration obtained from the Labour Force Survey produced by Statistics South Africa. Analyses were carried out based on the narrow definition of unemployment that considers those unemployed individuals who are actively seeking for jobs. Averages were used to describe the study data. Comparisons were made to verify differences and similarities over the period 2011 to 2016 dataset. The study also made use of ANOVA and t-test to ascertain whether there are statistically significant difference among the stated groups over the period under investigation.
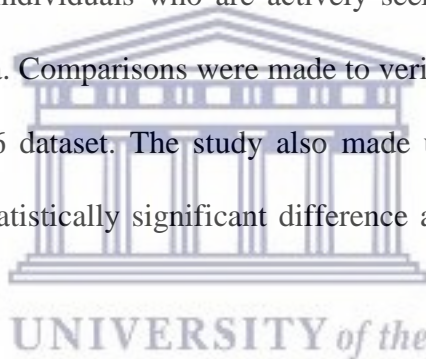
Since the collapse of the apartheid regime, South Africa has witnessed the acceleration of its already high unemployment rate. Even though a significant objective of economic and social policy has been to greatly reduce unemployment on a sustainable basis is, the rate at which unemployment is increasing is becoming preposterous. One of the aspects of this is the long duration of unemployment, which has been little regarded in the South African unemployment literature. In this context, it is important to comprehend the forces which have the tendency to shape the structure of unemployment duration and its underlying forces in order to appropriately design labour market policy. Nevertheless, responding to the need to promote effective changes in the South Africa labour market, which involves huge numbers of unemployed workers, the ANC led government has implemented numerous policies in the

last two decades. To mention but a few, the Reconstruction and Development Programme (RDP) policy was adopted to address the issues of unemployment, poverty and inequality (Van der Berg, 2006); expressing a strong desire to grow the economy, the Growth, Employment and Redistribution (GEAR) strategy was adopted and this led to the implementation of the Accelerated and Shared Growth Initiative of South Africa (ASGISA) in 2006 with the target of reaching an annual growth rate of 6% and halving unemployment and poverty by 2010 (Department of Basic Education, 2012).

There is no agreeable data on unemployment duration in South Africa. What is available is the duration of uncompleted spells of unemployment of those who are at the moment unemployed. Unfortunately there is no panel data available on labour force participants in South Africa. Uncompleted spells are exploratory but they can be used to estimate the duration of unemployment. The data is in categorical form rather than continuous form, with the categories not logically distributed and the questions asked only for the strictly unemployed. If unemployment statistics are to be used efficiently and effectively for policy purposes, the deficiencies of the data and the methodological approach should be reconsidered. This can only be done in collaboration with Statistics South Africa, various policy makers and independent researchers.

Notwithstanding data deficiencies, it was important to examine unemployment duration with the available data for the unemployed who were actively searching for a job. This study was among the first in South Africa to explore the differentials in the duration of unemployment across households using micro data, while upholding the capability to expound the observed trends in the duration with regard to the individual social-demographic characteristics and the household moderating variables over the period 2011-2016. The findings added value to the existing literature. It is evidently clear that in South Africa, the persistent high rate of

unemployment can be explained, among all other factors, by the long duration of unemployment. When policies are being formulated to reduce the unemployment rate, the duration of unemployment must be one of a prime consideration. After thorough exploration of the data sets and in line with the research questions, the study arrived at the following results.

Firstly, the study showed that there are differentials in the duration of unemployment across genders. Although, there has been economic development since the collapse of the apartheid system, discrimination against the most vulnerable in South Africa and employment inequalities against women, are still an unsettled problem (Kingdon and Knight, 2005; Rospabe, 2002). One of the principal findings was that the likelihood of women experiencing longer unemployment spell was substantially higher than for men. Making use of the LFS data, the findings of this study confirmed the hypothesis that the average duration of unemployment was longer for women than men. Also, the proportion of women experiencing longer unemployment spells was greater than for men.

Secondly, education was found in this study to be one of the key determinants of unemployment duration. It was clear from the findings that the more highly educated an unemployed individual was, the less likely their length of stay in unemployment. This was presumably because unemployed individuals with higher education are more likely to be mobile and have a broader range of job search possibilities, thus decreasing their unemployment duration (Bogale and Shimelis, 2009; Tasci and Tansel, 2004).

Thirdly, the study also found age to play a critical role in influencing an individual length of stay in unemployment. In the African situation, cultural values and family ties may permit the young adult to attach to the household for financial support for longer periods of times while looking for a job (Klasen and Woolard, 2009). This will supposedly prolong their

unemployment spell. On the contrary, the empirical evidence emanating from this study revealed that although both the young and the older unemployed adult fell back on the household for economic support, the young adults had shorter unemployment duration than did older adults. In other words adult age groups exhibited longer unemployment duration than younger age groups. Also the proportion of adult age groups displaying longer unemployment duration was higher than the proportion of young unemployed workers. This implies that older unemployed individuals are at a disadvantage in South Africa's rapidly restructuring economy in this post-apartheid era. This confirmed the International Labour Organization (ILO, 2015) findings that in the period between 2004 and 2014, there has been a substantial worldwide decrease in the proportion of unemployed youth from 41.5% to 36.7%. One reason for this finding could be that unemployed youths may be more exposed to lower paying jobs than are the middle and the older workers. It may also be that young people are more likely to take temporary jobs than older people (ILO, 2004). On the contrary, the estimated coefficient from the two level modelling indicated that successive increases of unemployed youth in a household would increase the duration of unemployment more than for middle and older age population groups.

Fourthly, this study revealed that an unemployed individual's previous work history was also a determining factor of the duration of unemployment. It was shown that unemployed individuals with previous work experiences had a shorter unemployment spell than new job seekers. This supports the argument raised by Isobel (2006) that the ever increasing rate of unemployment faced by South Africa is because most of the unemployed individuals have never worked before. The lack of readily available jobs while the few existing ones demand certain levels of skill, poses a huge challenge for first time job seekers to meet employers' requirements, and this keeps new entrants into the labour market waiting for a longer period of time before securing a job. In other words, first time job seekers under the current high rate

of unemployment find it difficult to land a job, due to their lack of work experience as demanded by employers. Although, the empirical evidence showed that previous work experience plays a pivotal role in exiting unemployment, it is interesting to note that the longer an individual is unemployed, the tougher it becomes to find a job due to skills deteriorating (Becker, 1964; Mincer, 1974). This suggests that government should invest more in effective workforce training programmes to improve the unemployed future job prospects and also to prevent skills deterioration. With this in mind, it is recommended that the public works programme initiative should focus more on skills development rather than giving temporary employment to the unemployed to ease their financial burdens.

Fifthly, this study also revealed disparities in unemployment duration across the provinces; with the most affected province also having the longest duration of unemployment, being Gauteng, Eastern Cape and North-West provinces. Understanding the differentials in the unemployment duration across the provinces in South Africa may bring new outlooks for policy makers and also help to alleviate the burgeoning unemployment rate, which has been a major threat to economic growth and development. Arguably, unemployed workers living in provinces that are endowed with natural resources and concentrated industries are likely to exhibit longer unemployment spell. The explanation being that these provinces attract more workers (Collier, 2003). By implication, all things being equal, the influx of the workforce into these provinces may compel employers to lower their wage offers due to the forces of demand and supply of labour. This in effect will lower the job acceptance rate.

Turning to the differentials of unemployment duration across the population groups, it was evident that the non-white population group, especially Blacks, suffered from longer duration of unemployment than did the White population group. This reflected the increasing labour force participation by the non-white population groups following the collapse of the apartheid

segregation laws and the opening of equal opportunities for everyone participating in the labour market (Kingdon and Knight, 2006; Abhijit and co-workers, 2007). Though post-apartheid policies have sought to bring about equal opportunities for labour market participation, it seems that discrimination in the labour market still exists. The study identified a remarkably higher proportion of long-term unemployment duration among the non-whites population groups than among the Whites. This may be a legacy of apartheid era spatial separation where a many Blacks grew up far from the business and industry centres and far from access to quality education. Another factor contributing to disparities in the duration of employment across the population groups might be lower skills and education of the unemployed workers, which the apartheid regime denied to the non-white majority (Verick, 2009).

Central to the high unemployment rate faced by South Africans is the failures of the education system to equip unemployed workers with the necessary skills required for available jobs (Moleke, 2003). This is greatly felt in the non-white population groups. In 2016, 58% of the black African and 57% of the Coloured labour forces had not achieved matric (Stats SA, 2017). The Department of Basic Education, 2016/17 performance plan reported identified poor quality education among black children, high dropout rate and poor teaching due to the untimely appointment of personnel at different levels.

Long term unemployment is positively correlated to crime, suicide and stress (Fougere *et al.*, 2009; Gould *et al.* 2002). The long term unemployment spells experienced predominantly among the non-white population groups are surely a factor in the frequent social protests over housing and service delivery and in the high crime statistics recorded in the non-white communities. The dominance of Blacks in long term unemployment may also be attributed to the post-apartheid school enrolment policies. Over-aged students were encourage to enrol in

adult education and training with the aim of participating in the labour market. However according to Asmal (2003) this training was given without considering the relevant skills needed by employers.

Social networks are one of the valuable household assets that aid in creating job opportunities. The long durations of unemployment experienced by the majority in the non-white population groups can be associated with their weaker social networks emanating from apartheid era racial segregation with its poor education, lack of skills and poor residential areas distant from industrial areas that non-white groups were forced to occupy. This supports the argument raised by Gobillon and Selod (2011) that communities far from industries and business centres will suffer longer unemployment duration due to the cost involved in the job search. It is most significant that Blacks lived in impoverish communities not only far from business centres but also prone to crime and poverty (Woolard *et al*., 2013). Another plausible factor contributing to the wide gap in the duration of unemployment between the White population group and the other groups is the housing problem. The segregation policies during the apartheid era created opportunities for the White population group to own houses closer to business and industrial areas. The cost of renting in these areas is exorbitant and it is very difficult to rent while looking for a job. The cost of travelling long distance further impedes job search and as a result prolongs the duration of unemployment among the non-white unemployed individuals.

Although, there is a paucity of evidence to explain why black Africans experience longer durations of unemployment instead of seizing the wide range of opportunities created by the post-apartheid government under the BEE policy to become self-employed, this study partially concedes the views of Kingdon and Knight (2006) that restrictive legislations under the apartheid regime inhibited the development of black South Africans' entrepreneurial and

social skills and social networks. Indeed, the longer unemployment spells found among the non-white population groups need to be probed further. In this regard, the study explored further the household moderator variables to evaluate their impacts on the duration of unemployment.

Merely studying the effects of the individual's characteristics on the duration of unemployment will not give enough insight into the differentials of longer unemployment spells. These individuals live in households having different characteristics. The different observed household's variables will naturally impact differently on their members' duration of unemployment. Bearing this in mind, and in conjunction with the insights drawn from the sustainable livelihood framework, the study took into consideration household variables of household size, the number of members gainfully employed and the gender of the household headship. An understanding of the differentials in unemployment duration across households in South Africa may bring new outlooks for policy makers and so help to alleviate the burgeoning unemployment rate which is a major threat to economic growth and development. The study found unemployed workers living in households headed by a female, larger household size and less endowed households (households where no one or few people are in gainful employment) were more vulnerable to longer unemployment spells.

The empirical evidence presented in this thesis produced a number of insights into the dynamics of the persistent increase in unemployment in South Africa. First, it confirmed that the rising unemployment rate might be explained by the length of time that unemployed individuals stay looking for a job. Second, the duration of unemployment varies with respect to the unemployed socio-demographic characteristics. And finally, the thesis provides evidence that household moderator variables are determinants of the differentials in the

duration of unemployment. Identifying these driving forces which have been one of the causes of South Africa's rising unemployment can provide valuable policy insight.

This study corroborated many of the views in the growing literature about the differentials in the duration of unemployment arising from individual characteristics, but little has been done on the impact of household moderator variables on the duration of unemployment. Beyond the individual characteristics, this thesis also demonstrated that the duration of unemployment is also influenced by the household moderator variables where these unemployed workers attach themselves for their livelihood.

In conclusion, the increasing unemployment rate over the period 2011-2016 and the corresponding increasing pattern in the duration of unemployment show that improvement in the economic growth does not necessarily guarantee a reduction in unemployment, poverty and inequality. This could be possible if the public and private sector employment policies would focus on improving skill levels in line with the rapid structural changes in the labour market due to technological advances.
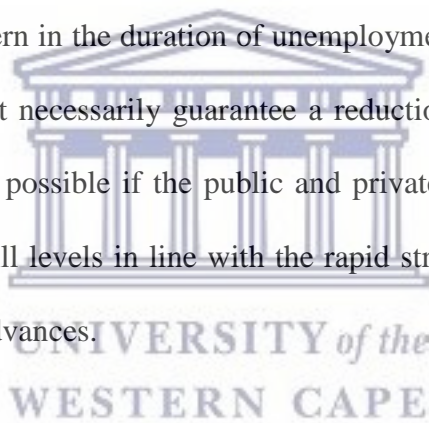
6.2 Recommendations

The results of the current study have public policy implications for alleviating unemployment, poverty and inequality and improving job creation for those who are more vulnerable to experiencing longer spells of unemployment. First, unemployment duration is evidently connected to both individual characteristics and to the type of household the individuals attached themselves for their livelihood. However, the recommendations made by this study may be just the tip of the proverbial iceberg. Numerous factors need to be considered in policy and in practical efforts to alleviate unemployment amongst the most vulnerable.

It is interesting to note that the sprouting of a very new and vibrant political party in form of the Economic Freedom Front and their political agenda, has won the heart of many young people. It is a reflection of discontent amongst youth with an economic policy which has not created enough jobs to absorb the vast majority of them. The study recommends that macro-economic policies should be geared towards job creation not only increasing economic growth.

As part of the solution to the high rate of unemployment and correspondingly longer unemployment spells in the country, job creation policies should target the most vulnerable households as well as targeting individuals. While it is good to empower individuals and equip them with the necessary entrepreneurial skills to be self-employed and also readily available for any job opportunities and while creating a job for an individual will also help reduce poverty at the household level, creating a job for the households will go a long way towards reducing the unemployment problem in the community alongside crime and poverty. Based on the findings, the study, therefore, suggests that:

1. Government should strengthen the affirmative action and enforce policies prohibiting against racism in the labour market. This will enhance the non-white access to the labour market.

2. If industrial activities are centralized at one province, there will be less employment opportunities in the under developed provinces. In this case, government should adopt such policies which encourage decentralization of industrial activity.

3. Adult unemployed should be encourage to re-skill themselves through education and training to improve their competency to secure jobs available in the market.

4. Government should encourage support programs for entrepreneurship training and financing opportunities and ensuring that priority is given to women to increase their employment opportunities.

5. Government should support intervention programs that provide practical work experience to first time job seekers.

6.2.1 Implications for employment policy
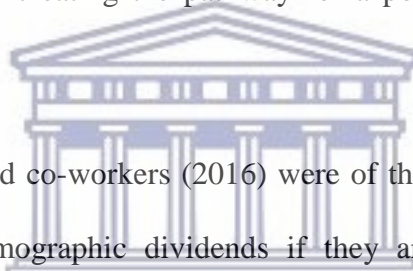
It is worrying to observe the rate at which the population is growing, while not enough jobs are being created to support the increasing number of working-age population. The issue of job creation to match the growing working-age population has been a major concern and debate documented in the employment literature. (See, Kingdon and Knight, 2007; Biyase and Bonga-Bonga, 2010). It is of paramount importance to speed up the pace of job creation to keep up with the growing working-age population by maintaining a high level of economic growth.

Putting this issue in its right perspective, one will agree with the statement made by the Statistician General (P.J. Lehohla) in his keynote address at the 2018 International Population Conference (IPC) held in Cape Town that South Africa is not ready to adopt the concept of demographic dividend; alluding to the fact that the youth level of skills and education is very low.

There must be a positive correlation between demographic transition and economic growth rate in order to have a successful demographic dividend. Studying the trend of GDP growth rate between 2005 and 2016 one will concur that the country is not ready. Thus, the South Africa's annual real GDP growth rate was 5.3% in 2005 and 5.6% in 2006. After the global economic recession, the economy has been struggling to recover from the shock. The annual

growth after the recession was 3% in 2010, substantially decreasing to 0.3% in 2016 (Stats SA, 2017).

Although this is true, in the natural setting there is an indication that the demographic transition of South Africa is naturally heading toward the framework of the concept of demographic dividends, where the working-age group especially the youths constitute the greatest share of the population. Adopting the family planning system to reduce fertility and the reduction of mortality through improved medical and health system is a sign. For instance, from 1960 to 2017, South Africa has experienced a decline in the fertility rate from 6.1 births per woman to 2.4 births. The working-age ratio has seen an increase from 57% in 1990 to 65% in 2017 thereby creating the pathway for a potential demographic dividend. (Stats SA, 2017).

In the light of this, Ahmed and co-workers (2016) were of the view that countries can reap the maximum benefit of demographic dividends if they are able to succeed in policy outcomes with regard to education, job-creation, economic growth and increasing productivity and investment. South Africa will indeed be on the right path to reap the benefits of demographic dividends if what is stipulated in the 2010 National Growth Plan is achieved; that by 2020 five million new job opportunities will be created with an annual economic sustainable growth rate between six and seven percent (NGP, 2010). A demographic dividend is not an approach to economic growth. Rather, it is the added economic growth connected with a demographic transition, so long as the economy is adequately strong to support low unemployment and that suitable socioeconomic conditions are in place, such as quality education which enables the growing number of working-age people to acquire the skills required by employers (Stats SA, 2017)

In support of this, the study recommends that labour and economic policies should be flexible and well defined in order to attract more foreign direct investment and as well as boosting the local industries to reach their full potential and productivity. Corruption is one of the obstacles to achieving macroeconomic policies and eradicating it would boost both local and foreign investors' confidence to invest in the economy, which in the short and long runs would create more job opportunities. The government should also ensure quality, affordable education and training to enable the growing working-age people to have the required skills needed by employers. Drummond and co-workers (2014) noted that one of the key components for the benefit of demographic dividends is Investment in human capital. The OECD (2017) findings showed that the biggest challenge faced by South Africa is skills mismatch and poor quality education.

6.2.2 Implications for new research direction

Another point to consider is the methodological approach to the capturing of employment and unemployment data. For future research, it would be appropriate to capture data on the stock flow of unemployment. This would enable us to better understand the relationships behind the high rate of unemployment currently revolving around 27%. It is of paramount importance to know at every point in time the number of people entering unemployment, the existing number who are unemployed and the number of the unemployed exiting from unemployment to employment or giving up their job search (voluntary unemployment). Another important factor expected to influence the duration of unemployment is the individual's location in terms of rural or urban. Unfortunately, this was not captured in the LFS data. However, having more and comprehensive data on the stock-flow of unemployment and rural-urban differences would open the path for substantial policies to rescue the country from the ever increasing rate of unemployment.

The survey data also did not provide information on migration which could have been a good indicator to measure unemployment duration. Studying the inter-provincial mobility of labour could bring more insight into differentials in duration of unemployment across provinces. This would enable us to identify the provinces that are performing well and so are more attractive to immigrants.

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Appendices

Appendix A

hypotheses testing

Hypotheses	Statistic	Sig. (0.05)	Confirmation
1. The lower the level of education the longer the unemployment duration	ANOVA Two-level modelling	Sig. Sig.	Yes Yes
2. Women have longer unemployment duration than men.	t-test Two-level modelling	Sig. Sig.	Yes Yes
3. The adult age group (30-64 years) has longer unemployment duration than the youth age group (15-29 years).	ANOVA Two-level modelling	Sig. Sig.	Yes Yes
4. There is shorter unemployment duration among Whites than the non-White racial groups	ANOVA Two-level modelling	Sig. Sig.	Yes Yes
5. Unemployed individuals without previous work experience would display longer unemployment duration than those with previous work experience.	t-test	Sig.	Yes
6. The province with the highest unemployment rate also has the highest average unemployment duration.	ANOVA	Sig. Sig.	Yes Sig.Yes
7. The bigger the household size, the longer the average duration of unemployment.	ANOVA Two-level modelling	Sig.	Yes Yes
8. The bigger the number of people who are working in the household the longer the unemployed individuals are likely to stay unemployed.	ANOVA Two-level modelling	Sig. Sig.	Yes Yes
9. Individuals living in a household headed by a female stay longer unemployed than household headed by a male.	t-test Two-level modelling	Sig. Sig.	Yes Yes

Appendix B

SPSS output for the Two-level modelling
Part one
Empty model (LRT=likelihood ratio test) PART 1

Year	-2 Log Likelihood (NULL MODEL)	-2 Log Likelihood (SINGLE NULL MODEL)	Likelihood ratio (LR)
2011	5.897E4	5.919E4	22
2012	6.374E4	6.392E4	18
2013	6.611E4	6.632E4	21
2014	6.211E4	6.233E4	22
2015	6.435E4	6.450E4	15
2016	6.103E4	6.126E4	23

Estimates of Fixed Effects[a]

year	Estimate (intercept)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
2011	3.089702E1	.296298	4.881E3	104.277	.000	30.316143	31.477898
2012	3.152472E1	.286518	5.252E3	110.027	.000	30.963026	32.086414
2013	3.013955E1	.28279z9	5.314E3	106.576	.000	29.585146	30.693952
2014	3.050950E1	.292650	4.995E3	104.252	.000	29.935781	31.083226
2015	2.958035E1	.288172	5.151E3	102.648	.000	29.015410	30.145289
2016	3.089785E1	.301717	4.959E3	102.407	.000	30.306351	31.489347

RANDOM SLOPE BY GENDER (LRT=likelihood ratio test) PART 2

Year	-2 Log Likelihood (NULL MODEL)	-2 Log Likelihood (Random slope model)	Likelihood ratio (LR)
2011	5.892E4	5.893E4	10
2012	6.369E4	6.370E4	10
2013	6.605E4	6.606E4	10
2014	6.204E4	6.205E4	10
2015	6.428E4	6.430E4	20
2016	6.096E4	6.099E4	30

Explanatory variable by gender: fixed effect (RANDOM INTERCEPT MODEL)

Year	Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
2011	Intercept	2.911631E1	.406648	6.357E3	71.601	.000	28.319141	29.913475
	Female	3.395817E0	.533134	6.036E3	6.370	.000	2.350685	4.440949
	Male	0[a]	0	.	.	.	.	.
2012	Intercept	2.960985E1	.393427	6.790E3	75.261	.000	28.838613	30.381092

| | | | | | | | 95% Confidence Interval | |
		Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
	Female	3.705341E0	.524064	6.644E3	7.070	.000	2.678006	4.732676
	Male	0ᵃ	0	.	.	.	.	.
2013	Intercept	2.814957E1	.384146	7.003E3	73.278	.000	27.396531	28.902616
	Female	3.887455E0	.510251	6.818E3	7.619	.000	2.887203	4.887707
	Male	0ᵃ	0	.	.	.	.	.
2014	Intercept	2.814402E1	.397780	6.616E3	70.753	.000	27.364249	28.923801
	Female	4.572969E0	.524530	6.368E3	8.718	.000	3.544713	5.601226
	Male	0ᵃ	0	.	.	.	.	.
2015	Intercept	2.725399E1	.397188	6.769E3	68.617	.000	26.475381	28.032606
	Female	4.472157E0	.528638	6.764E3	8.460	.000	3.435859	5.508454
	Male	0ᵃ	0	.	.	.	.	.
2016	Intercept	2.856467E1	.410285	6.480E3	69.622	.000	27.760374	29.368960
	Female	4.511667E0	.540871	6.221E3	8.341	.000	3.451372	5.571961
	Male	0ᵃ	0	.	.	.	.	.

Explanatory variable by gender: fixed effect (RANDOM INTERCEPT AND FIXED SLOPE MODELS)

| Year | Parameter | | | | | | 95% Confidence Interval | |
		Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
2011	Intercept	2.908469E1	.414118	2.694E3	70.233	.000	28.272670	29.896711
	Female	3.414353E0	.537308	3.495E3	6.355	.000	2.360883	4.467823
	Male	0ᵃ	0	.	.	.	.	.
2012	Intercept	2.951996E1	.402942	2.883E3	73.261	.000	28.729879	30.310044
	Female	3.775310E0	.526533	3.973E3	7.170	.000	2.743010	4.807611
	Male	0ᵃ	0	.	.	.	.	.
2013	Intercept	2.807888E1	.385492	3.107E3	72.839	.000	27.323035	28.834725
	Female	3.974113E0	.517020	4.170E3	7.687	.000	2.960479	4.987747
	Male	0ᵃ	0	.	.	.	.	.
2014	Intercept	2.808345E1	.406972	2.780E3	69.006	.000	27.285450	28.881447
	Female	4.618023E0	.539293	3.652E3	8.563	.000	3.560677	5.675368
	Male	0ᵃ	0	.	.	.	.	.
2015	Intercept	2.718337E1	.400470	2.914E3	67.879	.000	26.398142	27.968606
	Female	4.529422E0	.528909	4.064E3	8.564	.000	3.492470	5.566374
	Male	0ᵃ	0	.	.	.	.	.
2016	Intercept	2.850823E1	.410562	2.812E3	69.437	.000	27.703194	29.313261
	Female	4.586348E0	.530451	3.682E3	8.646	.000	3.546341	5.626355
	Male	0ᵃ	0	.	.	.	.	.

BY GENDER and Age group   (LRT=likelihood ratio test) PART 3

Year	-2 Log Likelihood (NULL MODEL)	-2 Log Likelihood (Random slope model)	Likelihood ratio (LR)
2011	5.870E4	5.871E4	10
2012	6.352E4	6.358E4	60
2013	6.604E4	6.616E4	120
2014	6.196E4	6.197E4	10
2015	6.411E4	6.410E4	-10
2016	6.078E4	6.089E4	110

Explanatory variable by gender and age group: fixed effect (RANDOM INTERCEPT MODEL)

Year	Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
2011	Intercept	2.532286E1	1.877535	6.266E3	13.487	.000	21.642247	29.003472
	female	3.241156E0	.524106	6.003E3	6.184	.000	2.213720	4.268592
	male	0ᵃ	0	.	.	.	.	.
	Youth	8.107015E0	1.797520	6.220E3	4.510	.000	4.583255	11.630775
	Middle age	.213133	1.807975	6.234E3	.118	.000	-3.331121	3.757387
	Older age	0ᵃ	0	.	.	.	.	.
2012	Intercept	3.069825E1	.845351	6.885E3	16.635	.000	27.080792	34.315708
	female	3.649987E0	.518085	6.615E3	7.045	.000	2.634374	4.665600
	male	0ᵃ	0	.	.	.	.	.
	Youth	2.613165E0	.764752	6.848E3	1.481	.000	-.846298	6.072628
	Middle age	-4.413227E0	.771469	6.870E3	-2.491	.000	-7.885854	-.940600
	Older age	0ᵃ	0	.	.	.	.	.
2013	Intercept	3.248022E1	1.574775	7.009E3	20.625	.000	29.393181	35.567250
	Male	3.951062E0	.510437	6.815E3	7.741	.000	2.950447	4.951678
	Female	0ᵃ	0	.	.	.	.	.
	Youth	0ᵃ	0	.	.	.	.	.
	Middle age	0ᵃ	0	.	.	.	.	.
	Older age	-4.484929E0	.581605	6.929E3	-2.836	.005	-7.585360	-1.384498
2014	Intercept	2.412215E1	1.720678	6.482E3	14.019	.000	20.749051	27.495247
	female	4.549997E0	.521886	6.356E3	8.718	.000	3.526925	5.573070
	male	0ᵃ	0	.	.	.	.	.
	Youth	6.209259E0	.640240	6.425E3	3.786	.000	2.993843	9.424675
	Middle age	1.655167E0	.641494	6.420E3	1.008	.000	-1.562709	4.873043
	Older age	0ᵃ	0	.	.	.	.	.
2015	Intercept	2.209636E1	1.733507	6.714E3	12.747	.000	18.698136	25.494582
	female	4.470904E0	.522726	6.749E3	8.553	.000	3.446195	5.495612
	male	0ᵃ	0	.	.	.	.	.
	Youth	8.402692E0	1.654787	6.658E3	5.078	.000	5.158780	11.646605
	Middle age	1.622288E0	.656719	6.677E3	.979	.000	-1.625411	4.869987

Year	Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
	Older age	0ª	0	.	.	.	.	.
2016	Intercept	2.209844E1	1.675633	6.550E3	13.188	.000	18.813649	25.383225
	female	4.571996E0	.533660	6.184E3	8.567	.000	3.525836	5.618155
	male	0ª	0	.	.	.	.	.
	Youth	9.721973E0	.585520	6.494E3	6.132	.000	6.613832	12.830114
	Middle age	2.712156E0	.586378	6.494E3	1.710	.000	-.397668	5.821981
	Older age	0ª	0	.	.	.	.	.

Explanatory variable by gender and age group: fixed effect (RANDOM INTERCEPT AND FIXED SLOPE MODELS)

Year	Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
2011	Intercept	2.535390E1	2.045891	211.165	12.393	.000	21.320909	29.386884
	female	3.155985E0	.511369	5.994E3	6.172	.000	2.153517	4.158453
	male	0ª	0	.	.	.	.	.
	Youth	8.011832E0	1.966786	180.024	4.074	.000	4.130913	11.892751
	Middle age	.188455	1.983737	187.211	.095	.000	-3.724895	4.101805
	Older age	0ª	0	.	.	.	.	.
2012	Intercept	3.120925E1	1.932874	230.366	16.147	.000	27.400876	35.017619
	female	3.527889E0	.468665	8.939E3	7.528	.000	2.609199	4.446580
	male	0ª	0	.	.	.	.	.
	Youth	2.145007E0	1.869976	203.249	1.147	.000	-1.542032	5.832046
	Middle age	-4.761227E0	1.877573	205.675	-2.536	.000	-8.462985	-1.059468
	Older age	0ª	0	.	.	.	.	.
2013	Intercept	3.248926E1	1.489151	436.698	21.817	.000	29.562470	35.416059
	female	3.880158E0	.466539	9.394E3	8.317	.000	2.965640	4.794675
	male	0ª	0	.	.	.	.	.
	Youth	0ª	0	.	.	.	.	.
	Middle age	0ª	0	.	.	.	.	.
	Older age	-4.505936E0	.493366	464.289	-3.017	.000	-7.440529	-1.571344
2014	Intercept	2.411985E1	1.728242	289.309	13.956	.000	20.718331	27.521374
	female	4.429094E0	.479065	8.042E3	9.245	.000	3.490003	5.368184
	male	0ª	0	.	.	.	.	.
	Youth	6.155504E0	.661120	251.115	3.706	.000	2.884001	9.427007
	Middle age	1.728356E0	.1660010	245.226	1.041	.000	-1.541340	4.998053
	Older age	0ª	0	.	.	.	.	.
2015	Intercept	2.236929E1	1.777472	246.363	12.585	.000	18.868306	25.870265
	female	4.357117E0	.488229	8.220E3	8.924	.000	3.400066	5.314169

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		Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
	male	0ᵃ	0	.	.	.	.	.
	Youth	8.136137E0	.713107	215.521	4.749	.000	4.759548	11.512726
	Middle age	1.488195E0	.716187	214.128	.867	.000	-1.894589	4.870980
	Older age	0ᵃ	0	.	.	.	.	.
2016	Intercept	2.109124E1	1.404523	359.801	15.017	.000	18.329134	23.853346
	female	4.324049E0	.524441	322.666	8.245	.000	3.292294	5.355803
	male	0ᵃ	0	.	.	.	.	.
	Youth	1.083139E1	1.285553	383.398	8.425	.000	8.303772	13.359005
	Middle age	3.766010E0	1.285087	437.148	2.931	.004	1.240293	6.291727
	Older age	0ᵃ	0	.	.	.	.	.

BY GENDER, Age group and education (LRT=likelihood ratio test) PART 4

Year	-2 Log Likelihood (NULL MODEL)	-2 Log Likelihood (Random slope model)	Likelihood ratio (LR)
2011	5.866E4	5.882E4	160
2012	6.350E4	6.370E4	200
2013	6.599E4	6.600E4	10
2014	6.194E4	6.200E4	60
2015	6.408E4	6.431E4	230
2016	6.074E4	6.089E4	150

Explanatory variable by gender and age group and education: fixed effect (RANDOM INTERCEPT MODEL)

Year	Parameter						95% Confidence Interval	
		Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
2011	Intercept	3.992346E1	7.991576	6.476E3	4.996	.000	24.257335	55.589593
	female	3.284182E0	.523283	5.988E3	6.276	.000	2.258360	4.310005
	male	0ᵃ	0	.	.	.	.	.
	Youth	7.733059E0	1.799001	6.213E3	4.299	.000	4.206396	11.259723
	Middle Age	.124803	.0803207	6.223E3	.069	.945	-3.410104	3.659711
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	-1.367172E1	.669718	6.463E3	-3.726	.000	-20.865580	-6.477854
	Middle quali	-1.186742E1	.681632	6.464E3	-3.223	.000	-19.084635	-4.650200
	High quali	-1.612699E0	.510542	6.511E3	-.358	.000	-10.454844	7.229445
2012	Intercept	1.602726E1	.378993	5.684E3	1.709	.000	-2.359143	34.413665
	female	3.806219E0	.518505	6.605E3	7.341	.000	2.789782	4.822655
	male	0ᵃ	0	.	.	.	.	.
	Youth	2.148216E0	.1770160	6.841E3	1.214	.000	-1.321849	5.618280

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	Middle Age	- 4.601266E0	.1770162	6.862E3	-2.599	.000	-8.071331	-1.131200
	Older Age	0ª	0	.	.	.	.	.
	Low quali	3.268163E0	.483462	5.480E3	.729	.000	-5.521203	12.057528
	Middle quali	5.030428E0	.497920	5.519E3	1.118	.000	-3.787266	13.848123
	High quali	1.068846E1	.985759	6.010E3	2.144	.000	.914581	20.462332
2013	Intercept	2.604774E1	.914924	7.254E3	5.300	.000	16.413060	35.682425
	female	4.089625E0	.509281	6.805E3	8.030	.000	3.091275	5.087975
	male	0ª	0	.	.	.	.	.
	Youth	0ª	0	.	.	.	.	.
	Middle Age	0ª	0	.	.	.	.	.
	Older Age	- 4.139129E0	.601787	6.949E3	-2.584	.000	-7.279120	-.999137
	Low quali	- 2.618146E0	.0944156	7.223E3	-1.347	.000	-6.429261	1.192968
	Middle quali	.430626	.0965666	7.240E3	.219	.000	-3.422652	4.283904
	High quali	7.008118E0	.888298	7.291E3	2.426	.000	1.346218	12.670018
2014	Intercept	2.285184E1	.577375	6.541E3	4.992	.000	13.878690	31.824992
	Male	4.676649E0	.521924	6.353E3	8.960	.000	3.653502	5.699796
	Female	0ª	0	.	.	.	.	.
	Youth	6.031963E0	.665042	6.458E3	3.623	.000	2.767928	9.295998
	Middle Age	1.611030E0	.1655806	6.438E3	.973	.000	-1.634900	4.856960
	Older Age	0ª	0	.	.	.	.	.
	Low quali	- 3.069659E0	.1959011	6.331E3	-1.567	.000	-6.909984	.770666
	Middle quali	- 1.021048E0	.1991792	6.433E3	-.513	.000	-4.925624	2.883528
	High quali	3.290056E0	.2904466	6.798E3	1.133	.000	-2.403608	8.983719
2015	Intercept	1.633067E1	.669426	7.059E3	3.497	.000	7.177194	25.484148
	female	4.577796E0	.522465	6.747E3	8.762	.000	3.553599	5.601994
	male	0ª	0	.	.	.	.	.
	Youth	7.948256E0	.668266	6.689E3	4.764	.000	4.677924	11.218588
	Middle Age	1.411252E0	.1661230	6.692E3	.850	.000	-1.845287	4.667792
	Older Age	0ª	0	.	.	.	.	.
	Low quali	- 1.319668E0	.1976691	7.048E3	-.668	.000	-5.194577	2.555240
	Middle quali	.754668	.005050	7.058E3	.376	.000	-3.175832	4.685169
	High quali	6.241195E0	.838740	7.090E3	2.199	.000	.676417	11.805972

2016	Intercept	1.834117E1	.634860	6.520E3	3.957	.000	9.255320	27.427012
	female	4.703312E0	.532670	6.176E3	8.830	.000	3.659092	5.747531
	male	0ᵃ	0	.	.	.	.	.
	Youth	9.455163E0	1.599533	6.510E3	5.911	.000	6.319554	12.590773
	Middle Age	2.734802E0	.590548	6.492E3	1.719	.000	-.383195	5.852800
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	-4.089417E0	.2988296	6.406E3	-2.057	.000	-7.987141	-.191692
	Middle quali	-1.683947E0	.015306	6.462E3	-.836	.000	-5.634614	2.266720
	High quali	6.741115E0	.868818	6.668E3	2.350	.000	1.117314	12.364915

Explanatory variable by gender and age group: fixed effect (RANDOM INTERCEPT AND FIXED SLOPE MODELS)

Year	Parameter						95% Confidence Interval	
		Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
2011	Intercept	3.940764E1	6.965450	48.292	5.658	.000	25.404845	53.410428
	female	3.252526E0	.465245	8.578E3	6.991	.000	2.340534	4.164517
	male	0ᵃ	0	.	.	.	.	.
	Youth	7.872674E0	1.626670	7.946E3	4.840	.000	4.683974	11.061373
	Middle Age	.232020	.030102	7.903E3	.142	.000	-2.963410	3.427450
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	-1.337186E1	.243153	36.733	-4.123	.000	-19.944723	-6.798999
	Middle quali	-1.172122E1	.252792	36.760	-3.603	.000	-18.313455	-5.128989
	High quali	-1.484366E0	.2797122	63.823	-.391	.000	-9.070394	6.101661
2012	Intercept	1.339853E1	1.058906E1	43.473	1.265	.000	-7.949634	34.746684
	female	3.691432E0	.495501	7.163E3	7.450	.000	2.720105	4.662759
	male	0ᵃ	0	.	.	.	.	.
	Youth	2.172150E0	.2711921	6.580E3	1.269	.000	-1.183772	5.528071
	Middle	-4.449573E0	.714188	6.548E3	-2.596	.000	-7.809941	-1.089204

						Sig		
	Age					0		
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	4.550673E0	.113468	38.109	.890	.000	-5.800029	14.901374
	Middle quali	6.423462E0	.125042	38.387	1.253	.000	-3.948212	16.795137
	High quali	1.172273E1	.575996	51.179	2.102	.000	.529400	22.916059
2013	Intercept	2.703046E1	.850686	285.141	5.573	.000	17.482767	36.578158
	female	4.028866E0	.483466	8.054E3	8.333	.000	3.081148	4.976584
	male	0ᵃ	0	.	.	.	.	.
	Youth	0ᵃ	0	.	.	.	.	.
	Middle Age	0ᵃ	0	.	.	.	.	.
	Older Age	-4.297558E0	.546086	5.150E3	-2.780	.000	-7.328543	-1.266573
	Low quali	-2.993155E0	.2985550	149.589	-1.507	.000	-6.916502	.930193
	Middle quali	-.027712	.000266	153.464	-.014	.000	-3.977346	3.921923
	High quali	6.602917E0	.761708	211.837	2.391	.000	1.158967	12.046866
2014	Intercept	2.242262E1	2.18849	204.241	4.468	.000	12.527220	32.318017
	female	4.684554E0	.506284	6.651E3	9.253	.000	3.692075	5.677033
	male	0a	0	.	.	.	.	.
	Youth	6.044949E0	.656048	4.460E3	3.650	.000	2.798273	9.291626
	Middle Age	1.670208E0	.2645947	4.329E3	1.015	.000	-1.556692	4.897107
	Older Age	0	0	.	.	.	.	.
	Low quali	-2.880250E0	.215156	138.778	-1.300	.000	-7.260069	1.499569
	Middle quali	-.878044	.0142956	145.063	-.391	.000	-5.311141	3.555052
	High quali	3.391093E0	.088240	187.146	1.098	.000	-2.701143	9.483329

201 5	Intercept	1.803147E1	.899054	230.331	3.681	.00 0	8.378779	27.684155
	female	4.539586E0	.491559	7.771E3	9.235	.00 0	3.575998	5.503174
	male	0ª	0	.	.	.	.	.
	Youth	7.571567E0	.576912	6.182E3	4.802	.00 0	4.480272	10.662863
	Middle Age	.868307	.0571591	5.946E3	.553	.00 0	-2.212583	3.949196
	Older Age	0ª	0	.	.	.	.	.
	Low quali	-1.747301E0	.130045	147.345	-.820	.00 0	-5.956686	2.462084
	Middle quali	.285979	.0157446	155.103	.133	.00 0	-3.975789	4.547747
	High quali	5.314244E0	.928214	192.829	1.815	.00 0	-.461197	11.089684
201 6	Intercept	1.845253E1	.394283	405.415	4.199	.00 0	9.814105	27.090956
	female	4.627194E0	.475596	8.965E3	9.729	.00 0	3.694917	5.559471
	male	0ª	0	.	.	.	.	.
	Youth	8.882593E0	1.456149	7.922E3	6.100	.00 0	6.028158	11.737028
	Middle Age	1.984149E0	.447966	7.795E3	1.370	.00 0	-.854252	4.822550
	Older Age	0ª	0	.	.	.	.	.
	Low quali	-3.686233E0	.2957131	276.609	-1.883	.00 0	-7.538996	.166529
	Middle quali	-1.339963E0	.0980662	283.651	-.677	.00 0	-5.238624	2.558698
	High quali	6.892287E0	.591179	384.309	2.660	.00 0	1.797625	11.986950

BY GENDER, Age group and education, pop group   (LRT=likelihood ratio test) PART 5

Year	-2 Log Likelihood (NULL MODEL)	-2 Log Likelihood (Random slope model)	Likelihood ratio (LR)
2011	5.862E4	5.892E4	300
2012	6.346E4	6.346E4	0
2013	6.598E4	6.682E4	840
2014	6.188E4	6.236E4	480
2015	6.407E4	6.437E4	300
2016	6.071E4	6.178E4	1070

Explanatory variable by gender and age group and education pop group: fixed effect (RANDOM INTERCEPT MODEL)

Year	Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
2011	Intercept	5.199790E1	9.331264	6.517E3	5.572	.000	33.705561	70.290237
	female	3.260270E0	.521996	6.000E3	6.246	.000	2.236971	4.283570
	male	0a	0	.	.	.	.	.
	Youth	8.295786E0	.800249	6.208E3	4.608	.000	4.766674	11.824897
	Middle Age	.571600	.0802405	6.222E3	.317	.000	-2.961736	4.104936
	Older Age	0a	0	.	.	.	.	.
	Low quali	-1.347185E1	.658208	6.468E3	-3.683	.000	-20.643144	-6.300549
	Middle quali	-1.163758E1	.670565	6.469E3	-3.171	.000	-18.833100	-4.442056
	High quali	-2.344810E0	.510280	6.512E3	-.520	.000	-11.186441	6.496820
	Black	-6.623358E0	.915330	5.605E3	-3.458	.000	-10.378148	-2.868569
	White	-1.519315E0	.069624	5.510E3	-.734	.000	-5.576595	2.537965
	Indian/Asian	-9.815264E0	.337666	5.193E3	-2.941	.000	-16.358495	-3.272033
	White	0a	0	.	.	.	.	.
2012	Intercept	1.653726E1	.061095	6.545E3	1.559	.000	-4.263660	37.338176
	female	3.700177E0	.517729	6.611E3	7.147	.000	2.685261	4.715094
	male	0a	0	.	.	.	.	.
	Youth	2.673661E0	.2771667	6.843E3	1.509	.000	-.799355	6.146678
	Middle Age	-4.107593E0	.769572	6.866E3	-2.321	.000	-7.576502	-.638685
	Older Age	0a	0	.	.	.	.	.
	Low quali	3.343949E0	.474917	5.515E3	.747	.000	-5.428652	12.116550
	Middle quali	5.064418E0	.490427	5.553E3	1.128	.000	-3.738577	13.867413
	High quali	1.034066E1	.983666	6.036E3	2.075	.000	.570893	20.110423
	Black	-	.2835421	6.292E3	-2.702	.000	-8.557459	-1.361357

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		4.959408E0						
	White	.041791	.003790	6.131E3	.021	.000	-3.866737	3.950319
	Indian/Asian	.017145	.008351	5.525E3	.005	.000	-7.233079	7.267369
	White	0ᵃ	0	.	.	.	.	.
2013	Intercept	2.458385E1	.971070	7.142E3	3.527	.000	10.918491	38.249215
	female	4.010680E0	.509294	6.806E3	7.875	.000	3.012305	5.009055
	male	0ᵃ	0	.	.	.	.	.
	Youth	0ᵃ	0					
	Middle Age	0ᵃ	0					
	Older Age	-4.457966E0	.606601	6.946E3	-2.775	.000	-7.607395	-1.308538
	Low quali	-2.953146E0	.244308	7.224E3	-1.519	.000	-6.764558	.858266
	Middle quali	.113213	.0266603	7.241E3	.058	.000	-3.741902	3.968328
	High quali	6.490425E0	.901355	7.291E3	2.237	.000	.802929	12.177921
	Black	-2.124874E0	.1830415	6.085E3	-1.161	.000	-5.713134	1.463387
	White	.862123	.05000	5.972E3	.439	.000	-2.989987	4.714232
	Indian/Asian	2.282752E0	.384504	6.199E3	.674	.000	-4.352049	8.917554
	White	0ᵃ	0	.	.	.	.	.
2014	Intercept	1.780123E1	.283705	6.754E3	2.704	.000	4.895094	30.707368
	female	4.560013E0	.520487	6.368E3	8.761	.000	3.539683	5.580342
	male	0ᵃ	0	.	.	.	.	.
	Youth	6.274312E0	.660138	6.475E3	3.779	.000	3.019893	9.528730
	Middle Age	1.855600E0	.650837	6.456E3	1.124	.000	-1.380587	5.091787
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	-3.396075E0	.453175	6.356E3	-1.739	.000	-7.224957	.432807
	Middle quali	-1.252634E0	.186347	6.455E3	-.631	.000	-5.146533	2.641264
	High quali	2.171812E0	.2913519	6.804E3	.745	.000	-3.539595	7.883220
	Black	-3.507526E0	1.908239	5.757E3	-1.838	.000	-7.248391	.233340
	White	2.292634E0	.046407	5.668E3	1.120	.000	-1.719108	6.304375
	Indian/Asian	4.899824E0	.197134	5.593E3	1.533	.000	-1.367799	11.167448
	White	0ᵃ	0	.	.	.	.	.
2015	Intercept	1.770500E1	.730055	6.769E3	2.631	.000	4.511976	30.898027
	female	4.560499E0	.522088	6.750E3	8.735	.000	3.537042	5.583955
	male	0ᵃ	0	.	.	.	.	.
	Youth	8.140660E0	.670855	6.686E3	4.872	.000	4.865252	11.416068
	Middle Age	1.595034E0	.1663177	6.690E3	.959	.000	-1.665323	4.855392
	Older Age	0ᵃ	0	.	.	.	.	.

Year	Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
	Low quali	-1.497341E0	.175115	7.048E3	-.758	.000	-5.369160	2.374479
	Middle quali	.566277	.004420	7.058E3	.283	.000	-3.362989	4.495542
	High quali	5.875765E0	.843025	7.090E3	2.067	.000	.302586	11.448944
	Black	-3.456777E0	.064033	6.164E3	-1.675	.000	-7.503002	.589449
	White	-.130810	.0232729	6.032E3	-.059	.000	-4.507757	4.246136
	Indian/Asian	-.440070	.0270139	5.572E3	-.135	.000	-6.850818	5.970679
	White	0ª	0	.	.	.	.	.
2016	Intercept	1.751350E1	.0945813	6.524E3	2.521	.000	3.897430	31.129570
	female	4.624047E0	.531899	6.181E3	8.693	.000	3.581341	5.666754
	male	0ª	0	.	.	.	.	.
	Youth	9.499174E0	.598853	6.513E3	5.941	.000	6.364897	12.633451
	Middle Age	2.779867E0	.588577	6.496E3	1.750	.000	-.334266	5.894000
	Older Age	0ª	0	.	.	.	.	.
	Low quali	-4.069862E0	.584218	6.412E3	-2.051	.000	-7.959592	-.180132
	Middle quali	-1.630675E0	.012161	6.468E3	-.810	.000	-5.575176	2.313826
	High quali	6.524712E0	.880539	6.671E3	2.265	.000	.877935	12.171489
	Black	-3.785086E0	.144105	5.654E3	-1.765	.000	-7.988354	.418183
	White	1.638820E0	.350609	5.550E3	.697	.000	-2.969295	6.246934
	Indian/Asian	-.44494	.09558	5.634E3	-.013	.000	-6.728540	6.639552
	White	0ª	0	.	.	.	.	.

Explanatory variable by gender and age group, education, pop group: fixed effect (RANDOM INTERCEPT AND FIXED SLOPE MODELS)

Year	Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
2011	Intercept	4.998747E1	.878036	701.438	5.060	.000	30.593413	69.381531
	female	3.314667E0	.522443	5.393E3	6.345	.000	2.290468	4.338866
	male	0ª	0	.	.	.	.	.
	Youth	8.164126E0	1.818010	4.089E3	4.491	.000	4.599837	11.728415
	Middle Age	.574841	.0821843	4.096E3	.316	.000	-2.996960	4.146643
	Older Age	0ª	0	.	.	.	.	.
	Low quali	-1.322114E1	.767617	5.007E3	-3.509	.000	-20.607323	-5.834964
	Middle quali	-1.073097E1	.780463	5.003E3	-2.839	.000	-18.142335	-3.319607

Year		B	Std. Error	Wald	t	Sig.	Lower	Upper
	High quali	-1.717492E0	.289165	3.513E3	-.366	.000	-10.911254	7.476270
	Black	-6.311573E0	.138372	55.134	-2.952	.000	-10.596733	-2.026413
	Coloured	-1.166859E0	.321240	75.902	-.503	.000	-5.790106	3.456389
	Indian/Asian	-9.548511E0	.789659	46.546	-2.520	.000	-17.174284	-1.922737
	White	0ᵃ	0	.	.	.	.	.
2012	Intercept	1.645410E1	1.038200	98.301	1.585	.000	-4.147860	37.056061
	female	3.693471E0	.514844	129.670	7.174	.000	2.674890	4.712052
	male	0ᵃ	0	.	.	.	.	.
	Youth	2.689129E0	.752125	117.910	1.535	.000	-.780583	6.158840
	Middle Age	-4.100867E0	.749893	116.770	-2.343	.000	-7.566510	-.635224
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	3.440408E0	.454911	121.357	.772	.000	-5.379000	12.259817
	Middle quali	5.158454E0	.470304	120.559	1.154	.000	-3.692020	14.008928
	High quali	1.036650E1	.950031	116.702	2.094	.000	.562964	20.170040
	Black	-4.931543E0	.693233	78.154	-2.913	.000	-8.302406	-1.560680
	Coloured	.035512	.855235	63.148	.019	.000	-3.671709	3.742733
	Indian/Asian	-.25664	.0033	38.457	-.008	.000	-6.845276	6.793949
	White	0ᵃ	0	.	.	.	.	.
2013	Intercept	2.164107E1	.742025	157.302	2.795	.000	6.349331	36.932805
	female	3.451443E0	.490704	5.886E3	7.034	.000	2.489483	4.413403
	male	0ᵃ	0	.	.	.	.	.
	Youth	0ᵃ	0	.	.	.	.	.
	Middle Age	0ᵃ	0	.	.	.	.	.
	Older Age	-4.515663E0	.567582	4.667E3	-2.881	.000	-7.588865	-1.442461
	Low quali	-1.278914E0	.264797	4.895E3	-.651	.000	-5.130798	2.572969
	Middle quali	2.026469E0	.24625	4.847E3	1.016	.000	-1.883901	5.936839
	High quali	7.369574E0	.05603	3.603E3	2.452	.000	1.476722	13.262426
	Black	-1.784810E0	.216025	56.877	-.805	.000	-6.222530	2.652911
	Coloured	1.232019E0	.392287	77.018	.515	.000	-3.531615	5.995653
	Indian/Asian	2.289108E0	.079247	18.081	.561	.000	-6.278318	10.856534
	White	0ᵃ	0	.	.	.	.	.
2014	Intercept	1.697426E1	.953586	277.841	2.441	.000	3.285856	30.662667
	female	4.754160E0	.501453	6.303E3	9.481	.000	3.771141	5.737178

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Year		B	Std. Error	Wald	t	Sig.	Lower Bound	Upper Bound
	male	0ª	0	.	.	.	.	.
	Youth	6.622657E0	.606940	6.116E3	4.121	.000	3.472488	9.772826
	Middle Age	2.170882E0	.596425	6.130E3	1.360	.000	-.958671	5.300436
	Older Age	0ª	0	.	.	.	.	.
	Low quali	-3.552818E0	.872607	6.267E3	-1.897	.000	-7.223770	.118134
	Middle quali	-1.210626E0	.16246	6.248E3	-.632	.000	-4.967126	2.545875
	High quali	1.988933E0	.228052	3.919E3	.679	.000	-3.751717	7.729584
	Black	-3.125365E0	.155348	63.819	-1.450	.000	-7.431403	1.180673
	Coloured	2.682885E0	.314164	84.622	1.159	.000	-1.918590	7.284360
	Indian/Asian	4.863538E0	.601294	44.102	1.350	.000	-2.393920	12.120996
	White	0ª	0	.	.	.	.	.
2015	Intercept	1.838984E1	.231588	351.548	2.543	.000	4.167227	32.612462
	female	4.591062E0	.519829	6.256E3	8.832	.000	3.572019	5.610105
	male	0ª	0	.	.	.	.	.
	Youth	7.535423E0	.646917	5.809E3	4.575	.000	4.306852	10.763994
	Middle Age	.887877	.039842	5.808E3	.541	.000	-2.326825	4.102578
	Older Age	0ª	0	.	.		.	.
	Low quali	-1.875605E0	.023305	5.576E3	-.927	.000	-5.842071	2.090860
	Middle quali	.350732	.055880	5.576E3	.171	.000	-3.679594	4.381057
	High quali	5.410808E0	.952864	4.949E3	1.832	.000	-.378115	11.199731
	Black	-3.227319E0	.292898	84.854	-1.408	.000	-7.786328	1.331689
	Coloured	.176331	.0187604	116.258	.071	.000	-4.750567	5.103228
	Indian/Asian	-.235533	.018841	72.264	-.065	.000	-7.508909	7.037844
	White	0ª	0	.	.	.	.	.
2016	Intercept	1.567842E1	1.220366	38.030	1.285	.000	-9.025956	40.382795
	female	4.525034E0	.643305	330.670	7.034	.000	3.259548	5.790520
	male	0ª	0	.	.	.	.	.
	Youth	7.917694E0	.983551	281.927	3.992	.000	4.013244	11.822143
	Middle Age	1.042739E0	.2968776	285.097	.530	.000	-2.832442	4.917921
	Older Age	0ª	0	.	.	.	.	.
	Low quali	-3.157116E0	.431944	299.949	-1.298	.000	-7.942949	1.628717
	Middle quali	-.113655	.0176437	291.108	-.046	.000	-4.987646	4.760335
	High quali	8.298984E0	.677309	238.477	2.257	.000	1.054828	15.543140
	Black	-3.701732E0	.464196	27.743	-.829	.000	-12.850045	5.446582
	Coloured	2.067462E0	.797252	29.137	.431	.000	-7.742016	11.876940

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	Indian/Asian	-.99674	.099112	25.860	-.014	.000	-14.901551	14.702204
	White	0ᵃ	0	.	.	.	.	.

Part two

Empty model (LRT=likelihood ratio test) PART 1

Year	-2 Log Likelihood (NULL MODEL)	-2 Log Likelihood (SINGLE NULL MODEL)	Likelihood ratio (LR)
2011			
2012			
2013			
2014			
2015			
2016			

Explanatory variable by gender and age group and education pop group: fixed effect (RANDOM INTERCEPT MODEL)

Year	Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
2011	Intercept	4.685765E1	.418580	6.502E3	4.975	.000	28.394134	65.321164
	female	3.168718E0	.524041	5.982E3	6.047	.000	2.141409	4.196028
	male	0ᵃ	0	.	.	.	.	.
	Youth	8.478917E0	1.801660	6.213E3	4.706	.000	4.947040	12.010794
	Middle Age	.665350	.0801716	6.230E3	.369	001	-2.866634	4.197334
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	-1.329557E1	3.655331	6.473E3	-3.637	.000	-20.461229	-6.129914
	Middle quali	-1.154025E1	3.667503	6.474E3	-3.147	.002	-18.729772	-4.350736
	High quali	-2.304995E0	.506604	6.514E3	-.511	.000	-11.139419	6.529429
	Black	-6.312806E0	1.918062	5.590E3	-3.291	.001	-10.072952	-2.552660
	White	-1.205977E0	.075371	5.493E3	-.581	.000	-5.274527	2.862572
	Indian/Asian	-9.681764E0	.334312	5.174E3	-2.904	.004	-16.218425	-3.145104
	White	0ᵃ	0	.	.	.	.	.
	Below HHS	4.264459E0	.127695	3.278E3	3.782	.000	2.053401	6.475516
	Averag	4.015792E0	.156281	3.206E3	3.473	.001	1.748667	6.282916

	HHS							
	Above HHS	0ᵃ	0	.	.	.	.	.
2012	Intercept	1.361037E1	.067190E1	6.620E3	1.275	.000	-7.310003	34.530736
	female	3.584576E0	.518044	6.612E3	6.919	.002	2.569043	4.600109
	male	0ᵃ	0	.	.	.	.	.
	Youth	3.002439E0	.771663	6.846E3	1.695	.001	-.470571	6.475449
	Middle Age	-4.014643E0	.768050	6.871E3	-2.271	.000	-7.480567	-.548718
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	3.222320E0	.474991	5.543E3	.720	.000	-5.550417	11.995058
	Middle quali	4.944824E0	.490435	5.580E3	1.101	.002	-3.858177	13.747824
	High quali	9.982115E0	.982794	6.057E3	2.003	.000	.214066	19.750164
	Black	-4.342560E0	.837060	6.283E3	-2.364	.001	-7.943825	-.741295
	White	.845792	.998299	6.114E3	.423	.000	-3.071577	4.763160
	Indian/Asian	.578943	.690964	5.495E3	.157	.004	-6.656808	7.814694
	White	0ᵃ	0	.	.	.	.	.
	Below HHS	3.141990E0	.121895	3.301E3	2.801	.005	.942309	5.341671
	Averag HHS	.820889	.149844	3.223E3	.714	.000	-1.433611	3.075388
	Above HHS	0ᵃ	0	.	.	.	.	.
2013	Intercept	2.088854E1	.591897	7.010E3	3.169	.000	7.966429	33.810651
	female	3.631486E0	.504850	6.738E3	7.193	.001	2.641820	4.621152
	male	0ᵃ	0	.	.	.000	.	.
	Youth	8.205621E0	1.612792	6.890E3	5.088	.002	5.044052	11.367190
	Middle Age	1.494706E0	.603646	6.914E3	.932	.000	-1.648933	4.638346
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	-4.600382E0	.925643	7.207E3	-2.389	.000	-8.375206	-.825558
	Middle quali	-2.714581E0	.956160	7.230E3	-1.388	.001	-6.549227	1.120065
	High quali	3.934337E0	.874431	7.286E3	1.369	.000	-1.700381	9.569055
	Black	-2.892013E0	.820343	6.077E3	-1.589	.004	-6.460531	.676505
	White	.206585	.0956283	5.968E3	.106	.000	-3.628437	4.041607
	Indian/Asian	2.311517E0	.356300	6.181E3	.689	.002	-4.267998	8.891032
	White	0ᵃ	0	.	.	.	.	.
	Below HHS	1.274511E0	.048696	3.566E3	1.215	.001	-.781592	3.330615
	Averag HHS	-.453945	.076880	3.477E3	-.422	.000	-2.565325	1.657435
	Above HHS	0ᵃ	0	.	.	.004	.	.
2014	Intercept	1.616045E1	.652103	6.689E3	2.429	.015	3.120209	29.200692
	female	4.469513E0	.522512	6.350E3	8.554	.000	3.445212	5.493813

	male	0ᵃ	0	.	.	.	.	.
	Youth	6.454390E0	1.663275	6.466E3	3.881	.000	3.193822	9.714959
	Middle Age	1.929687E0	.651375	6.456E3	1.169	.000	-1.307556	5.166930
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	-3.468353E0	.953885	6.353E3	-1.775	.000	-7.298626	.361921
	Middle quali	-1.356823E0	.987351	6.450E3	-.683	.001	-5.252691	2.539044
	High quali	1.990591E0	.0914522	6.803E3	.683	.000	-3.722785	7.703967
	Black	-3.357583E0	.0909371	5.740E3	-1.758	.004	-7.100670	.385504
	White	2.484272E0	.048865	5.648E3	1.213	.000	-1.532290	6.500834
	Indian/Asian	4.842730E0	.195154	5.582E3	1.516	.002	-1.421015	11.106476
	White	0ᵃ	0	.	.	.000	.	.
	Below HHS	1.934222E0	.033896	3.279E3	1.871	.001	-.092925	3.961370
	Averag HHS	1.268093E0	.058459	3.169E3	1.198	.000	-.807241	3.343428
	Above HHS	0ᵃ	0	.	.	.004	.	.
2015	Intercept	1.415760E1	.820311	6.687E3	2.076	.000	.787618	27.527587
	female	4.298815E0	.523363	6.747E3	8.214	.000	3.272858	5.324772
	male	0ᵃ	0	.	.	.	.	.
	Youth	8.318371E0	.668929	6.707E3	4.984	.000	5.046739	11.590004
	Middle Age	1.556769E0	.0660940	6.710E3	.937	.000	-1.699200	4.812738
	Older Age	0ᵃ	0	.	.	.	.	.
	Low quali	-1.288722E0	.0971588	7.051E3	-.654	.000	-5.153628	2.576183
	Middle quali	.762699	.0200787	7.061E3	.381	.001	-3.159444	4.684843
	High quali	5.812250E0	.836926	7.090E3	2.049	.000	.251027	11.373473
	Black	-2.920777E0	.059486	6.162E3	-1.418	.004	-6.958088	1.116533
	White	.682893	.0229993	6.022E3	.306	.000	-3.688692	5.054478
	Indian/Asian	-.118688	.0258438	5.551E3	-.036	.002	-6.506502	6.269126
	White	0ᵃ	0	.	.	.	.	.
	Below HHS	3.960919E0	.093786	3.148E3	3.621	.001	1.816313	6.105526
	Averag HHS	.955199	.0124816	3.065E3	.849	.000	-1.250270	3.160669
	Above HHS	0ᵃ	0	.	.	.004	.	.
2016	Intercept	1.520014E1	.044675	6.439E3	2.158	.000	1.390233	29.010044
	female	4.509058E0	.533329	6.171E3	8.455	.000	3.463546	5.554570
	male	0ᵃ	0	.	.	.	.	.
	Youth	9.712867E0	1.599810	6.511E3	6.071	.000	6.576713	12.849020
	Middle Age	2.888032E0	.588331	6.498E3	1.818	.000	-.225619	6.001684
	Older Age	0ᵃ	0	.	.	.	.	.

	Low quali	- 4.129930E0	.983825	6.415E3	-2.082	.000	-8.018889	-.240970
	Middle quali	- 1.741246E0	.012142	6.470E3	-.865	.000	-5.685709	2.203217
	High quali	6.286013E0	.880377	6.671E3	2.182	.000	.639552	11.932473
	Black	- 3.427739E0	.145775	5.648E3	-1.597	.000	-7.634282	.778804
	White	2.097727E0	.354874	5.540E3	.891	.002	-2.518749	6.714203
	Indian/Asian	.288653	.0408025	5.625E3	.085	.000	-6.392390	6.969695
	White	0ª	0	.	.	.001	.	.
	Below HHS	2.552544E0	.197182	3.227E3	2.132	.000	.205230	4.899858
	Averag HHS	1.062858E0	.238273	3.174E3	.858	.004	-1.365039	3.490755
	Above HHS	0ª	0	.	.	.	.	.

Model 7 number working

Empty model (LRT=likelihood ratio test) PART 1

Year	-2 Log Likelihood (NULL MODEL)	-2 Log Likelihood (SINGLE NULL MODEL)	Likelihood ratio (LR)
2011			
2012			
2013			
2014			
2015			
2016			

Explanatory variable by gender and age group and education pop group: fixed effect
(RANDOM INTERCEPT MODEL)

Year	Parameter						95% Confidence Interval	
		Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
2011	Intercept	6.943074E1	1.621705E1	5.375E3	4.281	.000	37.638745	101.222729
	female	3.132084E0	.525235	5.974E3	5.963	.000	2.102435	4.161733
	male	0ª	0	.	.	.	.	.
	Youth	8.527247E0	1.801762	6.211E3	4.733	.000	4.995171	12.059323
	Middle Age	.658533	.0800717	6.233E3	.366	.000	-2.871492	4.188559
	Older Age	0ª	0	.	.	.	.	.
	Low quali	-	3.653753	6.474E3	-3.670	.	-	-6.245294

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Year	Variable	B	Std. Error		t	Sig.	Lower	Upper
		1.340786E1					20.570419	
	Middle quali	-1.162931E1	.666620	6.474E3	-3.172	.000	-18.817097	-4.441521
	High quali	-2.139849E0	.505535	6.515E3	-.475	001	-10.972177	6.692478
	Black	-6.553712E0	1.924314	5.586E3	-3.406	.	-10.326116	-2.781309
	Coloured	-1.547290E0	.076664	5.495E3	-.745	.000	-5.618374	2.523794
	Indian/Asian	-9.842389E0	.331820	5.174E3	-2.954	.002	-16.374165	-3.310614
	White	0^a	0	.	.		.	.
	Below HHS	4.700906E0	.158933	3.313E3	4.056	.000	2.428609	6.973203
	Averag HHS	4.460765E0	.169553	3.220E3	3.814	.000	2.167622	6.753908
	Above HHS	0^a	0	.	.		.	.
	None workong	-8.169189E0	.429071	4.504E3	-1.844	.	-16.852342	.513965
	One working	-9.173936E0	.422569	4.500E3	-2.074	.000	-17.844345	-.503527
	Two working	-9.098614E0	.471222	4.515E3	-2.035	.001	-17.864398	-.332831
	Three working	-4.711300E0	.785720	4.509E3	-.984	.	-14.093657	4.671057
	Four plus working	0^a	0				.	.
2012	Intercept	-1.091699E1	1.774457E1	6.827E3	-.615	.002	-45.701868	23.867886
	female	3.552960E0	.519426	6.606E3	6.840		2.534718	4.571202
	male	0^a	0	.	.		.	.
	Youth	3.033965E0	.771958	6.845E3	1.712	.000	-.439622	6.507552
	Middle Age	-3.972590E0	.767564	6.871E3	-2.247		-7.437563	-.507617
	Older Age	0^a	0	.	.	.000	.	.
	Low quali	3.290269E0	.474504	5.542E3	.735	.002	-5.481514	12.062052
	Middle quali	5.022065E0	.489109	5.580E3	1.119	.000	-3.778335	13.822466
	High quali	9.978609E0	.981180	6.057E3	2.003	.001	.213725	19.743493
	Black	-4.417297E0	.845612	6.276E3	-2.393	.000	-8.035327	-.799267
	White	.753152	.998978	6.114E3	.377	.004	-3.165548	4.671852
	Indian/Asian	.422333	.0691649	5.492E3	.114	.	-6.814761	7.659427
	White	0^a	0	.	.	.005	.	.
	Below HHS	3.151715E0	.150940	3.298E3	2.738	.000	.895086	5.408344

Year								
	Averag HHS	.783191	.0160082	3.220E3	.675		-1.491382	3.057765
	Above HHS	0ª	0	.	.	.000	.	.
	None workong	7.897745E0	.747217	5.904E3	1.664	.001	-1.408537	17.204027
	One working	7.342802E0	.746602	5.909E3	1.547	.000	-1.962273	16.647877
	Two working	8.799454E0	.795965	5.896E3	1.835	.002	-.602394	18.201302
	Three working	8.419500E0	.028898	5.798E3	1.674	.000	-1.439017	18.278016
	Four plus working	0ª	0	.	.		.	.
2013	Intercept	1.206280E1	.29673	5.529E3	.930	.000	-13.358222	37.483824
	female	3.625884E0	.505243	6.739E3	7.177	.001	2.635449	4.616320
	male	0ª	0	.	.	.000	.	.
	Youth	8.218139E0	.612640	6.890E3	5.096	.004	5.056868	11.379411
	Middle Age	1.496193E0	.604305	6.914E3	.933	.000	-1.648738	4.641124
	Older Age	0ª	0				.	.
	Low quali	-4.589214E0	.925691	7.207E3	-2.383	.002	-8.364133	-.814295
	Middle quali	-2.684646E0	.957748	7.228E3	-1.371	.001	-6.522405	1.153113
	High quali	4.055206E0	.878047	7.285E3	1.409	.000	-1.586600	9.697012
	Black	-2.990999E0	.825934	6.074E3	-1.638	.004	-6.570478	.588479
	Coloured	.132768	.00957100	5.973E3	.068	.015	-3.703855	3.969391
	Indian/Asian	2.173761E0	.357182	6.185E3	.647	.000	-4.407482	8.755004
	White	0ª	0	.	.	.	.	.
	Below HHS	1.034513E0	.088290	3.586E3	.951	.000	-1.099217	3.168243
	Averag HHS	-.637618	.089546	3.495E3	-.585	.000	-2.773829	1.498592
	Above HHS	0ª	0		.	.		.
	None workong	3.562519E0	.785516	5.064E3	.941	.000	-3.858731	10.983769
	One working	3.534291E0	.780302	5.062E3	.935	.001	-3.876736	10.945318
	Two working	4.115487E0	.825591	5.067E3	1.076	.000	-3.384325	11.615299
	Three working	1.441480E0	.066030	5.091E3	.355	.004	-6.529686	9.412647
	Four plus working	0ª	0	.	.	.000	.	.
2014	Intercept	1.869733E1	.520943	5.936E3	1.964	.002	.032821	37.361843

		B	Std. Error		t	Sig.	Lower Bound	Upper Bound
	female	4.431329E0	.522752	6.348E3	8.477	.000	3.406558	5.456100
	male	0ᵃ	0	.	.	.001	.	.
	Youth	6.499202E0	.663283	6.463E3	3.907	.000	3.238618	9.759787
	Middle Age	1.978430E0	.650939	6.457E3	1.198	.004	-1.257957	5.214816
	Older Age	0ᵃ	0	.	.			.
	Low quali	-3.495402E0	.953345	6.352E3	-1.789	.000	-7.324617	.333813
	Middle quali	-1.388686E0	.987615	6.449E3	-.699	.	-5.285071	2.507699
	High quali	2.023298E0	.915598	6.802E3	.694	.000	-3.692186	7.738782
	Black	-3.436169E0	.924432	5.725E3	-1.786	.000	-7.208784	.336446
	Coloured	2.396630E0	.052532	5.646E3	1.168		-1.627120	6.420381
	Indian/Asian	4.762198E0	.196195	5.581E3	1.490	.000	-1.503588	11.027984
	White	0ᵃ	0	.	.	.001	.	.
	Below HHS	1.953346E0	.069692	3.269E3	1.826	.000	-.143989	4.050681
	Averag HHS	1.256618E0	.070017	3.155E3	1.174	.004	-.841381	3.354617
	Above HHS	0ᵃ	0	.	.	.000	.	.
	None workong	.451924	.0969976	5.122E3	.229	.002	-3.410071	4.313920
	One working	-.635126	.0963136	5.141E3	-.324		-4.483709	3.213456
	Two working	1.110970E0	.060447	5.131E3	.539	.001	-2.928384	5.150324
	Three working	-8.725152E0	1.2884	3.484E3	-.848	.000	-28.897085	11.446781
	Four plus working	5.488319E0	.695223	3.398E3	.566	.004	-13.520739	24.497377
2015	Intercept	2.498908E1	.434147	4.935E3	1.742	.000	-3.126576	53.104740
	female	4.143275E0	.524830	6.754E3	7.895	.000	3.114444	5.172107
	male	0ᵃ	0	.	.		.	.
	Youth	8.394561E0	1.669473	6.711E3	5.028	.000	5.121863	11.667259
	Middle Age	1.680053E0	.660249	6.717E3	1.012	.003	-1.574562	4.934668
	Older Age	0ᵃ	0	.	.			.
	Low quali	-1.319517E0	.0969702	7.052E3	-.670	.000	-5.180725	2.541691
	Middle quali	.742842	.0999420	7.062E3	.372	.000	-3.176621	4.662306
	High quali	5.588639E0	.837460	7.090E3	1.970	.000	.026370	11.150909
	Black	-2.745284E0	.065229	6.151E3	-1.329	.000	-6.793855	1.303288
	Coloured	.752585	.1229946	6.019E3	.337	.002	-3.618909	5.124079

	Indian/Asian	.31631	.0253158	5.540E3	.010	.000	-6.345835	6.409098
	White	0ª	0	.	.	.001	.	.
	Below HHS	4.431721E0	.127851	3.161E3	3.929	.000	2.220327	6.643116
	Averag HHS	1.272911E0	.135144	3.054E3	1.121	.000	-.952813	3.498636
	Above HHS	0ª	0	.	.	.	.	.
	None workong	-3.933533E0	.236836	4.337E3	-.928	.000	-12.239898	4.372831
	One working	-5.631347E0	.232373	4.338E3	-1.331	.000	-13.928960	2.666266
	Two working	-2.298768E0	.280648	4.363E3	-.537	.002	-10.691013	6.093477
	Three working	-3.802521E0	.574131	4.433E3	-.831	.000	-12.770101	5.165060
	Four plus working	0ª	0	.	.	.001	.	.
2016	Intercept	2.072231E1	.456649E1	5.198E3	1.423	.000	-7.834138	49.278758
	female	4.446237E0	.534894	6.167E3	8.312	.000	3.397659	5.494816
	male	0ª	0	.	.	.	.	.
	Youth	9.828035E0	1.601068	6.507E3	6.138	.000	6.689416	12.966654
	Middle Age	2.923520E0	.588525	6.498E3	1.840	.000	-.190511	6.037551
	Older Age	0ª	0	.	.	.	.	.
	Low quali	-4.108025E0	.983524	6.415E3	-2.071	.000	-7.996395	-.219655
	Middle quali	-1.676202E0	.011891	6.469E3	-.833	.000	-5.620173	2.267769
	High quali	6.384031E0	.880699	6.671E3	2.216	.002	.736939	12.031123
	Black	-3.692537E0	.151035	5.646E3	-1.717	.000	-7.909392	.524319
	Coloured	1.914166E0	.356559	5.539E3	.812	.001	-2.705615	6.533947
	Indian/Asian	.187889	.0407798	5.628E3	.055	.000	-6.492709	6.868487
	White	0ª	0	.	.	.	.	.
	Below HHS	2.518138E0	.243812	3.229E3	2.025	.000	.079397	4.956880
	Averag HHS	1.189010E0	.258904	3.170E3	.944	.000	-1.279338	3.657358
	Above HHS	0ª	0	.	.	.	.	.
	None workong	-1.436319E0	.242328	4.749E3	-.339	.000	-9.753248	6.880610
	One working	-2.459686E0	.235901	4.750E3	-.581	.002	-10.764016	5.844644
	Two working	-2.726558E0	.297502	4.763E3	-.634	.000	-11.151647	5.698531
	Three	-.813564	.0689893	4.794E3	-.173	.001	-	8.380779

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working					10.007907	
Four plus working	0ª	0	.	.	.	.

Model 8

Empty model (LRT=likelihood ratio test) PART 1

Year	-2 Log Likelihood (NULL MODEL)	-2 Log Likelihood (SINGLE NULL MODEL)	Likelihood ratio (LR)
2011			
2012			
2013			
2014			
2015			
2016			

Explanatory variable by gender and age group and education pop group: fixed effect
(RANDOM INTERCEPT MODEL)

Year	Parameter						95% Confidence Interval	
		Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
2011	Intercept	7.028737E1	1.620038	5.365E3	4.339	.000	38.528051	102.046690
	female	2.843815E0	.533324	5.916E3	5.332	.000	1.798306	3.889325
	male	0ª	0	.	.	.	.	.
	Youth	8.749006E0	1.802307	6.212E3	4.854	.000	5.215862	12.282151
	Middle Age	.711568	.1799893	6.236E3	.395	.000	-2.816843	4.239978
	Older Age	0ª	0	.	.	.	.	.
	Low quali	-1.351919E1	.651644	6.477E3	-3.702	.000	-20.677624	-6.360765
	Middle quali	-1.172893E1	.664458	6.477E3	-3.201	.000	-18.912479	-4.545382
	High quali	-2.436805E0	.503564	6.516E3	-.541	.000	-11.265268	6.391658
	Black	-6.364626E0	.123165	5.581E3	-3.309	.000	-10.134778	-2.594474
	Coloured	-1.412384E0	.074777	5.490E3	-.681	.000	-5.479770	2.655002
	Indian/Asian	-9.704241E0	.328086	5.167E3	-2.916	.000	-16.228698	-3.179783
	White	0ª	0	.	.	.	.	.
	Below HHS	4.491424E0	.159101	3.294E3	3.875	.000	2.218794	6.764055
	Averag	4.461264E0	.167559	3.200E3	3.821	.000	2.172025	6.750504

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	HHS							
	Above HHS	0ᵃ	0	.	.		.	.
	None workong	-7.734759E0	.425309	4.491E3	-1.748	.000	-16.410544	.941026
	One working	-9.093319E0	.416588	4.487E3	-2.059	.001	-17.752008	-.434629
	Two working	-9.087269E0	.465107	4.502E3	-2.035	.000	-17.841071	-.333466
	Three working	-4.617752E0	.779271	4.497E3	-.966	.004	-13.987473	4.751969
	Four plus working	0ᵃ	0	.	.	.	.	.
	Gender of HH male	-1.856019E0	.105417	4.939E3	-3.066	.000	-3.042904	-.669133
2012	Intercept	-9.798565E0	1.774418	6.827E3	-.552	.000	-44.582684	24.985554
	female	3.784723E0	.528851	6.560E3	7.157	.000	2.748003	4.821443
	male	0ᵃ	0	.	.		.	.
	Youth	2.787201E0	.1774537	6.843E3	1.571	.002	-.691444	6.265845
	Middle Age	-4.082643E0	.1767563	6.871E3	-2.310		-7.547612	-.617673
	Older Age	0ᵃ	0	.	.		.	.
	Low quali	3.307515E0	.473008	5.545E3	.739	.000	-5.461333	12.076363
	Middle quali	5.034435E0	.487601	5.584E3	1.122		-3.763010	13.831879
	High quali	9.894389E0	.979592	6.059E3	1.987	.000	.132619	19.656160
	Black	-4.557991E0	.245863	6.277E3	-2.469	.002	-8.176514	-.939467
	Coloured	.696473	.098306	6.114E3	.349	.000	-3.220911	4.613856
	Indian/Asian	.505766	.090267	5.494E3	.137	.001	-6.728618	7.740151
	White	0ᵃ	0	.	.		.	.
	Below HHS	3.338924E0	.153236	3.307E3	2.895	.004	1.077795	5.600053
	Averag HHS	.868297	.160118	3.223E3	.748	.000	-1.406348	3.142941
	Above HHS	0ᵃ	0	.	.		.	.
	None workong	7.509918E0	.748207	5.903E3	1.582	.000	-1.798306	16.818142
	One working	7.152260E0	.745347	5.911E3	1.507	.000	-2.150355	16.454874
	Two working	8.637522E0	.794485	5.897E3	1.802	.000	-.761424	18.036469
	Three working	8.401898E0	.26808	5.800E3	1.671	.001	-1.452522	18.256317
	Four plus working	0ᵃ	0	.	.	.000	.	.

	Gender of HH male	-1.352757E0	.185697	5.314E3	-2.310	.002	-2.500963	-.204551
2013	Intercept	1.063914E1	1.297065	5.527E3	.820	.000	-14.788427	36.066707
	female	3.350126E0	.314939	6.660E3	6.506		2.340680	4.359571
	male	0ᵃ	0	.	.	.000	.	.
	Youth	8.353148E0	.612591	6.888E3	5.180	.001	5.191973	11.514323
	Middle Age	1.555328E0	.1603650	6.914E3	.970	.000	-1.588320	4.698975
	Older Age	0ᵃ	0	.	.	.004	.	.
	Low quali	-4.542283E0	.24795	7.207E3	-2.360	.000	-8.315446	-.769120
	Middle quali	-2.621228E0	.156896	7.229E3	-1.339		-6.457316	1.214860
	High quali	4.080337E0	.276596	7.286E3	1.418	.002	-1.558625	9.719299
	Black	-2.703624E0	.27963	6.071E3	-1.479	.001	-6.287081	.879833
	Coloured	.305656	.057060	5.972E3	.156	.000	-3.530889	4.142200
	Indian/Asian	2.162164E0	.155375	6.185E3	.644	.004	-4.415538	8.739865
	White	0ᵃ	0	.	.	.015	.	.
	Below HHS	.833982	.090129	3.592E3	.765	.000	-1.303353	2.971316
	Averag HHS	-.703878	.089187	3.495E3	-.646	.	-2.839385	1.431630
	Above HHS	0ᵃ	0	.	.	.000	.	.
	None workong	3.979905E0	.186494	5.064E3	1.051	.000	-3.443260	11.403071
	One working	3.757145E0	.179087	5.063E3	.994		-3.651500	11.165791
	Two working	4.221952E0	.282362	5.067E3	1.104	.000	-3.274097	11.718002
	Three working	1.572276E0	.064062	5.092E3	.387	.001	-6.395033	9.539584
	Four plus working	0ᵃ	0	.	.		.	.
	Gender of HH male	1.584752E0	.178588	5.419E3	2.739	.004	.450487	2.719018
2014	Intercept	1.851550E1	.528343	5.933E3	1.943	.000	-.163521	37.194518
	female	4.387362E0	.530934	6.290E3	8.263	.002	3.346550	5.428174
	male	0ᵃ	0	.	.	.000	.	.
	Youth	6.542222E0	.665792	6.460E3	3.927	.001	3.276717	9.807727
	Middle Age	2.002648E0	.1651748	6.457E3	1.212	.000	-1.235326	5.240622
	Older Age	0ᵃ	0	.	.		.	.
	Low quali	-3.493490E0	.253361	6.353E3	-1.788	.000	-7.322737	.335758
	Middle quali	-	.187625	6.449E3	-.699	.000	-5.286569	2.506240

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Year		B	Std. Error		t	Sig.	Lower	Upper
		1.390164E0						
	High quali	2.020450E0	.15580	6.802E3	.693	.000	-3.694998	7.735898
	Black	-3.396828E0	.26153	5.724E3	-1.764	.000	-7.172816	.379160
	Coloured	2.417032E0	.052887	5.645E3	1.177	.000	-1.607415	6.441479
	Indian/Asian	4.761217E0	.196023	5.580E3	1.490		-1.504231	11.026665
	White	0ª	0	.	.	.000	.	.
	Below HHS	1.914209E0	.072868	3.269E3	1.784	.001	-.189353	4.017770
	Averag HHS	1.237327E0	.070706	3.153E3	1.156	.000	-.862024	3.336679
	Above HHS	0ª	0		.	.004		.
	None workong	.508074	.013476	5.115E3	.257	.000	-3.360782	4.376931
	One working	-.614748	.013494	5.138E3	-.313	.002	-4.464033	3.234537
	Two working	1.118379E0	.060380	5.130E3	.543		-2.920845	5.157603
	Three working	-8.672668E0	1.028805	3.482E3	-.843	.001	-28.843878	11.498542
	Four plus working	5.427922E0	.695124	3.397E3	.560	.000	-13.580946	24.436790
	Gender of HH male	.281854	.016919	5.053E3	.472	.004	-.888366	1.452075
2015	Intercept	2.472017E1	1.435731	4.938E3	1.722	.000	-3.426535	52.866878
	female	4.177979E0	.532203	6.722E3	7.850	.000	3.134692	5.221265
	male	0ª	0		.	.	.	.
	Youth	8.364596E0	.671220	6.705E3	5.005	.000	5.088474	11.640717
	Middle Age	1.668413E0	.160514	6.715E3	1.005	.000	-1.586720	4.923547
	Older Age	0ª	0		.		.	.
	Low quali	-1.329603E0	.169853	7.052E3	-.675	.000	-5.191107	2.531902
	Middle quali	.733302	.009550	7.062E3	.367	.000	-3.186417	4.653020
	High quali	5.595185E0	.837477	7.090E3	1.972	.000	.032883	11.157486
	Black	-2.764878E0	.065781	6.150E3	-1.338	.000	-6.814531	1.284775
	Coloured	.732569	.030471	6.018E3	.328	.002	-3.639952	5.105091
	Indian/Asian	.24187	.053125	5.540E3	.007	.000	-6.353215	6.401588
	White	0ª	0		.		.	.
	Below HHS	4.477374E0	.133729	3.170E3	3.949	.000	2.254458	6.700290
	Averag HHS	1.292099E0	.136138	3.054E3	1.137	.000	-.935573	3.519770
	Above HHS	0ª	0					
	None workong	-3.921892E0	.236794	4.337E3	-.926	.000	-12.228174	4.384390

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	One working	-5.587703E0	.233688	4.340E3	-1.320	.000	-13.887893	2.712487
	Two working	-2.248894E0	.282382	4.365E3	-.525	.000	-10.644537	6.146749
	Three working	-3.733547E0	.577334	4.439E3	-.816	.000	-12.707404	5.240309
	Four plus working	0ᵃ	0	.	.	.001	.	.
	Gender of HH male	.231054	.017069	5.138E3	.394	.000	-.919851	1.381959
2016	Intercept	2.069821E1	1.457611	5.200E3	1.420	.000	-7.877093	49.273516
	female	4.450920E0	.544676	6.091E3	8.172	.	3.383162	5.518678
	male	0ᵃ	0	.	.	.000	.	.
	Youth	9.825505E0	.601983	6.505E3	6.133	.000	6.685091	12.965919
	Middle Age	2.922770E0	.288593	6.497E3	1.840	.	-.191396	6.036936
	Older Age	0ᵃ	0	.	.	.000	.	.
	Low quali	-4.107786E0	.283526	6.415E3	-2.071	.000	-7.996159	-.219412
	Middle quali	-1.675723E0	.011909	6.469E3	-.833	.002	-5.619730	2.268285
	High quali	6.385550E0	.880875	6.671E3	2.217	.000	.738113	12.032987
	Black	-3.693654E0	.151180	5.645E3	-1.717	.001	-7.910794	.523486
	Coloured	1.914460E0	.356575	5.539E3	.812	.000	-2.705351	6.534271
	Indian/Asian	.189181	.07927	5.627E3	.056	.	-6.491670	6.870032
	White	0ᵃ	0	.	.	.000	.	.
	Below HHS	2.524065E0	.250678	3.235E3	2.018	.000	.071865	4.976265
	Averag HHS	1.191209E0	.259855	3.170E3	.946	.000	-1.279006	3.661423
	Above HHS	0ᵃ	0	.	.		.	.
	None workong	-1.439241E0	.242835	4.747E3	-.339	.002	-9.757166	6.878684
	One working	-2.459637E0	.235920	4.750E3	-.581	.000	-10.764003	5.844729
	Two working	-2.725712E0	.297560	4.763E3	-.634	.001	-11.150916	5.699493
	Three working	-.812797	.089944	4.794E3	-.173	.000	-10.007239	8.381644
	Four plus working	0ᵃ	0	.	.	.	.	.
	Gender of HH male	.28246	.019495	5.007E3	.046	.000	-1.186236	1.242728