

**Impact of inter-provincial migration on individual labour market status:  
The case of Limpopo-Gauteng migration flow**

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## ABSTRACT

Gauteng province is the biggest recipient of migrants in South Africa, both international and internal. Limpopo province is the biggest contributor of internal migrants to Gauteng contributing almost 30% of the internal migrants to Gauteng during the period 2001-2011. This study investigates the labour market outcomes in terms of employment and earnings of migrants from Limpopo to Gauteng in comparison to their counterparts who remained in Limpopo for two consecutive periods, 1996-2001 and 2001-2011.

Using the neo-classical theory of migration, logistic-regression models estimate the probability for employment of migrants to Gauteng compared to their counterparts who remained in Limpopo. Secondly it also estimate the probability of a migrant being in a high or medium income group rather than low income group compared to the non-migrant. Thirdly, spatial statistical techniques are applied to determine if there are any statistically significant spatially clustering of Limpopo migrants in certain parts of Gauteng.

The results show that migrants to Gauteng have better labour market outcomes compared to non-migrants who remained in Limpopo. However the gap between migrants and non-migrants in terms of individual labour market outcomes declined between census 2001 and census 2011. The results also indicate that migrants to Gauteng are more likely to be in the high income group than in low income group compared to the non-migrants in Limpopo, although the gap between the migrants and non-migrants is declining. The results of the spatial statistical analysis confirmed a statistically significant spatial clustering of Limpopo migrants in the Tshwane metropolitan municipality and the northern parts of Ekurhuleni.

### **Key words and phrases:**

Internal Migration

Labour market

Spatial patterns

Neo-classical migration theory

Multinomial logistic regression

Spatial statistics

## OPSOMMING

Gauteng is die grootste ontvanger van beide internasionale en interne migrante in Suid-Afrika. Limpopo provinsie is die grootste enekele bron van interne migrante na Gauteng en het soveel as 30% van die interne migrante na Gauteng bygedra gedurende die tydperk 2001-2011. Hierdie studie ondersoek die arbeidsmark uitkomst in terme van indiensnemingskoerse en inkomste vlakke van migrante uit Limpopo na Gauteng in vergelyking met hul eweknieë wat in Limpopo agtergebly het vir twee agtereenvolgende tydperke 1996-2001 en 2001-2011.

Deur die gebruik van die neo-klassieke teorie van migrasie en die toepassing van logistiese regressiemodelle word die waarskynlikheid vir indiensneming van migrante na Gauteng bereken en vergelyk met hul eweknieë wat in Limpopo aangebly het. Die waarskynlikheid van migrante na Gauteng om in 'n hoë of medium inkomste groep eerder as lae inkomste groep te val word ook bereken en vergelyk met die nie-migrante in Limpopo. Ruimtelike statistiese metodes is toegepas om te bepaal of daar enige ruimtelike groeperings van Limpopo migrante in Gauteng voorkom.

Die resultate toon dat migrante na Gauteng 'n beter arbeidsmark uitkoms het in vergelyking met nie-migrante in Limpopo, maar dat die gaping tussen migrante en nie-immigrante afgeneem het tussen 2001 en 2011. Die resultate toon ook dat die migrante 'n groter waarskynlikheid het om in 'n hoë inkomste groep te val in vergelyking met die nie-migrante, maar dat die gaping besig is om te vernou. Daar is 'n statistiese beduidende groepering van migrante uit Limpopo in die Tshwane munisipaliteit en die noordelike dele van Ekurhuleni.

### **Trefwoorde en frases:**

Arbeidsmark

Interne migrasie

Ruimtelike patrone

Neo-klassieke migrasie teorie

Muti-nomiale logistiese regressie

Ruimtelike statistiese metodes

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**ABBREVIATIONS AND ACRONYMS**

		<b>Page</b>
<b>Gross Domestic Product</b>	<b>GDP</b>	<b>5</b>
<b>European Union</b>	<b>EU</b>	<b>6</b>
<b>United States of America</b>	<b>USA</b>	<b>6</b>
<b>United Kingdom</b>	<b>UK</b>	<b>6</b>
<b>Quarterly Labour Force Survey</b>	<b>QLFS</b>	<b>11</b>
<b>Complete Spatial Randomness</b>	<b>CSR</b>	<b>13</b>
<b>Small Area Layer</b>	<b>SAL</b>	<b>13</b>

## CHAPTER 1: INTRODUCTION

### 1.1 BACKGROUND AND RATIONALE OF THE STUDY

The main internal migration flow in South Africa is towards Gauteng. The province received 714 287 persons between 1996 and 2001, and an additional 953 021 between 2001 and 2011 (Statistics South Africa, 2012). The biggest in-flow of these migrants to Gauteng is from Limpopo. Between Census 1996 and Census 2001 the largest proportion of internal migrants to Gauteng (175 864), representing 24,6% of internal migrants to the province, originated from Limpopo (Statistics South Africa, 2005). This figure further increased to 283 491 between 2001 and 2011 (Statistics South Africa, 2012) representing 29,7% of internal migrants over this period. Statistics South Africa (2013) reported that most interprovincial migration happens due to labour market related reasons. This study thus focusses on the Limpopo-Gauteng migration flows and its impact on labour market outcomes of individuals.

Studies of this nature (e.g. Zuberi & Sibanda 2004; Fauvelle-Aymar 2014) compare migrants and non-migrants irrespective of which provinces they are coming from or their selected destination. Individuals are likely to compare the successes of those who left their regions of origin before they take a similar decision to move. Comparing migrants and non-migrants of their point of origin (in this case, migrants from Limpopo to Gauteng and non-migrants in Limpopo) could assist in understanding future migration patterns from the perspective of the sending province or point of origin.

Harris & Todaro (1970) suggest wage differentials as the most important determinants of migration. They argued that migration increases as a response to urban-rural differences in expected earnings. However, they further pointed out that the urban employment rate will act as an equilibrium force to migration. This relationship between employment, earnings and migration is well documented in various studies (e.g. Shumway & Otterstrom 2001; Gebremariam, Gebremedhin & Schaeffer 2011; Morrison & Clark 2011; Wang et al 2011; Van Lottum & Marks 2012).

This study compares labour market outcomes of migrants from Limpopo to Gauteng to that of their non-migrant counterparts residing in Limpopo.

## 1.2 PROBLEM STATEMENT

Todaro (1969) first pointed out that individuals often move in search of a better life, but that not all of them succeed in this quest as some end up joining the unemployed urban dwellers and thus increasing the urban unemployment. Some studies have shown that migrants are relatively poor compared to locals, they work long hours and in low-paying jobs and some have shown lower subjective mean happiness scores compared to their rural counterparts (Knight & Gunatilaka 2010; Park & Wang 2010). For 20 consecutive quarters to quarter four 2014, figures from the Quarterly Labour Force Surveys in South Africa showed that the official unemployment rate (which excludes discouraged job-seekers) has been higher in Gauteng compared to that of Limpopo. The unemployment rate in Gauteng ranged from 27,2% to 24,7% between quarter one of 2010 and Quarter four of 2014 while that of Limpopo ranged from 26,1% to 15,9% over the same period. This could suggest that more job-seekers are moving to Gauteng. These migration patterns are likely to continue as long as those at the point of origin still see better labour market outcomes of their counterparts who leave.

## 1.3 RESEARCH QUESTIONS

This research compares will attempt to answer the following research questions:

- Do individuals who migrate from Limpopo to Gauteng have a better labour market outcome (i.e. employment and earnings) than their counterparts who remain?
- If there is a gap (i.e. difference in the labour market outcomes between migrants and non-migrants), is the gap declining or increasing between the period 2001 and 2011?
- Is there any evidence of spatial clustering of migrants from Limpopo in Gauteng, and do these patterns differ between employed and unemployed migrants?

## 1.4 HYPOTHESIS

The study will test the following hypotheses:

- There is no significant difference in labour market outcomes (i.e. employment and earnings) between the migrants from Limpopo to Gauteng and non-migrants who stayed in Limpopo.
- There is no difference between the relative labour market outcome patterns between migrant and non-migrant observed in 2001 and those observed in 2011.

## 1.5 AIMS AND OBJECTIVES

The aim of this study is to understand the labour market outcomes of migrants from Limpopo to Gauteng compared to their counterparts who remained in Limpopo. The main objectives of the study include the following:

- To determine the relative differences between migrants from Limpopo to Gauteng and non-migrants residing in Limpopo in terms of their labour market outcomes i.e. employment and earnings.
- To establish if the relative difference between the labour outcomes of the two groups is increasing or decreasing.
- To establish if there is any evidence of spatial clustering of migrants from Limpopo in Gauteng, and whether these patterns differ between employed and unemployed migrants.

## CHAPTER 2: LITERATURE REVIEW

### 2.1 AN OVERVIEW OF NEO-CLASSICAL MIGRATION THEORY

The extensive body of migration theory can broadly be classified into four alternative approaches: neo-classical migration theory, relative deprivation theory, Neo-Marxist theories, and structuration theory. The objective of this study is to compare labour market outcomes of migrants and non-migrants and this makes neo-classical migration theory most relevant to this study. Neo-classical migration theory fundamentally views migration as premised on the principle of demand and supply of labour due to differences of income in source and destination areas. (De Haas: 2010, Kurekova: 2011). The linkage between migration and labour market can be traced back to the work of Lewis (1954). Although his model was a development rather than migration model it did refer to the two economies, i.e. the subsistence economy which will provide labour to the modern economy as it develops. His theory assumed unlimited labour supply at subsistence wages and argued that as countries or regions develop, wages will increase, and this would trigger mass migration to counter the wages. Although Dubey, Palmer-Jones & Sen (2006) established empirical support of the Lewis model of the link between surplus labour and the rural-urban migration, they point out that migration is more complex and highlighted social structure and human capital as factors which also influence rural-urban migration.

It was however Todaro (1969) and Harris & Todaro (1970) who improved the model to extend beyond rural-urban wage differential to include probability of a migrant obtaining employment. Todaro (1969) observed high unemployment in urban areas and he argued that this should affect migration decision making. He then proposed that when analysing the determinants of urban labour supply, real rural urban income differential adjusted for the probability of getting a job, rather than the unadjusted prevailing rural-urban income differentials should be considered. In summary for Todaro (1969) the decision to migrate is a function of:

- a) Real rural-urban income differential
- b) Probability of obtaining a job in urban areas

Arango (2000) argues that the biggest advantage of the neo-classical theory is its ability to combine micro perspectives and macro structural determinants. Arango (2000) however also

questions the theory based on international migration studies indicating low levels of migration despite major economic disparities between nations. He argues that migration levels would have been higher compared to what is observed given the level of economic disparities. He however, acknowledges that although economic disparity is an important factor it is not sufficient to explain migration and highlights the inability of the theory to explain differential migration.

## **2.2 NEO-CLASSICAL MIGRATION THEORY AND ITS APPLICATION IN THE DEVELOPED WORLD**

Napolitano & Bonasia (2010) indicated that the simple Todaro model is unable to explain the complexity of internal migration in Italy. They observed declining migration at the time when Italy was experiencing increasing regional differentials in unemployment rates. They did however find that migration flow was affected by differentials in house prices and concluded that it is important to consider other factors which the traditional economic model ignores. A further contribution of their work is that they highlighted how different factors become dominant in explaining migration flows for different periods. For example, although wage differential was not dominant in explaining migration flows during 1985-1995, they found it to be an important determinant of migration during the 1995-2006 decade. A further criticism against the model is expressed by De Haan (1999) who criticises the model for ignoring the political and social contexts in which migration decisions are taken.

Guriev & Vakulenko (2013) analysed interregional migration flows in Russia for the period 1995 to 2010. They observed a low migration rate during the 1990s when regional convergence was nonexistent. They attributed this to the poverty trap in poor regions and argued that poor people who wanted to move could not afford to do so because of the underdevelopment of financial and real estate markets. However, when income increased in the poor regions in the 2000 this was followed by increased out-migration.

Although the neo-classical approach to migration argues that the main drivers of migration are employment related, i.e. wage differentials and probability of securing employment, Morrison & Clark (2011) showed that in the USA, Britain and Australia the majority of migrants report to have moved for other reasons. They pointed out the contradiction between macro flows and micro motives and explained this by highlighting the importance of separately identifying migration that is due to employment enabling, from that which is due to employment enhancing. Morrison & Clark (2011) further analysed the survey of dynamics



and motivations for migration in New Zealand and results indicated that few working age migrants changed locations with the aim of enhancing employment returns, but most viewed their motive to move as adjusting consumption or realigning social relationships.

Molloy, Smith & Wozniak (2011) tried to establish a link between the declining internal migration with housing prices in the United States and found no clear evidence with inconclusive results. They also could not attribute the declining migration rates in the US to demographics, income, employment, labour force participation, or homeownership.

Another factor that may influence migration patterns is economic cycles like the 2008–2009 recession. Saks & Wozniak (2011) found that internal migration in the United States is positively correlated with the national business cycle. They observed that migration declined during recessions. They analysed three business cycle indicators i.e employment, unemployment rate and unemployment insurance claimants in relation to migration. Their results showed that migration declined with declining employment, migration declined with the increasing unemployment insurance claimants and finally migration declined with increasing unemployment rate.

Kurekova (2011) tested the significance of wage differentials between the new members of European Union (EU) from the eastern bloc and the UK and Ireland in explaining migration at a country level. The study found that wages are not a statistically significant predictor of migration but rather unemployment differential which signals labour market difficulties in home markets. The study concluded that wage differentials were a good indicator to understand migration but not sufficient to explain the dynamics observed in individual Eastern European countries after the expansion of the EU.

### **2.3 NEO-CLASSICAL MIGRATION THEORY AND ITS APPLICATION IN THE DEVELOPING WORLD**

Employment related migration or employment enhancing migration, as Morrison & Clark (2011) termed it, is more prevalent in Asia and Africa compared to the developed regions of Europe and North America. Seto (2011) investigated migration to 11 Asian and African mega-deltas and reviewed over 100 migration studies in these regions. The study concluded that the underlying drivers of migration across all mega-deltas included spatial inequalities in economic development, employment opportunities and wages. The study also concluded that although economic factors are the underlying drivers, they are mediated through migration

networks. However, Van Lottum & Marks (2012) found that wage differentials between the sending and receiving regions were not very important in determining inter provincial migration in Indonesia and they attributed this finding to a dominant informal sector in Indonesia.

In Pakistan, Mahmud et al (2010) found that on average a one percentage point difference in unemployment rate of a district might lead to a 0,16 percentage point difference in in-migration rate of rural migrants into that district. The percentage difference for migrants from other urban areas was even higher (0,24 of a percentage point).

De Brauw, Mueller & Lee (2014) highlighted the low migration rate in sub-Saharan Africa and investigated the challenges of measuring differentials between the returns to agricultural and non-agricultural labour in sub-Saharan Africa. They attributed this to workers in agriculture owning their land and also the prevalence of informal sector employment in urban areas. The question of low rural-urban migration despite visible regional divergences however remained and identified a number of barriers affecting migration included the following:

- Lack of information about the probability of urban employment, thus potential migrant perceiving low probability of urban employment;
- weak migrant network due to poor communication
- Opportunity cost of a migrant's departure.

Aguayo-Tellez, Muendler & Poole (2010) indicated how the surge in internal migration flows in Brazil coincided with market-oriented reforms that were implemented since the late 1980s. The analysis showed that wages for migrants were higher than non-migrants both before and after migration. They concluded that globalisation influences internal migration through the growth of foreign owned establishments and employment opportunities beyond spot wage differentials and the stability of employment at exporting establishments.

#### **2.4 NEO-CLASSICAL MIGRATION THEORY AND THE LABOUR MARKET IN THE SOUTH AFRICAN CONTEXT**

South Africa has a long history of labour migration. Posel & Casale (2003) investigated changes in labour migrants between 1993–1999 and found an increase in the number of households reporting at least one member as a labour migrant. They concluded that migrant labour is still important in South Africa and that the increase was driven by improved women

participation in leaving rural areas to work or find work and that women's relationships with men has a significant influence on their migration decision and subsequent participation in the labour market. Married women and women from households which had employed men were less likely to be labour migrants. These findings highlight the importance of controlling for marital status in migration and labour market studies.

Cornwell & Inder (2004) examined whether rural-urban migrants are more likely to be unemployed, employed in the informal sector or underemployed. They did not find any evidence that migrants had a higher unemployment rate than the national average. They instead found evidence that migrants had a better than average success in getting formal sector employment and concluded that migrants are likely to be more motivated to look for work compared to their non-migrant counterparts.

Using the National Income Dynamics Survey (NIDS), Mbatha & Roodt (2014) found that migration, education, age and gender were the most important variables in determining whether the individual will be employed (formally or informally), unemployed or inactive in South Africa. They also established that migration effects were positive and statistically significant in predicting the odds of labour market participation, although their model did not control for endogenous factors.

Zuberi & Sibanda (2004) analysed Census 1996 labour market status of migrants and non-migrants and their study yielded results of specific relevance for this research. Foreign-born migrants (both recent and long term) were found to have a higher labour force participation and proportions of employment compared to the South African-born migrants. Secondly South African-born internal migrants were found to have a higher labour force participation and employment compared to South African non-migrants. In a recent study using the Quarterly labour force survey data of 2012, Fauvelle-Aymar (2014) analysed employment of foreign-born immigrants, South African-born migrants and South African-born non-migrants. She found that foreign-born migrants had a higher probability of being employed compared to South African born migrants. The study also found that employment of foreign-born migrants in informal and precarious jobs explains the higher employment probability of foreign-born migrants. While Zuberi & Sibanda (2004) observed higher odds of employment for South African born migrants compared to non-migrants, Fauvelle-Aymar (2004) concluded that internal migrants are neither positively nor negatively impacted in the labour market compared to their non-migrant counterparts.

## **2.5 SUMMARY OF NEO-CLASSICAL MIGRATION THEORY**

The review of literature showed how the neo-classical theory is still relevant in migration analysis, despite the criticism that it does not take into consideration the political and social contexts of migration decisions making. Both migrant's individual characteristics like age, education, sex, and marital status, as well as regional characteristics like per capita income differential, and regional unemployment rates play a role. However, the literature has also shown how the theory might not be able to explain migration patterns especially in the developed world. This is because patterns and drivers of migration can change over time, for example wage differential could be an important factor as a predictor of migration during a specific period and less important during subsequent periods. The theory seems to be more relevant in the developing world and it has been widely applied in South African studies. Therefore, applying the neo-classical analytical framework coupled with individual characteristics of migrants and non-migrants will be appropriate for this study.

## CHAPTER 3: DATA SOURCES AND METHODOLOGY

### 3.1 STUDY AREA

The study focuses on labour market outcomes of migrants and non-migrant in relation to Limpopo–Gauteng migration flow. The reason for selecting this specific migration flow is because Gauteng is the biggest recipient of migrants in South Africa and Limpopo is the biggest contributor (29,7%) of the total internal migrants to Gauteng between 2001 and 2011.

### 3.2 OVERVIEW OF RESEARCH DESIGN

This study uses data from the South African census 2001, Census 2011 and Quarterly Labour Force Survey (QLFS) quarter 3: 2012. The 10% sample from Census 2001 and Census 2011 is analysed in the comparisons between the migrants from Limpopo and their non-migrant counterparts who stayed in Limpopo. Figure 3.1 below illustrates the analysis frame-work which was followed.

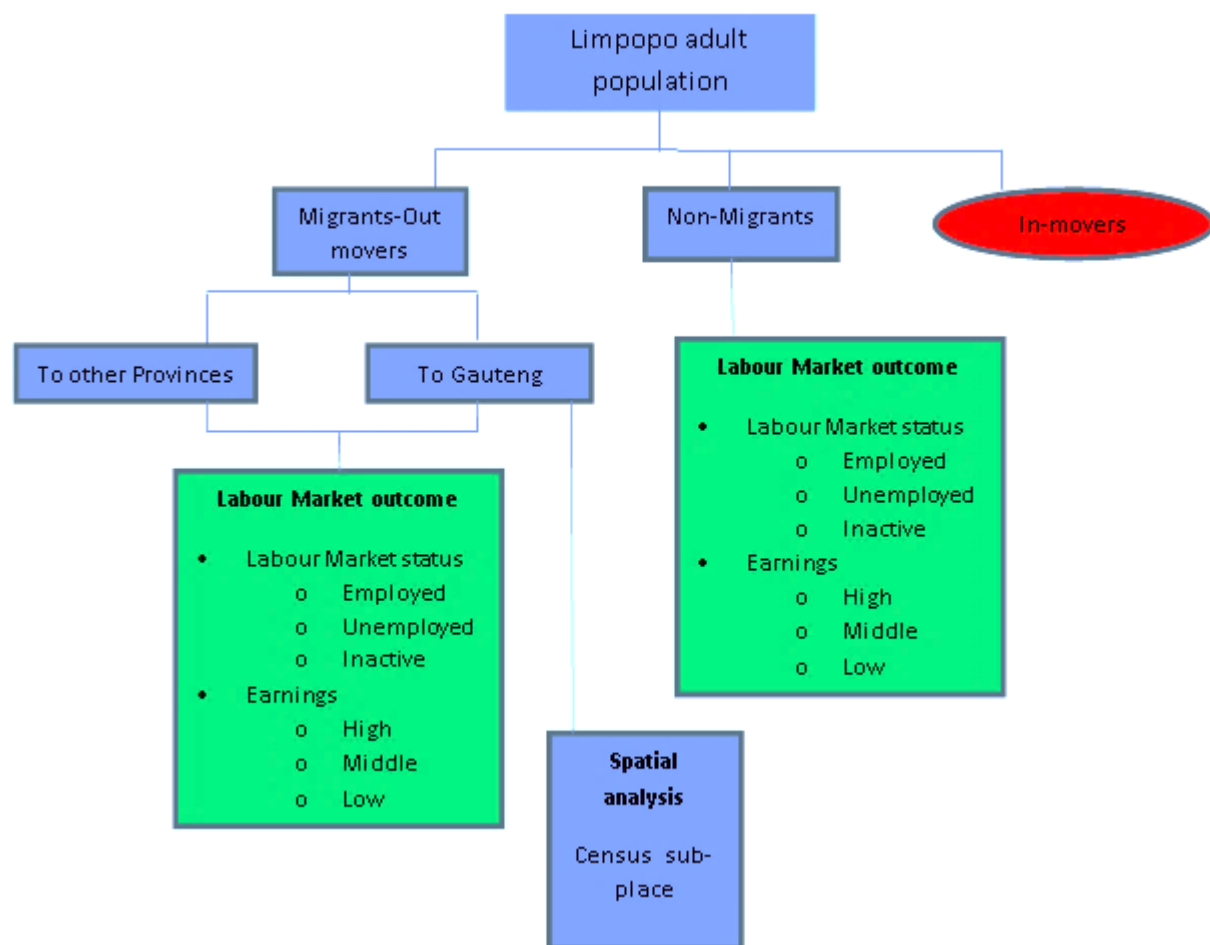


Figure 3. 1 Analysis frame-work

The 10% samples from both censuses provide unit record data at individual level and individuals who migrated from Limpopo to other provinces were identified. Secondly individuals who did not move and were residents in Limpopo at the time of the census were also identified and these two groups were assembled in one database for analysis purposes. In-migrants to Limpopo during the reference period did not form part of the analysis.

Binary logistic regression was used to analyse the likelihood of being employed for both migrants from Limpopo to Gauteng and non-migrants who remained in Limpopo. Secondly, multinomial logistic regression was used to analyse the likelihood of being in high or medium income group compared to being in low income group for migrants and non-migrants.

Statistics South Africa also conducts a Quarterly Labour Force Survey (QLFS). This is a quarterly household based survey which measures employment, descriptors of employment like earnings, unemployment and descriptors of the unemployed. A migration module including questions on reasons why people move was included in the QLFS during the 3rd quarter of 2012. This was used to analyse reasons why people move and relative earnings or differential earnings by province.

Finally, in addition to the 10% census unit records, Statistics South Africa also provides geo-referenced data at small area layer for certain selected variables. The small area layer is the geographic level below a sub-place but higher than the enumeration areas. Cluster and outlier analysis (Anselin's Local Moran's I) was applied to establish if there is statistically significant clustering of employed and unemployed migrants from Limpopo in certain areas of Gauteng or not.

### **3.3 MULTIVARIATE ANALYSIS**

Multivariate analysis measures the relative importance of a factor in explaining the dependent variable. The objective of this study is to determine the relative differences between migrants from Limpopo to Gauteng and non-migrants residing in Limpopo in terms of their labour market outcomes. There are however also other individual and external characteristics which influence labour market outcomes and the application of multivariate analysis is required to isolate the relative importance in explaining labour market outcomes.

### 3.3.1 Employment analysis

The purpose of this component of the analysis was to establish if the probability of migrants from Limpopo to Gauteng of being employed is higher compared to their counterparts who stayed in Limpopo. The probabilities or the odds of being employed were calculated by applying the binary logistic regression.

A dependent variable Labour market status (1=employed, 0=unemployed ) was created and a logistic regression analysis was conducted on migrants and non-migrants to determine the odds of being employed after controlling for education, age, sex, marital status, type of residence and number of years since the move.

The logistic equation may be written as follows;

$$\pi(x) = \frac{e^{\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_i x_i}}{1 + e^{\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_i x_i}}$$

Where  $\pi(x)$  is the probability that the response  $y=1$

$\alpha$  is the equation constant and

$\beta_i$  is the coefficient of the predictor  $x_i$

Logistic regression was conducted for the two points (Census 2001 and Census 2011) to determine if the gap between migrants and non-migrants in terms labour market outcomes was widening or closing.

### 3.3.2 Earnings analysis

The second part of the analysis focused on earnings. The purpose of the earnings analysis was to establish wage differentials between the migrants from Limpopo to Gauteng and their counterparts who remained in Limpopo controlling for age, number of years since the move, education, industry(primary, secondary and tertiary), occupational skill and sector (formal, informal). South African census income data is grouped into 12 categories. In order to conduct multivariate analysis the 12 groups were categorised into 3 income groups (low, middle and high) to create the dependent variable (income).

In order to group all employed people into the three categories, the upper bound poverty line provided by Statistics South Africa (2014) was used as a guide. For example the upper bound poverty line in 2001 was R323 and in 2011 after adjusting it for inflation it moved to R620. For the purpose of this study, the census 2001 and Census 2011 income data was categorised as shown in Table 3.1. The cut-offs were changed in Census 2011 as a crude adjustment for inflation.

**Table 3.1 Income categories for analysis Census 2001 and Census 2011**

Category	Codes	
	Census 2001	Census 2011
Low	R0 - R 400	R0 - R 800
Middle	R401 – R 3 200	R801 – R 6 400
High	R3 201 +	R6 401 +

The multinomial logistic regression analysis with low income category as a reference was conducted.

### 3.3.3 Spatial analysis

In addition to the 10% census unit records, Statistics South Africa also provides geo-referenced data up to the level of the Small Area Layer (SAL). In order to determine the statistical significance of the observed spatial patterns and either reject or confirm the null hypothesis of Complete Spatial Randomness (CSR) the Anselin Local Morans I technique ('cluster-outlier analysis' function) was applied to the data. The purpose is to further analyse the spatial distribution of employed and unemployed migrants from Limpopo in Gauteng to determine whether these spatial patterns exhibit statistically significant clustering or dispersion, and would provide evidence of statistically significant underlying spatial processes. High positive local Morans I values imply that the unit under analysis has similar high or low values as its neighbours, and these can therefore be regarded as spatial clusters. A high negative local Morans I value means that the value of the unit under analysis is different from the values of their surrounding locations and that the location under study is a spatial outlier. ArcGIS software was used for this purpose.



## CHAPTER 4: FINDINGS OF EMPIRICAL ANALYSIS

### 4.1 OVERVIEW OF LABOUR MARKET AND EARNINGS INDICATORS

As discussed in chapter 2, individuals migrate for a variety of reasons, with labour market related reasons particularly important (e.g. Kurekova 2011; Morrison & Clark 2011; Saks & Wozniak 2011; Seto 2011).

The census questionnaire did not include the reasons why individuals migrate. However, the quarterly labour force survey of the period July to September 2012 included a module on migration, where interprovincial migration was measured for the five years prior to the survey. Migrants were also asked to report the main reason why they migrated. This was the first time in the QLFS where reasons were asked why people move and this module was not included again in any subsequent rounds of this survey.

Although the sample size of the labour force survey is too small to analyse the Limpopo-Gauteng migration flows in detail, it does however provide important general national patterns and trends. Table 4.1 shows the number of interprovincial migrants and the reasons why they migrated. Just over 53% of the approximately 1,2 million individuals who moved from one province to another in the five years prior to the QLFS Q3:2012 gave labour market related reasons why they moved.

**Table 4.1 Number of interprovincial migrants and distribution of reasons why they moved**

Reasons of migration	Number in thousands	Percent
<b>To work*</b>	<b>382</b>	<b>30,3</b>
<b>Looking for work*</b>	<b>207</b>	<b>16,4</b>
To live with relative	146	11,5
Other	134	10,6
Family moved	117	9,3
School	109	8,6
<b>Job transfer*</b>	<b>57</b>	<b>4,5</b>
Marriage	46	3,6
<b>To start a business*</b>	<b>28</b>	<b>2,2</b>
Adventure	23	1,9
Divorce	10	0,8
<b>Look for land for farming*</b>	<b>4</b>	<b>0,3</b>
<b>Total</b>	<b>1 263</b>	<b>100,0</b>

Source of data: QLFS Q3:2012

\* Labour market related reasons

Labour market related reasons include work (30,3%), looking for work (16,4%), job transfer (4,5%), to start a business (2,2%) and look for land for farming (0,3%). This implies that most people move for labour market related reasons and thus the impact of migration on the labour market is significant.

#### 4.1.1 Key labour market indicators of migrants and non-migrants

Table 4.2 shows that approximately 36,7% (employment-population ratio) of the 158 314 migrants to Gauteng from Limpopo during the period 1996-2001, reported that they were employed at the time of Census 2001. This is 16 percentage points higher compared to their non-migrant counterparts who stayed in Limpopo. Migrants from Limpopo who moved to other provinces other than Gauteng reported an even higher employment-population ratio (41,7%) compared to both the migrants to Gauteng and the non-migrants. During the period 2001–2011, all the three groups (Non-migrant, migrants to Gauteng, and migrants to other provinces other than Gauteng) reported higher employment-population ratios than for the period 1996 to 2001. However, the gap between the different groups widened. For example the employment-population ratio among migrants to Gauteng was 59,3% which is almost 22 percentage points higher compared to the non-migrants (compared to a gap of 17,9% in the 2001 Census).

**Table 4.2 Key labour market indicators**

Status	Using strict definition						Using Expanded definition					
	1996-2001			2001-2011			1996-2001			2001-2011		
	Non migrant	Migrants to GP	Migrants to other provinces	Non migrant	Migrants to GP	Migrants to other provinces	Non migrant	Migrants to GP	Migrants to other provinces	Non migrant	Migrants to GP	Migrants to other provinces
Employed	607 726	58 155	25 844	1 105 152	154 298	60 901	607 726	58 155	25 844	1 105 152	154 298	60 901
Unemployed	573 761	52 530	12 562	393 689	48 119	8 783	813 981	59 618	15 547	629 160	62 593	12 405
Not in labour force	1 741 437	47 629	23 516	1 468 208	57 671	16 531	1 501 218	40 541	20 532	1 232 738	43 197	12 909
Total aged 15 year and above	2 922 925	158 314	61 922	2 967 049	260 088	86 215	2 922 925	158 314	61 922	2 967 049	260 088	86 215
Labour Force	1 181 488	110 685	38 406	1 498 841	202 417	69 684	1 421 707	117 773	41 390	1 734 311	216 891	73 307
Unemployment rate	48,6	47,5	32,7	26,3	23,8	12,6	57,3	50,6	37,6	36,3	28,9	16,9
Employment population ratio	20,8	36,7	41,7	37,2	59,3	70,6	20,8	36,7	41,7	37,2	59,3	70,6
Labour Force participation rate	40,4	69,9	62,0	50,5	77,8	80,8	48,6	74,4	66,8	58,5	83,4	85,0

Source of data: 10 percent sample Census 2001 and Census 2011

Unemployment rate is another labour market indicator; however it is more complex than the employment-population ratio which has been discussed so far. Unemployment can be defined in two ways. First, is the strict definition where for someone to be classified as unemployed he/she has to be without work, have looked for work (salaried or self-employment) during a specific reference period and he/she is available to work. The second definition relaxes the criteria of having looked for work. The person has to be without work during the reference

period and he/she is available to work. The second definition is referred to as the relaxed or expanded definition. The data is presented for both the strict and the expanded definitions, but the emphasis of the analysis will be on the expanded definition. The expanded definition is more appropriate for this study in that, those who indicate that they are available to work but have not looked for work are potential suppliers of labour and they have an impact on the labour market and are likely to be potential migrants compared to those who are completely outside the labour force.

The expanded rate during Census 2011 shows that the gap between migrants and non-migrants widened during the 2001–2011 period compared to the 1996–2001 period. Although the strict unemployment showed a similar pattern, the expanded rate depicts a bigger gap (7,4 percentage points) compared to that showed by the strict unemployment (2,5 percentage points).

The labour force measures the labour supply and it includes individuals who are willing to sell their labour, so it is the sum of the employed and the unemployed. Like the unemployment indicator, the labour force can be analysed as strict labour force (i.e. employment plus the strict unemployment) or the expanded labour force (which is employment plus the expanded unemployment).

Table 3 shows both the strict labour force and the expanded labour force. The non-migrants reported lower labour force participation rates compared to their migrant counterparts. During the period 1996–2001 the migrants to Gauteng reported an expanded participation rate of 74,4% which is 25,8 percentage points higher compared to the non-migrants. In the 2001–2011 period the expanded labour force participation rate among the migrants to Gauteng increased to 83,4% while that of non-migrants increased to 58,5%, decreasing the gap between the two groups somewhat to 24,9 percentage points. The increase in the participation rate was mainly driven by the increase in employment as observed in the increase of those who were employed among the working age (employment population ratio) for both migrants and non-migrants. The growth in employment could have been driven by the favourable economic growth experienced in South Africa during 2000-2008.

### 4.1.2 Median monthly earnings by provinces

Table 4.3 shows that the median monthly earnings in Gauteng (R4 100) is more than double the figure for Limpopo (R2 000). This means that 50 percent of the employed persons in Limpopo earn R2 000 or less while 50 percent of workers in Gauteng earn R4 100 or less. These wage differentials are visible both among low earners and higher earners. For example the lower 5% in Limpopo earn R500 or less per month while the lower 5% in Gauteng earn R650 or less per month. On the top end, the top 5% in Limpopo earn R17 000 or more per month while the top 5% in Gauteng they earn R25 000 per month.

**Table 4.3 Median monthly earnings by province**

	P5	P10	Q1	Median	Q3	P90	P95
Western Cape	600	1 000	1 800	<b>3 400</b>	8 500	18 000	26 000
Eastern Cape	500	550	1 300	<b>2 500</b>	6 000	14 800	19 000
Northern Cape	0	433	1 200	<b>2 000</b>	5 800	12 000	16 000
Free State	500	650	1 200	<b>2 100</b>	5 500	12 000	16 000
KwaZulu-Natal	500	780	1 400	<b>2 750</b>	6 000	12 000	16 000
North West	700	900	1 600	<b>3 500</b>	7 500	14 000	18 000
Gauteng	650	1 083	2 000	<b>4 100</b>	10 000	18 000	25 000
Mpumalanga	700	850	1 400	<b>2 500</b>	6 000	14 500	19 066
Limpopo	500	650	1 000	<b>2 000</b>	6 000	14 000	17 000

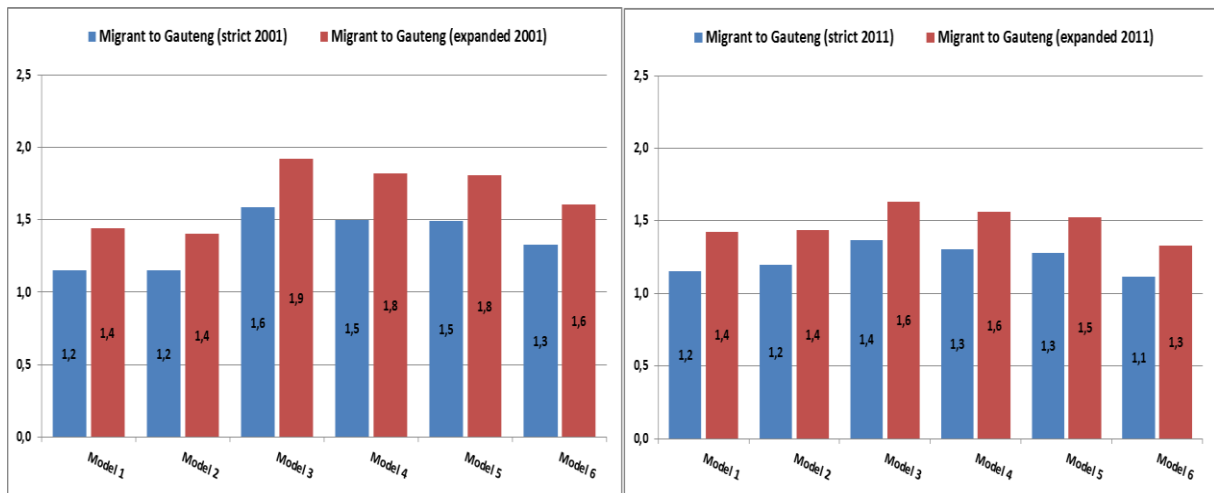
Source of data: QLFS Q3:2012

## 4.2 MULTIVARIATE ANALYSIS OF LABOUR MARKET STATUS

Multivariate analysis measures the relative importance of a factor in explaining the dependent variable. The objective of this study is to determine the relative differences between migrants from Limpopo to Gauteng and non-migrants residing in Limpopo in terms of their labour market outcomes.

The logistic regression model results are interpreted as an odds ratio, which is a probability of an event to occur. For example in this study the labour market outcome had two outcomes, either to be employed or unemployed.

As discussed earlier, the strict unemployment does not include those who indicated that they are available to work but did not actively look for work during the reference period but the expanded definition include them as unemployed. However, both the strict and expanded definitions provide similar patterns in terms of odds ratios of the likelihood of employment for migrants to Gauteng compared to their counterparts or stayed in Limpopo with the expanded definition yielding slightly higher odds ratio. The comparison between the two results is illustrated in Figure 4.1.



Source of data: 10 percent sample Census 2001 and Census 2011

**Figure 4.1 Odds ratio of employment: Comparison of strict and expanded unemployment for migrants to Gauteng in Census 2001 and Census 2011**

Those who indicate that they want to work and available to work but for some reasons they have not looked for work during the reference period have some attachment to the labour market and they are likely to be potential migrants. For this reasons, emphasis will be on the expanded definition which is discussed in the next section. The different models will also be discussed in the next section.

**4.4.2 Logistic regression models using the expanded unemployment**

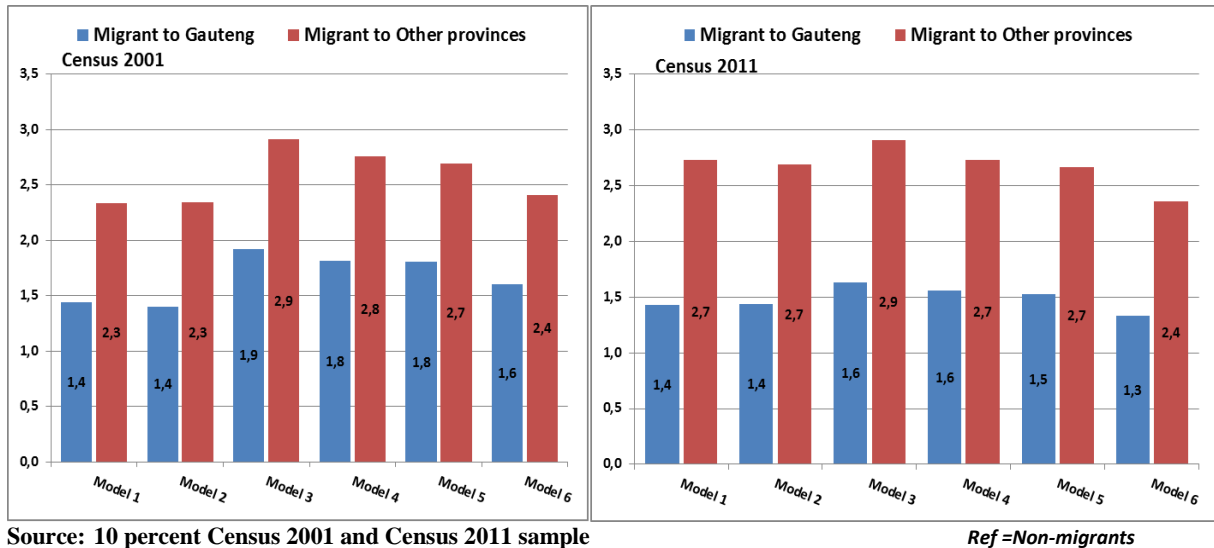
The results presented in Figure 4.2 shows the odds of being employed compared to being in expanded unemployment after controlling for various variables.

The figure shows results from 6 models. Model 1 includes only migration, showing the likelihood of migrants being employed compared to non-migrants without controlling for any other variable. As the models progress, an additional variable was added in the following order; education, age, sex, marital status, duration of stay, as illustrated in Table 4.4.

**Table 4.4 Illustration of the logistic regression models including control variables for each model**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Non-migrant (ref)						
Migrant to Gauteng	Migration	Migration	Migration	Migration	Migration	Migration
Migrant to Other provinces						
Other control variables		Education	Education	Education	Education	Education
			Age	Age	Age	Age
				Sex	Sex	Sex
					Marital status	Marital status
					Duration of stay	

Although results from all the 6 models are shown, the discussion will be based on model 6 only which has all the variables considered. The full details of each model are presented in Tables A1–A4 of the appendix.



Source: 10 percent Census 2001 and Census 2011 sample

**Figure 4.2 Odds ratio of employment compared to expanded unemployment for migrants and non-migrants in Census 2001 and Census 2011**

Model 6 which controls for migration, education, age, sex, marital status and duration at current province of residence show that the odds of being employed for the migrants to Gauteng were 1,6 in Census 2001 while that of migrants to other provinces were 2,4. In Census 2011 the odds ratio of being employed for the migrants to Gauteng compared to non-migrants remaining in Limpopo declined to 1,3 while that of those who migrated to other provinces remained unchanged. This suggests that employment opportunities were still slightly higher for migrants in Census 2011 compared to their counterparts who stayed in Limpopo. However, the gap between those who migrated to Gauteng and those who stayed in Limpopo declined slightly.

Table 4.5 shows that individuals with tertiary education were 5,2 times more likely to be employed compared to those with no education or with less than primary completed during the population Census 2001 after controlling for migration, age, sex marital status and duration at current residence. Somewhat surprisingly the odds ratio increases with age with those aged 65+ being 4,7 times likely to be employed compared to those aged 15–24 in Census 2011. However this could be due to the fact that those aged above 65 are mostly not in the labour force and the few who stay in the labour force are mostly employed.

In 2001 men were 2,0 times more likely to be employed compared to women but in Census 2011 this declined to men being 1,6 times likely to be employed compared to women. Married persons or those living with their partners are more likely to be employed compared to those who are not married. This could suggest that women are still discriminated in the labour market and marriage could be a stabilizing factor in terms of labour market outcomes. A similar pattern is observed in Census 2011.

**Table 4.5 Odds ratio of employment compared to expanded unemployment from model 6 for Census 2001 and Census 2011**

	<b>Census 2001</b>	<b>Census 2011</b>
<b>Non-migrant (ref)</b>		
<b>Migrant to Gauteng</b>	1,6	1,3
<b>Migrant to Other provinces</b>	2,4	2,4
<b>Constant</b>		
<b>No schooling or less than Primary (ref)</b>		
<b>Primary completed</b>	1,2	0,9
<b>Secondary not completed</b>	1,3	*1,0
<b>Secondary completed</b>	1,9	1,1
<b>Tertiary</b>	5,2	2,7
<b>Other</b>		2,3
<b>15-24 (ref)</b>		
<b>25-34</b>	2,1	1,1
<b>35-44</b>	4,7	1,6
<b>45-64</b>	5,7	2,3
<b>65+</b>	7,6	4,7
<b>Women(ref)</b>		
<b>Men</b>	2,0	1,6
<b>Not Married (ref)</b>		
<b>Married or living with a partner</b>	1,5	1,3
<b>Less than year (ref)</b>		
<b>1 year</b>	1,1	*1,1
<b>2 years</b>	1,1	1,2
<b>3 years</b>	1,2	1,2
<b>4 years</b>	1,2	1,3
<b>5 years</b>	1,5	1,2
<b>Constant</b>	0,1	0,8

Source of data: 10 percent sample Census 2001 and Census 2011

Table 4.6 also shows the odds ratio from model 6 including their respective confidence intervals. As reported earlier the employment odds ratio for migrants declined between Census 2001 and Census 2011, suggesting a decline in the employment opportunity gap between migrants and non-migrants. However, the study used a 10% sample instead of the full census, implying that the change in odds ratio between Census 2001 and Census 2011 could be due to sample variability rather than a real change. In order to determine if the changes are significant and thus real, the confidence intervals should be examined.

**Table 4.6 Employment odds ratio using expanded unemployment including the 95% confidence intervals**

Variables	Employment odds ratio including confidence intervals							
	Census 2001				Census 2011			
	Sig.	Exp(B)	95% C.I EXP(B)		Sig.	Exp(B)	95% C.I EXP(B)	
			Lower	Upper			Lower	Upper
Non-migrant (ref)	0,00				0,00			
Migrant to Gauteng	<b>0,00</b>	<b>1,6</b>	<b>1,5</b>	<b>1,7</b>	<b>0,00</b>	<b>1,3</b>	<b>1,2</b>	<b>1,4</b>
Migrant to other provinces	0,00	2,4	2,2	2,6	0,00	2,4	2,2	2,6

Source of data: 10 percent sample Census 2001 and Census 2011

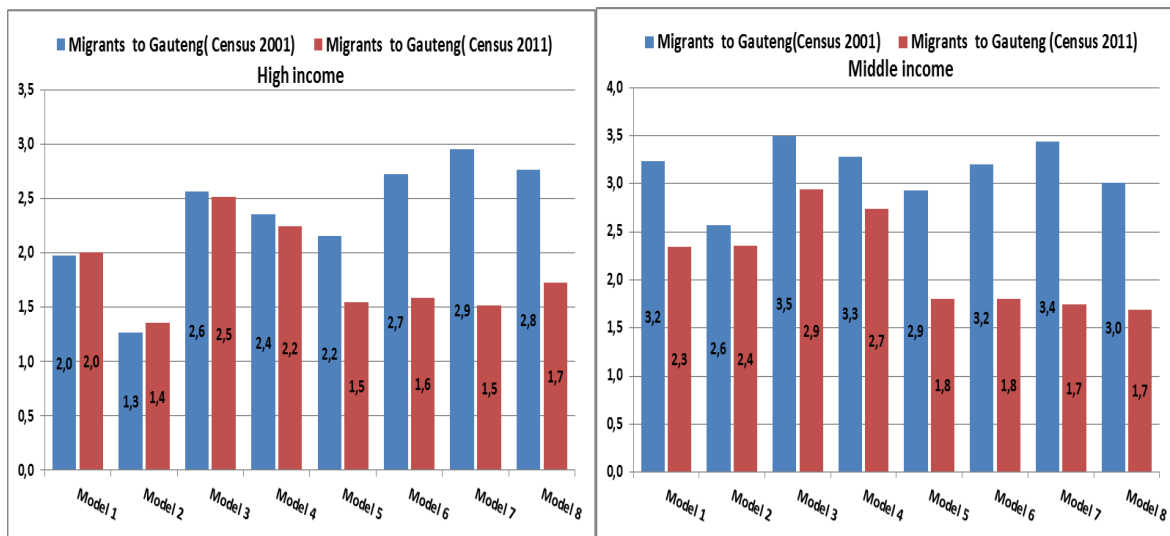
The estimate of employment odds ratio for migrants to Gauteng in 2001 was 1,6 with confidence intervals of 1,5 (lower) and 1,7 (upper). This means that the true value can be anywhere between 1,5 and 1,7. The confidence intervals for the equivalent odds ratio in Census 2011 were 1,2 for the lower limit and 1,4 for the upper limit. The confidence interval for Census 2001 and Census 2011 are not overlapping each other and thus implies that the change from 1,6 in Census 2001 to 1,3 in Census 2011 is significant and therefore not due to sampling variability.

It can thus be concluded that the migrants to Gauteng still have higher odds of being employed (1,3 times) compared to their counterparts who remained in Limpopo. However, there was a statistically significant decline in the gap between the migrants to Gauteng and their counterparts who remained in Limpopo between Census 2001 and Census 2011 from 1,6 to 1,3 times. Migrants from Limpopo to other provinces are 2,4 times likely to be employed compared to their counterparts who remained in Limpopo during Census 2001 and this gap was maintained during Census 2011. This may suggest that migrants to other provinces are likely to secure jobs first before moving.

#### 4.3 MULTIVARIATE ANALYSIS OF EARNINGS

As mentioned earlier the South African census income data were categorised into 3 groups (low, middle and high) to create the dependent variable. The multinomial logistic regression analysis with low income category as a reference was conducted and the results are shown in Figure 4.3 and the details in Tables A5 and A6 of the appendix.





Reference category=Low income  
 Source of data: 10 percent sample Census 2001 and Census 2011  
 Details of the models are in Tables A5 and A6 of appendix

**Figure 4.3 Income odds ratio from multinomial logistic regression for census 2001 and census 2011**

Figure 4.3 shows odds ratios from different models after controlling for specific variables. For example, Model 1 includes only migration variable. Additional variables were added in the following order; education (model 2), age in Model 3, sex in Model 4, industry in Model 5, occupational skills in Model 6, sector in Model 7 and duration of stay in Model 8 as illustrated in Table 4.7. However, only findings using Model 8 which includes all the variables will be discussed.

**Table 4.7 Illustration of the multinomial logistic regression models including control variables for each model**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Migrant to Gauteng								
Migrant to Other provinces	Migration	Migration	Migration	Migration	Migration	Migration	Migration	Migration
Non-migrant (ref)								
Other control variables		Education	Education	Education	Education	Education	Education	Education
			Age	Age	Age	Age	Age	Age
				Sex	Sex	Sex	Sex	Sex
					Industry	Industry	Industry	Industry
						Skills level	Skills level	Skills level
							Sector	Sector
								Duration of stay

Figure 4.3 shows that, in Census 2001 migrants to Gauteng were 2,8 times more likely to be in high income group than in low income group compared to their employed counterparts who stayed in Limpopo after controlling for education, age, sex, industry (primary, secondary and tertiary), occupational skills, sector and duration of stay. This gap however declined significantly to 1,7 in Census 2011.

Those with tertiary education were 51,5 times (see Table A5 in the appendix) more likely to be in the high income group than in the low income group compared to those with no schooling or uncompleted primary in census 2001. Those with tertiary education also recorded the highest odds ratio of being in middle income group compared to those with no education or uncompleted primary. In 2011 the odds ratio of those with tertiary education increased to 78,4. This clearly illustrates the impact of education in the labour market. This could probably explain why those with tertiary education are over-represented among the migrants to both Gauteng and other provinces. In 2001, those in skilled occupations were 12,7 more likely to be in high income group than in low income group compared to the unskilled workers. However in 2011 the skilled workers were 1,7 more likely to be in high income group than in low income group as compared to unskilled. The huge reduction in the likelihood of skilled employee being in high income group could have been due to the recession of the 2009.

The odds ratio of being in high income group for migrants from Limpopo to Gauteng declined from 2,8 in 2001 to 1,7 in 2011. However, it is imperative that confidence intervals are taken into consideration in determining whether the change is significant or not.

Table 4.8 shows the odds ratio from multinomial logistic regression for income from Model 8 for both Census 2001 and Census 2011 with their respective confidence intervals. Considering the confidence interval for Census 2001, the true value of the odds of being in high income group for migrants to Gauteng could have been between 2,2 and 3,5 while that of Census 2011 could have been between 1,5 and 2,0. These two ranges are not overlapping which implies that the decline in odds ratio of migrants to Gauteng of being in high income group compared to non-migrants is significant.

**Table 4.8 Income odds ratio from multinomial logistic regression for census 2001 and 2011**

		Census 2001				Census 2011			
		Sig.	Exp(B)	95% C.I EXP(B)		Sig.	Exp(B)	95% C.I EXP(B)	
				Lower	Upper			Lower	Upper
<b>High income</b>	<b>Intercept</b>	0,00				0,00			
	<b>Migrant to Gauteng</b>	<b>0,00</b>	<b>2,8</b>	<b>2,2</b>	<b>3,5</b>	<b>0,00</b>	<b>1,7</b>	<b>1,5</b>	<b>2,0</b>
	<b>Migrant to Other provinces</b>	0,00	1,6	1,3	2,1	0,00	2,7	2,3	3,2
	<b>Non-migrant (ref)</b>								
<b>Middle income</b>	<b>Intercept</b>	0,00				0,00			
	<b>Migrant to Gauteng</b>	<b>0,00</b>	<b>3,0</b>	<b>2,6</b>	<b>3,5</b>	<b>0,00</b>	<b>1,7</b>	<b>1,5</b>	<b>1,9</b>
	<b>Migrant to Other provinces</b>	0,02	1,2	1,0	1,5	0,00	1,7	1,5	1,9
	<b>Non-migrant (ref)</b>								

Source of data: 10 percent sample Census 2001 and Census 2011

The same pattern is observed in the odds of migrants to Gauteng of being in middle income group rather than low income group, compared to non-migrant. The decline from 3,0 in census 2001 to 1,7 in Census 2011 cannot be attributed to chance or sampling variability and thus statistically significant. In summary, although the probability of migrant workers to Gauteng being in high income or middle income rather than low income was still higher in Census 2011 compared to their counterparts who stayed in Limpopo, the gap between the two groups declined between Census 2001 and Census 2011.

#### 4.4 SPATIAL ANALYSIS

Since the probability of employment and of being in high income group or middle income is still higher for migrants to Gauteng compared to non-migrants who stay in Limpopo, migration flow from Limpopo to Gauteng is likely to continue. This implies that it is important to understand the spatial distribution of Limpopo migrants to Gauteng.

One of the objectives of this study is thus to establish if there is any evidence of spatial clustering of migrants from Limpopo in Gauteng, and whether these patterns differ between employed and unemployed migrants. To determine if there is any clustering, the global spatial auto correlation Moran's I statistics was considered. The results presented in Table 4.6 show positive z-score values for all the variables. i.e all migrants (18,4) employed migrants (23,9) and unemployed migrants (14,6).

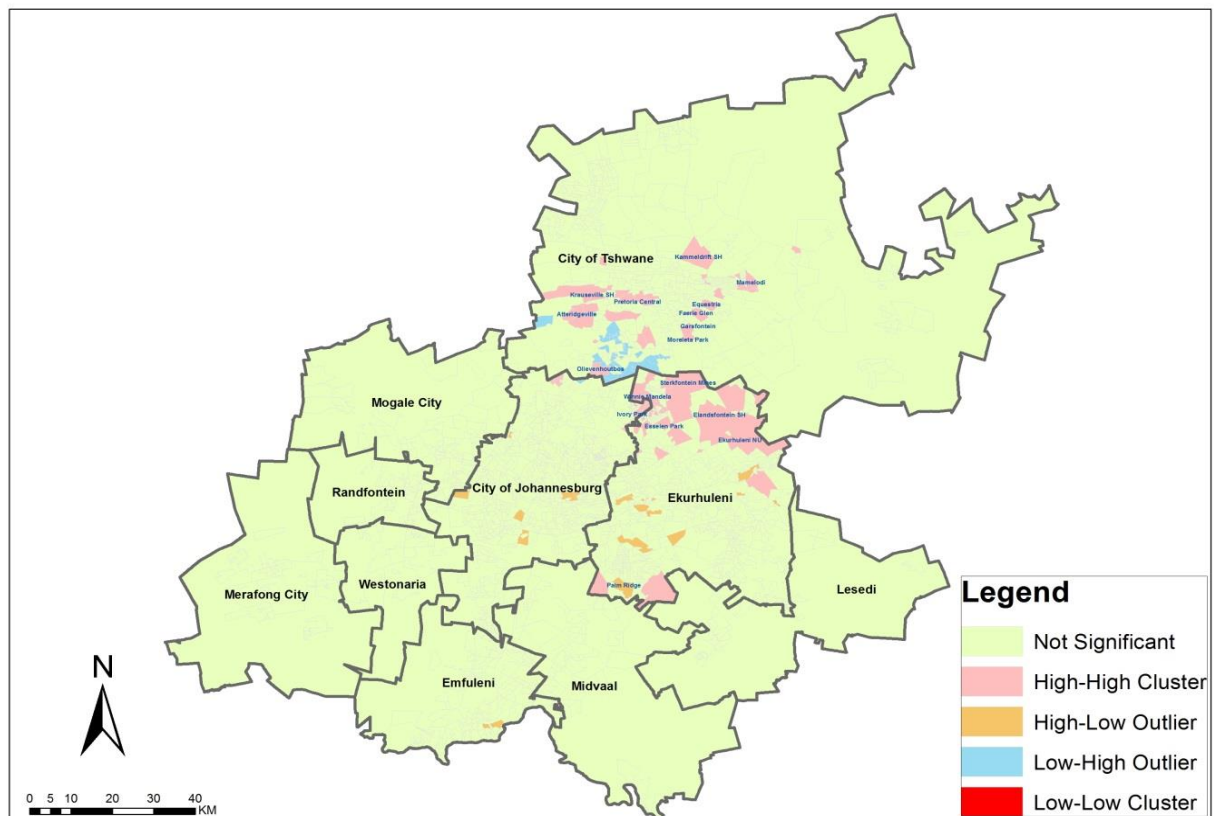
**Table 4.9 Moran's I statistics for total migrants from Limpopo, employed and the unemployed**

	Total migrants	Employed Migrants	Unemployed Migrants
<b>Moran's index</b>	0,025522	0,033257	0,020248
<b>Z-score</b>	18,483874	23,904268	14,686004
<b>P-value</b>	0,000000	0,000000	0,000000

Source of data: Census 2011

These positive z-score values suggest that the null hypothesis of Complete Spatial Randomness (CSR) can be rejected and thus, there is statistically significant spatial clustering in all the three the categories. This implies that similar values (high or low) of migrants tend to spatially cluster together (Figures 4.4 to 4.6).

The results from the local Moran's I statistics distinguishes between a statistically significant cluster (using migrants from Limpopo as the indicator) of high values (HH), cluster of low values (LL), outlier in which a high value is surrounded primarily by low values (HL), and outlier in which a low value is surrounded primarily by high values (LH).



Source of data: Census 2011

**Figure 4.4 Spatial clusters and outliers of Limpopo migrants in Gauteng**

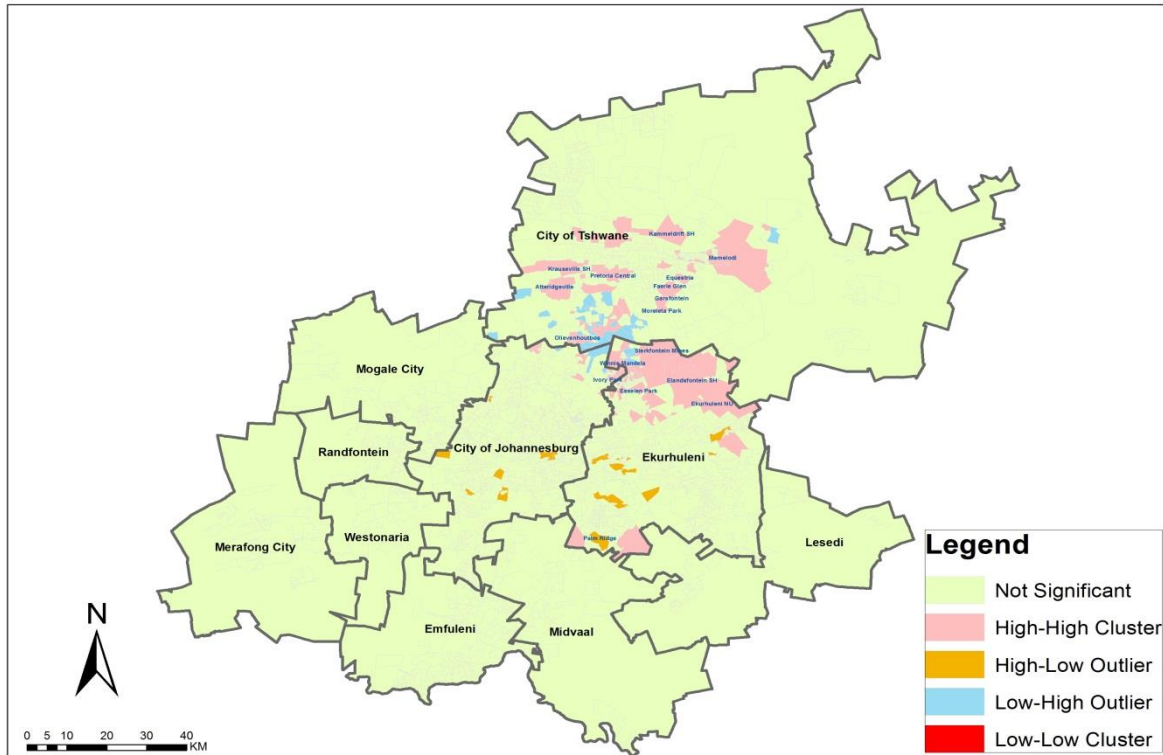
Figure 4.4 shows the spatial cluster and outlier map for all Limpopo migrants (both employed and unemployed). The High-High clusters are clearly mainly concentrated in Tshwane and Ekurhuleni.

The High-High clusters in Tshwane can be grouped in three distinct categories. These are firstly the lower income informal residential areas on the eastern fringe of Mamelodi, the western fringe of Atteridgeville and the Olievenhoutbosch area. The second category predominantly consists of small holding areas on the urban fringe areas of Pretoria such as Kameeldrift in the north, Lyttleton in the south and the areas north of Atteridgeville in the western parts of the city. The third category includes some of the higher income eastern suburbs of Pretoria such as Moreletta Park, Faerie Glen and Equestria. This implies that Tshwane receives migrants of various social groups. The migrants in the eastern suburbs are likely to be the more affluent, better educated and employed while those in informal settlements are the low income workers who are likely to be in irregular employment or unemployed.

In Ekurhuleni, the High-High clusters are predominantly located in the Tembisa, Ivory Park, Winnie Mandela lower income areas, as well as small holding and mining areas of Sterkfontein along the north-western periphery of the metropolitan areas. The second category is scattered High-Low outlier areas in lower income areas such as Daveyton, Windmill Park and Palm Ridge. This could be indicative of Ekurhuleni mostly attracting migrants from Limpopo who are in low skilled casual labour and farm work.

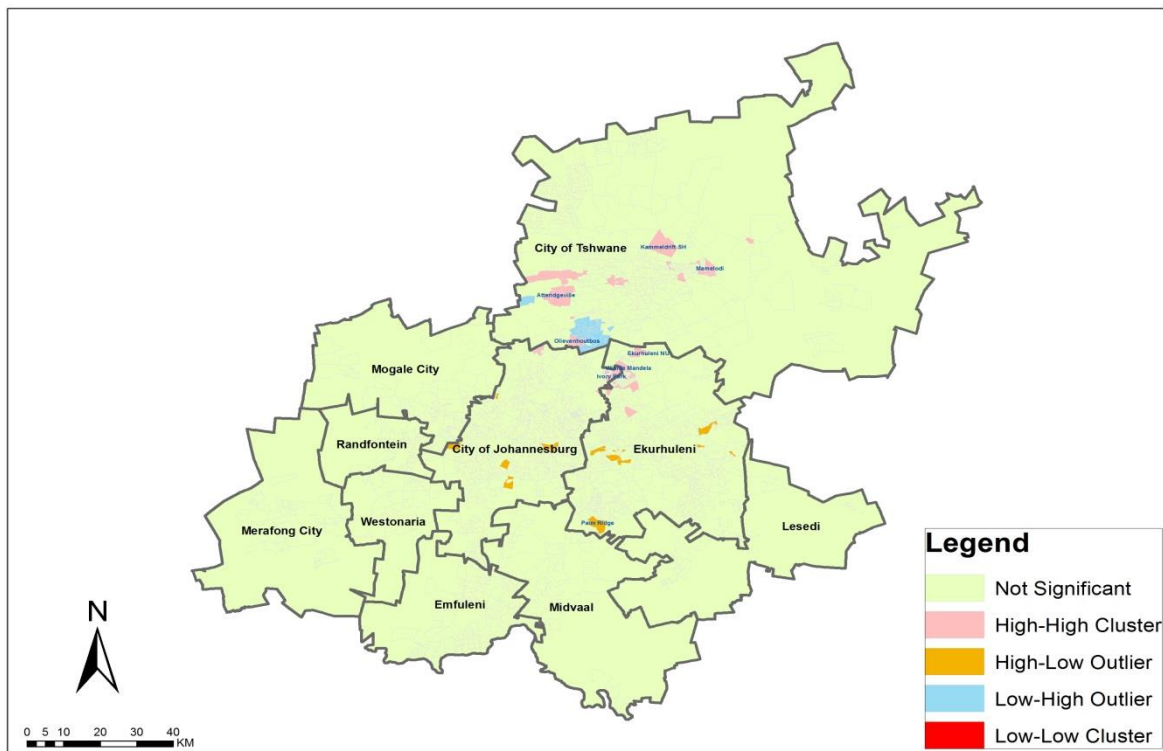
In the City of Johannesburg there are two distinct patterns. The first is a High-High cluster in Diepsloot in the extreme northern part of the city on the border with the Tshwane metropolitan area. Secondly, some High-Low outliers in some suburbs of Soweto such as, Orlando East and Devland, as well as informal settlements in the western part of the city such as Zandspruit.

Figures 4.5 and 4.6 show the spatial cluster and spatial outlier of the employed and unemployed migrants from Limpopo respectively. The pattern for the employed migrants looks broadly similar to the pattern observed for all migrants as discussed above.



Source of data: Census 2011

**Figure 4.5 Spatial cluster and spatial outliers of employed migrants from Limpopo to Gauteng**



Source of data: Census 2011

**Figure 4.6 spatial cluster and spatial outliers of unemployed migrants from Limpopo to Gauteng**

The spatial clusters and outliers of the unemployed migrants are however much more concentrated. These include the High-High clusters concentrated in the informal settlement areas of Mamelodi, Atteridgeville and Olievenhoutbosch in Tshwane, Ivory Park in Ekurhuleni and Diepsloot in Johannesburg. The second is a number of High-Low outliers consisting of some low-income suburbs in Ekurhuleni and Johannesburg as discussed above. This implies that some low skilled migrants remain unemployed and they are most probably end up in urban poverty of informal settlements.

## **SECTION 5: CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 SUMMARY CONCLUSIONS AND REVISITING THE STUDY OBJECTIVES.**

The first research objective was to determine the relative differences between migrants from Limpopo to Gauteng and non-migrants who remained in Limpopo in terms of their labour market outcomes i.e. employment and earnings. The descriptive analysis of key labour market indicators showed differentials between migrants to Gauteng and their counterparts who remained in Limpopo with the migrants having better labour market outcomes. The unemployment rate among migrants to Gauteng was 7,4 percentage points lower compared to non-migrants in Census 2011. The proportion of those aged 15 years and above who had jobs (employment population ratio or labour absorption) among migrants was 22,1 percentage points higher compared to non-migrants in census 2011. The expanded participation rate among migrants to Gauteng was 24,9 percentage points higher compared to non-migrants. Migrants from Limpopo to other provinces other than Gauteng also had better labour market outcomes compared to non-migrants who stayed in Limpopo.

The multivariate analysis was conducted to determine the likelihood of better labour market outcome of migrants compared to non-migrants while controlling for other influencing factors. These results indicated that during Census 2011 migrants to Gauteng were 1,3 times more likely to be employed compared to non-migrants who remained in Limpopo after controlling for education, age, sex, marital status and duration of stay. Those with tertiary education had better employment prospects and this explains why those with tertiary education were over-represented among the migrants to Gauteng. The implication of this would be that Limpopo is likely to continue to lose its greatest resource of human capital to Gauteng.

The second objective of the study was to determine if the gap between the migrants and non-migrants was widening or closing between the two censuses. Results showed that in Census 2001, migrants to Gauteng were 1,6 times more likely to be employed compared to non-migrants and this declined to 1,3 in Census 2011. The decline observed between the two study points was statistically significant suggesting that indeed the gap between migrants and non-migrants in terms of employment opportunities declined over the decade 2001 to 2011. However this should be interpreted with caution in that, it does not necessarily mean that



migration to Gauteng will decline. Saks & Wozniak (2011) found a positive correlation between internal migration and national business cycle in the United States of America. In 2011 South Africa had just emerged from the 2008-2009 recession and this could have influenced the trends observed in 2011.

Another important labour market outcome is the level of income or wages. The neo-classical migration theory views migration as premised on the principle of demand and supply of labour due to differences of income in source and destination areas. Although some studies like Van Lottum & Marks (2012) found that wage differential between the sending and receiving regions was not very important in determining inter provincial migration, the wage differential in the case of Limpopo-Gauteng are big to be ignored. Analysis of wages suggests a huge wage differential between Gauteng and Limpopo. The median monthly earning of those working in Limpopo is half of that observed in Gauteng.

Migrants to Gauteng who were employed were compared to their non-migrant counterparts who were employed in Limpopo. Income of employed migrants and non-migrants was analysed after controlling for other factors which might influence income. The results suggested that there is a gap between the two groups. The multinomial logistic regression indicated that during census 2001, migrants to Gauteng were 2,8 times more likely to be in the high income group than in low income group compared to their counterparts employed in Limpopo. This was after controlling for education, age, sex, industry, occupational skills, sector and duration of stay in the current province. This figure changed to 1,7 times more likely in Census 2011. A similar pattern was observed when considering the likelihood of migrants being in middle income group other than low income group compared to non-migrants. Although the gap between migrants and non-migrants is declining for both the elements highlighted in the neo-classical theory of migration i.e. employment and wage differentials, migration flow from Limpopo to Gauteng is likely to continue.

Finally, the third objective of the study was to establish if there is any evidence of spatial clustering of migrants from Limpopo in Gauteng, and whether these patterns differ between employed and unemployed migrants. The spatial analysis suggests there is clustering of migrants from Limpopo to Gauteng and also clustering of employed and unemployed migrants. This could indicate mediation of migration through networks as suggested by Seto (2011). Overall, the most significant clustering of migrants is concentrated in Tshwane and the northern parts of Ekurhuleni. The overall spatial clustering patterns of employed and

unemployed Limpopo migrants are not significantly different, although the spatial clusters and outliers of the unemployed migrants are much more concentrated in lower income residential areas. The small holdings farming areas in the fringe areas of Tshwane and Ekurhuleni also feature prominently as High-High spatial clusters of employed Limpopo migrants.

The spatial patterns observed could be having different implications for the different municipalities; however planning for services like housing and schools is common. The multivariate analysis suggests that the gap between migrants and non-migrants from Limpopo in terms of employment opportunities and wage differential still exists. This implies that migration is likely to continue to Gauteng. Since migrants are likely to depend on established social networks, it can be expected that the spatial clustering pattern of migrants from Limpopo is likely to continue. In the City of Tshwane and Ekurhuleni clustering occurs in a relatively wider area while in the City of Johannesburg clustering is confined in two areas of Diepsloot and areas bordering Ivory Park.

## **5.2 SIGNIFICANCE AND VALUE OF RESEARCH**

The study highlights the labour market outcome gaps between migrants and non-migrants. It also shows spatial patterns of migrants to Gauteng. The study shows spatial clusters of migrants in different municipalities and as discussed earlier potential migrants depend on their social networks and therefore the same areas are likely to attract more migrants. Municipalities could use this research to predict future Limpopo-Gauteng migration flows and future spatial patterns of migrants in Gauteng. This would assist the municipalities to plan future service delivery activities and budgets more effectively.

The study also shows the clustering of the unemployed migrants. Clustering of unemployment can pose threats of crime and urban poverty with complicated service delivery challenges for the municipalities in Gauteng. Consideration of these findings could assist in guiding the allocation of resources for policing and in planning of spatial distribution of poverty alleviation programmes.

### **5.3 LIMITATIONS OF STUDY**

There are some limitations of the study mainly associated with the data sources used.

Some of the labour market questions in census questionnaires were changed and improved between Census 2001 and Census 2011. For example Employment in 2001 included subsistence farming while in 2011 it was not included. One would have expected this to impact on rural provinces like Limpopo, however the results suggests that the gap between those in Limpopo and in Gauteng reduced. This implies that the change might not have impacted much on the results. However, this is still a limitation because the full impact is still unknown.

Zuberi & Sibanda (2004) identified limitations of census data which are also relevant in this study. First census captures individual attributes at the time of enumeration not at the time when the individual migrated. Secondly census data is cross sectional thus it is not possible to measure patterns overtime.

### **5.4 RECOMMENDATIONS FOR FURTHER RESEARCH**

This research has shown that migration from Limpopo to Gauteng is likely to continue and it has shown that there is a statistically significant spatial clustering of migrants from Limpopo. However, as discussed earlier migrants from Limpopo to Gauteng contribute only one third of the total internal migrants to Gauteng. Further research covering all migrants to Gauteng, (both international and internal) is needed in order to provide potential users of this information a complete picture and potential impact of migration to Gauteng.

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## APPENDIX

**Table A1 Odds ratio of employment compared to strict unemployment for migrants and non-migrants (period 1996-2001) as reported in Census 2001**

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
Non-migrant (ref)	0,00		0,00		0,00		0,00		0,00		0,00	
Migrant to Gauteng	0,00	1,15	0,00	1,15	0,00	1,59	0,00	1,50	0,00	1,49	0,00	1,33
Migrant to Other provinces	0,00	2,04	0,00	2,06	0,00	2,59	0,00	2,44	0,00	2,39	0,00	2,14
Constant	0,00	0,94										
No schooling or less than Primary (ref)			0,00		0,00		0,00		0,00		0,00	
Primary completed			0,00	0,91	0,00	1,16	0,00	1,12	0,00	1,11	0,00	1,11
Secondary not completed			0,00	0,79	0,00	1,25	0,00	1,23	0,00	1,22	0,00	1,22
Secondary completed			0,09	1,03	0,00	1,74	0,00	1,71	0,00	1,70	0,00	1,70
Tertiary			0,00	3,30	0,00	4,35	0,00	4,49	0,00	4,38	0,00	4,38
Constant			0,00	0,88								
15-24 (ref)					0,00		0,00		0,00		0,00	
25-34					0,00	2,19	0,00	2,26	0,00	2,04	0,00	2,03
35-44					0,00	5,01	0,00	5,30	0,00	4,40	0,00	4,39
45-64					0,00	6,70	0,00	6,82	0,00	5,62	0,00	5,61
65+					0,00	10,53	0,00	9,81	0,00	8,28	0,00	8,25
Constant					0,00	0,22						
Women(ref)												
Men							0,00	1,98	0,00	1,94	0,00	1,94
Constant							0,00	0,15				
Not Married (ref)												
Married or living with a partner									0,00	1,44	0,00	1,44
Constant									0,00	0,15		
Less than year (ref)											0,00	
1 year											0,02	1,14
2 years											0,01	1,18
3 years											0,01	1,18
4 years											0,01	1,18
5 years											0,00	1,55
Constant											0,00	0,15
Model summary												
-2 Log likelihood	148722,34		144617,19		134911,50		132240,49		131568,93		131547,78	
Cox & Snell R Square	0,004		0,041		0,124		0,145		0,151		0,151	
Nagelkerke R Square	0,005		0,055		0,165		0,194		0,201		0,201	

Source of data: 10 percent sample census 2001

**Table A2 Odds ratio of employment compared to strict unemployment for migrants and non-migrants (period 2001-2011) as reported in Census 2011**

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
Non-migrant (ref)	0,00		0,00		0,00		0,00		0,00		0,00	
Migrant to Gauteng	0,00	1,15	0,00	1,20	0,00	1,37	0,00	1,31	0,00	1,28	0,00	1,11
Migrant to Other provinces	0,00	2,40	0,00	2,41	0,00	2,62	0,00	2,46	0,00	2,40	0,00	2,13
Constant	0,00	2,76										
No schooling or less than Primary (ref)			0,00		0,00		0,00		0,00		0,00	
Primary completed			0,00	0,70	0,08	0,94	0,02	0,93	0,01	0,92	0,01	0,92
Secondary not completed			0,00	0,58	0,00	0,94	0,00	0,93	0,00	0,92	0,00	0,92
Secondary completed			0,00	0,62	0,41	0,98	0,60	0,99	0,24	0,98	0,24	0,98
Tertiary			0,00	1,60	0,00	2,23	0,00	2,28	0,00	2,23	0,00	2,23
Other			0,00	1,62	0,00	2,21	0,00	2,17	0,00	2,13	0,00	2,13
Constant			0,00	3,76								
15-24 (ref)					0,00		0,00		0,00		0,00	
25-34					0,00	1,08	0,00	1,09	0,19	1,02	0,34	1,02
35-44					0,00	1,58	0,00	1,61	0,00	1,43	0,00	1,42
45-64					0,00	2,50	0,00	2,56	0,00	2,24	0,00	2,23
65+					0,00	5,42	0,00	5,81	0,00	5,33	0,00	5,31
Constant					0,00	1,82						
Women (ref)												
Men							0,00	1,51	0,00	1,50	0,00	1,50
Constant							0,00	1,50				
Not Married (ref)												
Married or living with a partner									0,00	1,29	0,00	1,29
Constant									0,00	1,48		
Less than year (ref)											0,00	
1 year											0,22	1,07
2 year											0,00	1,22
3 year											0,01	1,16
4 year											0,00	1,28
5 year											0,00	1,22
Constant											0,00	1,48
<b>Model summary</b>												
-2 Log likelihood	173360,83		170311,89		166758,21		165616,99		165248,55		165220,70	
Cox & Snell R Square	,004		0,02		0,05		0,05		0,06		0,06	
Nagelkerke R Square	,006		0,03		0,07		0,08		0,08		0,08	

Source of data: 10 percent sample census 2011



**Table A3 Odds ratio of employment compared to expanded unemployment for migrants and non-migrants as reported in Census 2001**

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
Non-migrant (ref)	0,00		0,00		0,00		0,00		0,00		0,00	
Migrant to Gauteng	0,00	1,44	0,00	1,40	0,00	1,92	0,00	1,82	0,00	1,80	0,00	1,61
Migrant to Other provinces	0,00	2,34	0,00	2,34	0,00	2,91	0,00	2,76	0,00	2,70	0,00	2,41
Constant	0,00	0,66										
No schooling or less than Primary (ref)			0,00		0,00		0,00		0,00		0,00	
Primary completed			0,00	0,93	0,00	1,22	0,00	1,18	0,00	1,16	0,00	1,16
Secondary not completed			0,00	0,81	0,00	1,33	0,00	1,30	0,00	1,29	0,00	1,29
Secondary completed			0,00	1,13	0,00	1,98	0,00	1,93	0,00	1,92	0,00	1,92
Tertiary			0,00	3,87	0,00	5,21	0,00	5,37	0,00	5,24	0,00	5,24
Constant			0,00	0,60								
15-24 (ref)					0,00		0,00		0,00		0,00	
25-34					0,00	2,30	0,00	2,37	0,00	2,13	0,00	2,13
35-44					0,00	5,41	0,00	5,72	0,00	4,73	0,00	4,72
45-64					0,00	6,98	0,00	7,06	0,00	5,76	0,00	5,74
65+					0,00	9,78	0,00	9,07	0,00	7,57	0,00	7,55
Constant					0,00	0,14						
Women(ref)												
Men							0,00	2,06	0,00	2,04	0,00	2,04
Constant							0,00	0,10				
Not Married (ref)												
Married or living with a partner									0,00	1,46	0,00	1,46
Constant									0,00	0,09		
Less than year (ref)											0,00	
1 year											0,02	1,14
2 years											0,03	1,13
3 years											0,00	1,21
4 years											0,01	1,18
5 years											0,00	1,51
Constant											0,00	0,09
<b>Model summary</b>												
-2 Log likelihood	174104,55		168492,43		156814,36		153362,68		152557,98		152535,81	
Cox & Snell R Square	0,006		0,049		0,131		0,154		0,159		0,159	
Nagelkerke R Square	0,009		0,066		0,176		0,207		0,214		0,215	

Source of data: 10 percent sample census 2001

**Table A4 Odds ratio of employment compared to expanded unemployment for migrants and non-migrants as reported in Census 2011**

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
Non-migrant (ref)	0,00		0,00		0,00		0,00		0,00		0,00	
Migrant to Gauteng	0,00	1,43	0,00	1,43	0,00	1,63	0,00	1,56	0,00	1,53	0,00	1,33
Migrant to Other provinces	0,00	2,73	0,00	2,69	0,00	2,91	0,00	2,73	0,00	2,67	0,00	2,36
Constant	0,00	1,72										
No schooling or less than Primary (ref)			0,00		0,00		0,00		0,00		0,00	
Primary completed			0,00	0,73	0,21	0,97	0,06	0,95	0,03	0,94	0,02	0,94
Secondary not completed			0,00	0,62	0,35	0,99	0,24	0,98	0,07	0,97	0,07	0,97
Secondary completed			0,00	0,70	0,00	1,10	0,00	1,11	0,00	1,09	0,00	1,09
Tertiary			0,00	1,99	0,00	2,72	0,00	2,78	0,00	2,72	0,00	2,73
Other			0,00	1,74	0,00	2,35	0,00	2,30	0,00	2,26	0,00	2,26
Constant			0,00	2,17								
15-24 (ref)					0,00		0,00		0,00		0,00	
25-34					0,00	1,17	0,00	1,19	0,00	1,12	0,00	1,11
35-44					0,00	1,71	0,00	1,76	0,00	1,58	0,00	1,57
45-64					0,00	2,57	0,00	2,64	0,00	2,35	0,00	2,34
65+					0,00	4,79	0,00	5,14	0,00	4,76	0,00	4,74
Constant					0,40	1,01						
Women (ref)												
Men							0,00	1,58	0,00	1,57	0,00	1,57
Constant							0,00	0,82				
Not Married (ref)												
Married or living with a partner									0,00	1,25	0,00	1,25
Constant									0,00	0,81		
Less than year (ref)											0,00	
1 year											0,30	1,05
2 year											0,00	1,21
3 year											0,00	1,18
4 year											0,00	1,27
5 year											0,00	1,23
Constant											0,00	0,81
<b>Model summary</b>												
-2 Log likelihood	225660,47		221074,13		216271,53		214391,48		214003,57		213966,36	
Cox & Snell R Square	0,01		0,03		0,06		0,07		0,07		0,07	
Nagelkerke R Square	0,01		0,05		0,08		0,10		0,10		0,10	

Source of data: 10 percent sample census 2011

**Table A5 Income odds ratio from multinomial logistic regression for census 2001**

		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
		Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
High Income	Intercept	0,00		0,00		0,00		0,00		0,00		0,00		0,00		0,00	
	Migrant to Gauteng	0,00	1,97	0,00	1,27	0,00	2,56	0,00	2,36	0,00	2,16	0,00	2,73	0,00	2,95	0,00	2,76
	Migrant to Other provinces	0,00	1,47	0,00	1,30	0,00	2,13	0,00	1,84	0,00	1,93	0,00	1,98	0,00	1,73	0,00	1,62
	Non-migrant (ref)																
	Primary completed			0,28	1,12	0,00	1,46	0,00	1,42	0,00	1,37	0,02	1,31	0,07	1,23	0,07	1,23
	Secondary not completed			0,00	3,46	0,00	6,06	0,00	6,04	0,00	5,55	0,00	4,23	0,00	3,66	0,00	3,67
	Secondary completed			0,00	20,99	0,00	46,80	0,00	50,02	0,00	42,76	0,00	22,06	0,00	14,76	0,00	14,77
	Tertiary			0,00	201,59	0,00	364,69	0,00	470,76	0,00	392,15	0,00	90,24	0,00	51,51	0,00	51,52
	No schooling or less than Primary (ref)																
	25-34					0,00	4,14	0,00	4,41	0,00	4,28	0,00	3,61	0,00	3,49	0,00	3,50
	35-44					0,00	15,48	0,00	18,40	0,00	17,12	0,00	12,28	0,00	10,38	0,00	10,39
	45-64					0,00	25,54	0,00	29,53	0,00	27,11	0,00	20,02	0,00	16,50	0,00	16,51
	65+					0,00	15,72	0,00	15,13	0,00	13,91	0,00	11,60	0,00	12,69	0,00	12,69
	15-24 (ref)																
	Men							0,00	3,76	0,00	4,02	0,00	3,23	0,00	2,67	0,00	2,67
	women (ref)																
	Primary industries									0,00	0,50	0,00	0,63	0,00	2,21	0,00	2,21
	Secondary industries									0,71	1,02	0,93	1,00	0,87	0,99	0,87	0,99
	Tertiary industries																
	Skilled											0,00	24,29	0,00	12,69	0,00	12,71
	Semi-skilled											0,00	4,81	0,00	2,97	0,00	2,97
	Unskilled																
	Formal													0,00	21,40	0,00	21,43
	Informal													0,00	1,92	0,00	1,93
	Agriculture													0,54	1,12	0,54	1,12
	Private household (ref)																
	1 year															0,22	1,21
	2 years															0,46	1,13
3 years															0,71	0,94	
4 years															0,61	1,10	
5 years															0,40	1,27	
Less than 1 year (ref)																	
Middle income	Intercept	0,00		0,00		0,00		0,00		0,00		0,00		0,00		0,00	
	Migrant to Gauteng	0,00	3,23	0,00	2,56	0,00	3,49	0,00	3,28	0,00	2,92	0,00	3,20	0,00	3,44	0,00	3,01
	Migrant to Other provinces	0,00	1,39	0,00	1,27	0,00	1,65	0,00	1,46	0,00	1,53	0,00	1,55	0,00	1,41	0,02	1,24
	Non-migrant (ref)																
	Primary completed			0,00	1,22	0,00	1,43	0,00	1,41	0,00	1,35	0,00	1,33	0,00	1,29	0,00	1,29
	Secondary not completed			0,00	1,56	0,00	2,15	0,00	2,17	0,00	1,96	0,00	1,77	0,00	1,61	0,00	1,61
	Secondary completed			0,00	2,98	0,00	4,54	0,00	4,87	0,00	4,11	0,00	3,12	0,00	2,32	0,00	2,32
	Tertiary			0,00	7,22	0,00	9,81	0,00	12,22	0,00	10,13	0,00	5,81	0,00	3,85	0,00	3,84
	No schooling or less than Primary (ref)																
	25-34					0,00	1,96	0,00	2,10	0,00	2,03	0,00	1,91	0,00	1,83	0,00	1,82
	35-44					0,00	3,50	0,00	4,15	0,00	3,84	0,00	3,48	0,00	3,05	0,00	3,04
	45-64					0,00	4,75	0,00	5,53	0,00	5,05	0,00	4,75	0,00	4,00	0,00	3,99
	65+					0,00	3,62	0,00	3,58	0,00	3,33	0,00	3,31	0,00	3,15	0,00	3,15
	15-24 (ref)																
	Men							0,00	2,83	0,00	3,01	0,00	2,46	0,00	2,10	0,00	2,10
	women (ref)																
	Primary industries									0,00	0,42	0,00	0,42	0,00	1,22	0,00	1,22
	Secondary industries									0,00	1,27	0,01	1,11	0,40	1,03	0,40	1,03
	Tertiary industries(ref)																
	Skilled											0,00	3,29	0,00	2,19	0,00	2,19
	Semi-skilled											0,00	2,22	0,00	1,69	0,00	1,69
	Unskilled																
	Formal													0,00	4,04	0,00	4,04
	Informal													0,00	1,16	0,00	1,17
	Agriculture													0,00	0,48	0,00	0,48
	Private household (ref)																
	1 year															0,11	1,20
	2 years															0,06	1,26
3 years															0,29	1,15	
4 years															0,09	1,27	
5 years															0,78	1,06	
Less than 1 year (ref)																	

Source: 10 percent sample census 2001

The reference category is: Low income

**Table A6 Income odds ratio from multinomial logistic regression for census 2011**

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	
High income	Intercept	0,00		0,00		0,00		0,00		0,00		0,00		0,00		0,00	
	Migrant to Gauteng	0,00	2,01	0,00	1,36	0,00	2,51	0,00	2,24	0,00	1,55	0,00	1,58	0,00	1,52	0,00	1,72
	Migrant to Other provinces	0,00	2,80	0,00	2,46	0,00	3,68	0,00	3,20	0,00	2,45	0,00	2,46	0,00	2,46	0,00	2,72
	Non-migrant (ref)																
	Primary completed			0,00	0,75	0,02	1,27	0,13	1,17	0,52	0,93	0,44	0,92	0,43	0,91	0,45	0,92
	Secondary not completed			0,00	1,15	0,00	3,47	0,00	3,28	0,00	2,77	0,00	2,62	0,00	2,38	0,00	2,38
	Secondary completed			0,00	7,16	0,00	21,45	0,00	21,19	0,00	15,91	0,00	13,59	0,00	11,78	0,00	11,79
	Tertiary			0,00	74,53	0,00	181,67	0,00	207,61	0,00	130,18	0,00	94,73	0,00	78,26	0,00	78,40
	Other			0,00	33,93	0,00	69,52	0,00	68,91	0,00	47,37	0,00	37,04	0,00	30,97	0,00	30,95
	No schooling or less than Primary (ref)																
	25-34					0,00	7,12	0,00	7,50	0,00	4,07	0,00	4,10	0,00	4,50	0,00	4,58
	35-44					0,00	17,39	0,00	19,21	0,00	8,21	0,00	8,23	0,00	9,64	0,00	9,86
	45-64					0,00	44,47	0,00	49,74	0,00	19,39	0,00	19,28	0,00	22,74	0,00	23,23
	65+					0,00	68,95	0,00	86,69	0,00	19,03	0,00	18,37	0,00	21,12	0,00	21,58
	15-24 (ref)																
	Men							0,00	3,06	0,00	2,72	0,00	2,57	0,00	2,48	0,00	2,48
	women (ref)																
	Primary industries									0,00	1,68	0,00	1,87	0,00	2,80	0,00	2,80
	Secondary industries									0,27	1,04	0,09	1,07	0,08	1,08	0,07	1,08
	Tertiary industries																
	Skilled											0,00	2,36	0,00	1,77	0,00	1,76
	Semi-skilled											0,00	1,74	0,00	1,27	0,00	1,27
	Unskilled																
	Formal													0,00	2,42	0,00	2,42
	Informal													0,00	0,73	0,00	0,73
	Agriculture													0,00	0,56	0,00	0,56
	Private household (ref)																
	1 year															0,44	0,91
	2 years															0,28	1,14
	3 years															0,09	0,81
4 years															0,35	0,89	
5 years															0,01	0,77	
Less than 1 year (ref)																	
Middle income	Intercept	0,00		0,00		0,00		0,00		0,00		0,00		0,00		0,00	
	Migrant to Gauteng	0,00	2,34	0,00	2,36	0,00	2,94	0,00	2,73	0,00	1,80	0,00	1,80	0,00	1,75	0,00	1,69
	Migrant to Other provinces	0,00	2,04	0,00	2,12	0,00	2,49	0,00	2,26	0,00	1,69	0,00	1,69	0,00	1,74	0,00	1,69
	Non-migrant (ref)																
	Primary completed			0,00	0,62	0,01	1,09	0,19	1,05	0,19	1,06	0,20	1,06	0,44	1,04	0,43	1,04
	Secondary not completed			0,00	0,47	0,00	1,13	0,00	1,11	0,00	1,22	0,00	1,21	0,00	1,18	0,00	1,18
	Secondary completed			0,00	0,87	0,00	1,95	0,00	1,99	0,00	1,85	0,00	1,86	0,00	1,77	0,00	1,77
	Tertiary			0,00	1,37	0,00	2,66	0,00	2,99	0,00	2,30	0,00	2,33	0,00	2,19	0,00	2,19
	Other			0,00	1,62	0,00	2,76	0,00	2,82	0,00	2,45	0,00	2,48	0,00	2,09	0,00	2,09
	No schooling or less than Primary (ref)																
	25-34					0,00	4,37	0,00	4,54	0,00	2,18	0,00	2,18	0,00	2,25	0,00	2,25
	35-44					0,00	5,94	0,00	6,44	0,00	2,40	0,00	2,40	0,00	2,56	0,00	2,56
	45-64					0,00	7,71	0,00	8,58	0,00	2,79	0,00	2,79	0,00	3,02	0,00	3,01
	65+					0,00	56,73	0,00	70,49	0,00	6,47	0,00	6,48	0,00	6,70	0,00	6,69
	15-24 (ref)																
	Men							0,00	2,10	0,00	1,86	0,00	1,84	0,00	1,83	0,00	1,83
	women (ref)																
	Primary industries									0,00	1,41	0,00	1,40	0,00	1,30	0,00	1,30
	Secondary industries									0,00	1,08	0,02	1,07	0,03	1,07	0,03	1,07
	Tertiary industries																
	Skilled											0,05	0,94	0,00	0,87	0,00	0,87
	Semi-skilled											0,21	1,03	0,01	0,93	0,01	0,93
	Unskilled																
	Formal													0,00	1,41	0,00	1,41
	Informal													0,93	1,00	0,93	1,00
	Agriculture													0,00	1,26	0,00	1,26
	Private household (ref)																
	1 year															0,97	1,00
	2 years															0,05	1,20
	3 years															0,73	0,97
4 years															0,86	1,02	
5 years															0,69	1,03	
Less than 1 year (ref)																	

Source of data: 10 percent sample census 2001

The reference category is: Low income

**Table A7 Income odds ratio from multinomial logistic regression for census 2001 and 2011**

		Census 2001					Census 2011				
		B	Sig.	Exp(B)	Confidence		B	Sig.	Exp(B)	Confidence	
					Lower Bound	Upper Bound				Lower Bound	Upper Bound
High income	Intercept	-7,81	0,00				-5,67	0,00			
	Migrant to Gauteng	1,02	0,00	2,76	2,20	3,47	0,55	0,00	1,72	1,48	2,01
	Migrant to Other provinces	0,48	0,00	1,62	1,27	2,06	1,00	0,00	2,72	2,29	3,24
	Non-migrant (ref)	0b					0b				
	Primary completed	0,21	0,07	1,23	0,98	1,54	-0,09	0,45	0,92	0,73	1,15
	Secondary not completed	1,30	0,00	3,67	3,26	4,13	0,87	0,00	2,38	2,12	2,67
	Secondary completed	2,69	0,00	14,77	13,05	16,72	2,47	0,00	11,79	10,53	13,21
	Tertiary	3,94	0,00	51,52	43,59	60,90	4,36	0,00	78,40	69,03	89,04
	Other						3,43	0,00	30,95	20,45	46,84
	No schooling or less than Primary (ref)	0b					0b				
	25-34	1,25	0,00	3,50	3,01	4,07	1,52	0,00	4,58	4,11	5,12
	35-44	2,34	0,00	10,39	8,90	12,12	2,29	0,00	9,86	8,81	11,03
	45-64	2,80	0,00	16,51	14,04	19,41	3,15	0,00	23,23	20,66	26,11
	65+	2,54	0,00	12,69	8,81	18,27	3,07	0,00	21,58	16,22	28,71
	15-24 (ref)	0b					0b				
	Men	0,98	0,00	2,67	2,47	2,88	0,91	0,00	2,48	2,34	2,63
	women (ref)	0b					0b				
	Primary industries	0,79	0,00	2,21	1,88	2,59	1,03	0,00	2,80	2,42	3,24
	Secondary industries	-0,01	0,87	0,99	0,88	1,11	0,08	0,07	1,08	0,99	1,17
	Tertiary industries	0b					0b				
	Skilled	2,54	0,00	12,71	11,03	14,64	0,57	0,00	1,76	1,60	1,95
	Semi-skilled	1,09	0,00	2,97	2,68	3,30	0,24	0,00	1,27	1,16	1,38
	Unskilled	0b					0b				
	Formal	3,06	0,00	21,43	15,79	29,10	0,88	0,00	2,42	2,15	2,72
	Informal	0,66	0,00	1,93	1,39	2,67	-0,31	0,00	0,73	0,64	0,84
	Agriculture	0,11	0,54	1,12	0,78	1,59	-0,58	0,00	0,56	0,45	0,69
	Private household (ref)	0b					0b				
	1 year	0,19	0,22	1,21	0,89	1,65	-0,09	0,44	0,91	0,73	1,15
	2 years	0,12	0,46	1,13	0,82	1,57	0,13	0,28	1,14	0,90	1,45
	3 years	-0,06	0,71	0,94	0,67	1,32	-0,21	0,09	0,81	0,64	1,03
4 years	0,09	0,61	1,10	0,77	1,56	-0,12	0,35	0,89	0,69	1,14	
5 years	0,24	0,40	1,27	0,73	2,21	-0,26	0,01	0,77	0,64	0,93	
Less than 1 year (ref)	0b					0b					
Middle income	Intercept	-1,73	0,00				-0,76	0,00			
	Migrant to Gauteng	1,10	0,00	3,01	2,55	3,54	0,53	0,00	1,69	1,50	1,91
	Migrant to Other provinces	0,22	0,02	1,24	1,04	1,48	0,53	0,00	1,69	1,47	1,95
	Non-migrant (ref)	0b					0b				
	Primary completed	0,25	0,00	1,29	1,17	1,42	0,04	0,43	1,04	0,94	1,15
	Secondary not completed	0,48	0,00	1,61	1,51	1,71	0,16	0,00	1,18	1,11	1,25
	Secondary completed	0,84	0,00	2,32	2,14	2,51	0,57	0,00	1,77	1,65	1,89
	Tertiary	1,35	0,00	3,84	3,34	4,42	0,78	0,00	2,19	2,00	2,40
	Other						0,74	0,00	2,09	1,41	3,10
	No schooling or less than Primary (ref)	0b					0b				
	25-34	0,60	0,00	1,82	1,68	1,98	0,81	0,00	2,25	2,11	2,39
	35-44	1,11	0,00	3,04	2,79	3,31	0,94	0,00	2,56	2,39	2,73
	45-64	1,38	0,00	3,99	3,65	4,36	1,10	0,00	3,01	2,81	3,23
	65+	1,15	0,00	3,15	2,54	3,91	1,90	0,00	6,69	5,54	8,09
	15-24 (ref)	0b					0b				
	Men	0,74	0,00	2,10	1,99	2,21	0,60	0,00	1,83	1,75	1,91
	women (ref)	0b					0b				
	Primary industries	0,20	0,00	1,22	1,08	1,38	0,26	0,00	1,30	1,15	1,48
	Secondary industries	0,03	0,40	1,03	0,96	1,12	0,07	0,03	1,07	1,01	1,14
	Tertiary industries	0b					0b				
	Skilled	0,79	0,00	2,19	1,96	2,45	-0,14	0,00	0,87	0,80	0,93
	Semi-skilled	0,52	0,00	1,69	1,59	1,79	-0,07	0,01	0,93	0,88	0,98
	Unskilled	0b					0b				
	Formal	1,40	0,00	4,04	3,74	4,36	0,34	0,00	1,41	1,31	1,51
	Informal	0,15	0,00	1,17	1,07	1,27	0,00	0,93	1,00	0,92	1,08
	Agriculture	-0,74	0,00	0,48	0,42	0,54	0,23	0,00	1,26	1,08	1,47
	Private household (ref)	0b					0b				
	1 year	0,18	0,11	1,20	0,96	1,51	0,00	0,97	1,00	0,84	1,20
	2 years	0,23	0,06	1,26	0,99	1,61	0,19	0,05	1,20	1,00	1,45
	3 years	0,14	0,29	1,15	0,89	1,48	-0,03	0,73	0,97	0,81	1,16
4 years	0,24	0,09	1,27	0,97	1,67	0,02	0,86	1,02	0,84	1,24	
5 years	0,06	0,78	1,06	0,69	1,65	0,03	0,69	1,03	0,89	1,19	
Less than 1 year (ref)	0b					0b					

Source of data: 10 percent sample census 2001 and Census 2011

The reference category is: Low income