Rural-Urban Migration and Subjective Well-Being: The South African Experience

ECO5066W: UCT Economics Master's Half Dissertation

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Abstract:

This paper gives a detailed account of rural-urban migration in South Africa. Using data from the recent National Income and Dynamics Study (NIDS) it defines the determinants and nature of rural-urban migration in South Africa before providing a thorough analysis of changes in a range of economic and social factors that individuals experience when they leave their rural homes and relocate to the country's urban areas. These factors include income, housing standards, access to utilities, relative deprivation, interpersonal trust, crime and safety, physical health and depression. In particular the paper looks at subjective well-being, defined in terms of individuals' self-reported satisfaction with life. Changes in subjective well-being are assessed for rural-urban migrants in the study and the interactions are analysed between changes in subjective well-being and changes in the other factors analysed. The results show that rural-urban migration is a complex and multi-dimensional phenomenon in which there are numerous factors which are changing and interacting with each other. Nonetheless we are able to draw some important conclusions and gain valuable knowledge which can help to deepen our understanding of the causes and effects of rural-urban migration in South Africa

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1 Introduction

A recent article in the Mail and Guardian has called for more research around migration in South Africa (Steyn, 2013). It has been almost two decades since the nation's democratically elected African National Congress (ANC) was voted into power, yet there are still areas where the legacy of the preceding apartheid era is still very evident. One such area is migration, where the migratory patterns developed during the apartheid era have persisted despite the removal of the legal institutions which brought them into being. These patterns consist of a form of circular migration whereby a rural household sends an individual to the cities to work for a temporary period of time after which they return to their rural homestead (Beinart, 1980).

Recent evidence has shown a slight decline in the number of households reporting a migrant worker, suggesting that migratory patterns are beginning to change (Posel, 2010). However, it is still a very real phenomenon which has been blamed for many of the country's current problems including the prevalence of the HIV/AIDS, the persistence of extreme poverty and even the recent violence stemming from the Marikana mine strikes (Steyn, 2013).

Rural-urban migration is an important consideration for economic development. Within the framework of the Lewis model, the movement of labour out of subsistence sectors and into a nation's commercial sectors is the key to economic growth (Lewis, 1954). Considering that subsistence sectors are largely associated with rural areas and commercial sectors with a country's urban centres, the process of rural-urban migration should be central to development analysis.

To gain a thorough understanding of rural-urban migration in a particular setting requires going outside of models such as the well-renowned Todaro model which focus on the role of economic incentives driving migration decisions. It requires an analysis of a broader set of factors which influence the experience of migrants as they leave their rural homes and try to adapt to life in the towns or cities to which they move.

Such a study is of particular relevance to South Africa. As the country nears two decades of democratic rule since the abolition of the apartheid government in 1994, it is important to analyse changing factors such as rural-urban migration to be able to get a better knowledge of the changes which have taken place in the country and to gain an understanding of the state of the country at the present point in time. In the past twenty years many things have changed and there are many important issues facing policy makers today.

This paper is an attempt to give a deeper understanding of the dynamics of rural-urban migration in South Africa. To achieve this will require gaining knowledge of migrant experiences and how rural-urban migrants adapt to urban life. For this study we pay particular attention to how factors influence a rural-urban migrant's subjective well-being, defined in terms of individual's self-reported satisfaction with life. Whilst individuals strive for many different goals and

vary in the importance they place on different achievements, life satisfaction provides a universal measure with which to assess if individuals perceive themselves to be better or worse off than before.

Until recently, the only data available for a study of this nature at the national level has been in the form of cross-sectional surveys, allowing users to only observe individuals at a specific point in time. A recent study carried out by the South African Labour and Research Unit (SALDRU) gives us a new lens to study rural-urban migration through. The National Income and Dynamic Study (NIDS) is a nationally representative household panel study which commenced in South Africa in 2008. One of the main advantages of NIDS is that it tracks the same individuals over time interviewing them every two years. In this respect we are able to identify rural-urban migrants and observe changes to a number of economic and social factors associated with the migration process.

The paper is structured into 6 chapters. Chapter 2 which follows gives a history of the migration literature to create a context for the study and highlight the factors which are important to the analysis which follows. The chapter then provides a background for the study by reviewing the history of migration in South Africa and then reviewing some current policy concerns of particular relevance for the study. Chapter 3 discusses the methodology used in the study as well as providing basic information on the determinants and nature of migration in order to provide a picture of how rural-urban migration manifests itself in South Africa. Chapter 4 then analyses the experiences of rural-urban migrants in South Africa, covering a wide range of factors to give a comprehensive analysis of rural-urban migration in the country. It takes particular note of how factors influence the subjective well-being of rural-urban migrants as they move to urban areas. Chapter 5 provides a multivariate analysis to see if there are any conclusions which can be drawn at an aggregate level. Then finally the paper ends off in Chapter 6 with some concluding comments highlighting some of the study's key findings.

2 Historical Context

This chapter provides the background for the study. The first section analyses the migration literature and how it has evolved over time. The second section focuses on South Africa, looking at the trends in migration patterns over time and the institutions which have governed migration processes. Then finally it looks at some recent policy concerns in South Africa and analyses how these are relevant to the current study.

2.1 The Migration Literature

It is well documented that people tend to migrate from rural to urban areas. The phenomenon was most clearly illustrated by Ravenstein (1885), who traced internal migration within the United Kingdom using 1871 and 1881 census data on people's place of residence and place of birth. Ravenstein classified areas as either areas of absorption or areas of dispersion. Areas of absorption are those areas where there is a net movement of migrants into the area, whereas areas of dispersion are those areas with a net movement of migrants out of the area[1]. Ravenstein's study found clear evidence that the chief seats of commerce and industry tended to be areas of absorption, with the proportion of the population involved in agriculture being less than the aggregate for the whole country. In contrast, areas of dispersion, where more people leave than are attracted from other areas, proved to be almost all agricultural.

Rural-Urban migration gained particular importance in economics in the 1950's when Kuznets published a series of papers on economic growth. The second paper in the series looked at the relationship between economic growth and the distribution of production and labour. Using first a cross-country comparison and then looking at trends over time, in both cases Kuznets found a negative relationship between economic growth and the proportion of an economy's labour force involved in agriculture and related industries. The opposite was found to be true for manufacturing and related industries (Kuznets, 1956a). In Kuznets' third paper he did the same comparison at the state-level within the United States and found the same result (Kuznets, 1956b).

At a similar time to Kuznets' empirical work, the Lewis model was introduced into the theoretical literature in a paper which has been credited as being the foundation for development economics (Kirkpatrick & Barrientos, 2004). In the Lewis model economic growth is a result of the movement of labour from subsistence sectors, where it is unlimited in supply, to the economy's capitalist sectors (Lewis, 1954). Although Lewis' model does not specify between rural and urban or between agriculture and industry (Lewis, 1979), later extensions of the model such as the balanced growth model of Fei and Reins do. As Fei and Reins state:

[1] *The net movement of migrants refers to the average flow. i.e. if more people migrate away from an area to other parts of the country than migrate from other parts of the country to the area in question, there is a net movement of migrants out of the area, and vice versa.*

> "*Development consists of the re-allocation of surplus agricultural workers, whose contribution to output may have been negligible, to industry where they become productive members of the labour force"* (Fei & Reins, 1961: pp. 534)

The outcome from the mid twentieth century was the belief that that economic development was the result of the movement of the population out of the agricultural activities prevailing in rural areas to be absorbed by industry, based in the nation's urban centres (Todaro, 1980). The logic being that the concentration of an economy's labour force facilitates the upgrading of industries from primary to secondary and tertiary industries, allowing specialization and economies of scale (Schnore, 1961; Mera, 1973).

In more recent years there has emerged recognition that the relationship between rural-urban migration and economic development is more complex than a simple linear causal relationship. This is particularly evident in the recent emergence of the *New Economics Geography* (SACN, 2011). This relatively new subdiscipline stems from work done by Paul Krugman which contributed towards his Nobel Prize in 2008 (Brackman & Garretsen, 2009). Krugman's study looks to build on earlier work on international trade (Krugman, 1979; 1980) to try and explain why economies are spatially concentrated and certain industries tend to be localized. His work reveals the importance of spatial distribution for economic development and how cities can become engine rooms for economic growth through promoting specialization, value chain formation and information spill overs (Krugman, 1991).

The complex relationship between spatial distribution and economic development requires a better understanding of the factors driving migration. Over the years economists have attempted to gain this understanding through developing models which explain the migration decision-making process by the individual or household.

The most influential migration model has been the Todaro model. The Todaro model recognises that employment is the key factor in migration decisions but also attempts to explain why workers continue to move to areas despite high levels of unemployment in those areas and positive marginal products in agriculture. In the Todaro model rural-migration is a response to higher expected incomes in urban areas, where expected income is the product of the income which would be earned for the individual if they were to find employment and the probability of finding employment. Thus the lower probability of finding employment in urban areas is offset by higher potential earnings. Equilibrium is reached when urban unemployment and the urban-rural wage differential are such that the expected income in urban areas is equal to that in rural urban areas (Todaro, 1969).

There has been empirical support for the Todaro model from studies done in Kenya (House & Rempel, 1980), Brazil (Sahota, 1968), Costa Rica (Carvajal & Geithman , 1974), Peru (Falaris, 1979), Great Britain (Pissarides & McMaster, 1990) and the United States (Hatton & Williamson, 1992). The model has also been used as the basis for a number of model extensions including those by Harris & Todaro (1970), Stiglitz (1974), Fields (1975), Corden & Finlay (1975), Salvatore (1981) and Cole & Sanders (1985).

The premise that individuals move to take advantage of economic opportunities is a product of human capital models to migration which were introduced by Sjaastad (1962). In the model developed by Sjaastad, migration is viewed as an investment in human capital, based on factors which will improve the present value of the potential migrant's lifetime earnings (Bowles, 1970). An advantage of more general models of human capital investment is that they allow users to

analyse migration decisions based on education and training as well as more indirect factors such as healthcare and safety (Schultz, 1961).

Stark and others have applied a relative deprivation approach to migration where it is suggested that it isn't necessarily absolute incomes which motivate migration but rather how people perceive their income relative to those around themselves. In Stark's model, individuals position their incomes relative to those around them, if they feel they are at the lower end of the income distribution, they migrate (Stark, 1984; Stark & Taylor, 1991). Whilst the work of Stark focuses on income, Quinn (2006) takes a broader view in a study of migration focusing on relative deprivation in terms of wealth in Mexico. In the Mexican study, there is empirical support for the relative deprivation hypothesis, where relative deprivation is defined broadly in terms of consumer durables, housing quality, housing size, land ownership, social standing and social networks[2].

There have been numerous studies focusing on the role of migrant networks in the migration decision making process. Migrant networks can be defined as "sets of interpersonal ties that link migrants, former migrants, and nonmigrants in origin and destination areas by ties of kinship, friendship, and shared community origin" (Massey, 1990: pp. 7). Empirical studies have shown that the presence of migrant networks has a significant influence on the decision to migrate (for a list of such studies see Haug, 2008: pp. 588).The presence of migrant networks is said to increase the attractiveness of migration through providing information on destination labour markets, increasing the utility with migration through the provision of ethnic goods and making migration less costly when previous migrants help new migrants settle at destination. Additionally stronger social networks at origin is said to decrease the probability of migration (Mincer, 1978; Banerjee, 1983; Boyd, 1989; Fawcett, 1989; Massey, 1990; Root & De Jong, 1981; Bauer et al, 2000; Zhao, 2003; Haug, 2008).

In theories linking migrant networks and migration decisions, networks can be as strong as close relatives and friends or be other migrants who share the same ethnicity or place of origin. Evidence of foreigners from diverse backgrounds clustering in certain areas suggests that even just being a migrant can create a social connection between people, although these connections will not be as strong as the others mentioned (Pieterse, 2003).

Graves and Linneman (1977) argue that in addition to job searching, individuals migrate in response to changes in demand for location specific, or non-tradable, goods. Non-tradable goods are defined as those for which demand can only be satisfied by moving to a particular area. Such goods would include better infrastructure, proximity to the ocean, non-polluted air or a particular climate. They build a model in which households maximize their lifetime utility according to the quantities of goods and leisure consumed subject to a time and an income constraint to illustrate this point. They claim that this demand will change in response to either expected "life-cycle" effects, due to unexpected idiosyncratic changes in the value of the independent variables in the household's utility function or through changes in the value of exogenous variables which are external to the family. Additionally, demand of non-traded goods must equal supply, thus a change in the supply of non-traded goods, due to unexpected or expected forces, will cause demand to shift until equilibrium restored. Empirical testing of the model shows those variables which cause changes in demand for non-traded goods to be good indicators of migration behaviour, although the authors note that in reality "the quantal migration response is due to the combined effect of many variables" (Graves & Linneman, 1977: pp 402).

[2] *Although Quinn (2006) argues that social networks and social status could be important deprivation factors, they are not included in the empirical testing due to lack of available data*

'Location-specific goods' could be used to describe a wide range of factors which effect migration differently. Muesar and Graves (1995) show that a more desirable climate, measured as lower summer and higher winter temperatures, will positively influence the decision to migrate. They also show marginal significance to recreational value, measured as the percentage of area covered in lakes. Hunter et al (2003) define a range of variables relating to environmental hazards but find little significance on the decision to migrate. Huffman & Feridhanusetyawan (1998) find that the level of crime at origin has a direct positive effect on the decision to migrate.

It is clear from the diverse literature on migration incentives and the empirical support the theories receive that migration is a complex process influenced by a multitude of factors. What holds in all the models discussed in this section is that individuals move because they perceive that they will be better off by doing so.

The benefits which accrue from migration will differ in different settings. Additionally, how much value is placed on various benefits will differ between individuals. In this respect, a thorough analysis of the experience of migrants in a particular setting and how they react to the benefits and costs associated with migration will help in understanding the forces driving migration patterns for that particular setting ir group of individuals.

Before we begin analysing recent rural-urban migration experiences in South Africa, it is important to first look at the historic migration trends in order to understand the setting in which the study is taking place.

2.2 Migration History in South Africa

The nature of migration within South Africa derives from a history of racial discriminatory policies during the nation's apartheid era. The migration patterns during this period were not merely an incidental outcome of disparate government policy. Rather, control over the spatial distribution of individuals was a key component in the apartheid government's strategy to maintain state power (Robinson, 1997). The policies utilised by the apartheid government were a form of territoriality, defined by Sack (1983) as "the attempt by an individual or group (x) to influence, affect, or control objects, people and relationships (y) by delimiting and asserting control over a geographic area" (Sack, 1983: pp. 56).

Territoriality, as a means of whites maintaining control over the African population in South Africa, was evident in government policy since colonial times and persisted until the end of apartheid in 1994. However, over this period it took on different forms with varying intensities (Robinson, 1990). Of particular relevance is the period following the National Party's coming to power in 1948. This period was preceded by extensive urbanization of the African population which had a significant impact on the policies employed by the apartheid government. Between 1921 and 1951 the number of Africans residing in urban areas increased from 587 200 to 2 329 000, an increase of almost 400% (Maylem, 1990).

Although the policies employed by the National Party emerged from a number of segragatory measures leading up to the party's coming to power, during this period territoriality intensified and became a compulsory procedure,

enshrined in various legislation (Mabin, 1992). Whilst the Natives (Urban Areas) Act of 1923 set out means for municipalities to establish segregated areas and control the movement of Africans outside of these areas, most of the provisions were not obligatory and were often not enforced. An amendment to the Act in 1952 put compulsory restrictions on permanent residence of Africans in urban areas and allowed for greater influx control by the state. The Group Areas Act of 1950 further strengthened residential segregation and led to the construction of African townships which forced African workers to reside in demarcated areas away from white residential areas but still close enough to industrial areas where they could be utilized as a work force (Maylem, 1990).

The policies of the National Party prevented Africans from remaining in the cities for more than 72 hours without permission obtained from the labour bureau. Work and residence permits were issued into identification documents which were monitored through road blocks and night raids. Initially permanent residence to urban areas could be obtained by Africans but this was later abolished by forcing workers to annually renew their employment contracts (Hindman, 1985).

The institutions developed in the period of apartheid rule in South Africa have led to migratory patterns which have continued to persist even after its abolition in 1994. The result has been particularly evident in rural-urban migration where a form of circular labour migration developed. This labour migration tends to entail a process whereby rural households send one or more members to the city to work for a temporary time period after which they would return home to the rural household (Beinart, 1980).

After apartheid ended, studies became less concerned with issues of temporary and circular migration, instead focusing on immigration issues. This change in focus indicates an assumption that the migration patterns of apartheid would change naturally as previously discriminated against individuals, now with no barriers restricting their movements, would choose where they wanted to live and settle there permanently (Posel, 2003). Data from the first five years after apartheid does not give empirical support for this being achieved (Posel and Casale, 2003). Instead the proportion of rural households which reported at least one labour migrant[3] increased from 33% in 1993 to 35% in 1999, an increase of 300 000 rural households (Posel, 2003). Data collected from the Agincourt Demographic Surveillance System, a study of a rural population of 68 500 in the former homeland district of Bushbuck Ridge, reported a ratio of permanent[4] to temporary[5] migration in 2002 of 1:2 (Kok & Collinson, 2006). Despite this persistence, a more recent study has shown a decline in the number of households reporting a migrant worker which suggests that the influence of apartheid on migratory patterns may be declining (Posel, 2010).

[3] Labour migrants here are defined as all household members who "were away from the household for at least one month of the year to work or look for work" (Posel, 2003: pp 8). It is important here that the definition requires workers to still remain part of the origin household

[4] A permanent migrant here is defined as "a person who enters or leaves a household with a permanent intention of entering or leaving. This definition follows the classic definition that migrants are people who experience a change in residence (Bilsborrow, 1993). This includes people who leave the index household and establish a household or join a household elsewhere. A key feature is that the destination household becomes the new home base for the migrant" (Kok & Collinson, 2006: pp 34).

[5] A temporary migrant here is defined as "a household member who is away most of the time, but retains a significant link to their base household. A six-month-per-year cut-off point was chosen to differentiate 'temporary migrants' from 'local residents'. Thus, people who are referred to as temporary migrants were absent from the household for more than six months of the year preceding observation, but who considered the index household to be their home base" (Kok & Collinson, 2006: pp 34)

2.3 Policy Concerns in South Africa

Since the turn of the twenty first century there has been a marked shift in urban policy in South Africa with less focus being placed on restitution and integration as a means of trying to reverse the outcomes of apartheid and more emphasis being placed on urban development as the key to unlocking growth in the economy (Boraine et al, 2006).

In 2002 the South African Cities Network (SACN) was launched with the purpose of networking individuals and organizations to help improve governance and information sharing to assist in developing productive and sustainable urban centres to provide the engine room for the growth and development of the South African economy. In 2004, SACN produced its first *State of the Cities Report* analysing the state of South African Cities and setting out the network's objectives and challenges which needed overcoming in relation to urban development. One of the key challenges coming up in the report is the spatial distribution of the population which has been shaped by the country's apartheid history (SACN, 2004).

Issues of spatial distribution are not exclusively experienced by South Africa, Africa or even the developing world. In the OECD's 2006 *Competitive Cities in the Global Economy* report it was reported that "Poverty and spatial polarisation are probably the most difficult challenge for metro-regions" (OECD, 2006: pp 1).

Due to the centrality of urban policy in the South African government's priorities and in particular the concern with the spatial distribution of the population, we need to have a better understanding of rural-urban migration in the country. In the next chapter we outline the methodology with which we will try and improve this understanding through a thorough analysis of the recent experience of rural-urban migrants in South Africa.

3 Methodology and Data

In this chapter we outline the methods used to generate the findings of the study. A panel is created which can be used to study changes in a number of factors to analyse the experience of rural-urban migrants. Using the panel we also look at the determinants and nature of rural-urban migration in South Africa

3.1 Panel Creation

The National Income Dynamic Study (NIDS), carried out by the South African Labour and Development Research Unit (SALDRU) at the University of Cape Town (UCT), is the first panel study to track the dynamics of well-being across South African households. The first wave was conducted in 2008 to a representative sample of approximately 10 000 households who were asked to complete a household questionnaire, including a household roster, plus individual questionnaires for all resident individuals. In the survey, a resident is defined as a person who usually resides at the household for at least four nights per week. All individuals resident in the original sample became part of the NIDS sample to be interviewed every two years for the duration of the project. The questionnaires consist of a range of questions relating to wealth creation, demographics, social heritage and access to cash transfers and social services (Leibbrandt et al, 2009).

At the time of writing this paper, the first two waves had been published and made available for this study[6]. The first wave was carried out in 2008 and the second in 2010/2011. Throughout this paper "wave 1" and "2008" are used interchangeably, as are "wave 2" and "2010/2011". The two waves give us two 'snapshots' of the sample, giving us a great opportunity to study the experience of rural-urban migrants for two particular reasons. Firstly, it enables us to get measures for a number of economic and social variables at two different time points for the same individuals, allowing us to observe changes in the variables over time. Secondly, we are able to distinguish rural-urban migrants from rural non-migrants, allowing us to observe the changes which are specific to migration.

Individual questionnaires can be one of three interview types. Child questionnaires are completed for all residents who are under the age of fifteen. All residents aged fifteen years and above complete an adult questionnaire unless, for specific reasons, the individual cannot be interviewed in which case a proxy interview is done on their behalf (Leibbrandt et al, 2009). Children are generally seen as dependent on their carers in migration analysis, hence although the presence of children may play a role in the migration decision of their carers (Long, 1972; DaVanzo, 1980), they are expected to move with their carers rather than make migration decisions for themselves (Lee, 1966; Mincer, 1978). For this reason we drop children from the panel to be studied and look only at adults, as defined in the survey.

[6] *The NIDS data and questionnaires are available for public use at: http://www.datafirst.uct.ac.za*

Each household in the NIDS sample is classified in terms of geographic area type using GPS coordinates. Additionally, individuals are identified as stayers or movers if they are non-migrants or migrants respectively (Brown et al, 2012). The geographic type is classified as "rural formal", "tribal authority areas", "urban formal" or "urban informal". The focus of this study is on the experience of rural-urban migrants, which we define as those individuals who were resident in a household in a "rural formal" or "tribal authority" area in wave 1 and an "urban formal" or "urban informal" area in wave 2. As we want to look at the changes specific to migrating from rural areas we shall compare data for rural-urban migrants with rural stayers, where a rural stayer is defined as an individual who resided in an area classified as "rural formal" or "tribal authority" in wave 1 and either remained in that household or moved to a new household which was also in an area classified as "rural formal" or "tribal authority".

One of the biggest potential issues when it comes to the analysis of panel data is attrition bias. If attrition is non-random it can lead to biased estimators in the data which can potentially distort statistics (Winer, 1983). In the NIDS data attrition occurs through individual refusals, household non-responses, moving outside of South Africa or becoming deceased. The main reason for attrition in wave 2 was through household non-responses, which could be due to a household refusal, the household not being located or the household not being tracked. Almost half of household non-responses were due to the household not being located (Brown et al, 2012). This is particularly relevant for migration analysis as a migrant's destination household is at a high risk of not being located due to the need to locate a new household.

To account for issues of attrition bias, we are able to use panel weights for wave 2. Panel weights represent the inverse of the product of the probability of being interviewed in wave 1 and the probability of being successfully reinterviewed in wave 2, conditional on being part of the wave 1 sample (Brown et al, 2012). Panel weights thus allow us to produce estimators for the panel which are representative for South Africa. Unless otherwise stated, all statistics produced in this paper use wave 2 panel weights.

Our ideal panel for this study would be a balanced panel of all individuals who had successful interviews in both wave 1 and wave 2 and who resided in rural households in wave 1. This would give us a panel made up of only rural-urban migrants and rural stayers and then attrition would be accounted for using panel weights. However there are other data issues which result in missing information for which the panel weights do not account for but which need to be considered. These issues can be classified as issues of missing geographic information, questionnaire type, wave 2 phase and question non-responses.

Whilst models do exist which can help deal with missing information (see Hausmann & Wise, 1976; 1977; 1979; Heckman, 1976; Griliches et al, 1978), as we are already using weighting to deal with significant attrition at the questionnaire level, it was decided not to use such models to avoid too much distortion in the data. Because of these omissions, statistics should be seen as indicative and would benefit from further analysis.

Issues of missing geographic information occur when no geographic information is supplied for individuals in the data. This is problematic for this study as it means we are unable to distinguish rural-urban migrants from rural stayers. In wave 1 all households are supplied with geographic information, meaning that this is only an issue for people who moved between wave 1 and wave 2. As we are unable to classify these individuals in terms of where they migrated to they are excluded from the panel.

A number of the variables being studied are only present in the adult questionnaire. In particular, the question relating to subjective well-being is only asked of respondents completing an adult questionnaire. Whilst, as discussed, children are excluded from the study, there are also cases where a proxy interview was done on behalf on an individual. As we are unable to observe measures of subjective well-being and several other factors for these interviews, individuals with a wave 1 or 2 proxy are also excluded ensure a balanced panel.

Towards the end of wave 2 fieldwork, "Phase 2" was implemented:

> *"In mid-2011 it was decided to exercise the option to implement a "Phase 2" for Wave 2. Internal data checking revealed that there were a variety of households that we believed could be successfully interviewed through a focused mop-up phase. The focus of Phase 2 was:*
>
> - *Movers that had not been tracked by the end of Phase 1;*
> - *Re-attempting to locate households that had been labelled as Not Located in phase 1;*
> - *Re-attempting households that had been unavailable during Phase 1, but which now indicated their availability; and*
> - *To overturn household level refusals from Phase 1."* (Brown et al, 2012: pp. 20)

The Phase 2 questionnaires implemented for wave 2 were shorter versions of the original Phase 1 questionnaires and some sections were left out. Included in the questions left out were some that are central to our analysis. As we then have no wave 2 data for all those interviewed in phase 2 we are forced to also drop these individuals from the panel. Due to the focus on finding households that hadn't yet been found, we expect there to be a bias in phase 2 towards migrants, making it a significant issue for migration analysis.

Table 3.1 shows the changes made from our "ideal" panel to the panel used in the study. It classifies the observations which were dropped according to the issues causing the drop, including any overlaps of the issues to avoid double counting. Although at first glance it appears the biggest issue is due to proxy interviews, there are a couple of points worth considering.

Firstly, as mentioned, issues of missing geographic information apply only to a subsample of individuals who moved between wave 1 and wave2, that is it only applies to rural-urban and rural-rural migrants. These two groups make up only 8% or the initial "ideal" panel and hence it makes up quite a large portion of this subsample of which a significant proportion could potentially be rural-urban migrants. Secondly, as expected, although Phase 2 questionnaires are only a small proportion of the entire panel this is biased towards movers. Among rural-urban migrants 12% were interviewed in phase 2. For a more detailed breakdown of the observations see Appendix A1.

Table 3.1 Observations Dropped from Panel in Study

	n (unweighted)	Weight	% Share
"Ideal" Panel	**7 098**	**11 397 234**	**100.00**
Dropped:			
Geographic Info Only	*64*	*113 804*	*1.00*
Proxy Only	*820*	*1 230 325*	*10.79*
Phase 2 Only	*187*	*296 607*	*2.60*
Geographic Info + Proxy	*19*	*30 237*	*0.27*
Geographic Info +Phase 2	*0*	*0*	*0.00*
Proxy + Phase 2	*39*	*48 032*	*0.42*
Geographic Info + Proxy + Phase 2	*0*	*0*	*0.00*
Panel Used in Study	**5 969**	**9 678 229**	**84.92**

Between wave 1 and wave 2 there were some slight changes to the questionnaires. In particular there were some questions in the household questionnaire which provided useful information for this study but were not asked in wave 1. In order to allow us to still examine these variables we used an approximation for wave 1 responses based on the wave 2 responses from individuals who were with the respondent in wave 1 and did not move from the household. This of course required there to be at least one stayer from the respondent's wave 1 household. Additionally it required nonattrition from the household in wave 2. We refer to this smaller panel as the "reduced panel". The breakdown of respondents who were dropped in order to get this panel is given in Table 3.2. To obtain the "reduced panel" we had to drop almost a third of rural-urban migrants from the study panel which will have an effect on results and needs to be taken into consideration when this panel is used.

Table 3.2 Breakdown of Responses Dropped to Get "Reduced Panel"

	Rural-Urban Migrants		Rural Stayers		Total	
Panel: Full						
n (unweighted)	142		5827		5969	
weight	229814		9448415		9678229	
Dropped						
Wave 1 Household not in Wave 2	31.6	%	1.3	%	2.0	%
Wave 1 Household Wave 2 Non-Response	0.4	%	0.0	%	0.1	%
Reduced Panel						
n (unweighted)	111		5764		5875	
weight	157185		9327797		9484982	

The issues of missing information discussed thus far are all cases where an individual had no relevant information in either wave 1 or wave 2. In addition to these issues, there are issues of non-responses particular to each question. This occurs when a respondent has given a response of "Don't know", "Refused", "Not Applicable" or "Missing", where

"Missing" refers to cases where a question was left out which should have been answered (Brown et al, 2012). We classify these issues as issues of question non-responses. As these issues are only specific to a certain question, individuals who had question non-responses in either wave 1 or wave 2 were left in the panel but to ensure balance they were ignored in the analysis of the particular question where they have a non-response. In Chapter 4 we analyse the changes in a number of variables, in each case we supply the "question response rate" which is calculated as the percentage of the panel that had a valid response in both waves.

To obtain a more detailed description of our panel, we analyse some characteristics in both wave 1 and 2 for the respondents. By analysing wave 1 characteristics we are able to see the determinants of rural-urban migration through those characteristics which are disproportionately observed in rural-urban migrants in comparison to rural stayers. Wave 2 observations can help us to get a better understanding of the nature of rural-urban migration in South Africa.

3.2 The Determinants of Rural-Urban Migration

Table 3.3 shows the details for the panel broken down into rural-urban migrants and rural stayers. In the rest of this section, each group is broken down in terms of descriptive characteristics from the wave 1 data set to allow us to see the types of individuals most likely to move between wave 1 and wave 2. All statistics are taken at the base-line in 2008 to observe factors pre-migration.

Table 3.3 Breakdown of Panel by Migrant Classification

	Breakdown by:	
	Rural-Urban Migrants	Rural Stayers
n (unweighted)	142	5 827
Weight	229 814	9 448 415
Share	2.4 %	97.6 %

Let us assume a time period *t,* and over this period, for a specific characteristic *i*, we observe a proportion U_x^i of rural-urban migrants exhibiting outcome *x* and a proportion R_x^i of rural stayers also exhibiting outcome *x*. Let us also assume there are a total of N_U weighted rural-urban observations and N_R weighted rural stayer observations. We can then estimate the probability, P_x^i, that a rural individual exhibiting outcome *x* of characteristic *i* will partake in rural-urban migration over a time period of length *t*, by the following equation:

$$P_x^i = (U_x^i * N_U) / ((U_x^i * N_U) + (R_x^i + N_R))$$

The above equation is just saying that the probability an individual that fits a certain classification is a rural-urban migrant can be estimated by the number of rural-urban migrants fitting that classification as a proportion of individuals fitting the classification in the panel. In the tables provided in this section, this probability is given in the far column as "Probability (Urban Migration)" for the time period 2008 - 2010/2011.

Geographic Area of Origin

Table 3.4 breaks down the geographic area type of origin. This is the area where the respondent resided in the first wave of the NIDS survey. As we are only looking at rural-urban migrants and rural stayers, there are no individuals who were in urban areas at this time. The majority of the panel come from tribal authority areas, however in relation to the number of individuals enumerated in each area type in 2008, there were disproportionately more urban migrants from rural formal areas. This is reflected in a probability of rural-urban migration for rural formal dwellers that is twice the size of the probability of those in tribal authority areas.

Table 3.4 Breakdown of Geographic Area of Origin at Base-line

	Breakdown by:		*Probability*
	Rural-Urban Migrants	**Rural Stayers**	***(Urban Migration)***
Geographic Area Type			
Rural Formal	30.3 %	17.5 %	*4.0 %*
Tribal Authority Area	69.7 %	82.5 %	*2.0 %*

Demographics

Table 3.5 shows the demographic characteristics of the panel. Males are more likely to undertake rural-urban migration than females. However, we still a significant share of rural-urban migrants being female. Studies by Posel (2003) and Posel and Casale (2003) show a significant increase in female labour migration between 1993 and 1999. Their study goes on to show that this increase is likely due to changes in women's role in the household. Traditionally, females in South Africa have had their mobility restricted by men in the household. However, between 1993 and 1999 there was a noticeable decline in the proportion of women being married and an increase in the number of households with no resident employed male. This would imply that the restrictions put on women by men has declined, allowing them more freedom to move. The studies do not find support for the increase in female migration being a result of increased female labour market participation as has been observed throughout the developing world (Standing, 1989; 1999).

Table 3.5 Breakdown of Demographic Information at Base-line

	Breakdown by:		*Probability*
	Rural-Urban Migrants	**Rural Stayers**	***(Urban Migration)***
Gender			
Male	46.6 %	40.4 %	*2.7 %*
Female	53.4 %	59.6 %	*2.1 %*
Race			
African	95.3 %	94.1 %	*2.4 %*
Coloured	4.7 %	2.1 %	*5.1 %*
Asian / Indian	0.0 %	3.1 %	*0.0 %*
White	0.0 %	0.7 %	*0.0 %*
Age*			
15-19yrs	23.6 %	19.5 %	*2.9 %*
20-29yrs	46.3 %	22.5 %	*4.8 %*
30-39yrs	20.6 %	18.9 %	*2.6 %*
40-49yrs	4.7 %	14.1 %	*0.8 %*
50-59yrs	1.6 %	11.7 %	*0.3 %*
60-69yrs	2.4 %	8.2 %	*0.7 %*
70+ yrs	0.9 %	5.1 %	*0.4 %*

**Note: Age was unknown for 0.8% of rural stayers and these individuals were ignored in the age breakdown. This was not an issue for any of the rural-urban migrants in the panel*

In our panel we observed no rural-urban migration amongst Asians/Indians or whites. Coloured people showed the highest probability of migration with over 5% of rural coloureds moving to urban areas. The majority of the panel are Africans reflecting that rural areas are predominantly resided in by African individuals.

Young adults are the most likely to migrate in terms of age. In particular we see a high probability of urban migration amongst rural individuals between the age of 20 and 29 years of age. The higher propensity of younger adults to migrate comes up throughout the migration literature with one of two reasons usually cited. The one argument is that younger workers find it easier to settle in a new place and have had less time to develop ties at their place of origin. From this point of view there is a specific psychic costs to moving which increases with age (Gallaway, 1969). An alternative argument can be derived from the human capital perspective. If individuals move to improve their lifetime earnings, then younger individuals have more time to realise more benefits from migrating, making it more attractive for them when compared with older individuals (Schultz, 1961; Lucas, 1997).

Employment and Household Income

Table 3.6 shows information relating to employment status and household income. In the NIDS data, "not economically active" individuals are not employed and do not have any desire to work. "Unemployed: Discouraged" are those individuals who would have liked to work in the past four weeks but have not actively searched for employment. "Unemployed: Strict" refers to individuals who are unemployed but have actively searched for work in the past four weeks. Employed individuals are those individuals who are employed in any kind of productive activity (Ranchod, 2009). A large portion of rural-urban migrants were not economically active prior to migration but approximately half

of the rural population were classified as such. The highest probability of urban migration is amongst employed individuals and unemployed job searchers whilst discouraged job searchers show the lowest propensity to migrate to urban areas.

Table 3.6 Breakdown of Employment Status and Household Income at Base-line

	Breakdown by:		*Probability*
	Rural-Urban Migrants	**Rural Stayers**	***(Urban Migration)***
Employment Status*			
Not Economically Active	42.9	49.6	*2.1 %*
Unemployed: Discouraged	3.2	5.8	*1.3 %*
Unemployed: Strict	14.2	12.4	*2.7 %*
Employed	39.8	32.3	*2.9 %*
Household Monthly Income Per Capita			
Mean	R 895.39	R 646.62	*n/a*
Household Monthly Income Per Capita			
Quintile 1	21.7 %	28.6 %	*1.8 %*
Quintile 2	20.2 %	28.6 %	*1.7 %*
Quintile 3	25.5 %	20.8 %	*2.9 %*
Quintile 4	24.3 %	16.2 %	*3.5 %*
Quintile 5	8.2 %	5.8 %	*3.3 %*

**Note: Employment Status was unknown for 1.1% of rural stayers and these individuals were ignored in the employment status breakdown. This was not an issue for any of the rural-urban migrants in the panel*

The finding here depart from studies which have shown that the unemployed are more likely to migrate. For example, in a study done in the United States, Saben (1964) reports a migration rate for the unemployed twice as high as that for employed individuals. From a human capital perspective, it is argued that the unemployed have more to gain from migrating which increases the probability of migration (Navratil & Doyle, 1977).

Migrants are also more likely to come from wealthier households. This is a reflection of the fact that there are monetary moving costs incurred when an individual migrates. Therefore a wealthier household is better equipped to be able to finance migration of one or more of its residents. Additionally individuals from wealthier households are more likely to be able to have money to support themselves for periods of unemployment before they tie down a job at destination (DaVanzo, 1980). This explanation may also be the reason why we observe the contradiction with regards to employment as although unemployed individuals may have more to gain from migration, they may lack the resources to finance migration to the country's urban areas.

Education

Table 3.7 shows the highest educational level completed by respondents at the time of their wave 1 interview. For ease of viewing the levels have been collapsed into 6 categories. Responses of NTC 1 and 2 are treated as "High School:

Incomplete" and NTC 3 is treated as "High School: Complete". To avoid confusion responses of "Other" are ignored, these make up less than 3% of rural stayer's responses and there are no "Other" responses for rural-urban migrants.

Table 3.7 Breakdown of Educational Achievement at Base-line

	Breakdown by:		*Probability*
	Rural-Urban Migrants	**Rural Stayers**	***(Urban Migration)***
Education*			
No Schooling	2.6 %	17.9 %	*0.4 %*
Primary School: Incomplete	8.8 %	18.4 %	*1.2 %*
Primary School: Complete	2.9 %	7.6 %	*0.9 %*
High School: Incomplete	54.1 %	40.5 %	*3.1 %*
High School: Complete	19.8 %	10.9 %	*4.2 %*
Tertiary Education	11.7 %	4.6 %	*5.8 %*

**Note: The level of education was unknown for 0.1% of rural stayers and these individuals were ignored in the education breakdown. This was not an issue for any of the rural-urban migrants in the panel*

More educated individuals are more likely to migrate to urban areas. This can be explained from a human capital perspective in that educated individuals are able to better take advantage of the potential benefits to migration. Ritsilä and Ovaskainen attribute this to "personal factors, such as career orientation, psychological readiness to move, social needs, knowledge about personal opportunities, sufficient economic potential to move, opportunities to profit economically, and narrowness of relevant job markets" (Ritsilä and Ovaskainen , 2010: pp. 318). Greenwood (1975) puts forward an additional argument that education may lower the importance an individual places on traditions and family ties which may otherwise serve as a barrier to migration.

Marriage and Children

Table 3.8 shows details relating to marital status and children. The highest probability of urban migration is among individuals classified as either "never married" or "living with partner" in 2008. Established families are generally seen as less likely to migrate due to the added cost of moving the entire family (Navratil & Doyle, 1977). Mincer (1978) argues that married couples sum their individual benefits when making migration decisions. Therefore as it less likely that both individuals will gain from migration, married couples are less likely to migrate.

The statistics for children refer to the number of children who are resident in the same household and stated that the respondent was their mother or father on the household roster. Children here are defined in NIDS as individuals younger than fifteen years of age. Where respondents have reported one child, this has been broken down into whether the child was less than five years old or older. The justification for this breakdown is in line with work done on migration and families' life cycles done by Long (1972) and Simmons (1968). These studies show that when couples initially have children, the likelihood of migration rises as they adjust to a family lifestyle involving factors such as wanting to be near to good schools or needing a more suitable dwelling. As the child nears schooling age or more children are born, ties are built to the area resided in which decreases the likelihood of migration.

We observe that when a child is initially born there is an increase in the probability of migration. As the child gets older or more children are born, the probability declines. The probability of migrating when there is one school age child or two children resident in the household is lower for the case of no children. The probability of migration for respondents who have 3 or more children resident in the household is particularly low. Although this appears to give support for the studies done on family life cycles and migration, the results may also be reflecting the age bias observed earlier as young adults are more likely to be in this category

Table 3.8 Breakdown of Marital Status and Number of Resident Children at Base-line

	Breakdown by:				*Probability*	
	Rural-Urban Migrants		**Rural Stayers**		***(Urban Migration)***	
Marital Status*						
Married	10.4	%	29.0	%	*0.9*	*%*
Living With Partner	8.2	%	6.9	%	*2.8*	*%*
Widow/Widower	3.4	%	9.3	%	*0.9*	*%*
Divorced/Separated	1.0	%	1.8	%	*1.3*	*%*
Never Married	77.0	%	53.1	%	*3.4*	*%*
Children Resident in Household						
No Children	70.1	%	64.8	%	*2.6*	%
1 Child: < 5yrs old	14.2	%	7.1	%	*4.6*	%
1 Child: 5-14 yrs old	5.3	%	9.8	%	*1.3*	%
2 Children	9.6	%	10.8	%	*2.1*	%
3+ Children	0.7	%	7.5	%	*0.2*	%

**Note: Marital Status was unknown for 0.3% of rural stayers and these individuals were ignored in the marital status breakdown. This was not an issue for any of the rural-urban migrants in the panel*

Household Characteristics

Table 3.9 shows characteristics of respondents' wave 1 household. The dwelling type is filled in by the interviewer whilst doing the household questionnaire. Most migrants come from a "dwelling, house or brick structure on a separate stand or yard or on farm", however this is also the dwelling type for the majority of rural households in the panel. There are no rural-urban migrants from the small portion of rural dwellers living in a "town, cluster or semi-detached house" whilst every respondent in the panel who was enumerated in a "caravan or tent" in a rural area in wave 1 migrated to an urban area.

Household size reflects the number of residents in each respondent's wave 1 household. There does not appear to be a pattern with regards to the relationship between household size and the probability of rural-urban migration except for the fact that single person households have a high probability whilst two person households have a low probability. The fact that single person households have a high probability of migration supports theories of migrant networks which state that ties to people at origin decreases the likelihood of migration (Haug, 2008).

Table 3.9 Breakdown of Household Characteristics at Base-Line

	Breakdown by: Rural-Urban Migrants		Rural Stayers		*Probability (Urban Migration)*	
Household Size						
1	11.6	%	5.9	%	*4.5*	%
2	4.8	%	8.7	%	*1.3*	%
3	18.0	%	11.7	%	*3.6*	%
4	13.1	%	14.1	%	*2.2*	%
5	14.2	%	13.8	%	*2.4*	%
6	14.2	%	12.2	%	*2.7*	%
7	7.5	%	9.6	%	*1.9*	%
8	5.3	%	6.4	%	*2.0*	%
9	3.0	%	4.9	%	*1.5*	%
10	5.5	%	4.0	%	*3.2*	%
11 +	2.8	%	8.8	%	*0.8*	%
Dwelling Type						
Dwelling, house or brick structure on a separate stand or yard or on farm	61.3	%	55.2	%	*2.6*	%
Traditional dwelling, hut or structure made of traditional materials	27.2	%	32.3	%	*2.0*	%
Flat or apartment in a block of flats	2.1	%	2.7	%	*1.9*	%
Town, cluster or semi-detached house (simplex, duplex or triplex)	0.0	%	0.9	%	*0.0*	%
Dwelling, house, flat or room in backyard	2.2	%	3.5	%	*1.5*	%
Informal dwelling or shack in backyard	0.2	%	1.4	%	*0.4*	%
Informal dwelling or shack not in backyard (e.g. in an informal / squatter settlement or on a farm	5.0	%	3.4	%	*3.5*	%
Room or flatlet	0.3	%	0.8	%	*0.9*	%
Caravan or tent	1.8	%	0.0	%	*100.0*	%

**Note: Dwelling type was unknown for 2% of rural stayers and these individuals were ignored in the breakdown of dwelling type. This was not an issue for any rural-urban migrants in the panel*

Mincer (1978) states that there are diseconomies of scale to migration in terms of household size as the returns to migration increase by less than the costs as household size increases. Whilst we do see a low probability of migration for households with eleven or more residents, the lack of a general trend and in particular the high probability of rural-

urban migration for households with ten residents allow us to only offer weak support for this hypothesis. The lack of influence of household size on migration decisions may be a result of the nature of migration in South Africa. If it is the case that rural households tend to only send a portion of the household to urban areas whilst some remain in the rural household, we would expect the effect of household size as argued by Mincer to lose its significance. This fact highlights the importance of studying the nature of migration when doing migration analysis, as is done in the next section of this paper.

Multivariate Analysis

To end off the sub-section, we run a probit regression of the decision to migrate with the variables analysed in this chapter. The probit regression takes the form:

$$RU = \beta_1[\text{Rural formal}] + \beta_2[\text{male}] + \beta_2[\text{African}] + \beta_3[\text{Age}] + \beta_4[\text{Employed}] + \beta_5[\text{Income}] + \beta_6[\text{Education}] + \beta_7[\text{Children}] + \beta_8[\text{Housheold Size}] + \varepsilon$$

Where:

- **RU**: Dummy variable which takes on a value of 1 if the individual is a rural-urban migrant and 0 if they are a rural stayer
- **Rural Formal**: Dummy variable which takes on a value of 1 if the individual resided in a rural formal area in wave 1 and 0 if they resided in a tribal authority area.
- **Male**: Dummy variable which takes on a value of 1 if the individual is male and 0 if they are a female
- **African**: Dummy variable which takes on a value of 1 if the individual is African and 0 if they belong to one of the other 3 population groups[7]
- **Age**: The respondent's age in years
- **Employed**: Dummy variable which takes on a value of 1 if the individual was employed in wave 1
- **Income**: The natural logarithm of the household monthly income per capita of the respondents wave 1 household
- **Education**: The level of education achieved by the respondent as at wave 1[8]
- **Children**: The number of children resident in the household who reported the individual as either their mother or father
- **Household Size**: The number of residents in the individual's wave 1 household
- **ε**: Random error term

Table 4.8 shows the output from the probit regression[9]. The main determinants of rural urban migration relate to the geographical area type, the respondents age, education level and household size. If we omit age from the regression we

[7] *Due to the small proportion of the panel in the other population groups it was decided not to include dummies for each one*

[8] *There were no NTC1 responses in the panel. NTC2 was set to Grade 10. NTC3 was set to Matric. Responses of "Other" were set to missing to avoid confusion. Tertiary qualifications were collapsed into 2 categories, one for postgraduate qualifications ("Honours degree" and "Higher degree (Masters Doctorate)") and all the others into an undergraduate classification.*

[9] *The regression in Table 3.10 is run on Stata using the "probit" command. For the full regression output see Appendix A2*

see that children becomes significant, this suggests that the effect of children we picked up was mainly due to the age of respondents rather than any life-cycle effects. The probability of rural-urban migration increases if the individual is from a rural formal area and has a higher education. The probability decreases with age and household size.

Table 3.10 Output from Probit Regression On Rural-Urban Migration

	Coefficient	*Std. Error*	Significance
RURAL_FORMAL	0.402	*0.135*	**
MALE	-0.004	*0.093*	
AFRICAN	0.365	*0.233*	
AGE	-0.012	*0.004*	**
EMPLOYED	0.101	*0.106*	
INCOME	0.001	*0.059*	
EDUCATION	0.066	*0.018*	**
CHILDREN	-0.078	*0.051*	
HOUSEHOLD_SIZE	-0.026	*0.013*	*

*Note: * indicates significance at the 5% level*

*** indicates significance at the 1% level*

3.3 The Nature of Rural-Urban Migration

Migration can take a number of different forms. Households may move together or an individual may leave their household and migrate on their own, migration may be over a log or a short distance, it may be temporary or permanent. The NIDS questionnaires can give us some useful insight into the nature of migration in South Africa. This section analyses these aspects in relation to the panel used in this study to give a more detailed picture of what rural-urban migration actually looked like between 2008 and 2010/2011 in South Africa.

Geographic Area of Destination

Table 3.11 shows the breakdown of destinations for rural-urban migrants. The majority of migrants moved to formal urban areas whilst less than 15% moved to informal areas.

Table 3.11 Geographic Area of Destinations for Rural-Urban Migrants

Geographic Area Type		
Urban Formal	85.5	%
Urban Informal	14.5	%

Distance of Migration

Due to data anonymity, we are unable to use the GPS coordinates in NIDS to calculate distances migrated. As a rough estimation we can divide migrants into those that migrated within the same province and those that crossed provincial boundaries. Table 3.12 presents the breakdown in this respect. The split is almost even, however there were slightly more rural-urban migrants moving into a new province, used here as a rough approximation of travelling a long distance.

Table 3.12 Distances Moved for Rural-Urban Migrants

Province Migrated to in Relation to Origin		
Within Same Province	46.4	%
Across Provincial Borders	53.6	%

Household Characteristics at Destination

Table 3.13 displays the characteristics of rural-urban migrants' destination households. Approximately a third of migrants moved into urban households on their own and less than half moved into households with more than 2 residents. There does not seem to be much influence of migrant networks with respect to rural-urban migrants in South Africa, if there was we would expect a higher proportion of migrants to move into households in urban areas with other individuals with whom they share social ties. It is not to say that they were completely on their own as they may move into areas where they have friends or family living nearby, however the nature of the NIDS survey is such that we are unable to gain information to further this analysis.

The most common dwelling type for rural-urban migrants to move into was a "dwelling, house or brick structure on a separate stand or yard or on farm". We didn't observe any rural dwellers in units in retirement villages at the base-line when we looked at the determinants of migration in the previous section, reflecting an absence of retirement villages in rural areas. We do observe a very small portion of rural-urban migrants migrating to retirement villages in urban areas.

Table 3.13 Household Characteristics at Destination

Household Size		
1	34.4	%
2	23.9	%
3	10.4	%
4	8.2	%
5	7.2	%
6	2.8	%
7	2.8	%
8	0.9	%
9	2.2	%
10	0.4	%
11+	6.9	%
Dwelling Type*		
Dwelling, house or brick structure on a separate stand or yard or on farm	32.9	%
Traditional dwelling, hut or structure made of traditional materials	8.3	%
Flat or apartment in a block of flats	12.3	%
Town, cluster or semi-detached house (simplex, duplex or triplex)	4.5	%
Unit in a retirement village	0.7	%
Dwelling, house, flat or room in backyard	14.0	%
Informal dwelling or shack in backyard	11.0	%
Informal dwelling or shack not in backyard (e.g. in an informal / squatter settlement or on a farm	10.3	%
Room or flatlet	6.2	%

**Note: Dwelling type was not known for 1.1% of rural-urban migrants and these individuals were ignored when looking at the breakdown of dwelling type at destination*

Effect of Rural-Urban Migration on Household Structure

Different households may employ different strategies in terms of migration. We define six categories in terms of these strategies applied to households in wave 1 from which a rural-urban migrant originated:

- **Single Person Households**: Households consisting of only one person who was a rural-urban migrant.
- **Household Moved**: Households where the whole household moved together to the same new urban household.

- **Household Dissolved**: Households where the whole household moved but individuals moved to different destination households. At least one migrant has to have moved to an urban area in this classification but not necessarily all of the migrants.
- **One Migrant with Stayers**: Household sends one individual to an urban area. The remainder of the household remains in a rural area with at least one individual remaining in the same rural household.
- **Group Migrants with Stayers**: Household sends a group of migrants to the same urban household. There is a remainder of the household who remain in a rural area with at least one individual remaining in the same rural household.
- **Multiple Migrants with Stayers**: Household sends more than one migrant to different urban households. There is a remainder of the household who remain in a rural area with at least one individual remaining in the same rural household.

Using this terminology, "strategy" is used very loosely as we don't know the specific reason individuals move and it may not be motivated by the incentives of the household unit. Individuals may move out of the household to get married, they may reach an age where they feel it is time to move out of home or they may move due to falling out with other household residents. Nonetheless this breakdown gives insight into what tends to happen to the households from which rural-urban migrants originate.

Table 3.14 shows the breakdown of the rural-urban migrants in the panel in terms of their sending household's strategy. More than half or respondents came from rural households from which they moved by themselves to an urban area and left their household behind in a rural area.[10] This helps to provide an explanation of why we observed a minimal impact of family size on migration probability in the previous section. If the effect of household size revolved around the costs of moving the entire family relative to the economic benefits (Mincer, 1978), this impact is going to lose significance if individuals move to urban areas and leave part of the household behind.

Table 3.14 Household Strategy for Sending Household of Each Rural-Urban Migrant

Household Strategy		
Single Person Household	11.6	%
Household Moved	16.4	%
Household Dissolved	3.6	%
One Migrant with Stayers	55.5	%
Group Migrants with Stayers	5.7	%
Multiple Migrants with Stayers	7.2	%

[10] *This analysis is looking at the case of each rural-urban migrant in our panel and not each wave 1 household. If we looked at the proportions for each wave 1 household we would see a greater proportion in the "one migrant with stayer" classification as some of the other classifications imply more than one respondent is counted from the wave 1 household. Specifically, "Household Moved", "Group Migrants with Stayers", "Multiple Migrants with Stayers" all, by definition, have more than one rural-urban migrant originating from the household. Also, potentially there could be more than one rural-urban migrant from households classified as "Household Dissolved"*

Intended Duration of Rural-Urban Migration

As wave 2 is the most recent data set we have, we are unable to measure the duration of migration. However, in the adult questionnaire, respondents are asked to give their preference to stay in the area in which they reside. These responses can give us insight into the intentions of respondents in terms of the duration of their stay. The responses to this question are listed in Table 3.15. Most respondents expressed a willingness to continue living in the area, suggesting that urban migrants planned on staying in the area long-term. It does not necessarily mean that this will be the case as they might leave despite intentions of staying. With the data available we are unable to assess the correlation between intentions and reality in this respect but it would be a worthwhile topic for further research when future waves of NIDS are carried out.

Table 3.15 Rural-Urban Migrant's Preference to Stay in Area

Preference to Continue Living in Area*	
Strong Preference to Stay	51.8
Moderate Preference to Stay	15.6
Unsure (no strong preference to stay or leave)	25.4
Moderate Preference to Leave	2.2
Strong Preference to Leave	5.0

**note: 4.7% of rural-urban migrants in the panel gave non-responses to this question in wave 2 and were ignored in this analysis*

We have now given a thorough description of the panel being used for this study. In doing so we have highlighted the key determinants of rural-urban migration and the nature of the migration which has taken place in the panel. We now turn to the experience of rural-urban migrants. In the next chapter we analyse a variety of different factors to get a detailed account of the rural-urban migration experience in South Africa.

4 The Rural-Urban Migration Experience

The diversity of the migration literature highlights the multi-dimensional nature of migration. To really understand the costs and benefits that rural-urban migration entails requires an analysis of a multitude of factors. Whilst not exhaustive, this section looks to give a thorough account of these factors.

We begin in section 4.1 by analysing changes in subjective well-being. We give justification for the centrality of subjective well-being to this study and then in the sections which follow we analyse changes to several relevant factors and assess the impact that these changes have on subjective well-being. Sections 4.2 through to 4.4 look at changes to material well-being covering changes in income, housing standards and access to utilities. Section 4.5 looks at changes in relative income deprivation. Section 4.6 analyses changes in trust and related factors as a means of assessing changes in social capital. Section 4.7 looks at changes in physical and emotional health. Then finally, in section 4.8 we look at the effect on subjective well-being of major life events, covering changes in employment status, educational involvement, marital status and the importance placed on religious activities.

4.1 Subjective Well-Being

> *"... all knowledge and every pursuit aims at some good, what it is that we say political science aims at and what is the highest of all goods achievable by action. Verbally there is a very general agreement; for both the general run of men and people of superior refinement say that it is happiness, and identify living well and doing well with being happy"* (Aristotle, 2009: pp. 7)

Over the years people have tried to conceptualize what constitutes a good and happy life. One method which has become prominent is to focus on individuals' own perceptions of their lives. This measurement is what is referred to as "subjective well-being". Subjective well-being has the advantage of being democratic in that it gives people the right to determine the quality of their own lives (Diener, 2000). Whilst individuals generally view themselves as aiming towards goals focusing around areas such as income, health and security, all these factors can be seen as instrumental means of improving subjective well-being (Diener et al, 1998). This applies to migration decisions in that the factors driving the decision making process revolve around economic or welfare benefits but in the end these benefits are desired in order to improve subjective well-being. For this reason, it is useful to look at how subjective well-being is influenced by rural-urban migration and to analyse the factors which govern these changes.

Household surveys are a useful tool in measuring subjective well-being as it allows users to specifically ask individuals to evaluate their lives. Two methods are most commonly used to obtain these evaluations. The first involves asking individuals to give self-reported ratings on their happiness. These methods generally tend to reflect short-term effects and are more influenced by moods and emotions. To get a more stable view of an individual's subjective well-being,

individuals are asked to report on how satisfied they are with their lives as a whole. These questions have shown consistency when analysed against other methods of measuring subjective well-being as well as when compared to external reports by others and observed behaviour (Helliwell & Putnam, 2004). Such questions have been used worldwide in studies, including the World Values Survey and the Eurobarometer Survey as well as in South Africa for the World Bank's Project for Statistics of Living Standards.

In the NIDS adult questionnaire, respondents are asked:

> *"Using a scale of 1 to 10 where 1 means "Very dissatisfied" and 10 means "Very satisfied", how do you feel about your life as a whole right now?"*

This gives us a measure of subjective well-being in terms of an individual's satisfaction with their lives where higher values represent greater subjective well-being.

The focus of this study is on changes in subjective well-being over the period 2008 – 2010/2011. A major advantage of focusing on changes is that levels of subjective well-being are not necessarily comparable between individuals (Frey & Stutzer, 2000). Personality has a strong influence on how individuals respond to questions on self-reported well-being, meaning that cross-sectional analyses of the factors affecting subjective well-being can be misleading (Diener, 2000). By using panel data to analyse how subjective well-being changes within individuals allows us to see what influences subjective well-being beyond individual traits and personalities (Diener et al, 2003).

Whilst our focus is on the experience of rural-urban migrants, we keep as our reference group the rural stayers in the panel. This allows us to distinguish changes which occurred as a result of rural-urban migration from changes which would likely have still occurred had the migrant remained in their rural household. Importantly, it is comparing individuals from the same cultures. This importance stems from the fact that, in addition to personality, culture is likely to have an influence on self-reports on subjective well-being (Diener et al, 2003).

Table 4.1 shows the aggregate changes in subjective well-being for our panel. The mean subjective well-being hovers around a response of 5 which is the midpoint on the scale used in the survey. There is a small decrease in the means but when we run a t-test of the change in means, the change is insignificant for rural-urban migrants due to the smaller sample size. This outcome is interesting, the fact that individuals decided to migrate would seem to imply there were some form of benefits to migrating, which we would expect to result in higher levels of subjective well-being.

There are a few reasons why we could see the consistent means across waves. One area of work which has received much attention in the literature on subjective well-being is based around hedonic adaptation, or the "hedonic treadmill". Hedonic adaptation occurs through the re-evaluation of an individual's well-being based on their current state. Therefore as individuals experience changes to their subjective well-being they reassess their perceptions in terms of what will increase and decrease the quality of their lives and hence they return to their initial levels of subjective well-being (Brinkman & Campbell, 1971). Whilst evidence of persistent levels of aggregate subjective well-being over time does offer support for theories of hedonic adaptation, it generally takes a while to take effect, meaning we would not expect to see changes adjusting back in the two year period under study. More importantly, Lyubomirsky (2010) gives a list of evidence of cases where subjective well-being has increased over time, displaying that in actual fact individuals do go through changes which alter their subjective well-being.

The work on hedonic adaptation does highlight an important fact in that subjective well-being is based on past expectations. This means that the costs and benefits from rural-urban migration may not have as much of an impact on subjective well-being for rural-urban migrants as may have been expected. Thus by analysing the different impact of factors on subjective well-being between rural stayers and rural-urban migrants we can gain insight into the expectations with regards to rural-urban migration and therefore gain a better understanding of the drivers influencing migration decisions.

Table 4.1 Changes in Subjective Well-Being Between 2008 and 2010/2011

	Urban Migrants		Rural Stayers	
n (unweighted)	124		4993	
Weight	195751		7929980	
Question Response Rate	85.2	%	83.9	%
Sample Means ($\bar{x}$)				
wave1 ($\bar{x}_1$)	5.49		4.99	
wave2 ($\bar{x}_2$)	4.91		4.40	
difference ($\bar{x}_2 - \bar{x}_1$)	-0.58		-0.59	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	1.43		10.00	
P > |t|	0.153		0.000	

An alternative explanation to hedonic adaptation in terms of the reasonably consistent levels of subjective well-being is that individuals are experiencing changes in their levels of subjective well-being but these changes are not unidirectional. In this case some individuals would be experiencing significant increases and others significant decreases, causing aggregate statistics to remain static. Figure 4.1 compares the breakdown in responses across waves. Although we observed consistency in mean levels, there were slight changes in the breakdown of responses. Of particular note is the fact that for rural-urban migrants we see a large decrease in the amount of individuals who reported that they were "very satisfied" with life and a large increase in the amount of people saying they were "very dissatisfied" with life. For rural stayers the changes were more in the intermediary responses and less change was experienced at the extreme ends of the scale

Although we do see some movement in the graphs presented in Figure 4.1, there is still a large amount of consistency across waves as the shapes of the curves retain a very similar shape. To dig down further we analyse the changes at the individual level, measured as the difference between the wave 1 and wave 2 responses for each individual. Table 4.2 shows the breakdown of respondents in terms of whether they experienced an increase, no change or a decrease in their levels of subjective well-being. Despite the lack of change in the average levels of subjective well-being, there were significant movements at the individual level. More than half of both groups reported a lower satisfaction with life in wave 2 compared with wave 1. Only a very small portion of the panel actually experienced no change, signifying that hedonic adaptation did not seem to be in effect in the panel for the period over which this study was conducted but

rather we observe significant movements of both positive and negative nature which cancel each other out leaving the aggregate levels constant.

Figure 4.1 Breakdown of Subjective Well-Being Responses (% of panel)

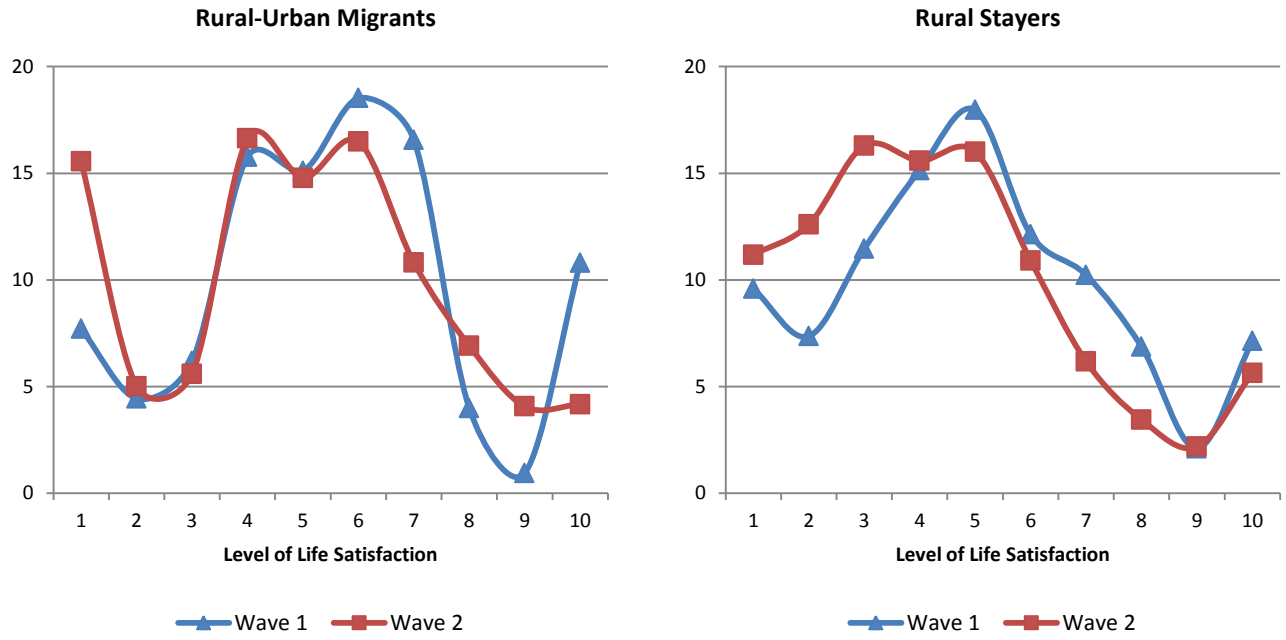


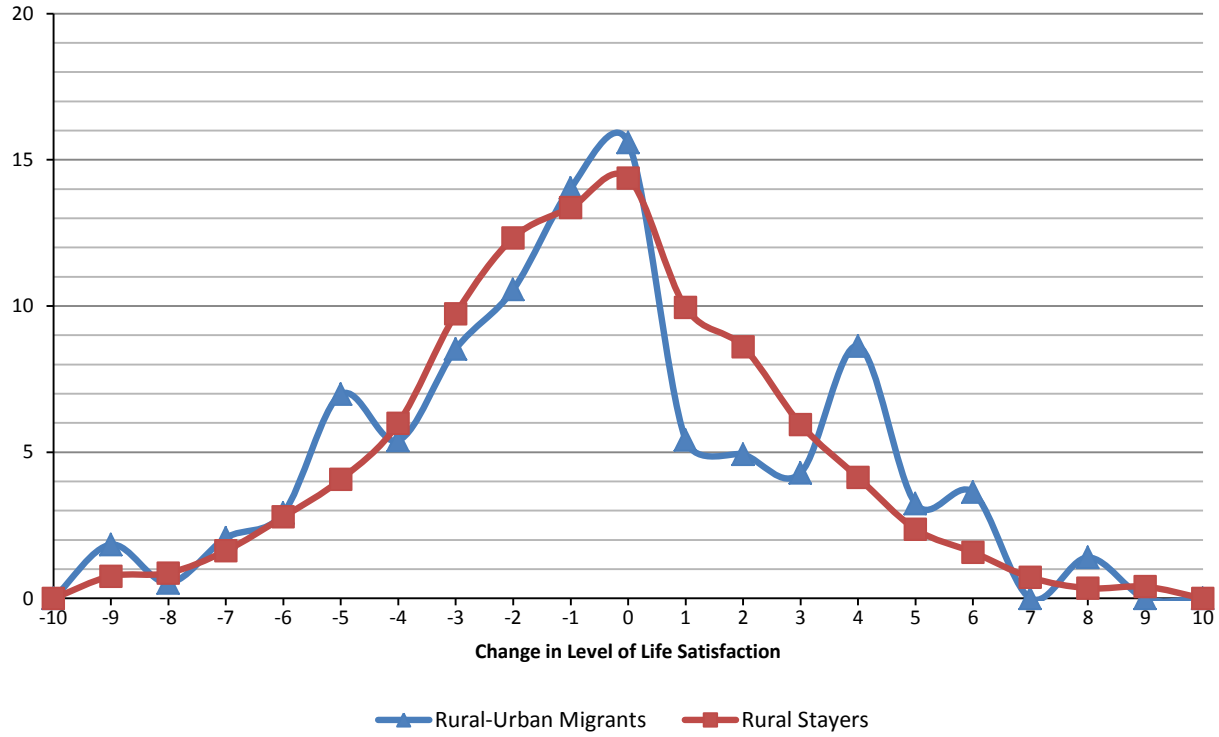
Table 4.2 Breakdown of Individual Changes in Subjective Well-Being Between Wave 1 and Wave 2

	Urban Migrants		Rural Stayers	
Increase	31.6	%	34.1	%
Equal	15.6	%	14.4	%
Decrease	52.9	%	51.5	%

The significant movements at the individual level are illustrated further in Figure 4.2 which shows the breakdown of changes in subjective well-being. For urban stayers the distribution follows a fairly normal distribution; however for rural-urban migrants we observe certain spikes at the tails. This is reflective of the smaller sample size but also suggests that rural-urban migrants are more likely to experience large swings in their levels of life satisfaction. It is particularly evident for cases where an increase of life satisfaction was experienced as we observe a relatively low proportion of the subsample experiencing small increases but a significant portion experiencing large increases.

The fact that we see significant movements in subjective well-being in both directions makes for an interesting point of study. It allows us to examine the factors which cause subjective well-being to increase and also which cause it to decrease. The fact that the rural stayers experienced very similar movements to rural-urban migrants also needs investigating. Rural-urban migration is a major life event which carries with it a number of significant changes. When we attempt to assess the root causes of changes in subjective well-being we will continue to contrast the changes for both groups and assess whether factors impact on subjective well-being in different ways.

Figure 4.2 Breakdown of Changes in Subjective Well-Being Between 2008 and 2010/2011 (% of panel)



As a final point of departure before we look into the drivers of change in subjective well-being, we have a look at subjective well-being experiences for rural-urban migrants under the different sending household strategies analysed in Section 5.4. In Table 4.3 we break down each group into the proportion which experienced an increase, no change or a decrease in subjective well-being. Due to the small size of the sample and particularly within certain groups, we can only make assumptions from this that are indicative and we are not able to draw any concrete conclusions from it. However we do observe an interesting pattern with the data that is available.

The proportion of migrants who experienced a decrease in subjective well-being was particularly high for individuals who did not leave anyone behind in the rural household. This would seem to suggest that having people remain at the rural household makes the move to an urban area more worthwhile, suggesting that individuals move in order to benefit their households rather than benefit themselves. This would give individuals more purpose, making it easier to cope with the hardships involved with rural-urban migration. We also see that individuals who moved with people appeared to have a more favourable experience than those who moved by themselves. In particular we see a very positive impact on subjective well-being for those who moved in a group from rural households and left stayers behind.

Table 4.3 Changes in Subjective Well-Being Broken Down by Migration Strategies

Migration Strategy*	n (unweighted)	weight	Changes in Subjective Well-Being		
			Increase	No Change	Decrease
Single Person Household	8	26 694	17.1 %	0.0 %	82.9 %
Household Moved	16	35 747	38.6 %	7.7 %	53.7 %
Household Dissolved	6	8 205	21.3 %	0.0 %	78.7 %
One Migrant with Stayers	74	104 763	31.3 %	20.4 %	48.2 %
Group Migrants with Stayers	12	8 334	83.9 %	16.0 %	0.0 %
Multiple Migrants with Stayers	8	12 008	15.2 %	41.8 %	43.0 %

**Note: For a description of migrant strategies see Chapter 3.1*

We have now given a thorough description of changes in subjective well-being in our panel. We now turn our attention to attempting to analyse what causes these changes. In the sections which follow we look into potential causes for the changes in subjective well-being to gain a complete understanding of the dynamics of rural-urban migration and the relationship between rural-urban migration and subjective well-being.

4.2 Income

The relationship between income and subjective well-being has been one which has puzzled economists over the years. Cross-sectional studies have shown a positive correlation between incomes and levels of subjective well-being (Easterlin, 1974; Diener et al, 1985; Blanchflower & Oswald, 2004). However, studies looking at time-series data at the national level observe increasing aggregate incomes whilst subjective well-being remains constant (Easterlin; 1995; Myers, 2000). Other studies have argued that income only affects subjective well-being for poor individuals but above a certain level of income it has no effect (Diener & Biswas-Diener, 2002; Helliwell & Putnam, 2004).

Income is a particularly important component given the nature of this study. As migration is driven primarily by potential economic benefits (Sjaastad, 1962; Todaro, 1969), we would expect changes in income to factor into whether or not a rural-migrant is satisfied with their decision to migrate which should have an effect on an individual's subjective well-being. Additionally, although it was observed that wealthy rural dwellers have a higher probability of rural-urban migration than individuals from poorer households; rural-urban migrants are still spread over the lower national income quintiles and had a mean household monthly income per capita of only R895.39 in 2008[11]. Thus a large

[11] *See section 4.3 ("The Determinants of Rural-Urban Migration: Employment and Household Income")*

portion of rural-urban migrants have low incomes, so if it is true that income only matters for poor individuals, we would expect to still see an effect on the subjective well-being of our panel.

We focus our attention on household income per capita rather than individual income as this gives a better indication of how well-off a household is (Datta & Meerman, 1980). In NIDS, in order to be a household resident, an individual has to usually stay in the household for four nights per week and has to be a household member which requires contributing to or sharing in a common resource pool. Due to this requirement, we would expect any effects on subjective well-being stemming for a change in an individual's income to be felt by the whole household in which they are resident. In a study done in Russia, Ravallion & Lokshin (2001) compared the effect on subjective well-being of changes in both household income per capita and individual income and found changes in household income per capita to be a far stronger predictor of subjective well-being than individual income.

Table 4.4 shows the changes in aggregate incomes for rural-urban migrants and rural dwellers. Whilst we see a significant increase in mean household income per capita for both rural-urban migrants and rural stayers, there was an increase of almost 150% for rural-urban migrants compared to an increase of just over 30% for rural stayers. This echoes a 2011 statement by the South African Cities Network (SACN) that "economic conditions are generally better in the cities than in the rest of the country. This is reflected in the level and rate of growth in output, employment, income and productivity" (SACN, 2011: pp. 44).

Table 4.4 Changes in Household Income per Capita, 2008 – 2010/2011

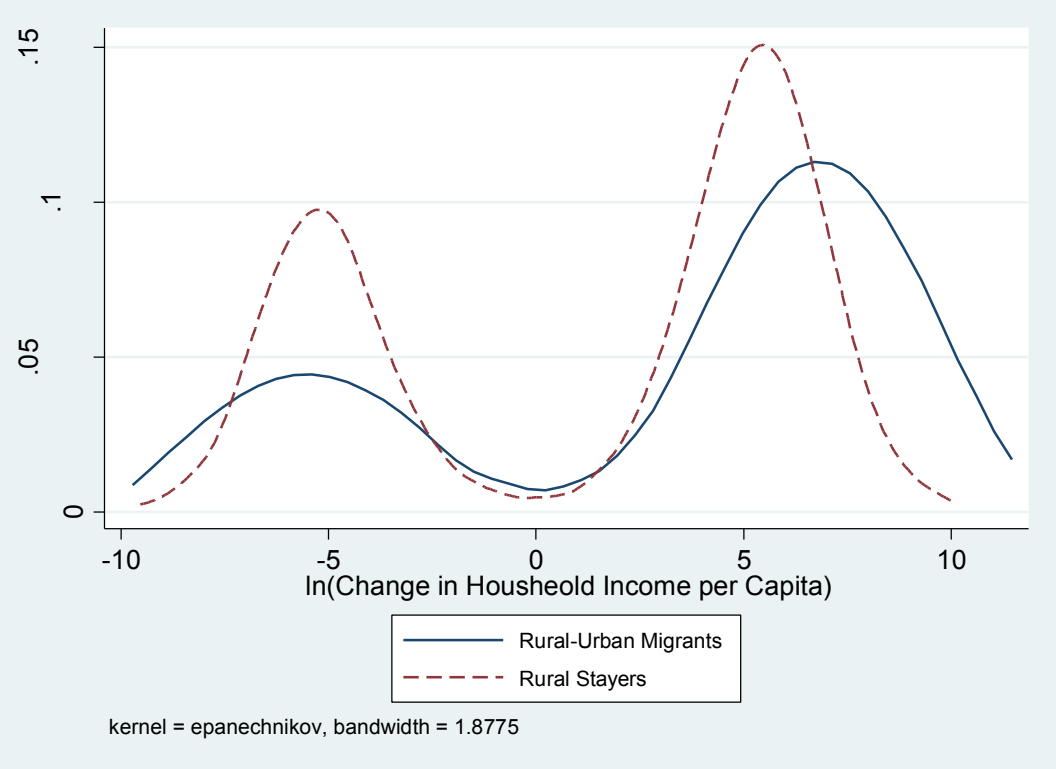
	Rural-Urban Migrants		Rural Stayers	
n (unweighted)	142		5827	
Weight	229814		9448415	
Question Response Rate	100	%	100	%
Sample Means ($\bar{x}$)				
wave1 ($\bar{x}_1$)	R 895.39		R 646.62	
wave2 ($\bar{x}_2$)	R 2 199.52		R 846.10	
difference ($\bar{x}_2 - \bar{x}_1$)	R 1 304.13		R 199.48	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-4.45		-8.78	
P > |t|	0.000		0.000	
Proportion Increasing	71.3	%	61.9	%

Despite better economic conditions, the SACN report gives evidence of significantly higher levels of unemployment in the nation's cities. As we observed a large proportion of rural-urban migrants living on their own post-migration and the time period of only two years between waves we would expect a significant portion of rural-urban migrants to have failed to find employment by the time the second wave was conducted. If this were the case we would not expect to see

such a substantial aggregate increase in household income per capita. Part of the explanation for this can be obtained from a study by Cornwall and Inder (2004) which found that migrants showed greater success in finding employment than non-migrants and are far less likely to be unemployed[12].

If we look at individual experiences we do observe some migrants experiencing a decrease in household income per capita. Figure 4.3 shows the kernel density plots for the logs of changes in household income per capita for rural-urban migrants and rural stayers[13]. Rural-urban migrants are represented by the solid line and rural stayers by the dashed line. As can be seen from the plots, both groups experienced increases and decreases in household income per capita. Rural-urban migrants exhibit a wider spread, indicating that rural-urban migrants experienced changes of higher magnitudes than rural stayers. This is particularly evident for increases in household income per capita where the turning point for rural-urban migrants occurs after the two lines intersect part way along the downward-slope for rural stayers.

Figure 4.3 Kernel Densities for the Changes in Household Income per Capita between 2008 and 2010/2011



When looking at changes in income in relation to migration, it is important to consider selectivity bias. As DaVanzo argues:

[12] *Changes in employment status are studied in more detail in Section 4.7*

[13] *As you can't take a log of a negative number or of zero, the following process was followed to obtain the log of the change in household income per capita using Stata: (1) The change in household income per capita was calculated by subtracting household income per capita in wave 1 from the amount in wave 1. (2) The log of the absolute value of the change in household income per capita was calculated, this gives values for all observations except for cases where the change was equal to zero and Stata returns a missing value. (3) Missing values were set to 0 as this relates to a change of zero. (4) values were changed to their negatives where the change in household income per capita was negative*

"..outcomes we observe depend on the choices made, which in turn were based on expectations about these outcomes. That is, we observe post-migration income at destination only for individuals who choose to move; and they choose to move precisely because they expected to receive more real income. We observe post-nonmigration income at origin only for nonmovers. They have chosen not to move precisely because they believed they were earning more real income than they could anywhere else. Therefore, their experiences may not be indicative of what migrants would have experienced had they not moved, just as the post-migration earnings of migrants may not be indicative of what nonmigrants would have experienced had they moved." (DaVanzo, 1980: pp. 22)

To assess the relationship between changes in income and changes in subjective well-being we run correlation coefficients between the two changes. Table 4.5 shows the correlation coefficients for the change in subjective well-being run against the log of the change in incomes per capita. The subsample was also broken down to try and see if the relationship was stronger for certain groups. First the panel was broken down into those that experienced an increase in incomes and those that experienced a decrease. Then the panel was also limited to only those individuals from wave 1 households with a monthly household income per capita of less than R400 (an approximate median), and wave 1 households with a monthly income of greater than R400.

Table 4.5 Correlation Coefficients for the Changes in Household Income per Capita and Changes in Subjective Well-Being Between 2008 and 2010/2011

	Rural-Urban Migrants	Rural Stayers
All		
n (unweighted)	124	4993
Weight	195751	7929980
Correlation Coefficient	***0.18***	***0.08***
Income Increased		
n (unweighted)	87	2948
Weight	136345	4831846
Correlation Coefficient	***0.07***	***0.06***
Income Decreased		
n (unweighted)	36	2043
Weight	55047	3086218
Correlation Coefficient	***0.08***	***0.04***
Wave 1 Household Income per Capita Income < 400		
n (unweighted)	59	2624
Weight	69611	4118620
Correlation Coefficient	***-0.01***	***0.07***
Wave 1 Household Income per Capita Income > 400		
n (unweighted)	65	2366
Weight	126139	3808874
Correlation Coefficient	***0.22***	***0.10***

The correlations suggest a there does exist a positive relationship between changes in income and changes in subjective well-being, although the relationship is not particularly strong. The relationship is significantly stronger for rural-urban migrants suggesting a higher importance placed on economic gains for this group. What is particularly surprising is the breakdown in terms of wave 1 incomes. Whilst studies have argues that income only effects subjective well-being for poorer individuals (Diener & Biswas-Diener, 2002; Helliwell & Putnam, 2004), we observe higher correlation coefficients for individuals with a higher income at baseline. For rural-urban migrants coming from poorer households the relationship even turns negative.

Income is only one area of material well-being. Whilst we have analysed income changes in detail and the relationships to subjective well-being, we now turn our attention to other areas of material well-being we believe to be relevant for the study.

4.3 Housing Standards

In a South African study using data from the 1993/1994 Project for Statistics on Living Standards data, Bookwalter and Dalenberg (2004) found housing variables to have the strongest marginal impact on subjective well-being. It is therefore of particular interest to observe changes to housing quality in this study.

In the second wave of NIDS, interviewers were asked to rate dwellings on a 5-point scale where 1 refers to "dilapidated/falling down", 2 "in need of structural repairs", 3 "structurally sound, but requires maintenance", 4 "structurally sound" and 5 "in good condition, shows evidence of recent maintenance/renovations". This provides a good indication of the quality of housing and doesn't suffer from being influenced by the number of residents of the housing prices specific to the area as would measures such as the number of rooms or housing market value.

Unfortunately this specific question was not asked in wave 1. As a method to get around this we can use the wave 2 response from respondents who were resident with the rural-urban migrant in wave 1 and remained in that household in wave 2. This forces us to use the reduced panel as was discussed in detail in Chapter 3.1.

Table 4.6 shows the aggregate changes in dwelling standards for our reduced panel. Obviously there we will hardly observe any change for rural stayers as the majority of this group remained in the same household, meaning we are comparing the same measurement at the same point in time. They were left in the table to observe the mean dwelling rating but are not included in any further analysis. For rural-urban migrants we do not see a significant difference in the aggregate dwelling standards for their new urban households in relation to the household from which they moved.

Table 4.6 Approximation of Changes in Dwelling Standards between 2008 and 2010/2011

	Rural-Urban Migrants		Rural Stayers	
n (unweighted)	110		5741	
Weight	156283		9296366	
Question Response Rate*	99.4	%	99.7	%
Sample Means ($\bar{x}$)				
wave1 ($\bar{x}_1$)	3.19		3.19	
wave2 ($\bar{x}_2$)	3.26		3.19	
difference ($\bar{x}_2 - \bar{x}_1$)	0.07		0.00	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-0.45		-0.03	
P > |t|	0.654		0.975	

**Note: Question response rates in relation to reduced panel. For a description of reduced panel see Chapter 3.1*

If there are both increases and decreases in a variable, aggregate estimations can disguise significant movements. Figure 4.4 shows the breakdown of responses for wave 2 and the wave 1 approximations in the reduced panel. The distribution stays quite similar but there is a slight change brought about by a decrease in the proportion of responses of 2, "in need of structural repairs", and 5, "in good condition, shows evidence of recent maintenance/renovations", together with an increase in responses of 3, "structurally sound, but requires maintenance", and 4, "structurally sound".

Figure 4.5 looks further into changes in the rating of respondents' dwelling by giving the breakdowns of the change in the responses between wave 1 and wave 2. Only a third of rural-urban migrants moved to dwellings which received the same rating as their origin household from wave 1. The distribution resembles a normal distribution around zero change, with the increases cancelling out the decreases to leave the mean change relatively unchanged.

Figure 4.4 Breakdowns (%) of Dwelling Ratings

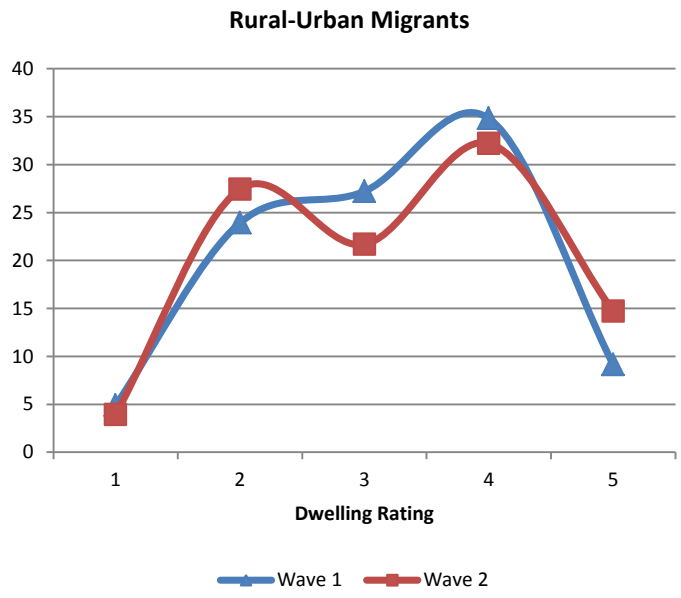
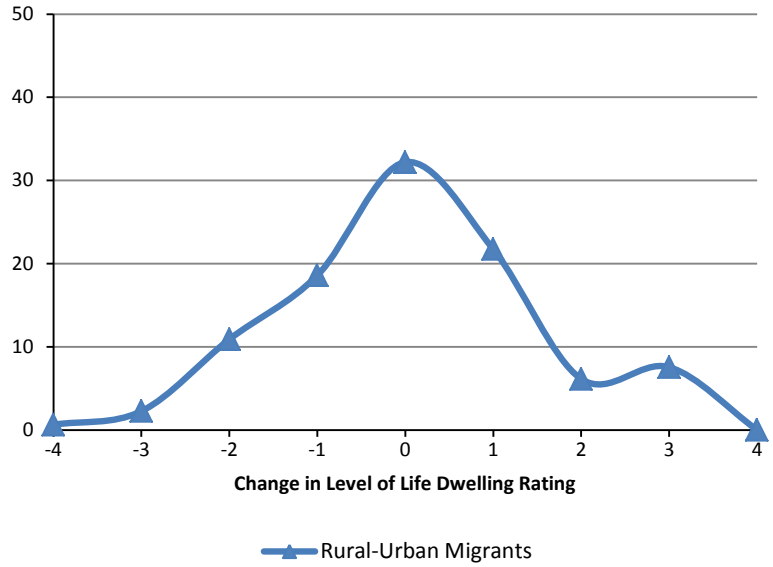


Figure 4.5 Changes in Dwelling Rating Between 2008 and 2010/2011



Despite the significant changes in dwelling standards, we only find a very week relationship between changes in dwelling ratings and changes in subjective well-being when compared on their own. We are unable to compare the relationships between rural-urban migrants and rural stayers as rural stayers have a change in the rating of their dwelling of 0 due to the nature of our approximations. If we run the correlation for rural-urban migrants we get a coefficient of only 0.13.

To gain a better understanding of the changes in housing standards, we look at changes in access to utilities to see if there are any significant changes to housing standards beyond the interviewer dwelling ratings.

4.4 Access to Utilities

Surveys carried out by the Development Bank of Southern Africa (DBSA) have led to suggestions that infrastructure and public service delivery are now playing a significant role in patterns of rural-urban migration. The argument is that there has been considerable degradation of natural resources which rural households rely on for necessities such as food, water and energy. Therefore they are driven from their rural homes in search of new residence where they can obtain these goods (Cross, 2001). For the purpose of this study we look at changes in access to water and electricity to see if rural-urban migrants gain access to these basic utilities and then later we analyse the impact of these changes on subjective well-being.

We begin with water as it is an essential factor in people's livelihoods. In the NIDS household questionnaire, respondents are asked what the household's main source of water is. Table 4.7 shows the details for this question as

well as the proportion of respondents who gained and lost piped water into the house, where they gain by not having piped water into their home in wave 1 but did in wave 2 and lost by having piped water into their home in wave 2 but didn't in wave 1. In this question there is an option of "other" which has been treated as a non-response in this analysis to avoid confusion.

As can be observed from Table 4.7, over a third of rural-urban migrants moved from a household without piped water to a household which did. We also see a significant proportion of rural stayers gaining piped water into the dwelling, although the proportion is less than half that of rural-urban migrants. Additionally, a substantially smaller but still significant proportion of rural-urban migrants moved from households with piped water into households without piped water. The proportion of rural stayers loosing access to piped water seems surprising as almost all this group remained in the same household and it seems strange to have water piped into the household and then not have. One explanation may lie in the question format. In the questionnaire, respondents are asked to provide the main source of water, this portion of rural stayers may still have piped water into the dwelling but choose to use an external source due to better quality water or a lower cost. Additionally, as this question is from the household questionnaire which does not need to be administered to the same respondent across waves, we may get different responses from different respondents. If the household has more than one water source, household residents may differ in their opinion of which is the main water source which could lead to inconsistencies across waves.

Table 4.7 Changes in Household's Main Water Source

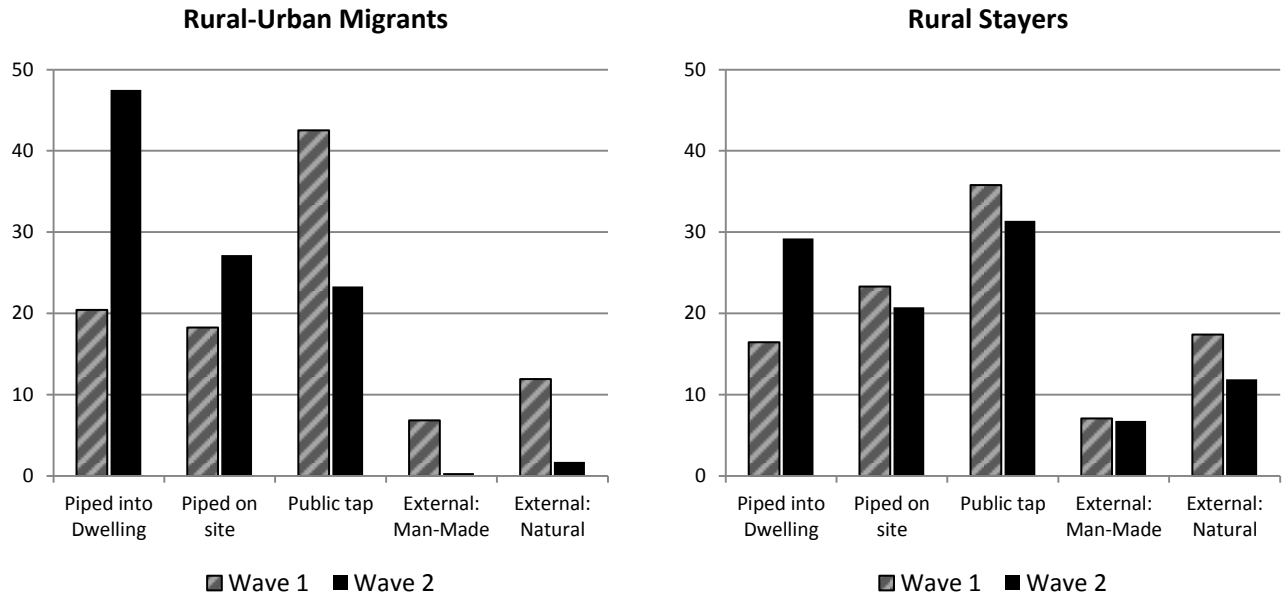
	Rural-Urban Migrants		Rural Stayers	
n (unweighted)	137		5639	
Weight	221288		9139829	
Question Response Rate	96.3	%	96.7	%
Piped Water into Dwelling				
Gained	36.4	%	17.8	%
Lost	9.3	%	5.1	%

Despite these potential issues, it is still useful to observe changes in the main sources used of water. The NIDS questionnaire lists 11 different sources. For ease of reading, these sources have been collapsed into 5 classifications. We leave the first three responses as they are. These responses account for the majority of responses and are "piped into dwelling", "piped on site" and "public tap". We then include a category "external: man-made" which covers responses of "water-carrier/tanker", "borehole on site", "borehole off site / communal", "rain-water tank on site" and "well". We also include a category "external: natural" which covers responses of "flowing water / stream", "dam/pool or stagnant water" and "spring".

Figure 4.6 compares the breakdown of household's main water source between the 2 waves of the study. The large increase in respondents with piped water into their dwellings has already been discussed and is reflected by the large increase in the first column of the graphs. We do observe a significant decrease in rural-urban migrants relying on

natural water sources as would be expected from the DBSA studies. However we also observe large decreases in man-made sources which are external to the household. Only a small portion of the panel actually relied on natural water sources as at wave 1, therefore any changes to subjective well-being are more likely to be from not having to go through the process of collecting water rather than out of fulfilling the need to find a reliable water source.

Figure 4.6 Breakdowns (%) of Responses for Main Water Source



In addition to questions on the household's main water source, respondents are also asked if their household has electricity, even if it is currently disconnected. Electricity is important for a number of day-to-day activities including cooking, heating and lighting. Whilst there are other means of achieving these goals, they generally involve substantially more effort, come in more unreliable supply, are more expensive or are more limited in their use. For this reason we would expect changes in electricity access to have an impact on individual's subjective well-being. Table 4.8 shows the numbers in terms of responses to this question. Again we display the proportion of respondents who gained or lost electricity access. In contrast to the experience of rural-urban migrants in terms gaining piped water into their dwelling, we see the proportion who gained electricity into their homes, whilst significant is less than half of the proportion who lost electricity access.

Table 4.8 Changes in Electricity Access

	Rural-Urban Migrants		Rural Stayers	
n (unweighted)	136		5572	
Weight	219270		8973368	
Question Response Rate	95.4	%	95.0	%
Electricity Access in Dwelling				
Gained	15.3	%	8.9	%
Lost	31.4	%	10.6	%

To assess the impact of gaining or losing utility access on subjective well-being, we look at the changes in subjective well-being for individuals who experienced a change in these respects. Table 4.9 shows the breakdown of changes in subjective well-being relative to the changes in utility access used in this study. Most individuals who gained or lost access experienced a change in subjective well-being but there were generally significant changes in both directions. The largest impact appeared to be for rural-urban migrants in terms of losing piped water as their main water source. However, as discussed there are potential issues with the way this particular question is structured which may distort results.

Table 4.9 Changes in Subjective Well-Being in Relation to Changes in Access to utilities Between 2008 and 2010/2011

	Rural-Urban Migrants		Rural Stayers	
Gained Piped Water				
n (unweighted)	52		714	
Weight	75717		1409672	
Subjective well-being increased	30.0	%	33.0	%
Subjective well-being unchanged	15.1	%	10.6	%
Subjective well-being decreased	54.8	%	56.4	%
Lost Piped Water				
n (unweighted)	8		204	
Weight	16232.9509		354570.935	
Subjective well-being increased	16.5	%	38.9	%
Subjective well-being unchanged	11.6	%	14.5	%
Subjective well-being decreased	72.0	%	46.6	%
Gained Electrcity				
n (unweighted)	26		392	
Weight	31833.7065		651268.828	
Subjective well-being increased	29.4	%	34.1	%
Subjective well-being unchanged	12.8	%	16.4	%
Subjective well-being decreased	57.8	%	49.5	%
Lost Elecricity				
n (unweighted)	23.0		399.0	
Weight	41638.0		782935.5	
Subjective well-being increased	46.1	%	23.2	%
Subjective well-being unchanged	16.1	%	14.4	%
Subjective well-being decreased	37.8	%	62.4	%

Whilst there are other facets of material well-being which could have a significant effect for rural-urban migrants and influence subjective well-being, we limit our analysis to the ones discussed thus far. These factors appear to be the main factors we can use in this analysis given the structure and contents of the NIDS data and which the relevant literature

appears to suggest will have a universal influence on subjective well-being rather than only influencing certain people or not influencing anyone. We now move on to other factors important to migration analysis, beginning with relative deprivation.

4.5 Relative Deprivation

In a 1974 study, Easterlin investigated the relationship between income and happiness. The study showed that within countries there was a strong positive association between income and happiness. However, when comparing across countries the association was less clear. The same was true for a time-series analysis using aggregate data for the United States. One of the suggestions for this seeming lack of consistency was that individuals may base their feelings of happiness on relative, rather than absolute income. If this was true, within a country the richer individuals would feel happier than those around them and if an individual's income were to increase they would improve their position relative to those around them and feel happier with their lives. However, if everyone's income were to rise, their relative position would remain unchanged resulting in no change in happiness. Similarly an individual at a certain position along a country's income distribution would have the same level of happiness as an individual at the same point along another country's income distribution regardless of the aggregate income of that country. Therefore aggregate levels of happiness would remain constant despite different income levels (Easterlin, 1974). Easterlin revisited the subject two decades later with more recent and comprehensive data. The study gave compelling evidence for his earlier suggestions (Easterlin, 1995).

Relative income has also become a prominent part of the migration literature after village studies done at the Institute of Development Studies at Sussex University revealed that it is not necessarily the poorest villages from which migration is greatest. Rather it was shown to be greater from those villages with more unequal income distributions, from where the poorest people tend to migrate (Stark, 1984). Relative deprivation refers to how an individual feels about their position relative to those around them. According to relative deprivation theory, feeling relatively worse off to those around you increases the likelihood of migration (Stark & Yitzaki, 1988). Runciman (1966) defines a person as being relatively deprived of *X* if the following four conditions are met:

(1) They do not have *X*
(2) They perceive other people to have *X*
(3) They want *X*
(4) They feel that they should have *X*

Postelwaite (1998) argues that the concern with one's relative status is evolutionary, rooted in a history of societies defined by a hierarchical social structure. Due to the fact that historically moving up the hierarchical structure would carry with it privileges which would increase wealth and even ensure survival, the concern for our position relative to those surrounding us has become hardwired into our thinking as a survival instinct. Studies have shown support for the relative deprivation hypothesis in relation to migration whether defined in terms of income (Bhandari, 2004) or other forms of wealth (Quinn, 2006).

In the NIDS adult questionnaire, respondents are asked to rate the income of their household relative to the average in their suburb/village. Responses to this question range from 1 – 5 where 1 is a response of "much above average income", 2 "above average income", 3 "average income", 4 "below average income" and 5 "much below average income". Due to higher scores on the scale signifying being worse off we can consider the question to be a rough measure of relative deprivation in terms of income in the local area individuals live in.

Table 4.10 shows the information regarding changes in the aforementioned question between wave 1 and wave 2. We observe significant declines of equal magnitudes in the average relative deprivation for both rural-urban migrants and rural stayers over this period. This reflects that, on average, households see themselves as having improved their incomes relative to those around them.

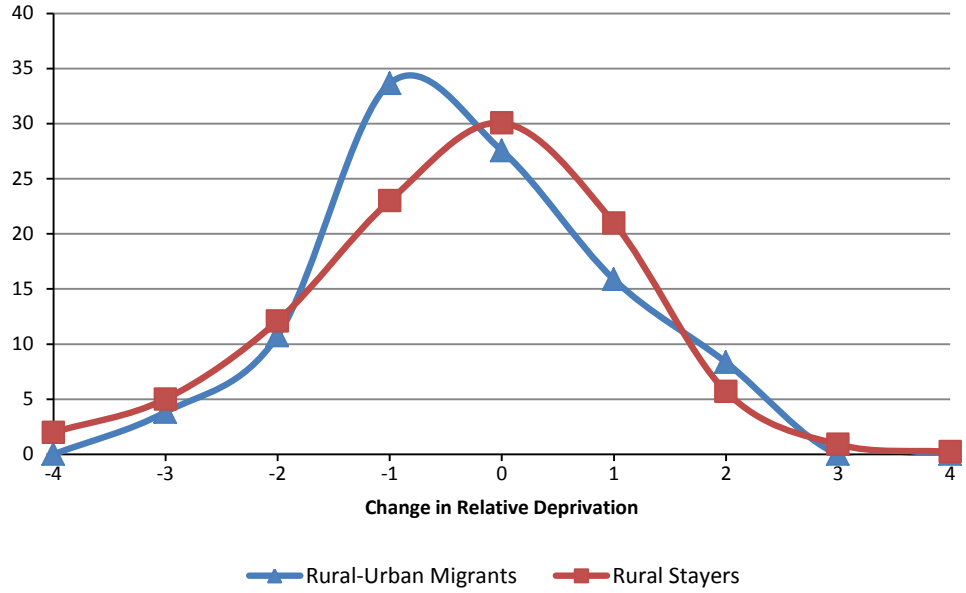
Table 4.10 Changes in Aggregate Relative Deprivation Between 2008 and 2010/2011

	Urban Migrants		Rural Stayers	
n (unweighted)	126		5134	
Weight	208833		8293094	
Question Response Rate	90.9	%	87.8	%
Sample Means ($\bar{x}$)				
wave1 ($\bar{x}_1$)	3.62		3.76	
wave2 ($\bar{x}_2$)	3.28		3.42	
difference ($\bar{x}_2 - \bar{x}_1$)	-0.34		-0.34	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	2.54		13.36	
P > |t|	0.011		0.000	

Whilst rural-urban migrants and rural stayers exhibited equal decreases in mean relative deprivation, the change was of a slightly different nature. Figure 4.7 shows the breakdown of the changes in relative deprivation. Rural stayers show a higher proportion of individuals with no change compared to rural-urban migrants. Within rural-urban migrants we observe a large portion of individuals experiencing a slight decline, whereas for rural stayers there were more individuals who experienced large decreases in relative deprivation. This may seem surprising given the greater tendency for rural-urban migrants to exhibit large changes in income as observed in Section 7.1.

One possible reason behind this outcome is the change in reference group. Rural stayers largely have the same reference group to compare their incomes with in wave 1 and wave 2, meaning their relative deprivation will change more in line with their change in income, assuming others around them do not experience drastic changes to their incomes. For rural-urban migrants, their reference group with which to compare their income will change which means that even large increases in income may not translate into large decreases in terms of relative deprivation.

Figure 4.7 Changes in Relative Deprivation Between 2008 and 2010/2011



To test this theory we run a correlation of the change in relative deprivation against the change in income. The results do not offer support for this argument. For rural-urban migrants we observe a very weak correlation coefficient of -0.1. As discussed, this is not surprising given the change of reference group as migrants move to urban areas. For rural stayers, instead of getting a strong correlation we get one of 0.01. Not only does this not exceed the magnitude of the coefficient for rural stayers, it is also positive. This suggests a more complex relationship between income and relative deprivation which would require more details about the change in incomes of those living around the respondent to analyse properly.

Despite the lack of any meaningful relationship between relative deprivation and income, we can still gain some useful information if we include income considerations into the relationship between relative deprivation and subjective well-being. Table 4.11 shows the correlation coefficients for the change in subjective well-being and the change in relative deprivation. Using the whole panel we get correlation coefficients of -0.15 and -0.07 for rural-urban migrants and rural stayers respectively. If we limit the calculations to only those whose incomes increased we get significantly higher coefficients, particularly for rural-urban migrants who now display a correlation coefficient of -0.35. This suggests that rural-urban migrants who have managed to improve their incomes are particularly sensitive to their relative position in terms of income.

To explain this outcome, take the following example: Imagine an individual who leaves behind their rural home and moves to one of their native cities in the search of economic benefits. Doing so entails financial and psychological costs due to the need to move and adjust to life in the city. If the individual succeeds in terms of increasing their income but finds that relative to those around them they feel worse off than before, they are likely to feel particularly discouraged given the amount of effort and strain the move has entailed. Similarly if they find that they have improved their economic position relative to those around them they are likely to feel particularly satisfied, given the amount of effort and strain the move has entailed.

Table 4.11 Correlation Coefficients Between Changes in Relative Deprivation and Changes in Subjective Well-Being Between 2008 and 2010/2011

	Rural-Urban Migrants	Rural Stayers
All		
n (unweighted)	111	4448
Weight	180784	7104032
Correlation Coefficient	***-0.15***	***-0.07***
Income Increased		
n (unweighted)	78	2638
Weight	127872	4329538
Correlation Coefficient	***-0.35***	***-0.11***
Income Decreased		
n (unweighted)	32	1808
Weight	48553	2762579
Correlation Coefficient	***0.15***	***-0.02***

In the broad scheme of things, we have found evidence of potential effects of relative deprivation changes on subjective well-being. However, these effects seem to only have an impact in certain situations, in particular when rural-urban migrants experience increasing incomes. Additionally, we have also discovered that the relationship between income and relative deprivation is more complex than a simple direct linear relationship.

4.6 Interpersonal Trust

> *"Trust is an important lubricant of a social system. It is extremely efficient; it saves a lot of trouble to have a fair degree of reliance on other people's world"* (Arrow, 1974: pp. 26)

Trust is central to economic activity through facilitating transactions between individuals (La Porta, 1997; Dasgupta, 2000; Zak & Knack, 2001). Trust also enhances the functioning of a society's institutions (Fukuyama, 1996). Helliwell and Putnam state that "norms of reciprocity and trustworthiness are a nearly universal concomitant of dense social networks " (Helliwell & Putnam, 2004: pp. 1436). Therefore levels of trust give an indication of the level of social capital. Social capital has been shown to be strongly linked to subjective well-being through numerous different channels (Helliwell & Putnam, 2004; Helliwell, 2006). We would thus expect changes in trust levels to have a significant impact on subjective well-being.

In the NIDS adult questionnaire, individuals are asked two questions relating to interpersonal trust. The questions consist of a hypothetical situation, in which the respondent has lost a wallet containing R200, they are then asked the likelihood that first someone who lives close by, and then a complete stranger, would return the wallet with the money in it. Answers range from 1 to 3, with 1 meaning an answer of "very likely", 2 meaning "somewhat likely" and 3 meaning

"not likely at all". As the lower ends of the scale represent the greatest level of trust, the responses can be viewed as a measure of distrust.

Tables 4.12 and 4.13 show the panel details for changes in the responses to the wallet scenario over waves in relation to someone living close by and a complete stranger respectively. In both case the t-statistic for changes in means is insignificant for rural-urban migrants but there is a significant decrease for rural stayers. For both scenarios and for both classifications of individuals the mean is close to 3, reflecting a general high level of distrust.

Table 4.12 Likelihood of Someone Living Close Returning Lost Wallet

	Urban Migrants		Rural Stayers	
n (unweighted)	120		4999	
Weight	198113		8060692	
Question Response Rate	86.2	%	85.3	%
Sample Means ($\bar{x}$)				
Wave 1 ($\bar{x}_1$)	2.51		2.62	
Wave 2 ($\bar{x}_2$)	2.43		2.45	
Difference ($\bar{x}_2 - \bar{x}_1$)	-0.09		-0.16	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	0.68		8.24	
P > |t|	0.497		0.000	

Table 4.13 Likelihood of Complete Stranger Returning Lost Wallet

	Urban Migrants		Rural Stayers	
n (unweighted)	119		4784	
Weight	196527		7730115	
Question Response Rate	85.5	%	81.8	%
Sample Means ($\bar{x}$)				
Wave 1 ($\bar{x}_1$)	2.79		2.82	
Wave 2 ($\bar{x}_2$)	2.70		2.68	
Difference ($\bar{x}_2 - \bar{x}_1$)	-0.09		-0.14	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	0.98		9.11	
P > |t|	0.327		0.000	

Figures 4.8 and 4.9 show the differences in the breakdowns to the wallet questions across waves for someone living close by and a complete stranger respectively. For both questions we observe a similar pattern. For both rural-urban migrants and rural stayers there is an increase in the proportion of individuals giving a response of "very likely" in wave 2. For rural-urban migrants this is made up by a decrease in the proportion of individuals with a response of "somewhat likely" with the amount responding "not likely at all" remaining reasonably consistent. However for rural stayers, the

increase in responses of "very likely" is made up of a decrease in the proportion of individuals responding "not likely at all" with the proportion responding with "somewhat likely" remaining reasonably constant.

Figure 4.8 Breakdown of Responses for Likelihood of Someone Living Close By Returning Wallet

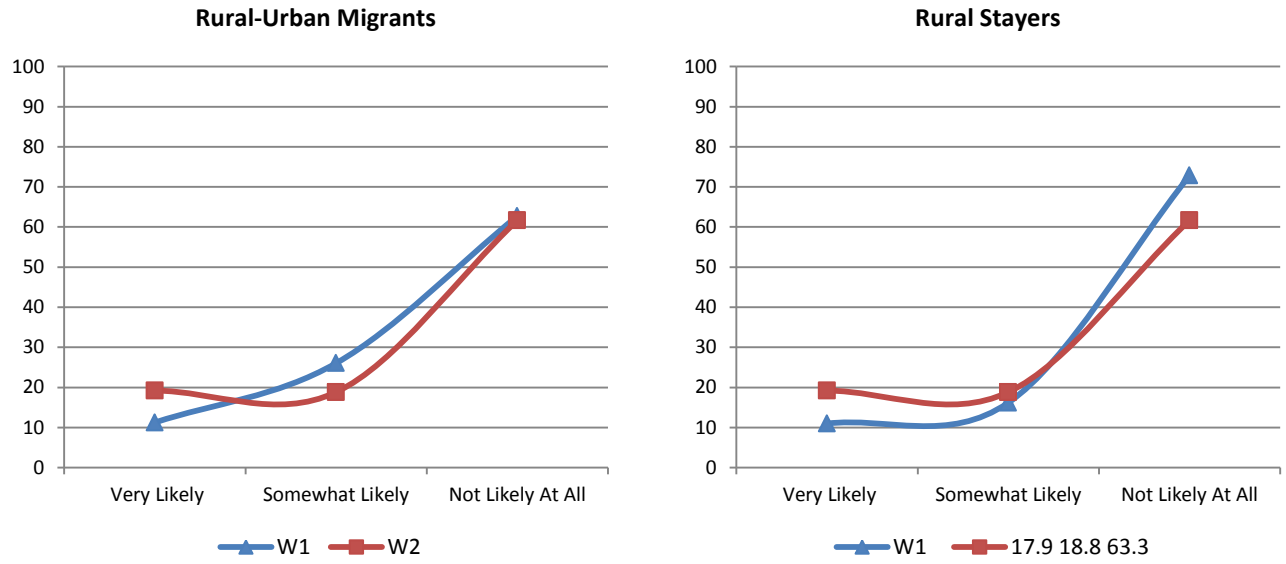
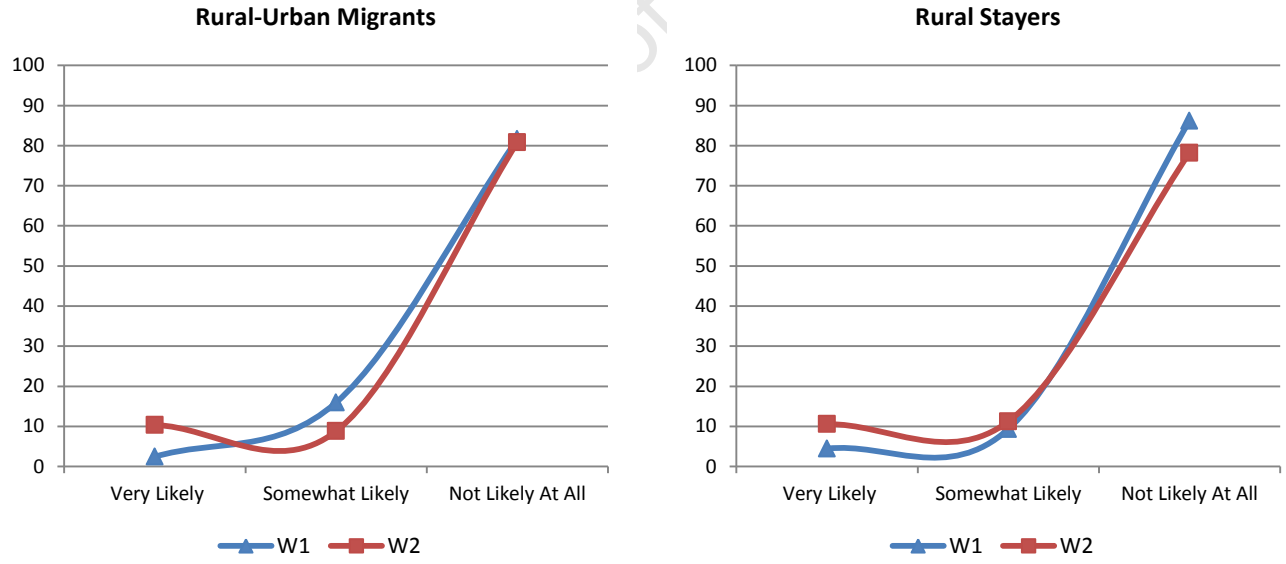


Figure 4.9 Breakdown of Responses for Likelihood of Complete Stranger Returning Wallet



There was more change in the question relating to the respondents neighbour returning the wallet. For this question, 46% retained their wave 1 response for rural-urban migrants and 52% for rural stayers. However, for the questions relating to a complete stranger we observe 73% retaining their wave 1 response for rural-urban migrants and 70% for rural stayers. As the question is only on a three point scale we are limited in the extent to which we can observe changes in the levels of trust, it is therefore useful to observe other elements which impact on levels of trust and social capital.

Surveys carried out in the 2011 SACN report revealed that due to higher crime rates, individuals living in metropolitan areas had a higher dissatisfaction with efforts by municipalities at cutting crime compared with individuals living in non-metropolitan areas. In the 2008 national priority issues, crime and safety featured in the top 3 for all of the country's major cities (SACN, 2011). As crime has strong implications with regards to trust (Walklate, 1998), it is of importance to analyse the differences in perceptions of crime in the area as individuals move from rural to urban areas.

In the NIDS wave 2 household questionnaire, respondents are asked how common a series of six crime-related occurrences are in the area in which they live. Responses range from 1 to 5 with 1 meaning that each occurrence "never happens", 2 that it is "very rare", 3 "not common", 4 "fairly common" and 5 "very common". These questions were not asked in wave 1, so again as an approximation of the occurrences in wave 1 we use the wave 2 responses from individuals who stayed in the respondent's wave 1 household. This forces us to again use the reduced panel[14]. Whilst there will be no change for rural stayers we include them in the table to compare the means to see if any changes in the crime occurrences are due to moving to urban areas or if rural-urban migrants just came from rural areas where crime was particularly low or high. To maintain consistency, only respondents who completed all six of the questions relating to crime and violence were included in the analysis.

Table 4.14 shows the changes in means for the six different areas of crime and safety. We observe a significant increase in the average frequency of gangsterism as well as drug or alcohol abuse for rural-urban migrants. All the means increase but the t-tests of the difference in means do not yield a significant increase for any of the other variables. This is interesting as we saw a slight average decrease in levels of distrust as per the "lost wallet" scenarios.

To investigate this further, we look at the changes in levels of distrust as each of the crime variables change. Table 4.15 shows these changes. The bar charts for each line show the breakdown of responses for that particular variable in the reduced panel. We then show the breakdown of reactions in our two measures of distrust as each variable increases, remains constant or decreases. We expect distrust to increase as levels of crime become more frequent and decrease as they become less frequent but the outcome appears more complex than this.

For all the variables we see a general increase in distrust of strangers as the frequency of crime increases, however an increase in frequency has little impact on the distrust of those living close by. A decrease in frequency of crime on the other hand only appears to decrease distrust in the case of neighbours, and even this doesn't hold in relation to violence between household members.

One potential reason for the discord between distrust and the frequency of crime could be that in reality respondent experience a "mixed bag" in terms of crime. As they move to an urban area they may find some crimes occur more frequently and others less frequently. To test this we run correlations between changes in all the crime related variables. The correlation coefficients are shown in Table 4.16. The correlation coefficients are high enough to show that there is some kind of relationship between some of the variables; in particular the two variables measuring different kinds of violence have a high correlation coefficient, as does gangsterism with murder, shootings or stabbings. However most of the coefficients, whilst strong enough to infer a relationship are low enough to support the idea that these variables do not move together in a uniform manner.

[14] *See Chapter 3.1 for a detailed description for the reduced panel*

Table 4.14 Changes in the Mean Occurrence of Crime Between 2008 and 2010/2011

	Rural-Urban Migrants		Rural Stayers	
n (unweighted)	105		5595	
Weight	150189		9016467	
Question Response Rate*	95.5	%	96.7	%
Sample Means ($\bar{x}$): Burglaries, Muggings or Theft				
wave1 ($\bar{x}_1$)	2.57		2.65	
wave2 ($\bar{x}_2$)	2.86		2.66	
difference ($\bar{x}_2 - \bar{x}_1$)	0.30		0.01	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-1.40		-1.48	
P > |t|	0.163		0.140	
Sample Means ($\bar{x}$): Violence Between Household Members				
wave1 ($\bar{x}_1$)	2.65		2.61	
wave2 ($\bar{x}_2$)	2.76		2.61	
difference ($\bar{x}_2 - \bar{x}_1$)	0.11		0.00	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-0.59		1.05	
P > |t|	0.558		0.292	
Sample Means ($\bar{x}$): Violence Between Different Households				
wave1 ($\bar{x}_1$)	2.56		2.63	
wave2 ($\bar{x}_2$)	2.82		2.63	
difference ($\bar{x}_2 - \bar{x}_1$)	0.27		0.00	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-1.32		1.25	
P > |t|	0.186		0.210	
Sample Means ($\bar{x}$): Gangsterism				
wave1 ($\bar{x}_1$)	2.51		2.58	
wave2 ($\bar{x}_2$)	2.94		2.59	
difference ($\bar{x}_2 - \bar{x}_1$)	0.44		0.01	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-1.96		-1.48	
P > |t|	0.050		0.138	
Sample Means ($\bar{x}$): Murder, Shootings or Stabbings				
wave1 ($\bar{x}_1$)	2.67		2.66	
wave2 ($\bar{x}_2$)	2.89		2.67	
difference ($\bar{x}_2 - \bar{x}_1$)	0.22		0.00	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-0.93		-0.34	
P > |t|	0.352		0.736	
Sample Means ($\bar{x}$): Drug or Alcohol Abuse				
wave1 ($\bar{x}_1$)	3.38		3.31	
wave2 ($\bar{x}_2$)	4.04		3.31	
difference ($\bar{x}_2 - \bar{x}_1$)	0.66		0.00	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-3.17		0.46	
P > |t|	0.002		0.647	

Table 4.15 Relationship Between the Changes in the Frequency of Crime and Changes in the Levels of Trust Between 2008 and 2010/2011

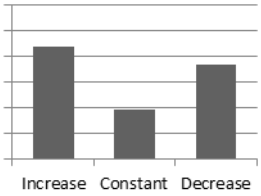
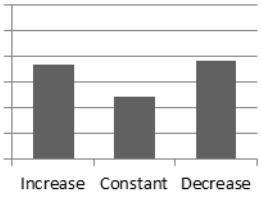
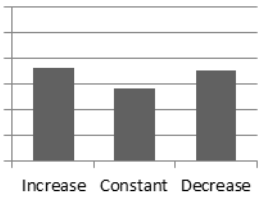
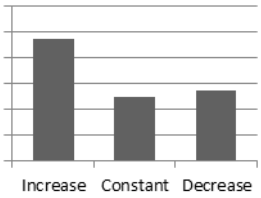
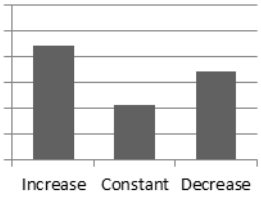
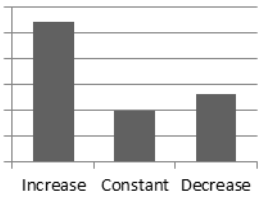
			Where More Frequent	Where Same Frequency	Where Less Frequent
Frequency of Burglaries, Muggings or Theft 	Distrust in Neighbour	Increased	28.44 %	20.40 %	21.51 %
		Constant	40.49 %	53.34 %	28.62 %
		Decreased	20.44 %	26.26 %	49.87 %
	Distrust in Stranger	Increased	34.81 %	27.24 %	27.16 %
		Constant	44.76 %	59.84 %	54.89 %
		Decreased	20.44 %	12.92 %	17.95 %
Frequency of Violence Between Household Members 	Distrust in Neighbour	Increased	32.65 %	34.43 %	18.78 %
		Constant	31.74 %	28.11 %	66.17 %
		Decreased	35.61 %	37.46 %	15.05 %
	Distrust in Stranger	Increased	40.18 %	34.43 %	18.78 %
		Constant	39.84 %	45.62 %	66.17 %
		Decreased	19.98 %	19.95 %	15.05 %
Frequency of Violence Between Different Households 	Distrust in Neighbour	Increased	40.95 %	10.56 %	18.27 %
		Constant	21.63 %	53.67 %	43.97 %
		Decreased	37.42 %	35.77 %	37.77 %
	Distrust in Stranger	Increased	48.63 %	15.23 %	24.14 %
		Constant	28.47 %	70.59 %	59.64 %
		Decreased	22.90 %	14.18 %	16.22 %
Frequesncy of Gangsterism 	Distrust in Neighbour	Increased	33.49 %	14.99 %	17.01 %
		Constant	38.35 %	34.33 %	42.88 %
		Decreased	28.16 %	50.67 %	40.10 %
	Distrust in Stranger	Increased	39.36 %	20.25 %	24.61 %
		Constant	47.22 %	38.85 %	70.08 %
		Decreased	13.41 %	40.89 %	5.31 %
Frequency of Murder, Shootings or Stabbings 	Distrust in Neighbour	Increased	31.87 %	38.76 %	5.63 %
		Constant	37.31 %	39.95 %	39.40 %
		Decreased	30.82 %	21.29 %	54.97 %
	Distrust in Stranger	Increased	38.17 %	38.76 %	15.54 %
		Constant	45.98 %	42.15 %	64.14 %
		Decreased	15.85 %	19.09 %	20.31 %
Frequency of Drug or Alcohol Abuse 	Distrust in Neighbour	Increased	30.31 %	21.10 %	14.34 %
		Constant	32.46 %	32.82 %	55.67 %
		Decreased	37.23 %	46.09 %	29.99 %
	Distrust in Stranger	Increased	35.46 %	21.10 %	27.37 %
		Constant	49.50 %	47.65 %	58.19 %
		Decreased	15.05 %	31.25 %	14.44 %

Table 4.16 Correlations Between Changes in Various Aspects of Crime Between 2008 and 2010/2011

	Burglaries, Muggings or Theft	Violence Between Household Members	Violence Between Different Households	Gangsterism	Murder, Shootings or Stabbings	Drug or Alcohol Abuse
Burglaries, Muggings or Theft	1.00					
Violence Between Household Members	0.55	1.00				
Violence Between Different Households	0.56	0.79	1.00			
Gangsterism	0.54	0.53	0.61	1.00		
Murder, Shootings or Stabbings	0.61	0.57	0.55	0.73	1.00	
Drug or Alcohol Abuse	0.45	0.43	0.48	0.52	0.52	1.00

We finally turn our attention to the effects on subjective well-being. Table 4.17 shows the correlation coefficients between changes in subjective well-being and our two measures of distrust, as well as the variables measuring the frequency of various crimes. As a large portion of the panel had consistent levels of distrust across waves we also included correlations for only those cases where there was a change in levels of distrust.

The results for distrust are not as expected. We observe a reasonably strong correlation between the distrust of neighbours and subjective well-being for rural-urban migrants. However, the coefficient is positive, meaning higher levels of distrust mean higher levels of subjective well-being. When we control for only those cases where levels of distrust changed, this relationship only gets stronger. When we look at distrust in strangers, both rural-urban migrants and rural stayers display positive correlation coefficients.

All the variables looking at the frequency of crime have the expected signs. As we are using the reduced panel we cannot run the correlations for rural stayers as they will almost all have a change of zero[15]. The strongest correlation is -0.23 which relates to the frequency of violence between different households. The only other two relationships stronger than -0.1 are gangsterism (-0.16) and drug and alcohol abuse (-0.15). These two are also the two areas we see the biggest increase in for rural-urban migrants.

The relationship between distrust and subjective well-being is a puzzling one. One explanation may be that rural individuals find it easier moving to an area which is less trusting as these areas may be more accepting to newcomers into the area. Areas where there are high levels of trust between individuals may have closer ties between people who have been living there a long time and thus make it difficult for migrants to settle down in the area. Another potential reason could be a relationship between distrust and other variables which have significant influence on changes in subjective well-being. We are able to investigate this further when we do a multivariate analysis in Chapter 5.

[15] *For a detailed description of the reduced panel, see Section 3.1*

Table 4.17 Correlations Between Changes in Subjective Well-Being and Changes in Distrust and Crime Between 2008 and 2010/2011

	Rural-Urban Migrants	Rural Stayers
Distrust: Some Living Close By		
n (unweighted)	106	4282
Weight	171803	6798647
Correlation Coefficient	***0.33***	***-0.08***
- If There is Change:		
n (unweighted)	55	1936
Weight	92699	3296094
Correlation Coefficient	***0.38***	***-0.11***
Distrust: Complete Stranger		
n (unweighted)	105	4097
Weight	170954	6518464
Correlation Coefficient	***0.13***	***0.11***
- If There is Change:		
n (unweighted)	27	1208
Weight	53781	1963226
Correlation Coefficient	***0.14***	***0.13***
Crime & Safety		
n (unweighted)	88	n/a
Weight	118108	n/a
Correlation Coefficients:		
Burglaries, Muggings or Theft	***-0.07***	***n/a***
Violence Between Household Members	***-0.04***	***n/a***
Violence Between Different Households	***-0.23***	***n/a***
Gangsterism	***-0.16***	***n/a***
Murder, Shootings or Stabbings	***-0.07***	***n/a***
Drug or Alcohol Abuse	***-0.15***	***n/a***

When analysing the measure of distrust as it is administered in the NIDS questionnaire, we must also remember that we are dealing with a very small scale (1-3) so we are limited in how much we can interpret relationships with changes in the variable. Our correlation coefficients relating to crime are not particularly strong but they do infer relationships with subjective well-being in the direction we would expect.

4.7 Health

Rural-Urban migration has significant health implications. The net effect of these implications tends to be uncertain. On the one hand urban areas generally have better facilities to deal with health issues which could potentially lead to

improvements in health (Aday & Anderson, 1974; Phillips, 1990; Ricketts, 2000). On the other hand rural-urban migration entails emotional and physical strain which could potentially lead to decreased health (Anarfi, 1993; Elliott & Gillie, 1998). In addition, the latter can be exasperated by urban living conditions which tend to be more overcrowded and polluted which can have a negative effect on health (Hope, 1998; Henderson, 2002).

To make matters more confusing, there is potential health bias involved with regards to health as it is more likely that healthier people will migrate than less healthy people. We have also observed an age bias towards younger individuals who are generally healthier than their older counterparts, making the health bias more likely (Findley, 1988). We are focusing on changes in health and so any pre-migration health bias should not affect our results significantly. However, through our analysis we are able to observe if a health bias does exist.

To understand the effect of rural-urban migration on health we undertake a thorough analysis of changes in variables measuring both emotional and physical health within our panel. At the same time we analyse how changes in these variables impact on subjective well-being.

Emotional Health

The National Income Dynamic Study uses a measure of emotional health from the Centre for Epidemiologic Studies Short Depression Scale (CES-D 10)[16]. The evaluation consists of ten questions asking about the occurrence of certain feelings or behaviours during the past week, responses are then scored to make up the CES-D 10 index (Ardington & Case, 2009). In testing, the CES-D 10 has been shown to be a successful indicator of emotional health and has shown consistency with other methods used to identify incidences of depression (Radloff, 1977). For each question respondents are given the option of "rarely or none of the time (less than 1 day)", "some or little of the time (1-2 days)", "occasionally or a moderate amount of time (3-4 days)" or "all of the time (5-7 days)". For the scoring used for each question see Appendix A3.

The CES-D 10 test gives a measure of depression for each individual. Wood et al (2010) argue that happiness can be measured as the absence of depression. According to this argument the CES-D 10 measurements can be seen as a continuum where low scores indicate happiness and higher scores indicate depression. For this reason we expect to see a high correlation between changes in subjective well-being and changes in emotional health, as measured using the CES-D 10 test.

Table 4.18 shows the aggregate changes in the CES-D 10 indices in our panel. The lower mean for rural-urban migrants in wave 1 supports the idea of a health bias in migration, at least in terms of emotional health. The change in the mean of the CES-D 10 scale is negligible for rural-urban migrants. However there is a modest but significant decrease in the mean scores for rural stayers. This is indicative of an aggregated movement towards being happier which was not experienced by rural-urban migrants.

[16] *For a description of the CESD-10 scale see Radloff (1977)*

Table 4.18 Changes in Means of CES-D 10 Index Between 2008 and 2010/2011

	Rural-Urban Migrants	Rural Stayers
n (unweighted)	142	5730
Weight	229814	9241609
Sample Means ($\bar{x}$)		
Wave 1 ($\bar{x}_1$)	7.65	8.37
Wave 2 ($\bar{x}_2$)	7.32	6.94
Difference ($\bar{x}_2 - \bar{x}_1$)	-0.33	-1.43
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	0.54	14.27
P > |t|	0.591	0.000

The incidence of depression is indicated in the CES-D 10 test by a score of 10 or higher (Ardington, 2009). We are therefore able to identify individuals who are suffering from depression in our panel. Table 4.19 shows the proportion of each subsample of the panel who are classified as depressed according to the CES-D 10 test. There is a decline for both rural-urban migrants and rural stayers; however the decline is less than a percent for rural-urban migrants but a decline of almost 14% for rural stayers. In wave 1 there were proportionately more individuals suffering from depression amongst the soon to be rural-urban migrants than those who remained in rural areas over the 2 year period. However, by wave 2 there were proportionately more depressed individuals among the group of rural-urban migrants.

Table 4.19 Incidence of Depression According to CES-D 10 Test

	Rural-Urban Migrants	Rural Stayers
Wave 1	30.21	36.26
Wave 2	29.33	22.37
Difference	*-0.88*	*-13.89*

Table 4.20 shows a transition matrix for the incidence of depression between wave 1 and wave 2 for our panel. In the 2x2 matrix, the value in the *ith* row and the *jth* column gives the percentage of those in state *i* in wave 1 who ended up in state *j* in wave 2. The rows all sum to 100%. The matrix is not Markovian in the sense that it is not able to predict the probability of being in state *j* in wave 2 based solely on being in state *i* in wave 1 (Hill et al, 1997), there are other factors which would determine whether or not a person is depressed or not. However it gives useful insight into the movements in and out of depression. Of those rural-urban migrants who were depressed in wave 1, only 34% remained depressed whist 66% moved out of depression. Of those rural-urban migrants who were not depressed in wave 1, 73%

were still not depressed in wave 2 whilst 27% became depressed following their urban migration. For rural stayers we observe a higher proportion of individuals moving out of depression and a lower proportion moving into depression.

Table 4.20 Transition Matrix for the Incidence of Depression between 2008 and 2010/2011

Wave 1 Depression	Wave 2 Depression			
	Not Depressed		Depressed	
Not Depressed	Rural-Urban Migrants	72.71	Rural-Urban Migrants	27.29
	Rural Stayers	78.97	Rural Stayers	21.03
Depressed	Rural-Urban Migrants	65.95	Rural-Urban Migrants	34.05
	Rural Stayers	75.23	Rural Stayers	24.77

In terms of subjective well-being, there are two areas which need investigating. Firstly we want to know how changes in scores from the CES-D 10 test correlate with changes in subjective well-being. Secondly we want to see how subjective well-being changes for individuals moving into and out of depression. To answer the first question, Table 4.21 shows the correlation coefficients between changes in subjective well-being and changes in subjective well-being. The coefficients are negative as expected considering higher scores on the CES-D 10 test indicate depression. For rural-urban migrants we see a reasonably strong correlation of -0.37. However rural stayers are less sensitive to changes in emotional health in terms of their subjective well-being as we see almost no relationship as signified by a correlation coefficient of -0.02

Table 4.21 Correlations Between Changes in CES-D 10 Scores and Changes in Subjective Well-Being Between 2008 and 2010/2011

	Rural-Urban Migrants	Rural Stayers
n (unweighted)	124	4912
Weight	195751	7748170
Correlation Coefficient	***-0.37***	***-0.02***

To assess the specific impact on subjective well-being for people coming into and out of depression we observe the changes in subjective well-being for these two groups. Figure 4.10 shows the changes in subjective well-being for individuals who were not depressed in wave 1 but became depressed in wave 2. The graph shows that becoming depressed had minimal effect on subjective well-being for rural stayers but the majority of rural-urban migrants in this group experienced a decrease in their subjective well-being. We observe a similar story for individual's moving out of depression. For rural-urban migrants, moving out of depression was associated with an increase in subjective well-being but for rural stayers it does not appear to have an effect.

Figure 4.10 Changes in Subjective Well-Being for Individual's who Became Depressed Between 2008 and 2010/2011 (% of panel)

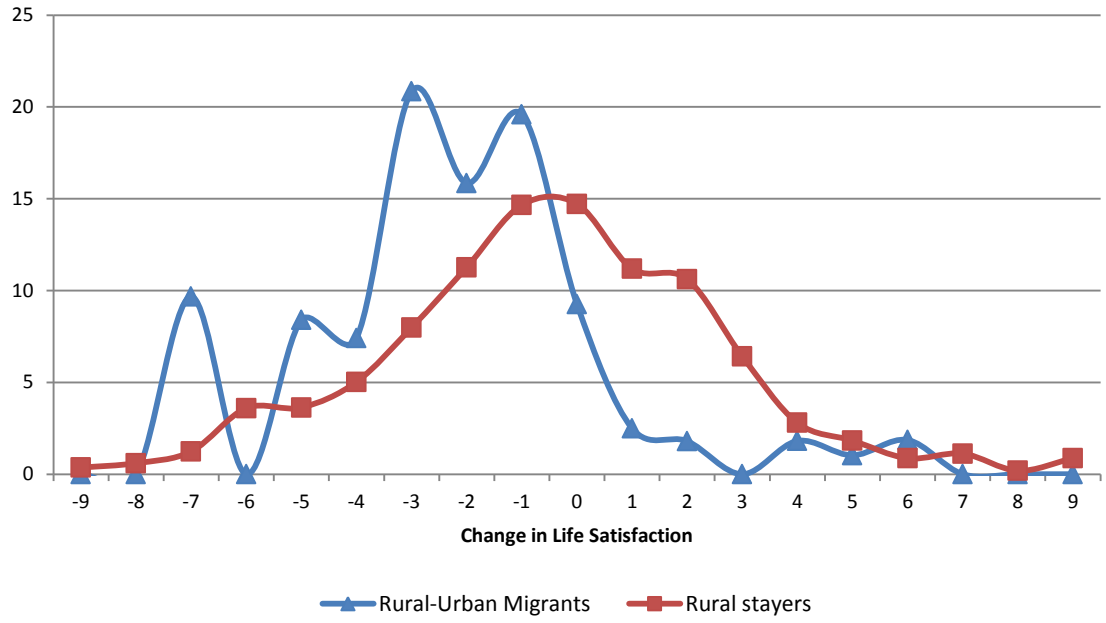
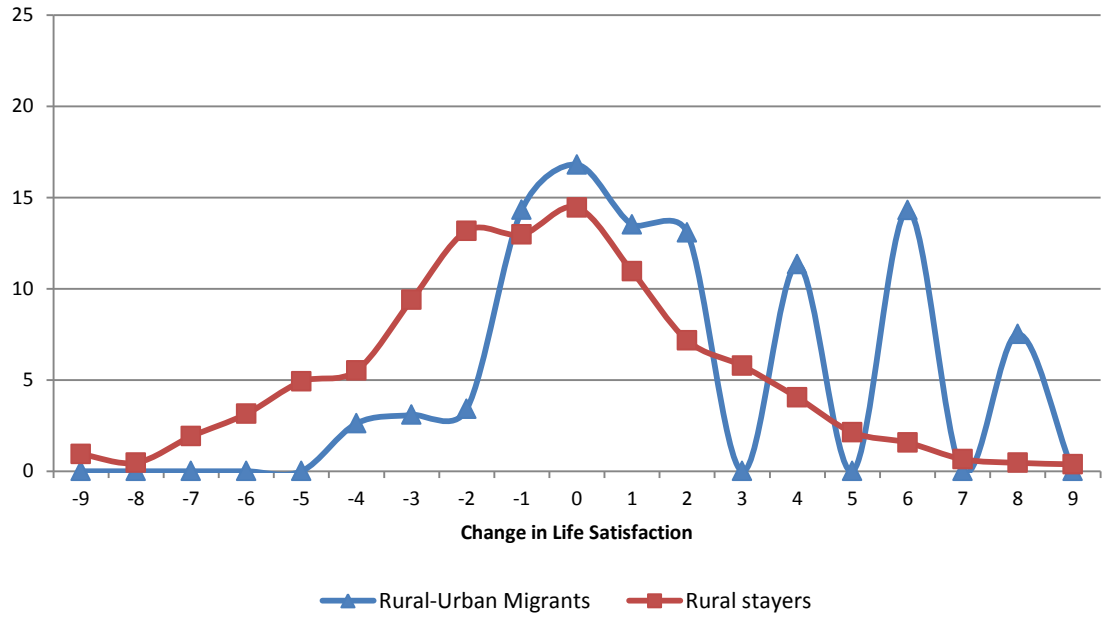


Figure 4.11 Changes in Subjective Well-Being for Individual's who Moved out of Depression Between 2008 and 2010/2011(% of panel)



Physical Health

Physical health has been shown in numerous studies to be a strong correlate of subjective well-being (Helliwell and Putman, 2004). What is less clear is the direction of causality. Some studies have argued that social capital, which is correlated with subjective well-being, affects health (House et al, 1998; Krumholz et al, 1998; Kawachi et al, 1999; Cohen, 2004). In contrast, Roberts et al (1997) argue that health influences depression which influences an individual's

subjective well-being. Roberts et al use their study to explain that any effects of age on subjective well-being are indirect. The study argues that it isn't age which matters but rather health, and as older people tend to have worse health we get a correlation between age and subjective well-being.

We focus our attention on self-reported health status. As we are concerned with how individuals feel about their lives, it seems consistent to look at how they feel about their health. If an individual feels like they have become healthier, whether they have or have not become healthier should not influence how it impacts on their subjective well-being. In the NIDS adult questionnaire, respondents are asked to describe their present health. Responses range from 1 to 5 where 1 is a response of "excellent", 2 "very good", 3 "good", 4 "fair" and 5 "poor". When viewing the results it is important to note that lower responses relate to better health so health improvements are represented by decreases in the variable.

Table 4.22 shows the average changes for the panel. As we observed when we looked at emotional health, we see a lower mean for rural-urban migrants in terms of physical health in wave 1, supporting the idea of a health bias in migration. On average there is a slight improvement in individual's self-reported health. The change in mean is smaller for rural-urban migrants and doesn't prove significant when the t-test is run on the change in means between the two waves. This is further illustrated in Figure 4.12 which shows the change in self-reported health between wave 1 and wave 2for the two groups. Both follow reasonably normal distributions but we see slight improvement in that the proportion which had a change of -1 was higher than +1, -2 was higher than -2 and so on. This change was more prominent for rural stayers as evident by the curve being more biased towards the lower end of the scale which represents better health.

Table 4.22 Changes in Average Physical Health Between 2008 and 2010/2011

	Urban Migrants		Rural Stayers	
n (unweighted)	141		5783	
Weight	228062		9373221	
Question Response Rate	99.2	%	99.2	%
Sample Means ($\bar{x}$)				
wave1 ($\bar{x}_1$)	1.89		2.41	
wave2 ($\bar{x}_2$)	1.77		2.12	
difference ($\bar{x}_2 - \bar{x}_1$)	-0.13		-0.29	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	1.14		12.53	
P > |t|	0.253		0.000	

Figure 4.12 Changes in Self-Reported Health Between 2008 and 2009/2011

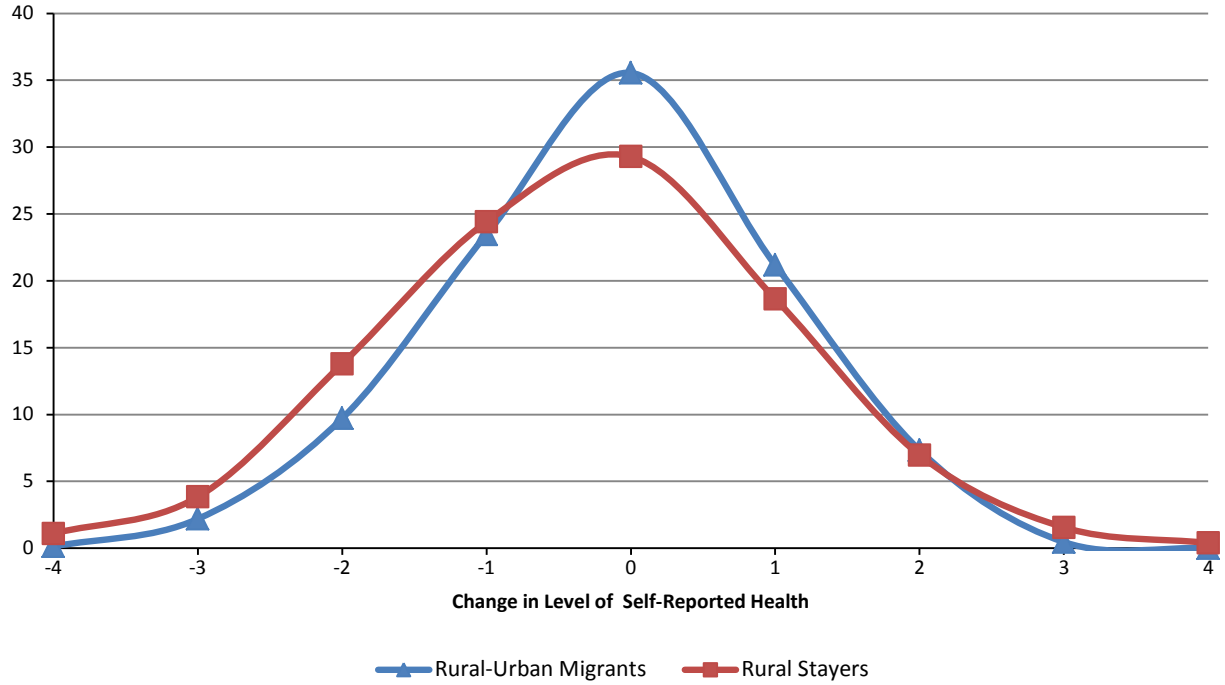


Table 4.23 shows the correlations between physical health and subjective well-being. Despite physical health being cited as one of the main correlates of subjective well-being we observe very little correlation between changes in the two variables. We also observe very little correlation between changes in self-reported health and changes in CESD-10 scores, particularly for rural-urban migrants.

Table 4.23 Correlations with Changes in Physical Health Between 2008 and 2010/2011

	Rural-Urban Migrants	Rural Stayers
Changes in Subjective well-Being		
n (unweighted)	124	4967
Weight	195751	7881364
Correlation Coefficient	***-0.09***	***-0.09***
Changes in Emotional health		
n (unweighted)	141	5692
Weight	228062	9181453
Correlation Coefficient	***0.04***	***0.12***

We have now looked at a number of variables to observe how they change as rural individuals migrate to urban areas. As a final section to this paper we look at certain events which are thought to influence subjective well-being and hence need to be considered in the analysis.

4.8 Major Life Events

There are certain life events we go through which can have major impacts on our subjective well-being. In this section we briefly look at how subjective well-being changes as these events occur. After reviewing the literature on subjective well-being and given the data available for the NIDS surveys, we have chosen four events which we believe to be important for this study. These events relate to employment, education, marriage and religion

Employment

Employment status has been shown in studies to have a strong influence on subjective well-being beyond the effects of changes in income (Jahoda, 1958; Feather, 1990; Clark & Oswald, 1994). There are some arguments that causality runs from subjective well-being to employment. Such arguments put forward the idea that unhappy people are less likely to have the motivation to find employment or are less employable. However, it is generally found that the causality runs from employment to subjective well-being (Frey & Stutzer, 2002). The effect of employment beyond the impact of the change in income is seen to come from the stigma attached to being unemployed as well as the psychological costs it entails (Goldsmith et al, 1996).

Table 4.24 shows the changes in average subjective well-being for individuals who become employed and for those who became unemployed. To measure changes in employment, individuals who became employed are defined as individuals who were classified as either "not economically active", unemployed discouraged" or "unemployed strict" in wave 1 and "employed" in wave 2. Individuals who became unemployed are defined as those individuals who were classified as "employed" in wave 1 and either "not economically active", unemployed discouraged" or "unemployed strict" in wave 2[17].

For rural-urban migrants we observe an increase in the average subjective well-being for individuals who became employed, however the increase is not large enough to pass the t-test of significance of the change in means with the sample size. For rural stayers we surprisingly see a decrease in subjective well-being for those who became employed, although the change is insignificantly small. Employment appears not to have a significantly strong impact on subjective well-being for rural stayers. This may be indicative of working conditions in rural areas or low returns to labour. It may also mean that there are other factors which have a much stronger influence on subjective well-being for individuals living in rural areas.

Despite becoming employed having an insignificant effect on subjective well-being, there was a significant decrease in the average subjective well-being for those who became unemployed from both groups. The decrease was particularly large for rural-urban migrants where the average subjective well-being decreased from a little over 6 to less than 3, a decrease of over half the wave 1 mean level. This signifies the centrality of economic incentives in migration decisions. It would appear from this and our earlier findings on income and relative deprivation, that rural-urban migrants move to urban areas with the expectations of reaping economic benefits. If they succeed in reaping those benefits this does not improve subjective well-being significantly as it was expected. However if they fail to achieve the expected benefits it can lead to significant declines in levels of subjective well-being.

[17] *See Chapter 3.2 for a description of the employment classifications*

Table 4.24 Changes in Subjective Well-Being by Changes in Employment Status Between 2008 and 2010/2011

	Rural-Urban Migrants		Rural Stayers	
n (unweighted)	124		4931	
Weight	195751		7810935	
Question Response Rate*	85.2	%	82.7	%
Became Employed	17.5	%	9.9	%
Mean Subjective Well-Being				
wave1 ($\bar{x}_1$)	5.02		4.78	
wave2 ($\bar{x}_2$)	5.98		4.49	
difference ($\bar{x}_2 - \bar{x}_1$)	0.96		-0.29	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-0.97		1.65	
P > |t|	0.333		0.099	
Became Unemployed	9.6	%	16.9	%
Mean Subjective Well-Being				
wave1 ($\bar{x}_1$)	6.02		4.91	
wave2 ($\bar{x}_2$)	2.70		4.20	
difference ($\bar{x}_2 - \bar{x}_1$)	-3.31		-0.72	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	2.06		5.00	
P > |t|	0.040		0.000	

** Note: Question response rates here measure the proportion of the panel who had a valid response for both wave and for both the questions being analysed*

As we are focused on changes in status, the strong negative impact of unemployment on subjective well-being observed in Table 4.24 is only for respondents who were employed in wave 1. As the influence was so strong, and considering the importance of employment in migration, it is useful to observe the change in subjective well-being for all respondents in the panel who were unemployed post-migration. This is shown in Table 4.25. We still see a significant decrease in subjective well-being for individuals unemployed post-migration even when they were not employed in wave 1, although it was nearly as pronounced as when we refined our analysis to those individuals who changed to being unemployed. Rural stayers also displayed a significant aggregate decline in subjective well-being for those individuals unemployed in wave 2, however it was not as large a decrease as for rural-urban migrants. These findings highlight the importance of employment to migration and the fact that not finding employment after moving to an urban area can have a strong negative impact on subjective well-being.

Table 4.25 Changes in Subjective Well-Being Between 2008 and 2010/2011 for Individuals Unemployed in 2010/2011

	Rural-Urban Migrants		Rural Stayers	
Unemployed in 2010/2011	52.6	%	73.0	%
Mean Subjective Well-Being				
wave1 ($\bar{x}_1$)	5.35		4.93	
wave2 ($\bar{x}_2$)	4.21		4.22	
difference ($\bar{x}_2 - \bar{x}_1$)	-1.14		-0.71	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	2.01		10.04	
P > |t|	0.044		0.000	

Education

Studies focusing on the relationship between education and subjective well-being have been focused around the effect of the level of educational attainment on the level of subjective well-being. Whilst usually a significant relationship exists between subjective well-being and education, this is often attributable to the effect of education on income and other areas relating to an individual's economic position (Helliwell, 2003; Helliwell & Putnam, 2004). Although a study by Blanchflower & Oswald (2004) found educational effects which proved independent of any income effects.

As this study is focused on causes of changes in subjective well-being, we are less interested in the effect that the level of education has on the level of subjective well-being at a point in time. Instead we look to investigate whether being involved in an educational institution has an effect subjective well-being. Hence we look at changes in subjective well-being as individuals who weren't involved in an educational institution become enrolled and conversely those who were involved in an educational institution and change to not being enrolled. Such impacts, if they exist should be independent of the effects that education has on earnings.

Table 4.26 shows the changes in subjective well-being for those who became enrolled in education and those who stopped their education. Becoming enrolled involves being enrolled in any kind of educational intuition in wave 2 after not being enrolled in any kind of educational institution in wave 1. Individuals who stopped their education were enrolled in wave 1 but not in wave2. Changes in educational enrolment appear to have little impact on subjective well-being. For both groups and for both enrolling in and stopping education there is a decline in the subjective well-being. For rural-urban migrants the decrease is too low to be significant in both cases. For rural stayers we see a significant decrease in average subjective well-being for individuals who were enrolled in wave 1 but not in wave 2.

Table 4.26 Changes in Subjective Well-Being by Changes in Educational Status Between 2008 and 2010/2011

	Rural-Urban Migrants		Rural Stayers	
n (unweighted)	82		1829	
Weight	117112		3072834	
Question Response Rate*	51.0	%	32.5	%
Enrolled in Education	7.1	%	2.0	%
Mean Subjective Well-Being				
wave1 ($\bar{x}_1$)	7.78		5.13	
wave2 ($\bar{x}_2$)	6.95		3.85	
difference ($\bar{x}_2 - \bar{x}_1$)	-0.83		-1.29	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	0.65		2.02	
P > |t|	0.519		0.051	
Stopped Education	23.9	%	22.7	%
Mean Subjective Well-Being				
wave1 ($\bar{x}_1$)	5.48		5.08	
wave2 ($\bar{x}_2$)	5.33		4.11	
difference ($\bar{x}_2 - \bar{x}_1$)	-0.15		-0.96	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	0.18		4.63	
P > |t|	0.856		0.000	

** Note: Question response rates here measure the proportion of the panel who had a valid response for both wave and for both the questions being analysed*

Marriage

Marital status has been shown to be strongly correlated with subjective well-being (Campbell, 1976; Haring-Hidore et al, 1985). In a study by Masterkaase (1992) it was shown that a significant factor in the relationship is selectivity. Married individuals are more likely to be married due to being a more attractive option as a spouse and being more likely to take the incentive in finding themselves a partner. As we are focused on changes we avoid these issues by observing the impact on people who have just become married. We also look at the impact on well-being of becoming divorced or widowed.

To be included in the analysis for those who got married, respondents had to be married in wave 2 and have a marital status of either "living with partner", "widow/widower", "divorced/separated" or "never married" in wave 1. The respondents classified as becoming divorced or widowed are those with a marital status of either "married", "living with partner" or "never married" in wave 1 and "widow/widower" or "divorced/separated" in wave 2. The changes in subjective well-being broken down by changes in marital status are provided in Table 4.27.

Rural-urban migrants who got married exhibited a significant increase in the average subjective well-being. For rural stayers there was a slight increase in the average subjective well-being but the increase was insignificant. It would be useful to be able to observe the reasons for rural-urban migration to see if marriage was a reason for relocating in terms of rural-urban migrants to assess the different results for the two groups but such information is beyond the scope of the data. There was only one observation which was a rural-urban migrant and became divorced or widowed between wave 1 and wave 2 so we were unable to run the t-test of the means in that respect. Rural stayers who became divorced or widowed exhibited a significant decrease in average subjective well-being as would be expected.

Table 4.27 Changes in Subjective Well-Being by Changes in Marital Status Between 2008 and 2010/2011

	Rural-Urban Migrants		Rural Stayers	
n (unweighted)	124		4944	
Weight	195751		7858562	
Question Response Rate*	85.2	%	83.2	%
Got Married	3.2	%	2.4	%
Mean Subjective Well-Being				
wave1 ($\bar{x}_1$)	2.24		4.64	
wave2 ($\bar{x}_2$)	6.03		4.02	
difference ($\bar{x}_2 - \bar{x}_1$)	3.78		-0.62	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-2.68		1.76	
P > |t|	0.008		0.081	
Became Widowed or Divorced	0.5	%	1.9	%
Mean Subjective Well-Being				
wave1 ($\bar{x}_1$)	n/a		4.92	
wave2 ($\bar{x}_2$)	n/a		4.00	
difference ($\bar{x}_2 - \bar{x}_1$)	n/a		-0.93	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	n/a		2.76	
P > |t|	n/a		0.007	

** Note: Question response rates here measure the proportion of the panel who had a valid response for both wave and for both the questions being analysed*

Religion

Studies have revealed a strong positive correlation between religious involvement and subjective well-being (Wilson, 1967; Witter et al, 1985). There are many reasons cited for the correlation between religion and subjective well-being including the provision of social and participatory mechanisms (Lim & Putnam, 2010), making it easier to cope with stress (Ellison, 1991), quicker recovery from negative events (McIntosh et al, 1993) and giving people's life meaning and purpose (Myers, 2000).

In the NIDS adult questionnaire, respondents are asked how important religious activities are in their life. Responses range from 1-4 with 1 meaning "not important at all", 2 "unimportant", 3 "important" and 4 "very important". To simplify the analysis, we define an individual for whom religion became important as someone who gave a response of "not important at all" or "unimportant" in wave 1 and "important" or "very important" in wave 2. Individuals for whom religion became unimportant gave responses of "important" or "very important" in wave 1 and responses of "not important at all" or "unimportant" in wave 2. The details of changes in subjective well-being among these two groups are displayed in Table 4.28.

Despite the positive relationship predicted by the literature, we see that individuals for whom religion became important on average showed a significant decrease in subjective well-being for both rural-urban migrants and rural stayers. In particular, for rural-urban migrants we see a very large decrease of almost half the wave 1 average response. Freud & Strachey (1989) argue that religion can cause lower levels of happiness through feelings of guilt, repressed sexuality and supressed emotions (Myers, 2000). Although this seems to gain support from the findings it does not fit with the studies mentioned which study the relationship between subjective well-being and religion. An alternative suggestion which has not received attention in the literature is the possibility of reverse causality. People who are going through hard times often turn to religion in their troubles. Thus we are potentially looking at people who were dissatisfied with life and thus turned to religion, rather than turning to religion and then becoming dissatisfied with life.

Table 4.28 Changes in Subjective Well-Being by Changes in Importance of Religion Between 2008 and 2010/2011

	Rural-Urban Migrants		Rural Stayers	
n (unweighted)	124		4955	
Weight	195751		7881405	
Question Response Rate*	85.2	%	83.4	%
Religion Became Important	10.4	%	10.3	%
Mean Subjective Well-Being				
wave1 ($\bar{x}_1$)	6.54		4.82	
wave2 ($\bar{x}_2$)	3.52		4.07	
difference ($\bar{x}_2 - \bar{x}_1$)	-3.02		-0.74	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	4.20		4.44	
P > |t|	0.000		0.000	
Religion Became Unimportant	3.7	%	8.0	%
Mean Subjective Well-Being				
wave1 ($\bar{x}_1$)	4.59		4.50	
wave2 ($\bar{x}_2$)	5.07		3.47	
difference ($\bar{x}_2 - \bar{x}_1$)	0.48		-1.02	
t stat (*test:* $\bar{x}_1 = \bar{x}_2$)	-0.46		4.99	
P > |t|	0.644		0.000	

** Note: Question response rates here measure the proportion of the panel who had a valid response for both wave and for both the questions being analysed*

We have now gained a thorough understanding of rural-urban migration in South Africa between 2008 and 2010/2011. We have also observed that factors influence subjective well-being differently for rural-urban migrants in comparison with rural stayers. Additionally we have seen that factors influence subjective well-being differently under different circumstances. We close off this chapter at this point. In Chapter 5 which follows we see if there is any knowledge which can be gained from analysing the factors discussed in this chapter in a multivariate framework

5 Multivariate Analysis

Thus far we have observed the multi-dimensional nature of rural-urban migration. There are many changes which a rural-urban migrant experiences as they leave their rural homes and relocate to urban areas. These changes have been shown to have different impacts on subjective well-being. We have also showed that often the relationship between factors and subjective well-being is circumstantial and thus manifests itself in different individuals in different ways.

In this final chapter of our study we do a multivariate analysis to see how the different factors interact as they influence an individual's subjective well-being. This is done through several panel regressions using fixed effects. The regressions use the change in subjective well-being as the dependent variable and uses changes in the variables studied in the previous chapter as the independent variables. All the discrete variables are measured on scales between two numbers which are converted to scales up to 10. The regressions were run without this conversion and it did not influence the outcomes. However it makes comparisons between the discrete variables easier. The scale for physical health is reversed so that higher values indicate better health.

As a starting point, we use all the variables which are available in the full panel. The output from this regression is shown in Table 5.1. Before we start analysing the results, there are three issues which need addressing as highlighted by our analysis in the previous chapter:

(1) One of the things which stands out in Table 5.1 is the estimated relationship between changes in levels of distrust and changes in subjective well-being. The results seem contradictory to the literature and even within the panel we see inconsistencies between the questions and between the migrant classifications which are unlikely attributable to the migration decision. Whilst in Chapter 4.6 we observed some peculiarities, at the time we were unable to offer more than an unsubstantiated suggestion for them. One suggestion comes from a study by Glaeser et al (1999) which found a negative relationship between employment and trust. According to this study employed people tend to have a higher level of distrust than unemployed people (Burns, 2009). Considering that we have observed a strong influence of employment status on subjective well-being and yet the employment dummy is insignificant in both regressions, it seems likely that the relationship between distrust and subjective well-being is picking up a relationship between subjective well-being and employment status through the relationship between distrust and employment status.

(2) There were issues pointed out with regards to the question structuring for access to piped water. We therefore removed the variable for piped water from the regression to avoid distortions in the data

(3) We also argued in the previous chapter with reference to the literature that there may be reverse causality in relation to changes in the importance of religion. As the effect of the variable was strong we also removed religion from the regression.

Table 5.1 Panel Regressions with Fixed Effects for Changes in Subjective Well-Being Between 2008 and 2010/2011[18]

Independent Variables	*Variable Type*	Rural-Urban Migrants			Rural Stayers		
Household Per Capita Income	*Continuous*	-0.26		*(0.39)*	0.50	***	*(0.10)*
Piped Water	*Dummy*	0.75		*(0.86)*	-0.68	***	*(0.20)*
Electricity	*Dummy*	-0.10		*(0.75)*	1.14	***	*(0.21)*
Relative Deprivation	*Discrete*	0.19		*(0.19)*	-0.04		*(0.03)*
Distrust: Neighbour	*Discrete*	0.29	*	*(0.17)*	-0.14	***	*(0.03)*
Distrust: Stranger	*Discrete*	-0.45		*(0.33)*	0.21	***	*(0.04)*
Depression (CESD-10)	*Discrete*	-0.15		*(0.34)*	0.03		*(0.05)*
Physical Health	*Discrete*	0.38	*	*(0.22)*	0.10	**	*(0.04)*
Employment	*Dummy*	1.46		*(1.08)*	0.06		*(0.20)*
Education	*Dummy*	-0.99		*(0.97)*	0.78	***	*(0.20)*
Marriage	*Dummy*	-0.38		*(1.39)*	-0.36		*(0.89)*
Religion	*Dummy*	-1.43		*(1.23)*	-0.02		*(0.75)*

**Note:* ** indicates significance at the 10% level*
*** indicates significance at the 5% level*
*** indicates significance at the 1% level*

After making the discussed adjustments, we obtain the results displayed in Table 5.2. The employment variable is now significant, giving support for our suggestion of the relationship with the distrust variables. To make sure this was the cause of the difference we ran the regression after only dropping distrust and observed the same result. Although we don't display the results, the regression output for this particular regression is provided in Appendix A4 [Regression 3].

From the regressions it seems as though income, electricity access, health and education have the strongest influence on subjective well-being for rural stayers, whist relative deprivation also has a strong influence. For rural stayers, due to the small subsample size we are only able to draw significance at the 10% level at which employment and physical health appear to be the only significant factors once the other factors in the regression are controlled for. All variables enter with the expected signs as per our analysis of the migration literature.

We do not run regressions for changes in the variables where the approximations from the reduced panel are used[19]. This would involve significantly reducing our already small subsample so we would be unable to draw any real conclusions from the analysis.

[18] *The regression results from Table 5.1 were run using Stata's "xtreg" command specifying fixed effects. For the full regression outputs with and without weights see Appendix A4 [Regression 1]*

Table 5.2 Adjusted Panel Regressions with Fixed Effects for Changes in Subjective Well-Being Between 2008 and 2010/2011[20]

Independent Variables	*Variable Type*	Rural-Urban Migrants			Rural Stayers		
Housheold Per Capita Income	*Continuous*	-0.15		*(0.30)*	0.34	***	*(0.09)*
Electricity	*Dummy*	0.21		*(0.64)*	1.14	***	*(0.20)*
Relative Deprivation	*Discrete*	0.02		*(0.15)*	-0.06	**	*(0.03)*
Depression (CESD-10)	*Discrete*	-0.04		*(0.25)*	0.06		*(0.05)*
Health	*Dummy*	0.32	*	*(1.18)*	0.12	***	*(0.03)*
Employment	*Dummy*	1.53	*	*(0.91)*	0.27		*(0.18)*
Education	*Dummy*	0.16		*(0.80)*	0.81	***	*(0.18)*
Marriage	*Dummy*	0.28		*(1.29)*	0.60		*(0.76)*

**Note:* ** indicates significance at the 10% level*
*** indicates significance at the 5% level*
*** indicates significance at the 1% level*

Due to the high rate of attrition among rural-urban migrants, it is possible that the regressions are being influenced by the weights. In Appendix A4 we supply all the full output from the regressions mentioned in this chapter. In addition to the output from the weighted regressions used to produce Tables 5.1 and 5.2, we also provide the unweighted regressions. Unfortunately the regressions differ significantly when unweighted regressions are run. For this reason we avoid any further analysis and suggest that the regression outputs given be viewed as indicative rather than drawing any concrete conclusions from them.

[19] *For a description of the reduced panel see Chapter 3.1*

[20] *The regression results from Table 5.1 were run using Stata's "xtreg" command specifying fixed effects. For the full regression outputs with and without weights see Appendix A4 [Regression 2]*

6 Conclusion

This study has enabled us to gain a deep understanding of rural-urban migration in South Africa. As is suggested by the diversity in the migration literature, rural-urban migration is a complex phenomenon in which numerous factors play a role. The study also highlighted that in many cases factors only influence certain people or certain situations, requiring us to dig deeper than aggregated statistics and assess the relationships between the different factors.

The National Income and Dynamics Study (NIDS) gives us a useful tool for analysing rural-urban migration in South Africa. As the first panel study of its nature in South Africa it provides the unique opportunity to study changes in a range of factors at the individual level. Due to issues with the data and the infancy of the study, a number of observations were dropped and the sample significantly reduced which hindered the ability to come to concrete conclusions in the analysis. Despite this, we were still able to get some valuable insights into the dynamics of rural-urban migration in South Africa between 2008 and 2010/2011.

Over this period, rural-urban migrants were more likely to come from rural formal areas rather than tribal authority areas. Despite trends in a number of personal characteristics, age and employment were shown to be the dominant factors where rural-urban migrants tended to be younger and more educated relative to the average individuals living in rural areas. Household size in 2008 also had a negative effect on rural-urban migration once other factors were controlled for.

Rural-urban migrants primarily moved to urban formal areas as opposed to informal settlements. The dominant strategy for rural households was for one migrant to leave the rural household and move to an urban area by themselves. Although this resonates with patterns of circular migration which are seen to be a persistent legacy from South Africa's apartheid era, rural-urban migrants interviewed expressed a desire to remain in the urban area to which they relocated, suggesting migration patterns could be changing to a more permanent nature.

When analysing the economic and social factors perceived to be effected by migration, in general we discovered a lot of noise but often movements in both direction resulting in minimal aggregate movements. However, in certain areas we did observe some important trends. In particular we observed significant economic benefits to rural-urban migrants as exhibited by an increase in household income per capita amongst rural-urban migrants which was substantially higher than that experienced by rural stayers. This trend was offset from a relative deprivation perspective where we did not observe a significant increase in relative income. This is likely due to moving to urban areas where incomes were higher than migrants' rural origin. Rural-urban migrants also reported higher frequencies of a variety of crime related factors post-migration. In particular there were large reported increases in the frequency of gangsterism as well as drug and alcohol abuse.

We observed the rural-urban migration experience through the lens of subjective well-being to assess the impact that the observed changes we observed had on individual's satisfaction with life. We discovered the potential effect of past

expectations on subjective well-being where we observed some of the benefits from rural-urban migration not resulting in significant improvements in subjective well-being.

The most substantial effect was with regards to employment status where we observed individuals who became unemployed experienced large declines in subjective well-being. This effect was particularly evident for rural-urban migrants. There were also large declines in subjective well-being for individuals who reported an increased importance of religion in their lives, however this could be capturing a reverse causality effect through turning to religion in times of trouble. We saw a strong relationship between changes in emotional health, as measured using the CES-D 10 test, and changes in subjective well-being for rural-urban migrants, however this relationship was not observed for rural stayers. We also observed evidence that higher frequency of crime is likely to lead to decreased subjective well-being.

There was also evidence of factors influencing subjective well-being under specific circumstances. We saw that there was a slight negative relationship between relative deprivation and subjective well-being for rural-urban migrants, and this relationship became much stronger once incomes were increasing. We also observed a slight relationship between household per capita income and subjective well-being for rural-urban migrants, and this relationship was much stronger for individuals who came from wealthier wave 1 households.

A panel regression was run to attempt to analyse the dominant factors for subjective well-being amongst our two panel classifications. We observed income, electricity access, physical health, being enrolled in an educational institution and relative deprivation to be key factors for rural stayers, whereas physical health and employment status mattered for rural-urban migrants. Due to data issues we were forced to only consider these results as indicative. Specifically the high rates of attrition result in weights having a significant effect on the regression results which could potentially be distorting the outcomes. Also, due to our small sample of rural-urban migration which has been reduced by attrition and other data issues in the panel creation, we are only able to draw significance at the 10% level for rural-urban migrants.

Whilst we have given a thorough analysis of the dynamics of rural-urban migration at the national level, this work would benefit from further research. In particular we had to account for a number of data issues to create the desired panel. NIDS is soon to publish the third wave of data and with it comes an opportunity to observe a whole new wave of rural-urban migrants. If studies can incorporate this into a similar study it will enable users to significantly increase the number of observations in the panel which should help to deal with some of the data issues which have affected this analysis.

As a final word, we have come a long way in terms of improving our understanding of rural-urban migration in South Africa over recent years. The knowledge presented in this paper should serve to help in other studies on migration and development in the country and can assist in policy making where issues concerning the population's spatial distribution need to be dealt with.

References

Aday, L.A. & Anderson, R. 1974. A Framework for the Study of Access to Medical Care. *Health Services Research.* 9:3. 208-220

Anarfi, J.K. 1993. Sexuality, migration and AIDS in Ghana - a socio-behavioural study. *Health Transition Review.* 3. 45-67

Ardington, C. & Case, A. 2009*. Health: Analysis of the NIDS Wave 1 Dataset, Discussion Paper no. 2.* Cape Town: South African Labour and Development Research Unit, University of Cape Town

Aristotle, 2009. *Nichomachean Ethics, Translated by W.D. Ross.* WLC Books

Arrow, K.J. 1974. *The Limits of Organization*. New York, Norton

Bauer, T. Epstein, G. & Gang, I.N. 2000. *What are Migration Networks?* IZA Discussion Paper No. 200, September 2000

Banerjee, B. 1983. Social Networks in the Migration Process: Empirical Evidence on Chain Migration in India. *Journal of Developing Areas.* 17:2. 185-196

Beinart, W. 1980. Labour Migrancy and Rural Production: Pondoland C. 1900-1950. In *Black Villagers in an Industrial Society,* edited by Meyer, P. pp 81-108. Cape Town, Oxford University Press

Bhandari, P. 2004. Relative Deprivation and Migration in an Agricultural Setting of Nepal. *Population and Environment.* 25:5. 475-499

Bilsborrow R.E. 1993. *Internal female migration and development: An overview*. New York, United Nations

Blanchflower, D.G. & Oswald, A.J. 2004. Well-being over time in Britain and the USA. *Journal of Public Economics*. 88. 1359–1386

Bookwalter, J.T. & Dalenberg, D. 2004. *Social Indicators Research.* 65. 333–353

Boranie, A. Crankshaw, O. Engelbrecht, C. Gotz, G. Mbanga, S. Narsoo, M. & Parnell, S. 2006. The State of South African Cities a Decade After Democracy. *Urban Studies.* 43:2. 259-284

Bowles, S. 1970. Migration as Investment: Empirical Tests of the Human Investment Approach to Geographical Mobility. *The Review of Economcs and Statistics.* 52:4. 356-362

Boyd, M. 1989. Family and Personal Networks in International Migration: Recent Developments and New Agendas. *International Migration Review.* 23:3. 638-670

Brackman, S. & Garretsen, H. 2009. Trade and Geography: Paul Krugman and the 2008 Nobel Prize in Economics. *Spatial Economic Analysis.* 4:1. 5-23

Brickman, P. & Campbell, D. T. 1971. Hedonic Relativism and Planning the Good Society. In *Adaptation Level Theory: A Symposium,* edited by Appley, M.H. New York, Academic Press

Brown, M. Daniels, R. De Villiers, L. Leibbrandt, M. & Woolard, I. 2012. *National Income Dynamic Study Wave 2 User Manuel.* Cape Town: South African Labour and Development Research Unit, University of Cape Town

Burns, J. 2009. *Well-Being & Social Cohesion: Analysis of the NIDS Wave 1 Dataset. Discussion Paper No. 7.* Cape Town, South African Labour and Development Research Unit

Campbell, A. 1976. Subjective measures of well-being. *American Psychologist*. 31:2. 117-124

Carvajal, M.J. & Geithman, D.T. 1974. An Economic Analysis of Migration in Costa Rica. *Economic Development and Culture Change.* 23:1. 105-122

Clark, A.E. & Oswald, A.J. 1994. Unhappiness and Unemployment. *The Economic Journal*. 104:424. 648-59

Cohen S. 2004. Social Relationships and Health. *American Psychologist.* 59:8. 676-684

Cole, W.E. & Sanders, R.D. 1985. Internal Migration and Urban Employment in the Third World. *The American Economic Review.* 75:3. 481-494

Corden, W.M. & Finlay, R. 1975. Urban Unemployment, Intersectoral Capital Mobility and Development Policy. *Economica.* 45:165. 59-78

Cornwell, K. & Inder, B. 2004. *Migration and Unemployment in South Africa: When Motivation Surpasses the Theory.* Department of Econometrics and Business Statistics, Monash University

Cross, C. 2001. Why Does South Africa Need a Spatial Policy? Population Migration, Infrastructure and Development, *Journal of Contemporary African Studies.* 19:1. 111-127

Dasgupta, P. 2000. Trust as a Commodity. In *Trust:Making and Breaking Cooperative Relations*, edited by Gambetta, D. pp 49-72. Department of Sociology, University of Oxford.

Datta, G. & Meerman, J. 1980. Housheold Income or Household Income per Capita in Welfare Comparisons. *Review of Income and Wealth.* 26:4. 401-418

DaVanzo, J. 1980. *Microeconomic Approaches to Studying Migration Decisions.* Rand Corporation, Paper Prepared for the National Institute of Child Health and Human Development, National Institutes of Health, S R01-HD10864-02

Diener, E. 2000. Subjective Well-Being: The Science of Happiness and a Proposal for a National Index. *American Psychologist.* 55:1. 34-43

Diener, E. & Biswas-Diener, R. 2002. Will Money Increase Subjective Well-Being? *Social Indicators Research.* 57. 119–169

Diener, E. Horwitz, J. & Emmons, R.A. 1985. *Social Indicators Research.* 16. 263-274.

Diener, E. Oishi, S. & Lucas, R.E. 2003. Personality, Culture, and Subjective Well-Being: Emotional and Cognitive Evaluations of Life. *Annual Review of Psychology.* 54. 403-425

Diener, E. Sapyta, J.J. & Suh, E. 1998. Subjective Well-Being Is Essential to Well-Being. *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory.* 9:1. 33-37

Easterlin, R.A. 1974. Does Economic Growth Improve the Human Lot. In *Nations and Households in Economic Growth: Essays in Honour of Moses Abramovitz*, edited by David, P.A. & Reder, M.W. New York: Academic Press, Inc.

Easterlin, R.A. 1995. Will Raising the Incomes of all Increase the Happiness of All? *Journal of Economic Behavior and Organization*. 27. 35-47

Elliott, S.J. & Gillie, J. 1998. Moving Experiences: A Qualitative Analysis of Health and Migration. *Health & Place.* 4:4. 327-339

Ellison, C.G. 1991. Religious Involvement and Subjective Well-Being. *Journal of Health and Social Behavior.* 32:1. 80-99

Falaris, E.M. The Determinants of Internal Migration in Peru: An Economic Analysis. *Economic Development and Culture Change.* 27:2. 327-341

Fawcett, J.T. 1989. Networks, Linkages, and Migration Systems. *International Migration Review.* 671-680

Feather, N.T. 1990. *The Psychological Impact of Unemployment.* New York, Springer-Verlag

Fields, G.S. 1975. Rural-Urban Migration, Urban Unemployment and Underemployment, and Job-Search Activity in LDCs. *Journal of Development Economics.* 2. 165-187

Findley, 1988. The Directionality and Age Selectivity of the Health-Migration Relation: Evidence from Sequences of Disability and Mobility in the United States. *International Migration Review*. 22:3. 4-29

Freud, S. & Strachey, J. 1989. *The Future of an Illusion.* Norton

Frey, B.S. & Stutzer, A. 2000. Happiness, Economy and Institutions. *The Economic Journal.* 110. 918-938

Frey, B.S. & Stutzer, A. 2002. What Can Economists Learn from Happiness Research? *Journal of Economic Literature*. 40:2. 402-435

Fukuyama, F. 1996. *Trust: The Social Virtues and the Creation of Prosperity.* London, Penguin.

Gallaway, E. 1969. Age and Labor Mobility Patterns. *Southern Economic Journal.* 36:2. 171-180

Glaeser, E.L. Laibson, D. Scheinkman, J.A. & Soutter, C.L. 1999. *What is Social Capital? The Determinants of Trust and Trustworthiness*. NBER Working Paper No. 7216

Goldsmith, A.H. Veum, J.R. & Darity, W. 1996. The Impact of Labor Force History on Self-Esteem and its Component Parts, Anxiety, Alienation and Depression. *Journal of Economic Psychology.* 17:2. 183-220.

Graves, P.E. & Linneman, P.D. 1979. Household Migration: Theoretical and Empirical Results. *Journal of Urban Economics.* 6. 383-404.

Greenwood, M.J. 1975. Research on Internal Migration in the United States: A Survey. *Journal of Economic Literature.* 13:2. 397-433

Griliches, Z. Hall, B.H. & Hausman, J.A. 1978. Missing Data and Self-Selection in Large Panels. *Annales de l'insee*. 30/31. 137-176

Haring-Hidore, M. Stock, W.A. Okun, A. & Witter, A. 1985. Marital Status and Subjective Well-Being: A Research Synthesis. *Journal of Marriage and Family.* 47:4 947-953

Harris, J.R. & Todaro, M.P. 1970. Migration, Unemployment and Development: A Two-Sector Analysis. *The American Economic Review.* 60:1. 126-142

Hatton, T.J. & Williamson, J.G. 1992. What Explains Wage Gaps between Farm and City? Exploring the Todaro Model with American Evidence, 1890-1941. *Economic Development and Cultural Change*

Haug, S. 2008. Migration Networks and Migration Decision-Making. *Journal of Ethnic and Migration Studies.* 34:4. 585-605.

Hausman, J.A. & Wise, D.A. 1976. The Evaluation of Results from Truncated Samples: The New Jersey Income Maintenance experiment. *Annals of Economic and Social Measurement*. 5:4. 421-445

Hausman, J.A. & Wise, D.A. 1977. Social Experimentation, Truncated Distributions, and Efficient Estimation. *Econometrica.* 45:4. 919-938

Hausman, J.A. & Wise, D.A. 1979. Attrition Bias in Experimental and Panel Data: The Gary Income Maintenance Experiment. *Econometrica*. 47:2. 455-473

Helliwell, J.F. 2003. How's Life? Combining Individual and National Variables to Explain Subjective Well-Being. *Economic Modelling.* 20. 331–360

Helliwell, J.F. 2006. Well-Being, Social Capital and Public Policy: What's New? *The Economic Journal.* 116. C34-C35

Helliwell, J.F. & Putnam, R.D. 2004. The Social Context of Well-Being. *Philosophical Translations of the Royal Society.* 359:1449. 1435-1446

Helson, H. 1964. *Adaptation-Level Theory: An Experimental and Systematic Approach to Behavior*. NY: Harper and Row

Henderson, V. 2002. Urbanization in Developing Countries. *The World Bank Research Observer.* 17:1. 89-112

Hindman, D.C. 1985. Orderly Urbanization and Influx Control: From Territorial Apartheid to Regional Spacial Ordering in South Africa. *Cahiers d'Études Africaines.* 25:99. 401-432

Hope, K.R. 1998. *Urbanization and Urban Growth in Africa.* Revised version of a paper presented at the Annual Conference of the African Studies Association, San Francisco, November 23-26, 1996

House, J.S. Landis, K.R. & Umberson, D. 1988. Social Relationships and Health. *Science.* 241:4865. 540-545

House, W.J. & Rempel, H. 1980. The Determinants of Interregional Migration in Kenya. *World Development.* 8. 25-35

Huffman, W.E. & Feridhanusetyawan, T. 1998. Migration, Fixed Costs, and Location-Specific Amenities: A Hazard Analysis for a Panel of Males. *American Journal of Agricultural Economics.* 89:2. 368-382

Hunter, L. White, M.J. Little, J.S. & Sutton, J. 2003. Environmental Hazards, Migration, and Race. *Population and Environment*, 25:1. 23-39

Jahoda, M. 1958. *Current Concepts of Positive Mental Health*. New York, Basic Books

Kawachi, I. Kennedy, B.P. & Glass, R. 1999. Social Capital and Self-Rated Health: A Contextual Analysis. *American Journal of Public Health.* 89:8. 1187-1193

Kirkpatrick, C. & Barrientos, A. 2004. *The Lewis Model After Fifty Years*. Institute for Development Policy and Management, University of Manchester. ISBN: 1 904143 56 3

Kok, P. & Collinson, M. 2006. *Migration and urbanization in South Africa*. Report 03-04-02, Pretoria: Statistics South Africa.

Krugman, P. 1979. Increasing Returns, Monopolistic Competition and International Trade. Journal of International Economics. 9. 469-479

Krugman, P. 1980. Scal Economies, Product Differentiation, and the Pattern of Trade. American Economic Review. 70. 950-959

Krugman. 1991. Geography and Trade. MIT Press

Krumholz, H.M. Butler, J. Miller, J. Vaccarino, V. Williams, C.S. Mendes de Leon, C.F. Seeman, T.E. Kasl, S.V. & Berkman, L.F. 1998. Prognostic Importance of Emotional Support for Elderly Patients Hospitalized With Heart Failure. *Circulation.* 97. 958-964

Kuznets, S. 1956a. Quantitative Aspects of the Economic Growth of Nations: II. Industrial Distribution of National Product and Labor Force. *Economic Development and Cultural Change.* 5:4. 1-111

Kuznets, S. 1956b. Quantitative Aspects of the Economic Growth of Nations: III. Industrial Distribution of Income and Labor Force by States, United States, 1919-1921 to 1955. *Economic Development and Cultural Change.* 6:4. 1-128

La Porta, R. Lopez-de-Silanes, F. Shleifer, A. & Vishny, R.W. 1997. *Trust in Large Organizations*. NBER Working Paper No. 5864

Lee, E.S. 1966. A Theory of Migration. *Demography.* 3:1. 47-57

Leibbrandt, M. Woolard, I & de Villiers, L. 2009. *Methodology: Report on NIDS Wave 1, Technical Paper no. 1.* Cape Town: South African Labour and Development Research Unit, University of Cape Town

Lewis, W.A. 1954. Economic Development with Unlimited Supplies of Labour. *The Manchester School.* 22:2. 139-191

Lewis. 1979. The Dual Economy Revisited. *The Manchester School.* 47:3. 211-229

Lim, C. & Putnam, R.D. 2010. Religion, Social Networks, and Life Satisfaction. *American Sociological Review.* 75:6. 914-933

Long, L.H. 1972. The Influence of Number and Ages of Children on Residential Mobility. *Demography.* 9:3. 371-382

Lucas, R.E.B. 1997. Internal Migration in Developing Countries. *Handbook of Population and Family Economics*. 1. 721-798

Lyubomirsky, S. 2010. Hedonic Adaptation to Positive and Negative Experiences. In *The Oxford Handbook of Stress, Health and Coping,* edited by Folkman, S. New York, Oxford University Press

Mabin, A. 1992. Comprehensive Segregation: The Origins of the Group Areas Act and Its Planning Apparatuses. *Journal of Southern African Studies.* 18:2. 405-429

Massey, D.S. 1990. Social Structure, Household Strategies, and the Cumulative Causation of Migration. *Population Index.* 56:1. 3-26

Masterkaasa, A. 1992. Marriage and Psychological Well-Being: Some Evidence on Selection into Marriage. *Journal of Marriage and Family.* 54:4. 901-911

Maylem, P. 1990. The Rise and Decline of Urban Apartheid in South Africa. *African Affairs.* 89:354. 57-84

McIntosh, D.N. Silver, R.C. & Wortman, C.B. 1993. Religion's Role in Adjustment to a Negative Life Event: Coping With the Loss of a Child. *Journal of Personality and Social Psychology.* 65:4. 812-821

Mera, K. 1973. On the Urban Agglomeration and Economic Efficiency. *Economic Development and Cultural Change.* 21:2. 309-324

Mincer, J. 1978. Migration Decisions. *Journal of Political Economy.* 86:5. 749-773

Muesar, P.R. & Graves, P.E. 1995. Examining the Role of Economic Opportunity and Amenities in Explaining Population Redistribution. *Journal of Urban Economics.* 37. 176-200

Myers, D.G. 2000. The Funds, Friends, and Faith of Happy People. *American Psychologist.* 55:1. 56-67

Navratil, F.J. & Doyle, J.J. 1977. The Socioeconomic Determinants of Migration and the Level of Aggregation. *Southern Economic Journal.* 43:4. 1547-1559

OECD. 2006. *Competitive Cities in the Global Economy*. OECD Territorial Reviews. ISBN: 9264027092

Phillips, D.R. 1990. *Health and Health Care in the Third World.* John Wiley & Sons

Pieterse, J.N. 2003. Social Capital and Migration : Beyond Ethnic Economies. *Ethnicities.* 3. 29-58

Pissarides, C.A. & McMaster. 1990. Regional Migration, Wages and Unemployment: Empirical Evidence and Implications for Policy. *Oxford Economic Papers*

Posel, D. 2003. *Have Migration Patterns in Post-Apartheid South Africa Changed?* Paper prepared for Conference on African Migration in Comparative Perspective, Johannesburg, South Africa, 4-7 June, 2003

Posel, D. 2010. Households and Labour migration in Post-Apartheid South Africa. *Studies in Economics and Econometrics*

Posel, D. & Casale, D. 2003. *What has been happening to Internal Labour Migration in South Africa?* Development Policy Research Unit Working Paper, no. 03/74, April

Postlewaite, A. 1998. The Social Basis of Interdependent Preferences. European Economic Review. 42. 779-800

Quinn, M.A. 2006. Relative Deprivation, Wage Differentials and Mexican Migration. *Review of Development Economics.* 10:1. 135-153

Radloff, L.S. 1977. The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Applied Psychological Measurement.* 1:3. 385-401

Ranchod, V. 2009. *Labour Market : Analysis of the NIDS Wave 1 Dataset, Discussion Paper no. 12.* Cape Town, South African Labour and Development Research Unit

Ravallion, M. & Lokshin, M. 2000. Identifying Welfare Effects from Subjective Questions. *Economica.* 68. 335-357

Ravenstein, E.G. 1885. The Laws of Migration. *Journal of the Statistical Society of London.* 48:2. 167-235

Ricketts, T.C. 2000. The Changing Nature of Rural Health Care. *Annual Review of Public Health*. 21. 639–657

Ritsilä, J. & Ovaskainen, M. 2001. Migration and Regional Centralization of Human Capital. *Applied Economics.* 33. 317-325

Roberts, R.E. Kaplan, G.A. Shema, S.J. & Stawbridge, W.J. 1997. Prevalence and Correlates of Depression in an Aging Cohort: The Alameda County Study. *Journal of Gerontology.* 52B:5. S252-S258

Robinson, J. 1990. "Progressive Port Elizabeth": Liberal Politics, Local Economic Development and the Territorial Basis of Racial Domination, 1923—1935. *GeoJournal.* 22:3. 293-303

Robinson, J. 1997. The Geopolitics of South African Cities: States, Citizens, Territory. *Political Geography.* 16:5. 365-386

Root, B.D. & De Jong, G.F. 1991. Family Migration in a Developing Country. *Population Studies.* 45. 221-233

Sack, R.D. 1983. Human Territoriality: A Theory. *Annals of the Association of American Geographers.* 73:1. 55-74

SACN. 2004. *State of the Cities Report 2004.* [online] Available: http://www.sacities.net/knowledge/research/publications (accessed 13/12/2012)

SACN. 2011. *State of the Cities Report 2011.* [online] Available: http://www.sacities.net/knowledge/research/publications (accessed 18/12/2012)

Saben, S. 1964. Geographic Mobility and Employment Status, March 1962 – March 1963. *Monthly Labour Review.* 87:8. 873-881

Sahota, G.S. 1968. An Economic Analysis of Internal Migration in Brazil. *Journal of Public Economy.* 76:2. 218-245

Salvatore, D. 1981. A Theoretical and Empirical Evaluation and Extension of the Todaro Model. *Regional Science and Urban Economics.* 11. 499-508

Schnore, L.F. 1961. The Statistical Measurement of Urbanization and Economic Development. *Land Economics.* 37:3. 229-245

Schultz, T.W. 1961. Investment in Human Capital. *The American Economic Review.* 51:1. 1-17

Simmons, J.W. 1968. Changing Residence in the City: A Review of Intraurban Mobility. *Geographical Review.* 58:4. 622-651

Sjaastad, L.A. 1962. The Costs and Returns of Human Migration. *Journal of Political Economy.* 70:5. 80-93

Standing, G. 1989. Global Feminization through Flexible Labor. *World Development.* 17:7. 1077-1095

Standing, G. 1999. Global Feminization Through Flexible Labor: A Theme Revised. *World Development.* 27:3. 583-602

Stark, O. 1984. Rural-to-Urban Migration in LDCs: A Relative Deprivation Approach. *Economic Development and Cultural Change.* 32:3. 475-486

Stark, O. & Taylor, J.E. 1991. Migration Incentives, Migration Types: The Role of Relative Deprivation. *The Economic Journal.* 101:408. 1163-1178

Stark, O. & Yitzhaki, S. 1988. Labour Migration as a Response to Relative Deprivation. *Journal of Population Economics.* 1:1. 57-70

Stiglitz, J.E. 1974. Alternative Theories of Wage Determination and Unemployment in LDC's: The Labor Turnover Model. *The Quarterly Journal of Economics.* 88:2. 194-227

Steyn, L. 2013. *Measuring the Waves of Migration.* Mail and Guardian, 11 January 2013

Todaro, M.P. 1969. A Model of Labor Migration and Urban Unemployment in Less Developed Countries. 59:1. 138-148

Todaro, M.P. 1980. *Internal Migration in Developing Countries: A Survey.* In: Easterlin, R.A. 1980. *Population and Economic Change in Developing Countries.* University of Chicago Press

Walklate, S. 1998. Crime and Community: Fear or Trust? *The British Journal of Sociology.* 49:4. 550-569

Wilson, W.R. 1967. Correlates of Avowed Happiness. *Psychological Bulletin.* 67. 294-306

Winer, R.S. 1983. Attrition Bias in Econometric Models Estimated with Panel Data. *Journal of Marketing Research.* 20:2. 177-186

Witter, R.A. Stock, W.A. Okun, M.A. & Haring, M.J. 1985. Religion and Subjective Well-Being in Adulthood: A Quantitative Synthesis. *Review of Religious Research.* 26:4. 332-342

Wood, A.M. Taylor, P.J. & Joseph, S. 2010. Does the CES-D Measure a Continuum from Depression to Happiness? Comparing Substantive and Artifactual Models. *Psychological Research.* 177. 120-123

Zak, P.J. & Knack, S. 2001. Trust and Growth. *The Economic Journal*. 111. 295-321

Zhao, Y. 2003. The Role of Migrant Networks in Labor Migration: The Case of China. *Contemporary Economic Policy.* 21:4. 500-511

Appendices

A1 Panel Creation Details

Initial Panel		
n (unweighted)	7098	
weight	11397234	
Breakdown by Migrant Status		
Urban Migrants	2.54	%
Rural Stayers	96.20	%
Unknown Migrant Status	1.26	%
Questionnaires: Urban Migrants		
Adult Only	91.05	%
Has a Proxy	8.95	%
Questionnaires: Rural Stayers		
Adult Only	88.58	%
Has a Proxy	11.42	%
Questionnaires: Unknown Migrant Status		
Adult Only	79.01	%
Has a Proxy	20.99	%
Phase: Urban Migrants		
Phase 1	87.98	%
Phase 2	12.11	%
Phase: Rural Stayers		
Phase 1	97.18	%
Phase 2	2.82	%
Phase: Unknown Migrant Status		
Phase 1	100.00	%
Phase 2	0.00	%
Breakdown by Stayer Variable		
Mover	7.84	%
Stayer	92.16	%
Proxy Interviews		
Proportion of initial Panel	11.48	%

Breakdown by wave		
Wave 1 Proxy	52.48	%
Wave 2 Proxy	38.84	%
Wave 1 & Wave 2 Proxy	8.68	%
Breakdown by Migrant Status		
Urban Migrants	1.98	%
Rural Stayers	95.71	%
Unknown Migrant Status	2.31	%
Breakdown by Phase		
Phase 1	96.33	%
Phase 2	3.67	%
Wave 2 Phase 2 Interviews		
Proportion of initial Panel	3.02	%
Breakdown by Migrant Status		
Urban Migrants	10.17	%
Rural Stayers	89.93	%
Unknown Migrant Status	0.00	%
Breakdown by Questionnaire type		
Adult	88.83	%
Proxy	11.17	%
Reason for Dropping		
Share of "Ideal" Panel		
All Dropped	15.08	%
Geographic Info Only	1.00	%
Proxy Only	10.79	%
Phase 2 Only	2.60	%
Geographic Info + Proxy	0.27	%
Geographic Info +Phase 2	0.00	%
Proxy + Phase 2	0.42	%
All 3	0.00	%
n (unweighted)		
All Dropped	1129	
Geographic Info Only	64	
Proxy Only	820	
Phase 2 Only	187	
Geographic Info + Proxy	19	
Geographic Info +Phase 2	0	
Proxy + Phase 2	39	
All 3	0	
Weight		
All Dropped	1719005	

Geographic Info Only	113804	
Proxy Only	1230325	
Phase 2 Only	296607	
Geographic Info + Proxy	30237	
Geographic Info +Phase 2	0	
Proxy + Phase 2	48032	
All 3	0	
Final Panel: All		
Percentage of "Ideal" Panel	84.92	%
n (unweighted)	5969	
Weight	9678229	
Final Panel: Urban Migrants		
Percentage of Final Panel	2.37	%
n (unweighted)	142	
Weight	229814	
Final Panel: Rural Stayers		
Percentage of Final Panel	97.63	%
n (unweighted)	5827	
Weight	9448415	
Breakdown by Rural Stayer Type		
Rural Non-Migrants	96.48	%
Rural-Rural Migrants	3.52	%

A2 Regression Output: Determinants of Rural-Urban Migration

Weighted Probit Regression

```
Probit regression                                 Number of obs   =       5913
                                                  Wald chi2(9)    =      49.49
                                                  Prob > chi2     =     0.0000
Log pseudolikelihood =  -990045.3                 Pseudo R2       =     0.0862
```

RU	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
RURAL_FORMAL	.4015558	.1352711	2.97	0.003	.1364293	.6666823
MALE	-.0044858	.0928083	-0.05	0.961	-.1863868	.1774151
AFRICAN	.3648237	.2334578	1.56	0.118	-.0927451	.8223924
AGE	-.0119192	.0043606	-2.73	0.006	-.0204659	-.0033725
EMPLOYED	.1013581	.1062159	0.95	0.340	-.1068212	.3095375
INCOME	.000805	.0592741	0.01	0.989	-.1153701	.11698
EDUCATION	.0658882	.017572	3.75	0.000	.0314476	.1003287
CHILDREN	-.0784758	.0509577	-1.54	0.124	-.178351	.0213994
HOUSEHOLD_~E	-.026487	.0134142	-1.97	0.048	-.0527783	-.0001957
_cons	-2.457495	.4903115	-5.01	0.000	-3.418487	-1.496502

Unweighted Probit Regression

```
Probit regression                                 Number of obs   =       5913
                                                  LR chi2(9)      =      93.03
                                                  Prob > chi2     =     0.0000
Log likelihood = -623.29583                       Pseudo R2       =     0.0694
```

RU	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
RURAL_FORMAL	.2224876	.109023	2.04	0.041	.0088064	.4361687
MALE	.0378235	.07899	0.48	0.632	-.1169941	.1926411
AFRICAN	.0496529	.1692389	0.29	0.769	-.2820492	.3813549
AGE	-.0104381	.0031819	-3.28	0.001	-.0166745	-.0042017
EMPLOYED	.0637527	.0870386	0.73	0.464	-.1068397	.2343452
INCOME	-.0282852	.0473439	-0.60	0.550	-.1210775	.0645072
EDUCATION	.0608464	.0128247	4.74	0.000	.0357104	.0859825
CHILDREN	-.0516172	.0450192	-1.15	0.252	-.1398532	.0366188
HOUSEHOLD_~E	-.0222777	.0133016	-1.67	0.094	-.0483482	.0037929
_cons	-1.934278	.3667197	-5.27	0.000	-2.653036	-1.215521

A3 CES-D 10 Scoring

Adult Questionnaire Number	*During the past week…*	Rarely or none of the time (less than 1 day)	Some or little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	All of the time (5-7 days)
K1	I was bothered by things that usually don't bother me	0	1	2	3
K2	I had trouble keeping my mind on what I was doing	0	1	2	3
K3	I felt depressed	0	1	2	3
K4	I felt theat everything I did was an effort	0	1	2	3
K5	I felt hopeful about the future	3	2	1	0
K6	I felt fearful	0	1	2	3
K7	my sleep was restless	0	1	2	3
K8	I was happy	3	2	1	0
K9	I felt lonely	0	1	2	3
K10	I could not "get going"	0	1	2	3

A4: Panel Regressions in Subjective Well-Being Analysis

Regression 1: Full Panel Regression *[Table 5.1]*

Rural-Urban Migrants: Weighted

```
Fixed-effects (within) regression               Number of obs      =       154
Group variable: pid                             Number of groups   =        97

R-sq:  within  = 0.2535                         Obs per group: min =         1
       between = 0.0019                                        avg =       1.6
       overall = 0.0279                                        max =         2

                                                F(12,45)           =      1.27
corr(u_i, Xb)  = -0.4589                        Prob > F           =    0.2672
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	-.2625911	.3856912	-0.68	0.499	-1.039413	.5142308
piped_wtr	.7490612	.8594489	0.87	0.388	-.9819578	2.48008
electricity	-.0950447	.7462303	-0.13	0.899	-1.59803	1.40794
rel_dep	.1905479	.1882849	1.01	0.317	-.1886773	.5697731
trust_nbr	.2881021	.1704085	1.69	0.098	-.0551183	.6313224
trust_str	-.4512874	.3284438	-1.37	0.176	-1.112807	.2102324
emo_cesd10	-.0147532	.3425475	-0.04	0.966	-.7046793	.675173
health	.3781335	.2217878	1.70	0.095	-.06857	.8248371
employed	1.464335	1.082662	1.35	0.183	-.7162595	3.644929
education	-.9901449	.9741218	-1.02	0.315	-2.952127	.9718371
married	-.384716	1.394788	-0.28	0.784	-3.193964	2.424532
religion	-1.42909	1.230405	-1.16	0.252	-3.907252	1.049072
_cons	5.086941	4.619636	1.10	0.277	-4.217483	14.39136
sigma_u	2.0706136					
sigma_e	2.2397436					
rho	.46082227	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(96, 45) =     0.89                 Prob > F = 0.6845
```

Rural-Urban Migrants: Unweighted

```
Fixed-effects (within) regression               Number of obs      =       154
Group variable: pid                             Number of groups   =        97

R-sq:  within  = 0.2397                         Obs per group: min =         1
       between = 0.0459                                        avg =       1.6
       overall = 0.0933                                        max =         2

                                                F(12,45)           =      1.18
corr(u_i, Xb)  = -0.3058                        Prob > F           =    0.3244
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	-.3341408	.3893905	-0.86	0.395	-1.118413	.4501319
piped_wtr	.392329	.8406624	0.47	0.643	-1.300852	2.08551
electricity	-.3360447	.7832418	-0.43	0.670	-1.913575	1.241485
rel_dep	-.0706345	.1896778	-0.37	0.711	-.4526652	.3113962
trust_nbr	.2123971	.1788326	1.19	0.241	-.1477902	.5725843
trust_str	-.5825869	.2843874	-2.05	0.046	-1.155372	-.0098013
emo_cesd10	-.2029753	.3123024	-0.65	0.519	-.8319845	.4260339
health	.2743783	.1912584	1.43	0.158	-.1108359	.6595925
employed	.9269444	.9479199	0.98	0.333	-.9822644	2.836153
education	-.8782741	.9629156	-0.91	0.367	-2.817686	1.061137
married	-.4363035	1.238087	-0.35	0.726	-2.929939	2.057332
religion	-2.071886	1.170233	-1.77	0.083	-4.428856	.2850845
_cons	11.68926	4.40406	2.65	0.011	2.819025	20.55949
sigma_u	1.8291293					
sigma_e	2.3033315					
rho	.3867408	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(96, 45) =     0.71                 Prob > F = 0.9151
```

Rural Stayers: Weighted

```
Fixed-effects (within) regression               Number of obs      =      3437
Group variable: pid                             Number of groups   =      2250

R-sq:  within  = 0.0964                         Obs per group: min =         1
       between = 0.0408                                        avg =       1.5
       overall = 0.0416                                        max =         2

                                                F(12,1175)         =     10.44
corr(u_i, Xb)  = -0.2274                        Prob > F           =    0.0000
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	.4951795	.0991376	4.99	0.000	.3006729	.689686
piped_wtr	-.6767609	.2048164	-3.30	0.001	-1.078608	-.2749143
electricity	1.138258	.2145936	5.30	0.000	.7172281	1.559287
rel_dep	-.0403488	.034189	-1.18	0.238	-.107427	.0267294
trust_nbr	-.1433793	.0316657	-4.53	0.000	-.205507	-.0812516
trust_str	.2139853	.0417796	5.12	0.000	.1320143	.2959562
emo_cesd10	.0280386	.050676	0.55	0.580	-.0713871	.1274642
health	.0951907	.0389243	2.45	0.015	.0188218	.1715595
employed	.0640372	.2047757	0.31	0.755	-.3377297	.465804
education	.7840537	.2001231	3.92	0.000	.3914152	1.176692
married	-.3618743	.885079	-0.41	0.683	-2.098386	1.374637
religion	-.0167073	.2220361	-0.08	0.940	-.4523387	.4189242
_cons	-.4838676	.8280994	-0.58	0.559	-2.108586	1.140851
sigma_u	2.0659791					
sigma_e	2.2089724					
rho	.46658826	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(2249, 1175) =     1.20          Prob > F = 0.0002
```

Rural Stayers: Unweighted

```
Fixed-effects (within) regression               Number of obs      =      3437
Group variable: pid                             Number of groups   =      2250

R-sq:  within  = 0.0847                         Obs per group: min =         1
       between = 0.0317                                        avg =       1.5
       overall = 0.0377                                        max =         2

                                                F(12,1175)         =      9.06
corr(u_i, Xb)  = -0.1967                        Prob > F           =    0.0000
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	.3208526	.0985913	3.25	0.001	.127418	.5142873
piped_wtr	-.6492308	.2207549	-2.94	0.003	-1.082349	-.2161129
electricity	.7700472	.22319	3.45	0.001	.3321518	1.207943
rel_dep	-.0658035	.0340343	-1.93	0.053	-.1325782	.0009712
trust_nbr	-.1865899	.0322331	-5.79	0.000	-.2498308	-.123349
trust_str	.2404626	.0407943	5.89	0.000	.1604248	.3205004
emo_cesd10	.0257465	.0526204	0.49	0.625	-.0774939	.1289869
health	.0652438	.0386216	1.69	0.091	-.0105311	.1410188
employed	-.1013693	.2155903	-0.47	0.638	-.5243544	.3216157
education	.9034341	.1928101	4.69	0.000	.5251435	1.281725
married	.2203241	.8627835	0.26	0.798	-1.472444	1.913092
religion	.0012222	.2236889	0.01	0.996	-.4376521	.4400965
_cons	1.351318	.8553061	1.58	0.114	-.3267802	3.029415
sigma_u	2.0632637					
sigma_e	2.2668535					
rho	.45308656	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(2249, 1175) =     1.07          Prob > F = 0.0942
```

Regression 2: Adjusted Full Panel ***[Table 5.2]***

(Removed: Distrust Variables, Religion Dummies and Piped Water Dummy)

Rural-Urban Migrants: Weighted

```
Fixed-effects (within) regression               Number of obs      =       176
Group variable: pid                             Number of groups   =       105

R-sq:  within  = 0.1042                         Obs per group: min =         1
       between = 0.0401                                        avg =       1.7
       overall = 0.0439                                        max =         2

                                                F(8,63)            =      0.92
corr(u_i, Xb)  = -0.1710                        Prob > F           =    0.5097
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	-.1493333	.3000943	-0.50	0.620	-.7490239	.4503573
electricity	.2121392	.6407828	0.33	0.742	-1.068363	1.492641
rel_dep	.0247232	.1494284	0.17	0.869	-.2738857	.3233321
emo_cesd10	-.0405407	.2461483	-0.16	0.870	-.5324287	.4513474
health	.3224786	.1841155	1.75	0.085	-.0454469	.6904041
employed	1.531688	.9129204	1.68	0.098	-.2926378	3.356014
education	.1561909	.8047166	0.19	0.847	-1.451907	1.764289
married	.2729777	1.290462	0.21	0.833	-2.305804	2.851759
_cons	2.503411	2.943367	0.85	0.398	-3.378438	8.38526
sigma_u	1.8285604					
sigma_e	2.2082817					
rho	.40676102	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(104, 63) =     1.04                 Prob > F = 0.4350
```

Rural-Urban Migrants: Unweighted

```
Fixed-effects (within) regression               Number of obs      =       176
Group variable: pid                             Number of groups   =       105

R-sq:  within  = 0.0639                         Obs per group: min =         1
       between = 0.0910                                        avg =       1.7
       overall = 0.0817                                        max =         2

                                                F(8,63)            =      0.54
corr(u_i, Xb)  = 0.0154                         Prob > F           =    0.8237
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	-.1715681	.2919957	-0.59	0.559	-.7550749	.4119386
electricity	.1461683	.6655403	0.22	0.827	-1.183808	1.476144
rel_dep	-.0968095	.1518332	-0.64	0.526	-.4002239	.206605
emo_cesd10	-.0937946	.238132	-0.39	0.695	-.5696634	.3820741
health	.2075604	.1721622	1.21	0.232	-.1364783	.5515992
employed	1.016998	.8480132	1.20	0.235	-.6776216	2.711617
education	.2415448	.8330614	0.29	0.773	-1.423196	1.906285
married	.2747115	1.194681	0.23	0.819	-2.112667	2.66209
_cons	4.910965	2.779369	1.77	0.082	-.643161	10.46509
sigma_u	1.7393981					
sigma_e	2.2820844					
rho	.3674667	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(104, 63) =     0.86                 Prob > F = 0.7534
```

Rural Stayers: Weighted

```
Fixed-effects (within) regression               Number of obs      =      3830
Group variable: pid                             Number of groups   =      2329

R-sq:  within  = 0.0579                         Obs per group: min =         1
       between = 0.0399                                        avg =       1.6
       overall = 0.0371                                        max =         2

                                                F(8,1493)          =     11.46
corr(u_i, Xb)  = -0.1671                        Prob > F           =    0.0000
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	.344454	.0852885	4.04	0.000	.177156	.5117521
electricity	1.139832	.1959211	5.82	0.000	.755522	1.524142
rel_dep	-.0617675	.0299777	-2.06	0.040	-.1205703	-.0029646
emo_cesd10	.0615472	.0460678	1.34	0.182	-.0288173	.1519116
health	.1153142	.0337388	3.42	0.001	.0491337	.1814948
employed	.2716151	.1776054	1.53	0.126	-.0767674	.6199977
education	.8123262	.1730778	4.69	0.000	.4728248	1.151828
married	.59776	.7568179	0.79	0.430	-.8867793	2.082299
_cons	.7705421	.6535653	1.18	0.239	-.5114616	2.052546
sigma_u	1.9798857					
sigma_e	2.2136748					
rho	.44442319	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(2328, 1493) =     1.23          Prob > F = 0.0000
```

Rural Stayers: Unweighted

```
Fixed-effects (within) regression               Number of obs      =      3830
Group variable: pid                             Number of groups   =      2329

R-sq:  within  = 0.0339                         Obs per group: min =         1
       between = 0.0317                                        avg =       1.6
       overall = 0.0333                                        max =         2

                                                F(8,1493)          =      6.56
corr(u_i, Xb)  = -0.0993                        Prob > F           =    0.0000
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	.1895465	.0866287	2.19	0.029	.0196196	.3594734
electricity	.715041	.2077896	3.44	0.001	.3074505	1.122632
rel_dep	-.0766191	.0304454	-2.52	0.012	-.1363395	-.0168987
emo_cesd10	.0467789	.0477023	0.98	0.327	-.0467917	.1403495
health	.092222	.0341762	2.70	0.007	.0251836	.1592605
employed	.1306443	.1898872	0.69	0.492	-.2418296	.5031183
education	.8329291	.1720403	4.84	0.000	.4954628	1.170395
married	.8932914	.7884962	1.13	0.257	-.6533866	2.439969
_cons	2.38064	.6592471	3.61	0.000	1.087491	3.673789
sigma_u	1.9689771					
sigma_e	2.2878854					
rho	.42550183	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(2328, 1493) =     1.07          Prob > F = 0.0732
```

Regression 3: Full Panel with Only Distrust Removed

Rural-Urban Migrants: Weighted

```
Fixed-effects (within) regression               Number of obs      =       173
Group variable: pid                             Number of groups   =       104

R-sq:  within  = 0.1827                         Obs per group: min =         1
       between = 0.0161                                        avg =       1.7
       overall = 0.0380                                        max =         2

                                                F(10,59)           =      1.32
corr(u_i, Xb)  = -0.3451                        Prob > F           =    0.2421
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	-.2848132	.3272119	-0.87	0.388	-.9395627	.3699363
piped_wtr	.3422271	.6286064	0.54	0.588	-.9156115	1.600066
electricity	.1387765	.6354438	0.22	0.828	-1.132744	1.410297
rel_dep	.085088	.1519297	0.56	0.578	-.2189225	.3890985
emo_cesd10	-.1256515	.2463621	-0.51	0.612	-.6186209	.367318
health	.2788493	.1869048	1.49	0.141	-.0951463	.652845
employed	2.015289	.9193585	2.19	0.032	.1756569	3.854921
education	-.4193046	.8134824	-0.52	0.608	-2.047079	1.20847
married	.1727604	1.251827	0.14	0.891	-2.33214	2.677661
religion	-1.598352	1.147695	-1.39	0.169	-3.894885	.6981814
_cons	4.985263	3.374419	1.48	0.145	-1.766933	11.73746
sigma_u	1.9598058					
sigma_e	2.1295604					
rho	.45856019	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(103, 59) =     1.12                 Prob > F = 0.3255
```

Rural-Urban Migrants: Unweighted

```
Fixed-effects (within) regression               Number of obs      =       173
Group variable: pid                             Number of groups   =       104

R-sq:  within  = 0.1359                         Obs per group: min =         1
       between = 0.0477                                        avg =       1.7
       overall = 0.0767                                        max =         2

                                                F(10,59)           =      0.93
corr(u_i, Xb)  = -0.1485                        Prob > F           =    0.5143
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	-.2973388	.3214361	-0.93	0.359	-.9405309	.3458534
piped_wtr	.2747495	.6451444	0.43	0.672	-1.016181	1.56568
electricity	.1172098	.6539669	0.18	0.858	-1.191375	1.425795
rel_dep	-.0715101	.1590649	-0.45	0.655	-.3897983	.2467781
emo_cesd10	-.0856172	.2374301	-0.36	0.720	-.5607136	.3894793
health	.230047	.1690221	1.36	0.179	-.1081655	.5682594
employed	1.321387	.8365518	1.58	0.120	-.352549	2.995324
education	-.2151583	.8289979	-0.26	0.796	-1.873979	1.443663
married	.1251245	1.159487	0.11	0.914	-2.195003	2.445252
religion	-1.895337	1.115505	-1.70	0.095	-4.127458	.3367838
_cons	7.10208	3.076426	2.31	0.024	.9461667	13.25799
sigma_u	1.7878806					
sigma_e	2.2100188					
rho	.39557427	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(103, 59) =     0.88                 Prob > F = 0.7109
```

Rural Stayers: Weighted

```
Fixed-effects (within) regression               Number of obs      =      3763
Group variable: pid                             Number of groups   =      2314

R-sq:  within  = 0.0629                         Obs per group: min =         1
       between = 0.0350                                        avg =       1.6
       overall = 0.0325                                        max =         2

                                                F(10,1439)         =      9.66
corr(u_i, Xb)  = -0.1839                        Prob > F           =    0.0000
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	.3936265	.0874692	4.50	0.000	.2220456	.5652074
piped_wtr	-.4700869	.1827443	-2.57	0.010	-.8285606	-.1116132
electricity	1.168359	.197597	5.91	0.000	.7807496	1.555968
rel_dep	-.0612886	.0301318	-2.03	0.042	-.1203955	-.0021818
emo_cesd10	.0450294	.0464252	0.97	0.332	-.0460388	.1360977
health	.1334603	.0342215	3.90	0.000	.066331	.2005896
employed	.3153938	.1801441	1.75	0.080	-.0379794	.668767
education	.6921935	.1757875	3.94	0.000	.3473662	1.037021
married	-.1540408	.7859709	-0.20	0.845	-1.695812	1.387731
religion	.0475972	.1930291	0.25	0.805	-.3310513	.4262457
_cons	.4611081	.7056882	0.65	0.514	-.9231796	1.845396
sigma_u	2.0025301					
sigma_e	2.1891662					
rho	.45556291	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(2313, 1439) =     1.26          Prob > F = 0.0000
```


Rural Stayers: Weighted

```
Fixed-effects (within) regression               Number of obs      =      3763
Group variable: pid                             Number of groups   =      2314

R-sq:  within  = 0.0365                         Obs per group: min =         1
       between = 0.0301                                        avg =       1.6
       overall = 0.0311                                        max =         2

                                                F(10,1439)         =      5.45
corr(u_i, Xb)  = -0.1026                        Prob > F           =    0.0000
```

SWB	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hhinc_pc	.2199074	.0885543	2.48	0.013	.046198	.3936168
piped_wtr	-.4127112	.2007446	-2.06	0.040	-.8064946	-.0189277
electricity	.7383825	.2100455	3.52	0.000	.3263544	1.150411
rel_dep	-.0800073	.0306801	-2.61	0.009	-.1401898	-.0198248
emo_cesd10	.0332746	.0482229	0.69	0.490	-.0613201	.1278693
health	.109645	.0347329	3.16	0.002	.0415124	.1777777
employed	.147407	.1914936	0.77	0.442	-.2282295	.5230434
education	.7333284	.1753033	4.18	0.000	.389451	1.077206
married	.4725601	.8057465	0.59	0.558	-1.108003	2.053124
religion	.1433258	.19535	0.73	0.463	-.2398755	.5265272
_cons	2.089453	.7105746	2.94	0.003	.6955797	3.483326
sigma_u	1.9824689					
sigma_e	2.2709481					
rho	.43248762	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(2313, 1439) =     1.09          Prob > F = 0.0429
```