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DEPARTMENT OF ECONOMICS

A Time Dimensional Extension to Standard Poverty Analyses in South Africa

by

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DECLARATION

I declare that *"A Time Dimensional Extension to Standard Poverty Analyses in South Africa"* is my own work, that it has not been submitted for any degree or examination in any university, and that all the sources that I have used or quoted have been indicated and acknowledged by complete references.

Moegammad Faeez Nackerdien

Signature:

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ABSTRACT

Most poverty studies ignore the dimension of time and are merely concerned if an individual meets certain money-metric or non-income welfare (e.g., access to services and asset ownership) criteria. They fail to recognise the limited time (24hours per day) available to complete tasks and the added difficulties they have even though there is an abundance of money-metric and asset-related non-money-metric poverty studies. (Kim *et al*. 2014:1). For example, individuals/households deemed poor by standard measures cannot afford market alternatives to assist them with non-market work (like childcare). Therefore, they find themselves spending all their time in market and non-market work without taking time for rest and improving themselves.

Recognising non-market work and the allocation of time allows for a greater understanding into the role of women and Africans whose non-market work are unrecognised by standard economic measures such as GDP (Ferrant 2014:1). There are also only a few in-depth studies on time poverty, but they fail to utilise the most current data. Therefore, this study seeks to provide insights into how household production impacts on South African welfare. It explores the income, time poor and the extent of time allocation differences for various personal characteristics. It estimates the likelihood of time poverty based on an individual's time schedule and the factors which most likely results in time poverty.

In this study, various time concepts and measures were explored adding to the scarcely found South African time poverty studies which lack in-depth exploration. At the same time the study highlighted household production, an aspect closely linked to time poverty which affects certain groups of people more (females and Africans), and its welfare implications completely ignored by standard measures of the economy. The study also aimed to examine the relationship between time and income poverty.

The study utilised the 2000 and 2010 South African Time Use Survey data by focusing on two main themes: time use patterns (to better understand household production) and time poverty (to measure it and understands its relationship with income poverty). The descriptive results revealed that both mean SNA (System of National Accounts internationally agreed standard for production)) and non-SNA production time increased over time at the cost of the non-productive time. Also, mean paid and unpaid work increased over time.

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In addition, mean SNA production and paid work time were higher for a white male who was married, highly educated and employed, whereas mean non-SNA production and unpaid work time was higher for an unemployed African female. The OLS and Tobit regression revealed a significant higher likelihood in SNA and paid work time to also be higher for the middle age, whites, males, highly educated, married and employed individuals, while a significant higher non-SNA production and unpaid time was revealed for the middle-aged, females, Africans, matriculants, non-single and unemployed people.

Time poverty was explored in three approaches: absolute poverty, relative poverty (three different cut-off points were used) and time deficits, with each approach highlighting various groups of individuals affected. At the same time, income and multidimensional poverty was estimated to provide contrast and comparison with time poverty estimates. The highest poverty headcount rate was 53.9% in 2000 and 34.7% in 2010 for income poverty, while the highest time poverty headcount rate was 28.1% in 2000 and 28.3% for relative time poverty (based on 60% of the median free time). Overall, all poverty headcount rates decreased over time, the only exception being the above-mentioned relative approach. Also in 2000, 9.36% of the population were income poor and absolute time poor, 14.66 % were income poor and relative time poor, while 7.57% were income poor and suffered from time deficits. Fortunately, these proportions decreased over time to 4.46%, 8.99% and 3.51%, respectively.

The income and multidimensional poverty headcount rates were the highest for the youth, females, Africans, lowly educated, unemployed and unmarried people. In contrast, the headcount rates for the absolute time poor were highest for females and unmarried, the relative time poor were highest for females, unmarried; lastly, those suffering from time deficits were the highest for males, non-African and unmarried. Studying the poor found the income and multidimensional, absolute time and relative time poor to be mainly, female, African and lowly educated, while the time deficit poor was mainly male, African, lowly educated and employed.

The probit regressions mainly found females, Africans and unmarried to have significantly greater likelihood of being income poor; on the other hand, male Africans had a higher likelihood of being multidimensional poor. Furthermore, female African employed individuals had higher likelihood of being absolute and relative time poor; males and Africans had a higher likelihood of suffering time deficits. Furthermore, highly educated

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employed individuals enjoyed significantly lower poverty likelihood (for all types of poverty under investigation). Extending the empirical analysis to the bivariate and multivariate probit regressions found some disparities for some variables, namely age, gender, marital status, race, education; nonetheless, these disparities only happened in certain regressions.

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KEYWORDS: Household production, Time Poverty, Income Poverty, Time Use

JEL: D13, J16, J22, J24

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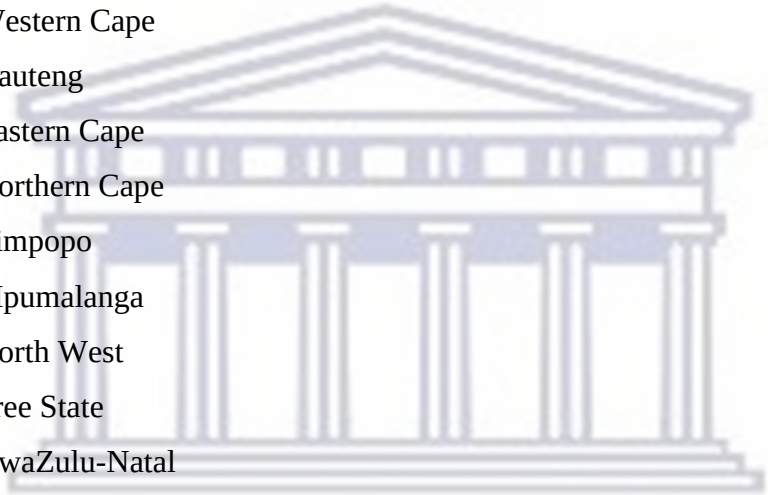
LIST OF ABBREVIATIONS

GDP	Gross domestic product
GNI	Gross national income
GNP	Gross national product
SES	Socio-economic status
SNA	Systems of National Accounts
StatsSA	Statistics South Africa
TUS	Time Use Survey
USA	United States of America
WC	Western Cape
GAU	Gauteng
EC	Eastern Cape
NC	Northern Cape
Lim	Limpopo
MPU	Mpumalanga
NW	North West
FS	Free State
KZN	KwaZulu-Natal



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CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

Amongst developing countries (especially sub-Saharan Africa), high levels of poverty, inequality and unemployment have been a constant menace and their alleviation have become one of the main economic development objectives. Such alleviation ensures a minimum standard of life by, amongst others, maximising the utilization of the available labour force (Hill 1993:428). Focusing on poverty, various measures have been applied to establish poverty levels and trends, with the most conventional ones being the money-metric measures (McGrath & Whiteford 1994, May *et al*. 1995, Klasen 1997, Leibbrandt & Woolard 1999, Bhorat & Cassim 2004, Woolard & Klasen 2005, Bhorat *et al.* 2012).

The absolute money-metric approach looks at the minimum desirable level of living referred to as the "poverty line" (Leibbrandt & Woolard 1999; Bhorat *et al*. 2012). It allows one to describe poverty in terms of the number or proportion of poor people. The money-metric approach has been the traditional way to measure poverty: a one-dimensional measure based on income or expenditure data. In recent years, other approaches have been adopted, such as the multidimensional non-money-metric approach and predominantly the overlooked time use approach which this study aims to address (Ravallion 1992; Booysen *et al.* 2008).

The money-metric approach only highlights one dimension of poverty (i.e., income or expenditure). However, poverty is actually a multi-dimensional concept which involves both money-metric and non-money-metric dimensions. This has led to the emergence of numerous alternative approaches to measure poverty. A popular alternative approach involves the derivation of an asset index, with the aid of statistical techniques such as multiple correspondence analysis (MCA), principal components analysis (PCA) and factor analysis (FA) (McKenzie 2005, Booysen *et al.* 2008, Leibbrandt *el al.* 2010, Bhorat *et al.* 2014, Wittenberg & Leibbrandt 2015). Moreover, as a means to derive a standardised international multidimensional index for poverty, the Multidimensional Poverty Index (MPI) approach was initiated in 2010, by considering indicators from three dimensions, namely health, education and living standards (Alkire & Santos 2011:3, Finn *et al.* 2013:3, Omotoso & Koch 2017:5). Despite all these approaches examining poverty multi-dimensionally, they still ignore other non-money-metric dimensions (e.g., powerlessness, vulnerability), including time.

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The time dimension is not regarded in the evolution of poverty dimensions, i.e., one is not concerned with how the dimensions which affect poverty have changed from one generation to another. For example, in previous generations those who lacked certain assets (e.g., a car) were most likely to be poor while in current generations ownership of these assets does not reduce the likelihood of poverty. One considers the time dimension, as the poor lack time-saving commodities, which could enhance their access to the market and allow them to provide efficient and productive labour to the market. Time can also be viewed in terms of well-being, e.g., lacking the time to do a particular task can reduce one's well-being, in particular utilising time in non-market production, such as production and services of household being a subset of non-market production (Kim 2016: 237, White 2016:219).

One would assume someone who is money-metric poor to have more time available. This is not necessarily true if the poor faces time-consuming tasks like collecting water from a distance as opposed to using piped water inside dwelling. Poor individuals also spend long hours commuting to and from the market (maybe due to long distance from the market and inefficient transport system). The need for time-saving services will value citizens' time and aid with resource allocation (Wondemu 2016:263). Had poverty been only linked to money-metric measures then it would had been easy to compensate the losers (the poor), but if one also views poverty in time differences, a question now arises on how one can compensate these differences to create the "same" amount of time for everyone (Hill 1992:428).

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Unlike the poor (in terms of income), the rich are able to address time-consuming tasks through their income. The poor therefore faces a dilemma that income poverty and time poverty can reinforce each other. For example, an individual trying to address his income poverty by working longer hours may increase his likelihood of time poverty. In turn, by working longer hours to earn higher income, less time is available to develop and further education of the individual. Also, if the income-poor individual's lack of time is linked to the non-market activities, it may prevent his/her participation in the market (Orkoh *et al.* 2020).

Time poverty can also be viewed in terms of leisure and rest. As time is fixed and limited, more time located to productive and/or non-productive work would result in less time available for leisure and rest thereby affecting time poverty (Ribeiro & Marinho 2012). Therefore, time poverty adds a different dimension to the income and consumption approaches of poverty.

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In summary, whilst most poverty research (to be discussed later) has focused on the money-metric dimension, there is a need for more research on poverty from the time use dimension. One could find an individual who is income non-poor but may not notice that the individual spends copious number of hours to earn just enough income to be income non-poor. What then of his/her household work, leisure for productivity or income to pay for household services which he/she is unable to afford if all his/her time is spent in the market only? These are important issues to consider.

1.2 Problem Statement

Non-market production covers the goods and services household members produce for their own consumption by combining their unpaid labour as well as the goods and services from the market. Mitchell *et al*. (1921), Kuznets (1944), Clark (1958) as well as Devereux and Locay (1992:399) believe there is a need to include household production in economic growth. Household production, referred to as non-market production, represents the goods and services produced in a household by joining goods and services of the market with unpaid labour to provide household members with consumption. The exclusion of non-market production may lead to unreliable and even biased economic statistics, for instance, national income would be severely under-estimated.

The estimates of household production in Western European countries and the USA range between 40-50 percent of gross national product (GNP) (Bonke, 1986 & 1987). However, Devereux & Locay (1992:399) believe these estimates are inaccurate as they ignore the use of capital in households. Household production and labour market production too differ; household production is not registered and not taxed as it is an income in kind (Bonke 1992:284). As a result, the allocation and efficiency of non-working time is important for economic welfare.

The economic and social contributions of women are also highlighted when household production is measured (Ferrant 2014). Hence, accounting for household production would allow for more effective policy towards women and better understanding reduced leisure times (under voluntary unemployment) and other activities for gender and race.

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Furthermore, living and working are centred around home with the activities surrounding unpaid household production contributing to the well-being of an individual and family (material wants and needs are satisfied) to reach a certain living standard. Not every household is the same, as some lack the time needed to produce these household activities (time deficits); as a result, income needs to be spent to attain alternative production in the market (Masterson *et al*. 2014:1).

Individuals and households are assumed to have sufficient time to see to the needs of household members under standard poverty measures. Unfortunately, some households are unable to afford market alternative when they suffer from time deficits. Under these circumstances, households encounter hardships not reflected in standard poverty measures (Kim *et al*. 2014:1). Non-market production reveals information on informal activities, unpaid work (e.g., subsistence agriculture), work done by contributing family members and reproductive (care) work in household economy.

Household production has brought light to the added role females play in the society. Traditionally, women are portrayed as housemakers whereas men are the breadwinners (Cunningham 2008). Charmes (2006) refers to the unrecognised work done by women as "invisible" work. Women provide the platform for men and other household members to concentrate their efforts outside the household in the market activities. Hence, women play a role in the production of the economy (Weinrobe 1974), and it is important to measure household production.

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According to Ferrant (2014:1), time use data matters for socially transformative policies. It allows women's economic and socio-economic contributions through home production to be accounted for. The data also provides an understanding of persistence of gender gaps in terms of employment and intergenerational transmission of gender roles, where girls perform up to twice the amount of household chores than boys do (ILO 2009). Time use data also allows for more efficient policies on women empowerment by considering the amount of unpaid work they do. Lastly, to assist in reducing gender gaps in time poverty whilst men work longer hours in the market, females work a disproportionally longer percentage of time in unpaid work and even if women work in the market, they are still expected or required to perform numerous household activities (Walker 2013:58).

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The basis of time use data surveys stems from the notion that every individual has 24 hours per day to spend on both market and non-market activities. Time use data allows one to determine the manner in which individuals spend their available hours (Abdourahman 2010: 22), whether this time is used for earning income in the market or producing goods and services as well as consumption of household and market items. Economic development has led to a large secular decline in the work week, thereby limiting the extent of maximum hours available to the market and freeing up more time for non-market production.

There is potential for further research because of the contribution of non-market work to GNP, factors which affect time use within households and the difficulties women experience in the market and household. A possible research question to be considered on household time allocation relates to the gender differences in time use across market work, household work/services with suitable market alternatives and those without any alternatives, leisure activities, sleep and self-grooming activities. The research will seek to determine the time poverty of an individual given his/her time schedule. It will also determine if there is any relationship between income poverty and time poverty. The research will be conducted in the South African context.

1.3 Objectives of the Study

The aim of this study is to provide insights on how production within households impacts on the South African welfare. Using South African time use surveys (TUSs), this study aims to examine the extent of time poverty in South Africa and its relationship with income poverty.

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More specifically, the study aims to achieve the following specific research objectives:

- Determine and measure the extent of time allocation differences (if any) by gender, race and other demographic variables on market work, household work and services with suitable market alternatives and those without any alternatives, self-care and leisure activities.
- Examine the personal- and household-level characteristics of time poor and income poor.
- Estimate the likelihood of an individual being time poor given his/her time schedule.
- Estimate the factors which more likely result in time poverty.

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1.4 Significance of the Study

In the South Africa context, there is an abundance of studies on money-metric and asset-related non-money-metric poverty. However, there are hardly any in-depth studies on time poverty, other than Kizilirmak & Memis (2009) and Antonopoulos & Memis (2010) amongst a few (highlighted later in the research), who examined the 2000 TUS data to conduct some preliminary empirical analysis. One would expect with the availability of both the 2000 and 2010 TUSs, more research on time poverty would have been conducted, yet it is surprising that these datasets were hardly analysed comprehensively over these years to examine time poverty of the country. Therefore, this study can significantly fill the existing research gap.

Income-based poverty measures only cover one dimension of household resources but ignore other factors such as time use. Measures that cover more poverty dimensions provide a better understanding of why people are stuck in poverty. A one-dimensional measure fails to highlight the real reason(s) for an individual to be trapped in poverty (Vickery 1977:27). Modelling household resources in terms of the time dimension (by looking at time spent on household activities) can better reveal the true extent of poverty and thereby assist with better policy formulation on poverty alleviation. This study will also be the first locally to link income and time poverty measures in South Africa (a form of research that is not even common in international literature) and the first to discuss time use patterns between two periods using the TUS data.

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For example, a person who spends long hours collecting water for his/her household and work short hours in the labour market to earn low income can be classified as both income poor and time poor. By addressing his/her time poverty both forms of poverty can be alleviated, thereby designing a policy to bring running water to a household and subsequently allowing the individual to spend longer hours at work (assuming job opportunities exist).

1.5 Structure of the Study

The study consists of six chapters. Chapter One introduces the research problem as well as explains the significance and aims of the study. Chapter Two is divided into three sections: conceptual framework, theoretical framework as well as review of past local and empirical studies. The conceptual framework defines various key poverty concepts and highlights the development and application of time use studies. The theoretical framework examines the base time theory models as well as their extensions and modifications. It also thoroughly

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discusses numerous core theories on the links between time poverty and income poverty as well as the possible labour market outcomes linked to time use.

Chapter Three highlights the methodology and data utilised in this study. Chapter Four is a highly descriptive chapter that comprehensively analyses time use on key activities by various personal and demographic characteristics, while Chapter Five focuses on examining time poverty incidence as well as the relationship (if any) between income poverty and time poverty. Various descriptive and econometric analyses are conducted in both Chapters Four and Five, before Chapter Six concludes the study by summarising the key findings and suggesting policy implications.

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CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The manner in which one perceives poverty is influenced by the research available and methods to measuring it; the depth of research and diverse methods of measuring poverty emphasises the complexity and multidimensionality of poverty. Yet, with all the research available there is still room for expansion and further development. Initially, this chapter is designed to highlight the core dimensions of poverty which are reviewed in the existing literature. It further adds to the core literature by concentrating on discussing the time dimension of poverty.

This chapter consists of three core sections. Section 2.2 investigates the conceptual nature of poverty: it defines the basic concepts of poverty in section 2.2.1, the measures of poverty in section 2.2.2 and time extension of poverty in section 2.2.3. The theoretical literature is discussed in section 2.3 by looking at the core literatures of Vickery (1977) and Becker (1965), as well as any extensions or modifications to their work. This section also provides alternative theories to their work. Section 2.4 looks at the majority of past empirical literature of time poverty studies. It is divided into two sub-sections: section 2.4.1 concentrates on international studies whereas section 2.4.2 focuses on local studies. Section 2.5 concludes the chapter.

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2.2 Definitions of Key Concepts

Poverty is a universal concept debated by many because of its complexity. To any individual poverty can be associated with living on the streets, poorly constructed housing, joblessness, lack of food, malnutrition, poor access to education, social discrimination, poor health, inferior quality or lack of resources and basic services (UN 2005; Triegaardt 2006:2). The diversity of its perception makes it difficult to agree to a standard measure of poverty.

Ravallion (1992) defines poverty in terms of the minimum level of well-being desirable by society. Thus, poverty is associated with deprivation which reduces a person's wellbeing or ability to allocate resources to aid with their elementary human functioning (Govender *et al.* 2006). According to McGregor (2006:2), well-being represents the interplay between the resources that a person is able to command, what they are able to achieve with those resources, as well as the meanings that frame and drive their aspirations and strategies.

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Therefore, poverty can be associated with an individual's lack of resources and failure to utilise them efficiently.

2.2.1 The Basic Dimensions of Poverty (Building the Analytic Framework)

There are six dimensions of poverty covered in this study of which five are mentioned in Chambers (1988:8). This section will briefly discuss the five dimensions before discussing the last one in depth as it forms the core of this study. First, poverty proper is associated with lack of income and assets. This dimension is associated with the most commonly adopted standard method to measure poverty with regard to income and consumption (World Bank 2000). This study will utilise this dimension to measure income poverty, as it is a relatively straightforward dimension to measure, given the regular availability of income, expenditure and consumptions data.

Physicality refers to poverty which is linked to a lack of strength, disability, malnutrition and illness. Poverty proper could be linked to being physically poor, for instance, a lack of income can prevent the upkeep of a healthy body (Chambers 1988:8). Furthermore, an individual can be isolated both physically and socially (Woolard and Leibbrandt 1993); physical isolation refers to an individual located at a place where interaction with others is minimal or his/her access to basic goods is limited. On the other hand, social isolation is linked to the eagerness of an individual to interact with others and can be influenced by factors such as intelligence and educational attainment.

Looking at other poverty dimensions, vulnerability refers to the risk of becoming poorer or being susceptible to unexpected changes (Chambers 1989). Vulnerability can take both an internal and external form. The former stems from helplessness due to dependency on others or mental and physical impairment amongst other factors, while the latter is related to risks, shocks and stress faced by the individuals.

The last dimension discussed by Chambers (1988) relates to how social, cultural and political circumstances make one feel powerless (i.e., a sense of helplessness). Powerlessness can be experienced when there is lack of access to opportunities or when there is an inability to voice one's dismal condition or troubles. There is also reliance on others, as one cannot improve the condition on his/her own (even if it is only a belief).

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The sixth dimension that is not discussed by Chambers (1988) is time. Poverty has evolved into a multi-dimensional concept, being initially viewed as an economic problem measured in income or consumption (Kes & Swaminathan 2006:13, Addison *et al*. 2009, Kim 2016:230). Time use has become an important resource to understand the dimensionality of poverty. The manner in which households allocate their time is central to understand the welfare impact on households.

Therefore, it is important to understand how time is viewed. The study proceeds to unpack views on time by Lindskog & Brede (2002), Saqib & Arif (2012) and Kes & Swaminathan (2006:15)[1]. Lindskog & Brede (2002) view time in terms of individuals either being time-rich or time-poor. They define time-rich people as those who have excessive time available (or time exist in large numbers and a need to "kill" time exists) while time-poor people are the ones whose time is a constraint in their daily lives (scarcest resource and saving time). The assumption that modern consumption patterns (due to prefabricated food and fast-food business, technology and capital advancements, online shopping, internet for information, etc.) have freed up time for time-poor is incorrect. There has been an increased pace of life and an increased cost to time which affects every consumption activity. The increased variety and choices have resulted in constant decision making in all environments and the need to allocate time to all consumption activities which arise because of these choices. The manner in which technology connects home to work has blurred the lines between leisure and work.

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Historically, Lindskog & Brede (2002) depict the group rich in time to be money-rich (those who possess power and influence politically and economically because of their economic resources and networking; they are also the largest consumers of entertainment) and the group poor in time to have little or no money (possibility to change one's situation was limited). Today the time-rich are predominately money-poor (usually retired with small pensions) and time-poor are usually the money-rich group (they use all their available time to work their way up the ladder and maintain the position).

A slightly different view of time is displayed in Figure 2.1 (Saqib & Arif 2012). Time is regarded as one of the resources of a household. In fact, the resources of the household which

[1] The study mainly wants have to establish a comprehensive view on time and time poverty without selecting which view is best (it is left to the reader to formulate their own opinion). Later when analysing the data it will incorporate an analytic framework which best suits the discussion of Chapter Two and complements the data well.

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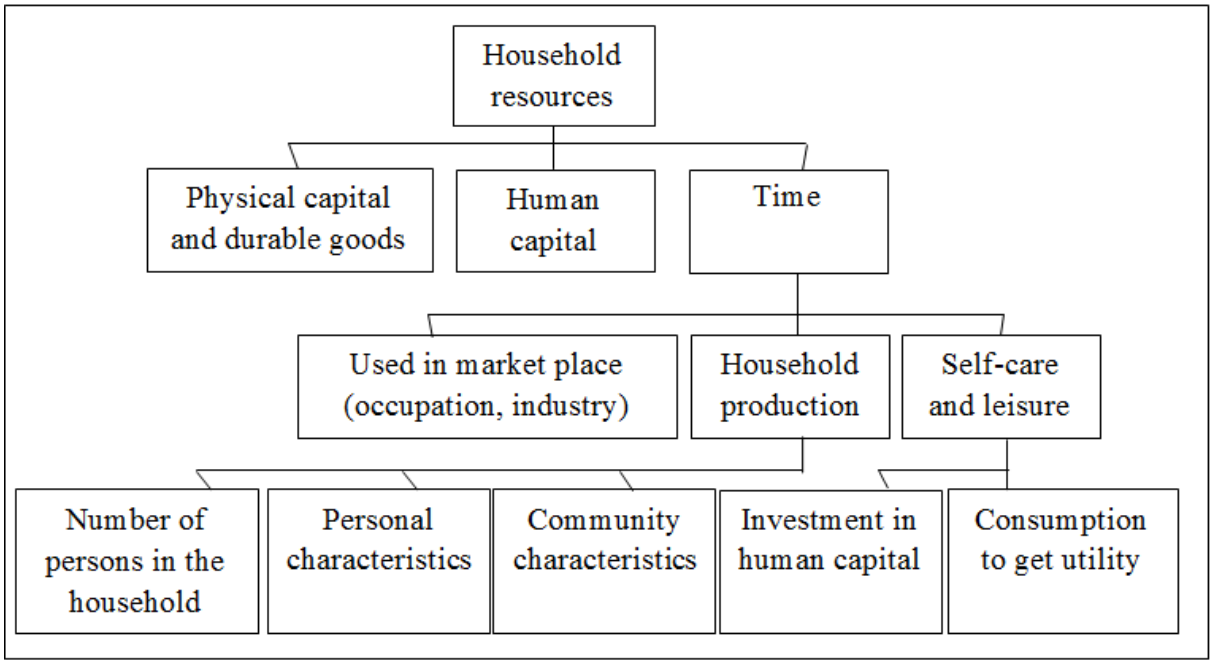
can increase its welfare can be divided into three broad categories: human capital, physical capital and time. Physical and human capital generates a stream of revenue over their life span which adds to household income and individuals respectively (Mincer 1974 & Becker 1975).

Figure 2.1: Household resources and their use



Source: Saqib & Arif (2012).

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Time can be utilised for various tasks. It is a combination of time, market goods, personal and household characteristics which result in household production (Becker 1965). Oates (1977) and Hamilton (1983) advocate community characteristics as an input to household production too. Another division of time is leisure and self-care. These activities can aid to improve human capital and increase utility through consumption activities. Productivity can also increase through leisure and self-care. The third manner in which time can be utilised in the market is income generation (which has a direct effect on income poverty). Employment increases time spent on committed activities (activities in the workplace and household) which could increase the probability of time poverty.

Due to the nature of time use survey data, Figure 2.1 is modified to link conceptual to empirical application, as shown in Figure 2.2. The marketplace is now linked to System of

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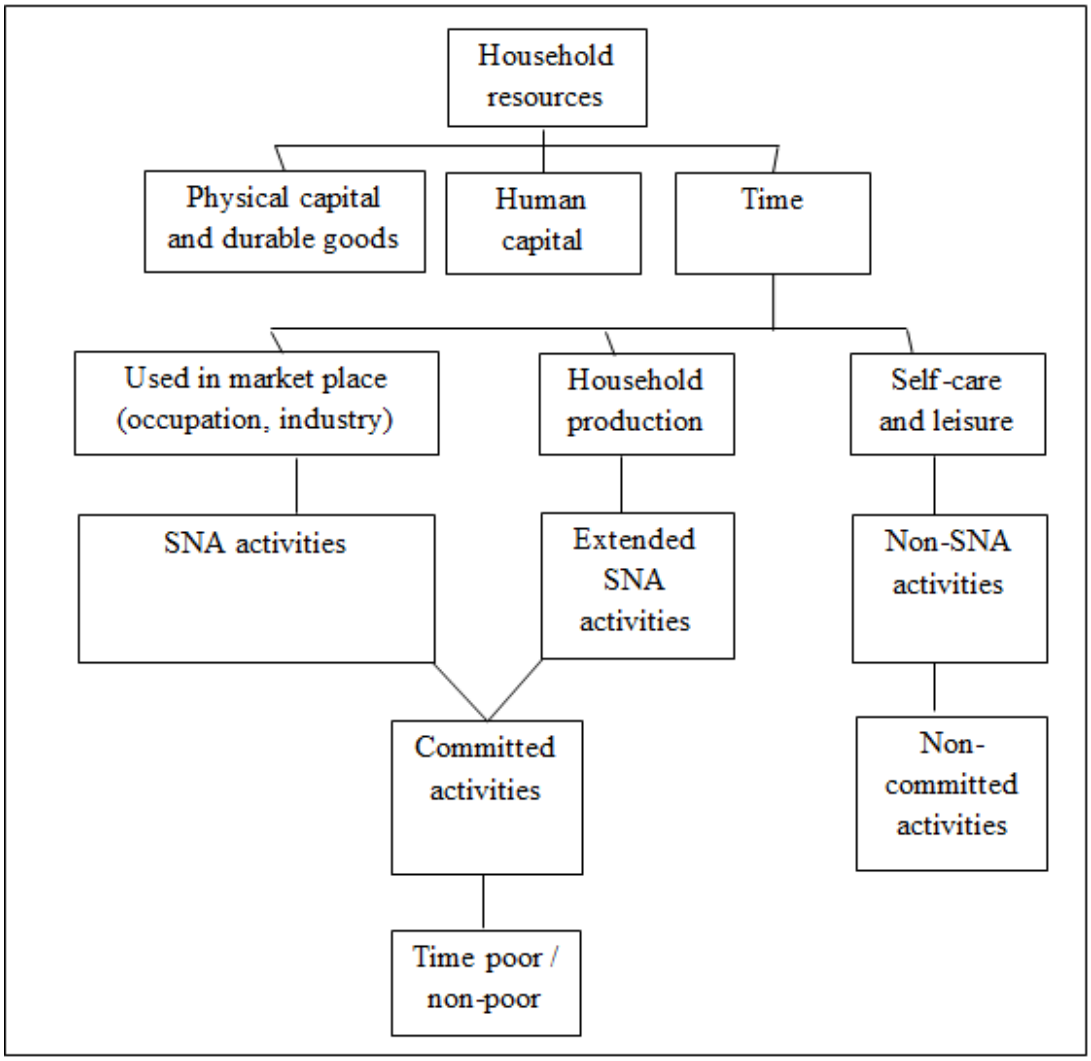
National Accounts[2] (SNA) activities, the household production to extended SNA activities, whereas self-care and leisure are related to non-SNA activities. SNA and extended SNA activities are regarded as committed activities, which are directly relevant to well-being and livelihood of individuals and households, done in exchange for benefits.

Figure 2.2: Defining household production: An empirical approach



Source: Saqib & Arif (2012).

The initial approach (from a recognised authority) to view household time use is defined in the System of National Accounts (SNA). Time allocated to work is distinguished in terms of formal and informal work as well as non-market subsistence work in the production of goods (United Nations 1968, Draft November 1991, Charmes 2006). The only household

[2] SNA is an international agreed standard for recommendations on measuring economic activity. It considers related concepts, definitions, classifications and account rules. It is an all-inclusive measure considering different stages of economic development (Eigenraam & Obst, 2018).

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production included in national production is household services which are produced by owner-occupiers of dwellings. The inclusion of other household services is deemed isolated, different and independent from markets, thereby making it extremely difficult to estimate in a meaningful manner, thereby leading to inappropriate policies being formulated (Chadeau 1992:87-88).

Time use data reveal work activities not classified under SNA by imputing a monetary value for them (Hirway 2005 as cited in Walker 2013:58). Chadeau (1992:87-88) highlights some of the reasons for excluding own-account household services, personal and domestic services:

- The inclusion of own-account household services virtually ensures the entire adult population to be economically active. If this is the case, unemployment is completely eliminated (a matter which distorts standard unemployment measures).
- Housing services of owner-occupiers of dwellings are different from other services produced for own consumption.
- Monetary income and computed income do not provide the same economic significance – monetary income allows for choices in the market, whereas computed income is used for household production only.
- Imputation of the prices of household goods can be difficult as no market exists for them.
- There may be difficulty to evaluate household output (goods produced by households or household activities completed by household members) due to the lack of necessary data (e.g., when a mother does laundry for her children) .

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The third view of time (a broader approach to Saqib and Arif 2012), depicted by Figure 2.3 (which is highly similar to Figure 2.2), examines how individuals allocate their time on work and various other activities. Some of these activities would not be included in national production under the first approach. Under the second approach, time use is divided into the broad categories of market and non-market work. Production of goods and services for the market includes formal and informal work activities, which form part of paid SNA production. Production (subsistence), reproductive and voluntary work are the main activities of non-market production. Production includes all goods produced for home use (e.g., food and clothing) and forms part of unpaid SNA production. Finally, reproductive work (e.g., meals and laundry) and voluntary work (e.g. unpaid community work) form part of unpaid

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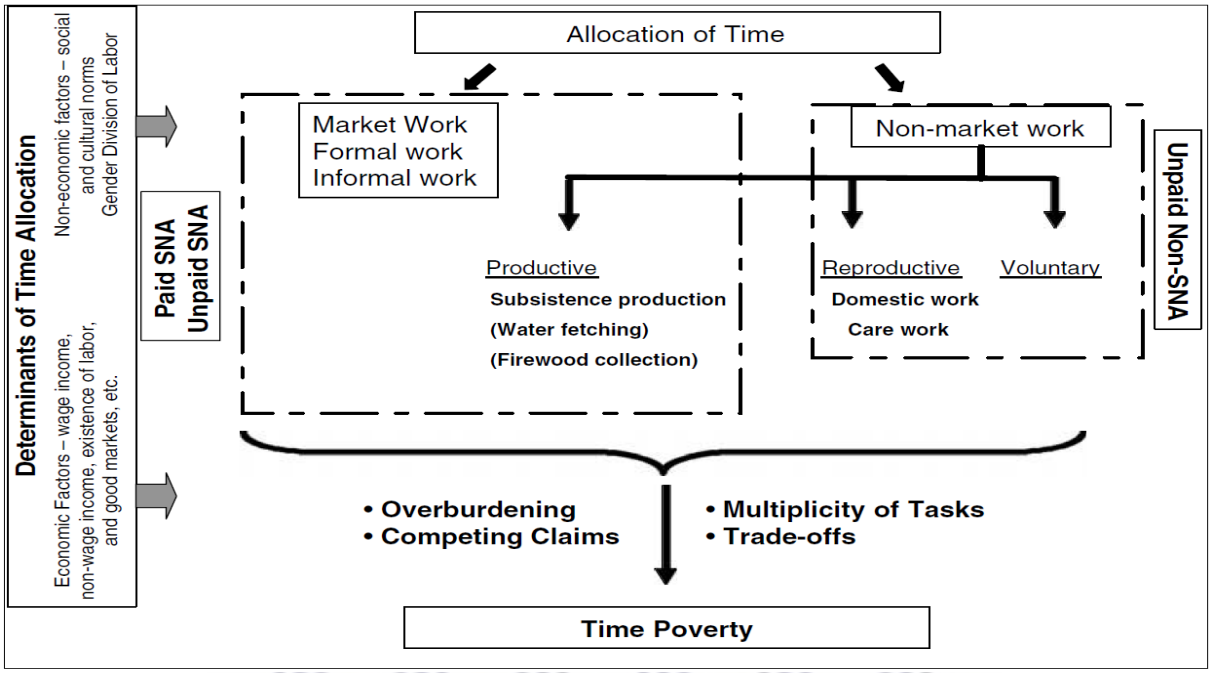
non-SNA production. The approach would give better insights into the role women play in the non-market as traditionally they spend more time in reproductive work than men.

Figure 2.3: A framework for analysing time use and time poverty



Source: Kes & Swaminathan (2006:15)

In practice, to estimate gross domestic product (GDP) according to SNA, production is classified into three broad categories: SNA production, non-SNA production and non-productive. These broad categories are further divided into 10 detailed sub-categories in total (see Table 2.1).

Numerous factors affect time use between market and non-market activities. Some determinants of time allocation can be explained through economic factors such as wages and non-labour income, but this is seen only as a secondary determinant. The main determinant of time allocation is linked to non-economic factors. For example, social and cultural norms may define women's and men's role in reproductive and market activities, respectively. Under SNA, the role of men would be accounted for in national production as market work is regarded as SNA production, while this is not the case for female individuals because household work is mostly regarded as non-SNA production (Kes & Swaminathan 2006:15; Budlender 2008:15).

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Table 2.1: System of National Accounts Classification

SNA production	1. Work in establishments (e.g., wage employment, domestic work and those looking for work)
	2. Primary production not for establishments (e.g., subsistence farming and collection of fuel and water)
	3. Other production of goods and services not for establishments (e.g., informal street trading, home production and informal provision of services)
Non-SNA production	4. Entails household maintenance (e.g., housework and personal and household shopping)
	5. Care of persons in the household (e.g., childcare and looking after the elderly and disabled)
	6. Community service to non-household members (e.g., volunteering for an organisation, cooking for collective organisations and caring for non-household members)
Non-productive	7. Learning (e.g., schooling, doing homework and attending work-related and non-formal courses)
	8. Social and cultural (e.g., socialising, cultural and religious activities and watching sports)
	9. Mass media use (watching television, radio and library)
	10. Personal care (sleeping, eating, drinking, washing and dressing oneself and receiving medical and personal care).

Source: adapted from StatsSA (2001).

SNA and non-SNA work, market and non-market work, paid and unpaid work activities are concepts which do not fully overlap each other. GDP already includes some of non-market work, i.e., the capital formation and production of goods and services, including collection of water and firewood. Thus, non-market activities cannot be perfectly classified as unpaid work as they add to economic production to some extent. However, since unpaid work such as collecting firewood is regarded as part of unpaid work, one cannot claim it does not form part of GDP.

According to Table 2.2, the standard restrictive concept of unpaid work forms part of non-SNA work and is linked to the care economy (shown as [IV] in the table). Moreover, [III] covers the extended version of unpaid work linked to self-employment production of goods for own consumption. The broadest concept of unpaid work would include household members producing for the market (depicted by [II]). Note that both [II] and [III] form part of GDP even though they are underestimated and imperfectly recorded.

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Table 2.2: Overlapping of market/non-market work, paid/unpaid work and SNA/non-SNA work

	Market Work		**Non-market work**	
	Paid work	**Unpaid work (contributing)**	**Unpaid work (contributing)**	**Unpaid work**
SNA work	[I]	[II]	[III]	
Non-SNA work				[IV]

Source: Charmes (2006).

Note:

[I]: Production of goods and services for the market by remunerated labour and remunerated self-employed.

[II]: Production of goods and services for the market by contributing family workers (belonging to economic units producing for the market).

[III]: Production of goods and services for own consumption or own capital formation of the household, by contributing family workers (belonging to economic units not producing for the market).

[IV]: Production of domestic and care services in the extended SNA.

The allocation of time between market and non-market work would determine the type of poverty present. If too much time is allocated to paid market work to overcome the money-metric poverty threshold, the individual could be classified as time-poor due to the lack of time available for other activities. Conversely, if the individual allocates too much time on non-market activities, they could be income poor as they have little time to work in the labour market to earn an adequate income to sustain their living. Hence, income and time poverty could occur when an individual's time is constrained by their inability to allocate time to the marketplace (SNA activities) and household (non-SNA activities) respectively. This can happen through increased work intensity or trade-offs between or within market and non-market activities (Hamermesh & Pfann 2005, Blackden & Wodon 2006, Kes & Swaminathan 2006:16; Goodin *et al*. 2008).

Individuals from all income groups can experience time poverty if they allocate a large number of hours to paid work, but the intensity of time poverty increases with less income as they lack resources to access market substitutes. Consequently, they can make decisions which affect the welfare of current and future household members (Kes & Swaminathan 2006:17), for example, a child needs to sacrifice his/her education to support the household financially.

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According to the 1993 SNA, unpaid work can be included in economic activities or fall outside the production boundary of SNA but counted as general production. Unpaid work can be referred to as unremunerated work, non-market work, social reproduction, domestic work or care activities. They are defined as activities which increase human well-being and are excluded from national income statistics as there are no exchange of products and/or services in the market. All personal activities which are done for personal welfare and cannot be assigned to another individual is not referred to as unpaid work but rather as leisure (e.g., personal grooming, eating, reading and resting). Some examples of unpaid work are household management, caring activities (looking after children and the elderly), production for self-consumption (patching up clothes and picking of foods) and social work. Women are primary responsible for these activities.

Unpaid work contributes to human welfare in many ways: Domestic work forms the basic physiological and psychological needs of humans. Unpaid activities increase the production of human capital and contribute to health, nutrition and education of household members. Human development improves as human capabilities are enhanced through areas such as good nurturing, physiological and psychological care (Hirway 2001).

Unpaid workers face several disadvantages: their work is considered unimportant as it is neither quantified nor recognised. As women are mainly involved in unpaid activities, it appears as if they are inferior to men. In addition, unpaid work is mostly centred around the household which could restrict unpaid workers to exposure and opportunities in the outside world (reduces their societal life chances). They are disadvantaged when entering the formal employment as they are burdened by their domestic work duties, have inferior human capital, lower status, poorer job prospects and limited scope for upward mobility (Hirway 2001).

2.2.2 Measures of Poverty

To determine the extent of poverty one needs to be able to measure it. They are three steps to measure poverty: to define the welfare indicator, establish the poverty line and generate summary statistics (Ravallion 1998; Haughton & Khandker 2009; Ferreira & Lugo 2012).

2.2.2.1 Welfare indicator

There are three welfare indicators: an income indicator, non-income indicator and composite indicator. The income indicator in the form of a money-metric measure is the most

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commonly used poverty measure to analyse well-being (Budlender 2015). Money-metric measures can come in the form of per capita income or consumption; these measures are easy to understand and interpret for quantitative purposes as cardinal variables are used.

To measure well-being in terms of standard of living (or non-monetary perspective), non-income indicators are used (Shea 1997). These indicators examine one non-money-metric variable at a time (it is not a composite measure). For example, one could examine the proportion of population living in formal dwelling, percentage of population with cellular telephones, and so forth. In contrast, composite indicators are more comprehensively created by combining several non-income indicators together, or even both income and non-income indicators together (Shea 1997), with the aid of mathematical and statistical techniques.

The simplest way to combine these indicators is to assign equal weights to each indicator (Bhorat *et al.* 2014).[3] Statistical methods can be incorporated into composite indicators to address issues with equal weights assigned to variables and the multi-dimensionality of poverty (Finn, Leibbrandt & Woolard 2013). A few commonly used statistical methods are MCA, PCA, FA and Totally Fuzzy and Relative (TFR) indices (Alkire *et al*. 2011a, Alkire *et al*. 2011b; Schiel 2012).

MCA and PCA are descriptive techniques that reduce dimensionality while FA makes assumptions about the underlying model that connects the latent variables (Booysen *et al.* 2008). PCA weights are linked to the individual indicator's variance as proportion of total variance, MCA weights are linked to a simple correspondence analysis and FA weights use a common factor approach to the variability in the data. Both PCA and MCA work better with qualitative variables – categorical variables and binary variables, respectively.

While MCA, PCA and FA assign arbitrary weights through statistical processes, TFR tries to assign weights according to the dimensions of poverty which are most experienced by the population (less common deprivations by the population are weighted more). The measure was designed to determine the depth of poverty (degree of poverty) for each household relative to the population and poverty line (Burger *et al*. 2004).

[3] Equal weighting implies all indicator variables have equal importance which may not be the case. In addition, equal weighting does not account for the quality of the variables.

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2.2.2.2 Poverty line

A poverty line utilises cut-off points to distinguish the poor from the non-poor. Poverty lines can either be in monetary or non-monetary terms; any individual who falls below the cut-off point is classified as poor. The biggest drawback of a poverty line is the determination of the cut-off points (Woolard & Leibbrandt 2006), but it falls beyond the scope of this study and will not be discussed further.

Poverty lines can be measured in absolute, relative and subjective terms. First, absolute money-metric poverty lines are fixed and adjusted for inflation. These poverty lines are only concerned with the individual or household irrespective of their social standing. Ravallion (2008) bases the cut-off value of these lines on the cost of basic needs while others have looked at the calorie intake of individuals and households (this is also seen as the amount of income or consumption expenditure needed to ensure a level of calculated energy). This method does have a drawback: the calorie intake of individuals may differ according to demographic characteristics such as age and gender. (Woolard & Leibbrandt 1999).

Relative poverty lines consider the norms of society. It is the income level which separates the poorest proportion of the population from the rest. The relative poverty line compares an individual's living standard to that of the rest of society based on a given society's characteristics. There are two interpretations of those classified as relatively poor (Woolard and Leibbrandt 1999; Haughton and Khandker 2009): (1) the poorest *x*% (e.g., 20%, 40%) of the population is poor; (2) The poor are identified as such if their living standard, as measured by income, is below a percentage of that of their contemporaries (such as half of mean income).

Whilst both absolute and relative poverty lines are objectively determined by an expert of poverty (Ravallion 1992; Booysen *et al.* 2008), subjective poverty lines are opinion-based and question how objective and accurate research is. In addition, the latter poverty lines are based on personal judgements and require individuals' personal opinion and experience to determine what constitutes poverty.

Finally, in most poor countries, money-metric poverty lines are usually measured in expenditure terms which are more reliably reported amongst the poor. Measuring poverty in terms of income is more problematic as income is associated with volatile earnings (e.g., self-

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employment, informal activities and self-reported agricultural activities). In many rich countries, measuring poverty in terms of income is more reliable as income is mainly derived from salaries and wages. Expenditure data suffers less from random irregularities and seasonal patterns compared to income data (expenditure is less likely to be connected to seasonal and weather-related agricultural changes) (Ravallion 1992: 13; Yu 2016: 2).

2.2.2.3 Summary statistics

Summary statistics aggregate the information of the welfare indicator relative to the poverty line. Therefore, the choice a welfare indicator and poverty line forms part of the initial steps to measure poverty. All suitable summary statistics used in poverty analysis need to comply with the four Sen (1976) axioms, namely monotonicity (as the income of the poor increases the poverty index should decrease), population symmetry (if populations who are identical are amalgamated, the index should remain unchanged), transfer (transfer of income from a poor person to any other individual should increase the poverty index) and proportion of poor (as the proportion of poor increases, the poverty index also increases).

Frequently used measures in the literature which comply to most of these axioms are headcount index (proportion of the population who are poor), poverty gap index (examines the degree to which the poor are found below the poverty line) and the squared poverty gap index (examines the severity of poverty based on weights linked to the proportion of the poverty line). These frequently used measures were proposed by Foster, Greer and Thorbecke (1984) and are commonly referred to as the FGT indices (refer to Haughton & Khandker 2009, for detailed discussion).

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2.2.2.4 Time poverty measures

In general, the poverty measures adopt “the more the merrier” approach, where more income, consumption and even assets lead to lower levels of poverty. Unlike these measures, time is a fixed resource, where more time spent on paid and unpaid work could result in less time available for other activities such as leisure and rest. Under standard measures of poverty more time in paid work would decrease income poverty, but when considering time this may lead to more time poverty (Bardasi & Wodon 2010).

Contrary to the discussion of poverty in the previous section, measures of time poverty are not as refined, established and diverse. As of yet, there are no commonly used measures of

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time poverty; most researchers have applied their understanding of time poverty to create similar (because of same theoretical background) yet different measures.

Measures of time poverty can be of both a subjective and objective nature. The former relates to how an individual perceives his/her feelings of time pressure; in contrast, the latter relates to a threshold of time required for leisure, rest or other activities after considering paid work, unpaid work and personal care. To indicate an objective measure of welfare for individuals: the more personal time available (or larger the ratio of personal time to total time), the higher the welfare would be. To indicate the burden of time spent on market and non-market activities, one can examine total work time (SNA plus non-SNA less personal services). Another indicator of burden is the ratio of unpaid to paid work; the larger this ratio, the greater burden of unpaid work is imposed on the individual. Furthermore, time stress can be measured by the number of multiple activities undertaken by the individual (Hirway 2001).

The first measure of time poverty (the most known) investigated is linked to Vickery (1977). It incorporates a time adjustment to the income poverty measure; Vickery (1977) uses estimates of the minimum amount of time needed to complete household tasks (i.e., the absolute threshold approach). These estimates were calculated with the usage of unemployed homemakers' average amount of time spent on household tasks. All time poverty thresholds could be adjusted based on the household composition (number of adults and children). Other time poverty measures have considered thresholds based on some percentage (e.g., 60%) of the median time (Bitman 2002, Bardasi & Wodon 2006, Burchardt 2008, and even time poverty lines by the 2008 Lawson study), that is, the relative threshold approach.

From the discussion above, one can see time poverty in terms of absolute or relative standard. Absolute standard occurs where an actual time of an activity is compared to a discretionary time that would be available to complete/perform the activity (although the discretionary time is based on ad-hoc assumptions), for example, the actual time taken by an individual to clean a house compared to the minimum time required to clean a house. As far as the relative standard is concerned, the thresholds are determined based on the distributions of actual time spent for an activity (for example, comparing time spent on leisure for individual against 50% of the median time of leisure for the population investigated).

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In contrast to the Vickery (1977) critical wage analysis, Harvey and Mukhopadhyay (2007) compute a monetary value for the time deficit (i.e., the time deficit approach). This monetary value is used to adjust the working-poor poverty threshold. It acts as a replacement cost to the minimum market wage rate. The assumption underlying this methodology is that paid work time cannot be exchanged for unpaid work time due to its nature, but unpaid work time can be exchanged for paid work time (one-way perfect substitutability).

Other institutions have developed their own measures of poverty to capture time use; the Levy Economics Institute created a two-dimensional measure termed the Levy Institute Measure of Time and Consumption Poverty (LIMTCP). It takes into account both the necessary consumption expenditures and household production time needed to achieve a minimum standard of living (Kim *et al.* 2014:1; Masterson *et al*. 2014:1). The authors referred to the time-poor who are unaccounted for by standard income poverty measures as the hidden poor.

Similar to LIMCTP (the only difference is that income instead of consumption is measured), the Levy Institute Measure of Time and Income Poverty (LIMTIP) measure incorporates the time needed for a household to produce essential household production for survival with an income linked to the official poverty line. Time deficit would occur when the committed time of an individual is greater than the number of hours in a week. Committed time is the sum of the required weekly hours of personal care, required weekly hours of household production and the actual working hours of the individual.

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Once the time deficits are known for each household, the time deficits are valued (average wage for domestic workers) in terms of income necessary to fill the missing household production with market purchases. It is this valued time deficit which is added to the official poverty line to create the LIMCIP poverty line. Time deficits and LIMCIP poverty lines can be incorporated into four poverty classifications (1) income-poor and time-nonpoor; (2) income-poor and time-poor; (3) income-nonpoor and time-nonpoor and (4) income-nonpoor and time poor.

Other attempts to capture time poverty were conducted by Goodin *et al*. (2008) as well as Davis & You (2011). Goodin *et al*. (2008) considered a time pressure concept to measure discretionary time. They defined time pressure as the time difference between actual time

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spent on these activities and the minimum amount of time necessary. Davis & You (2011) used a cost difference approach to create money-time thresholds for food production (where household production was valued at market rates).

From the earlier discussion in connection with Figure 2.3, any estimation of time poverty would be linked to the valuation of household production. According to Dulaney *et al.* (1992:115), household production is defined as goods and services produced by a household for itself which otherwise can be purchased in the marketplace. There are three main approaches to value household production (Dulaney *et al.* 1992:115; Sharp *et al.* 1998:215-217). The first method, the labour value approach, values the amount of time spent on household production at a market wage. It can be estimated using the opportunity cost approach or average wage approach. The opportunity cost approach calculates each household member's household production based on the wage of a market-employed member. This approach would fail to estimate household production if no market-employed member was present (Devereux & Locay 1992: 400).

Another way to value the wage is to use an average wage of the market activities which represent the household activities undertaken, or to value the time of each household activity at its representative market wage respectively, i.e., task by task (Dulaney *et al.* 1992: 116; Sharp *et al.* 1998: 216). The labour value approach ignores the value added by household's non-labour inputs such as household capital (e.g., washing machines, ovens and kettles). This approach also overestimates the value of household activity if the production process leads to the production of multiple outputs and services (Dulaney *et al.* 1992: 116; Sharp *et al.* 1998: 216). For example, to water and maintain a household garden, an element of leisure is attached to it.

Quah (1987) proposed an alternative approach, namely the contingent valuation approach, to avoid the problems faced by the labour value approach. To quantify the value of household benefits derived through household production, households are asked how much they are willing to pay to prevent the loss of household production. The likely flaw in this approach is the measurement error which can occur because of the subjective nature of the survey or data. Douglass *et al.* (1990) has shown the value-added method to be impractical in household production estimation. This approach relies heavily on the amount of individual's background data available. A comparative statistics approach can be applied in the absence of data

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(calibration model on changes in responses with no actual data needed). Due to the difficulty to explain this method to individuals, forensic economists (economists that apply economic theories within the legal framework) have avoided the application of this method (Sharp *et al.* 1998).

Instead of the valuation of household activities time, one can value the actual household output produced and multiply it by the appropriate market price (sum of all the value added by each input). This is termed the direct output approach or value-added approach; this approach avoids the need to calculate a household wage (valuing labour time) and removes the problem of multiple outputs (joint outputs). Actual goods and services are valued instead of the time expended on them.

One drawback of the above method is that when no market price exists for the household's outputs, it becomes impossible to estimate the shadow price. Even though this approach could be more accurate, the lack of freely available data on household outputs prevents this approach from being conducted. In addition, household data contains very few variables on household output. One of the advantages this method has over the labour value approach is that it avoids the overestimation that occurs with production of multiple outputs.

The focus on market-related improvements[4] can have detrimental effects on household production i.e., being concerned with increased efficiency and providing value for money in privatisation[5] can have negative effects on households. For example, in a hospital where efficiency (reducing costs to reduce hospital bills) leads to shorter stays can increase the cost to households. The time saved from being in a hospital may result in a patient spending more recovery time within their household which could burden those responsible with caregiving within the household (mostly women). These efficiency changes also affect the jobs linked to these services (lower paid jobs with longer working hours to create these cuts in costs) in favour of firm profitability (Elson 2002).

[4] Market-related improvements can relate to anything that improves the market, whether it is increase in production, increases in productivity, or use of new technology. The main concern of the paragraph is the negative impact the improvement will have on household production

[5] Providing value for money in privatisation could relate to the gain in value of paying for a service/product from a company than receiving the good for free or discounted from government

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2.2.3 Issues of time allocation for types of activities

Pollack (1998:8) defines two types of simultaneous activities that take up time: parallel (e.g., chewing gum and walking) and on-call activities (e.g. hanging clothes while caring for a baby). The main difference between the two types of simultaneous activities is that the latter activities are constrained by their location and limited to interruptions (i.e., although both activities occur during the same time, performing one activity would result in the pausing of the other activity or not as much attention given to the other activity). The allotted time for the simultaneous activities either needs to be shared equally (to ensure total time for all activities does not exceed the 24 hours available in a day) or they can each be assigned a time reflective of their true nature (Hirway 2000 suggests the possibility to add weights to each activity according to their importance). Ignoring simultaneous activities can lead to incorrect time poverty calculations and results (if the simultaneous activities are ignored it may reduce leisure or free time and thereby impacting negatively on time poverty results).

Another concern Hirway (2000) highlights is the issue that work time does not reflect other activities of time. For example, they fail to reflect breaks such as lunch or tea. There is also a concern that leisure reported may not be freely chosen but may be forced or situational as in the case with being unemployed.

2.2.4 Extensions to Time Poverty and Household Production

The problem with most labour and time use studies is that sleep can be assumed to be biologically determined (fixed or a set number of hours). To account for sleep in a 24-hour day, the leftover time (time awake) is divided amongst labour, consumption and other activities. Biddle & Hamermesh (1990:923) suggest sleep being flexible is more plausible as it changes weekly and an individual may change his/her sleep because of a change in economic incentives. If decisions on sleep and labour supply are not independent, ignoring sleep would have important consequences on time use in the market and household. Biddle & Hamermesh (1990:933) therefore extend Becker's analysis (Becker 1965) to incorporate sleep, where sleep is a time-consuming commodity which provides utility and efficiency (sleep increasing productivity).

2.3 Theoretical Literature

This section looks at the models and theories on which the discussion of time poverty is based. Section 2.3.1 concentrates on the core models and theories of Becker (1965) and

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Vickery (1977). It also looks at any extensions related to them. Section 2.3.2 provides perspectives on the division of household production according to gender.

2.3.1 Core Theoretical Models and Extensions

The idea of time in household production was first formalised by Becker (1965) who defined household production as a function of market goods and time. Prior to Becker (1965), Mitchell (1912) referred to household production as the "backward art of spending money". The research entailed a comparison of the efficiency to produce goods in the market against the inefficiency of domestic services of the household. Reid (1934) introduced household production in the branch of home economics; the research offered practical advice, some analytical principles and speculation of the future role of females in the household. Walker (1973:7) infers that time-saving technology allows for previously uncompleted tasks to be completed, thereby allowing time for leisure.

Similar to traditional economic theory where individuals maximise utility subject to a budget constraint, the Becker (1965:495) household theory combines individuals into one household. The utility of the household is maximised subject to the same constraints an individual would face under the traditional theory and an added constraint of time (the systematic incorporation of non-working time). The Becker model is explained below (Heckman 2014).

First, a household is assumed to derive utility by producing and consuming a vector of commodities Z, more formerly:

$$Z = (Z_i) \text{ where } i = 1, 2, \ldots, I$$

The commodities are related to various tasks undertaken by the household (e.g., gardening, washing of clothes, eating). Commodities are the inputs of the utility function:

$$U(Z_1, Z_2, \ldots, Z_I) \tag{1}$$

Each Z_i is a function of a vector of goods (X_i) used to produce them and a function time (T_i) which usually is assumed to be scalar (for simplification by Heckman 2014:5) but can also be a vector (originally conceived by Becker (1965:495). Note that if X_i represents a capital good such as washing machine then X_i refers to the services conducted by the good:

$$Z_i = f^{(i)}(X_i, T_i),\ i=1, 2, \ldots, I$$

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(2)

This formulation allows households to both produce and maximise utility. As a result, Z_i depends on the price of its components. Under the assumption $f^{(i)}$ is homogenous of degree of one, scale-invariant price index (π_i) can be constructed for each commodity. The household therefore faces traditional budget constraints and time constraints. Effectively each household faces one constraint once Becker's (1965) assumptions and some simple mathematics are applied. The assumptions of time being a scalar and the price of time (w) being constant across all its applications lead to an individual earning full income:

$$B = wT + V$$

where

$$T = \sum T_i$$

and V is the amount of household's unearned income. Therefore, Z_i covers all activities which utilises time according to the budget constraint:

$$\sum_{i=1}^{I} \pi_i Z_i = wT + V = B \qquad (3)$$

Utility (1) is maximised subject to the vector of commodities (2) and budget constraint (3) which leads to the demands of inputs for X_i and T_i being derived from the demands of Z_i. To some extent, time and good intensities (in producing the commodities) determine the responsiveness of demand for different activities as the price of goods and time changes. In essence, households resemble small factories combining capital goods, raw materials and labour to produce useful commodities and services (Cairncross 1958). Unfortunately, firms and households are not exactly identical, because firms control work time in exchange for commodities, whereas households control market goods and consumption time to create their own utility. Becker (1965:496) suggests that firms and households would be the same if firms are given control over market good and consumption time in exchange for the utility derived.

To adapt the traditional model for developing countries, Singh, Squire and Strauss (1986) model an agricultural staple (to capture farm work) as an additional good in the utility

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function. Time is spent on the following three broad categories of activities: market work, farm work and leisure. Farm work is incorporated via a standard production function. In addition, farm labour is seen as a bought-in input, valued at the market wage rate and is a perfect substitute for market. In essence, farm work captures the idea of household production and is a perfect substitute for market work. The household chooses its farm produce based on maximising profit from farm production. This is followed by household maximising their utility constrained by a budget, dependent on known prices, income from farm, market income and non-labour income.

The household utility model was created to address the abstractness of the Becker (1965) model. It addresses the issues of perfect substitution between household activities and similar market activities found in Becker (1965) and Singh *et al.* (1986) models. The household utility function represents n individuals, non-market time allocation of each individual, l_i and one aggregate consumption good, x:

$$u = u(x, l_1, ..., l_n) \tag{a}$$

There are two budget constraints: income and time. The time budget constraint is:

$$h_i + l_i = T \qquad i=1,\ldots, n \tag{b}$$

where h_i denotes market labour supply and T the total time available

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The income budget constraint is written as:

$$x + \Sigma w_i l_i = Y \quad i = 1, ..., n \tag{c}$$

$$\text{and} \qquad Y \equiv \Sigma Y_i \equiv \Sigma(w_i T + m_i) \qquad i = 1, ..., n \tag{d}$$

where w_i represents the wage rate (differs between individuals), m_i the non-wage income, the price of the consumption good is unity and (d) represents household full income.

Solving above model yields demand functions:

$$x = x_i(w_1, ..., w_n, Y) \tag{e}$$

$$h_i = h_i(w_1, ..., w_n, Y) \quad i = 1, ..., n \tag{f}$$

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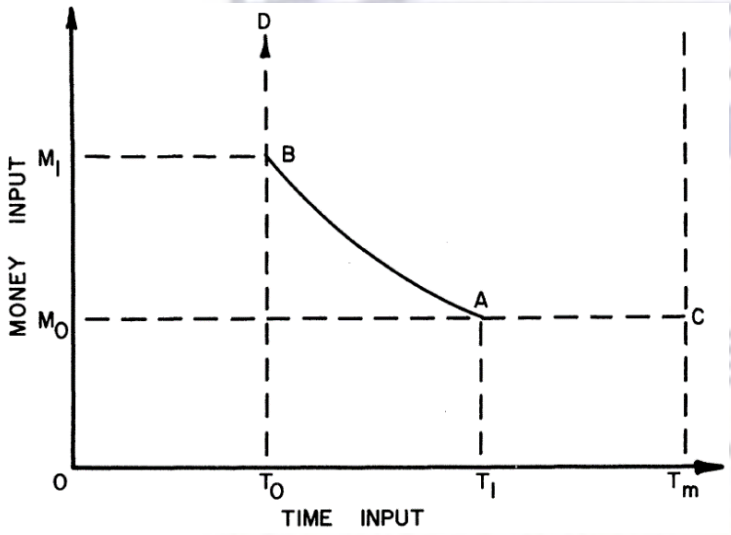
Empirically non-market time is calculated as the difference between market labour supply and each individual's total available time. Leisure is viewed as activities related to own consumption and done for other household member's benefit.

Figure 2.4 is a graphical representation that defines the relationship between income and time poverty by Vickery (1977:28-29) which forms the base on which this study is designed. Vickery (1977) assumes that household has a minimal input of income (M_0) regardless of the amount of time available; the household also has a minimal input of time (T_0) regardless of the amount of income available; T_m represents the maximum number of adult hours available to the household.

Figure 2.4: A poverty threshold for a given household



Source: Vickery (1977:28).

If the household level of time falls below T_0, the household is deemed time poor; similarly, if the household level of income drops below M_0, the household is regarded as income poor. One cannot assume that if a household has the minimum levels of T_0 and M_0 then it is non-poor, as each level of time (or income) equal or in excess of T_0 (or M_0) requires an amount of income (or time) to reach the poverty threshold. For example, for T_0 time, M_1 income is required and for M_0 income, T_1 time is required. CABD then represents the combinations of time and income inputs sufficient for minimal non-poverty. This shape of the curve is unique for each household as it is dependent on the characteristics of each household member.

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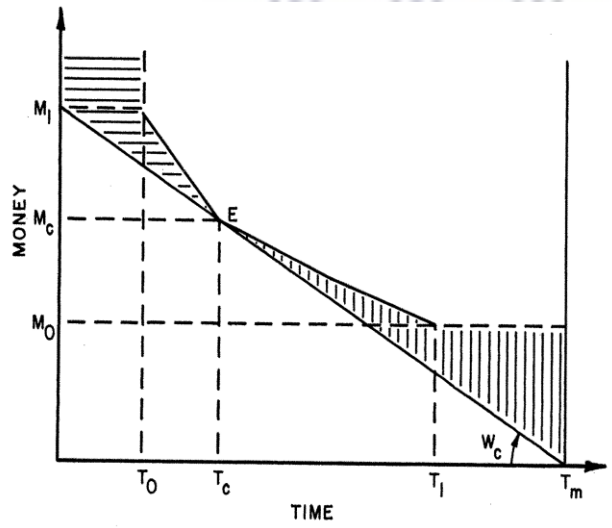
Figure 2.5 expands on the previous figure to introduce the market wage to determine whether the household is income- and time-poor because of their own time allocation or due to factors beyond their control. The figure also highlights those households who are temporarily poor because of short-term constraints linked to their market time (such as an unexpected change in their household demands or being unemployed) or those who will remain in poverty.

Assuming no assets and outside (non-labour) income, a household needs to have wage of W_c (represented by the slope of T_mEM_1) to be on the poverty threshold. At this point E the household will have T_c non-market time, $(T_m - T_c)$ work time and M_c income. If there is only one individual in the household then M_c equals $W_c \times (T_m - T_c)$. A household is involuntary poor if the maximum potential wage is less than W_c and remains in poverty until the composition of the household changes or a change in needs or resources occur. At times due to unemployment or job transition, the actual wage may fall below the maximum potential wage which makes the household temporarily involuntary poor.

Figure 2.5: Critical wage solution for defining the involuntary poor



Source: Vickery (1977:36)

There are three cases where the household observed below the threshold (combined income and poverty) is not involuntary poor.

1) Time poor: the household is associated with too much market time and too little non-market time. This is represented by the shaded area to the left of E where $W \geq W_c$, $T < T_c$ and $M > M_c$. To move above the threshold, the individual needs to work less at their current wage or work the required amount hours at any wage where $W \geq W_c$.

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2) Time rich: the household is associated with too little market time and too much non-market time. This is represented by the shaded area to the right of E where $W \geq W_c$, $T > T_c$ and $M < M_c$. To move above the threshold, the individual needs to work more at their current wage or work the required hours at any wage where $W \geq W_c$.
3) Consumption or investment poor, as the household opts for work at a wage $W < W_c$, even though it has a potential wage $W_p \geq W_c$. The worker needs to work the necessary hours at $W \geq W_c$.

2.3.2 Gender perspective of household production

In the previous section, the theoretical models have shown the inclusion of time to household production. For those non-singular household models, the division of labour in households amongst household members is ignored. From a gender perspective, there are three theoretical perspectives on the process of domestic labour division: the time availability perspective, the relative resource perspective and gender perspective.

First, the time availability perspective proposes that the division of household labour is rationally dependent on the amount of time available for each household member. Hence, the time spent in the market and family composition impacts on the number of hours spent on household production (Bianchi *et al.* 2000; Ilahi 2001).

The relative resource perspective rather argues that the division of labour is related to power relations experienced between men and women (the number of relative resources each family member brings to the relationship). Resources such as education and income can increase the economic contribution to the household resulting in the other partner having to contribute in terms of domestic labour. Therefore, education and income play a role to avoid domestic labour. Traditionally, women are dependent on their husbands' income and therefore lack bargaining power in domestic activities. A second relative resource perspective based on Becker (1991) explains that the division of household's labour concentrates on maximising efficiency and output via specialisation of household members' roles (each member is differently adept at market and non-market work). Higher income and education increase an individual's comparative advantage in market work, leading to less time spent in non-market work.

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Lastly, the gender perspective is representational of gender relations with an emphasis on gender expressions. The role of women is connected to household activities. Women are disadvantaged in the allocation of household work with their activities being defined by the demands of other family members. Women might also set standards of household care that men are unable to meet. (Saqib & Arif 2012; Seymour *et al.* 2017)

2.4 Review of Past Empirical Studies

With regard to the past empirical studies, they are divided into two groups: international studies and local studies. The international studies will be further divided into section 2.4.1.1 and 2.4.1.2. Section 2.4.1.1 looks at studies which measure household production (for GDP) and SNA/non-SNA activities. The SNA/non-SNA highlights the gender differences initially before followed by other individual characteristics and household differences.

Section 2.4.1.2 examines the classification of those who are time-poor by various studies which analyse the relationship between those who are time-poor and income-poor. It also looks at more sophisticated statistical studies (various forms or regressions) which analyse the determinants of time-poverty and income-poverty. Finally, Section 2.4.2 provides coverage on the rare local studies researched. It starts with simple descriptive studies on SNA/non-SNA activities and ends with empirical studies on 2000 TUS data.

2.4.1 International Studies

2.4.1.1 Descriptive studies on non-market production and SNA/non-SNA activities

Studies on non-market production have shown household production to contribute significantly to national production. A USA based study by Devereux & Locay (1992:400) used selected years from 1930 to 1985 and various data sources (Population Survey, Census and Michigan Time Use Survey). The authors found household production to account for 73% of market output in 1930 and this ratio decreased over time to 28% in 1985. Such decline could be attributed to the increase in labour force participation rate of women, rise in the proportion of unmarried women and increase in the number of women without children over time.

Bonke (1992:286) used the Danish Institute of Social Research Time Use Survey for 1987 (supplemented by 1987 Danmarks Statistik data) to compare the household production contribution to GNP in the Netherlands, Denmark and USA. National production was

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estimated to contribute 40-50% of GNP in these countries. The study also found labour market income and household income represented 54% and 38% of the gross national income (GNI) of Denmark, respectively. Since labour market income is taxable, its contribution reduced to less than the contribution of household income. The empirical findings also established that the majority of monetary income and household work was contributed by males and females respectively (Bonke 1992:286-287).

In a developing country context, Mueller (1984) studied the individual contribution to GNI in a rural area (known as Melanesia) in Botswana. For individuals who spent a great amount of time on output activities, only a small fraction of their output contributed to GNI. UNDP (1995) estimated women's unpaid work in developing countries to be half of GDP. Globally, women's output was $11 trillion compared to GDP of $23 trillion.

Using an opportunity cost, replacement and service cost approach to measure household production, Gammage (2010) valued household production based on the 2000 National Survey of Living Conditions (ENCOVI) in Guatemala. Household production was valued between 17% and 25% of GDP and women's contribution to household production being more than double of those of men.

Dulaney *et al.* (1992:120-123) utilised census tract data of 1985, based on 480 Missoula and Montana urban-based households, to compare the labour value and direct output approaches. For most of the output categories (e.g., interior cleaning, exterior cleaning and meal preparation) and overall, the direct output mean estimates exceeded those of the labour value approach (overall by 43%). Under the direct output approach, the authors found that wives contributed the most to households when compared to husbands and their single counterparts. The presence of children further increased the contribution of women (both single and married). One of the major problems associated with their study was the perceived inferior market quality compared to households. This meant the direct output estimates may have understated the value of household output to households.

The most comprehensive study which valued non-market production's (using the value-method) contribution to USA national production was conducted by Graham and Green (1985). Unfortunately, the study limited itself to Caucasian households with employed wives, making it difficult to be applicable for policy purposes (as it is not representative of other

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types of families and demographics). The study also combined household production of husbands and wives, but ignored an individual analysis and any gender differences.

Under the empirical definition of time poverty (based on Figure 2.3), Saqib & Arif (2012) used the 2007 Pakistan Time Use Survey data. On average, men spent approximately four more hours on SNA activities and approximately 4.5 hours less on extended-SNA activities than females. In rural areas, the extended SNA gender time difference was larger and in urban areas the SNA time was larger. When men were employed, their extended SNA time was not affected. However, for females, employment decreased their extended SNA time but by far less than their increase in SNA time (as females' total time increased in committed activities).

Jenkins & O'Leary (1997:155-158) analysed the changes in gender differentials for British citizens, upon analysing the 1974/5 British Broadcasting Corporation Time Use Survey and the 1987 Economic and Social Research Council Social Change and Economic Life Survey. The authors examined changes in minutes per day (m/d) spent on activities across the two surveys according to gender and marital status. For men, the authors found the total work hours (about 474 m/d for market and household) had remained the same across the two surveys but the composition of their total work had changed. The reduction in market work was accompanied by an increase of household work from 20 m/d to 45 m/d. For women, total work hours had slightly increased from 462 m/day to 469 m/day with increase in paid time outweighing the decrease in unpaid hours.

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Comparing the two genders, women's unpaid work time, which was 3.5 times higher than men in the mid-1970s, was only two times higher in 1987 (a large decrease in difference). Bear in mind this study did not take into account the actual monetary value of paid work time between females and men. A decrease in gender difference was also experienced in paid work time, as women's paid work time had increased from a third to half of those of men. The differential in terms of childcare time had also decreased for women who spent initially four times more than men on childcare but later only 2.9 times more; these results indicate the growing importance of a father's role in his children's lives. Also, it could indicate the feminisation of the labour force (moving towards equality in the household) or that childcare is outsourced (paid for by increased household income).Breaking the analysis into marital status, the total amount of work hours for singles fell and those of married couples increased.

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The gender differentials within single people and married couples reduced too, in terms of both work and unpaid work time.

Bianchi *et al.* (2000) utilised time diaries of national studies in the USA for numerous waves of the National Survey of Families and Households in 1965-1995, to explore gender differences in household work. Men experienced an increase but women a decrease in the number of hours of household work during the 30-year period, with the gender difference in household hours almost reduced to zero over the period (women hours decreased more steeply). Moreover, the mean ratio of mean women's hours to mean men's hours dropped from 6.0 to 1.8 over the period.

In another descriptive study of New York families, Walker (1973:8) found the older the homemaker in a childless family, the younger the age of the youngest child, the more children present in a household and a decrease in paid work hours were all associated with a rise of the amount of household work time. Unemployed women spent 5-12 hours daily on household work compared to employed women who spent 4-8 hours, on average. The results did not necessarily mean more household tasks were conducted by unemployed women, as one had no idea on multitasking and efficiency ability of the women in the sample.

In another comparative static study of the USA which used the Panel Study of Income Dynamics (PSID) data, Sharp *et al.* (1998: 223-227) analysed female-headed households (with no adult male members present) and married females. The authors found that an increase in educational attainment led to a decrease of the individual's efficiency in household production. This result could be attributed to education targeting skills needed for market production. Female-headed households (when compared to married females) experienced greater loss to household production when moving to market production. Since diminishing returns exist for education, female-headed households experienced a larger percentage increase in market returns due to them being on average less educated (than married females). Increase in age in turn increased the valued added of female for household production (albeit at a decreasing rate). The age factor could be linked to females who became more skilled or experienced over time, become more involved in valuable types of household production and the decline in physical abilities over time.

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Ilahi (2001), using the 1994 and 1997 LSMS panel of Peru, found women worked 15-20% more than men in total number of work hours (the sum of market and household production), on average. The study also found women's work to be concentrated in household production (accounting for about 70% of total work) and men's work to be concentrated in income-generating activities.

The study by Newman (2001) showed how an increased participation of women in the market affected men's non-market participation. The author used the 1999 quasi-experimental survey data on two districts in Ecuador, namely Cotocachi (treatment group with a new booming flower industry) and Cayambe (control group). The author found employed women (in both regions) had significantly higher total hours of work (market and household) but less paid hours than men. For the married women, the number of household hours increased; if they were employed, their husbands' household hours increased. Married women on average had 358 minutes of household work in Cayambe compared to 292 minutes in Cotocachi (the difference for married women increases between regions when comparing employed women).

Bianchi *et al.* (2000) summarised the key determinants of time spent on household work from numerous household production and time poverty studies. Gender was seen as contributing to the major difference in time on household work despite the gender gap narrowing over the recent years. Employment for both genders had decreased their household work time while an increase in education for men had increased their time on market work. Women found themselves contributing to the majority of core household tasks (cooking, childcare and cleaning). The presence of children increased time spent on household activities for either gender. They study also analysed the demographic and compositional shifts, which led to a decrease in unpaid work for women. Factors such as an increase in employment for women and decrease for men, marriage at an older age, increase likelihood of divorce, fewer children for men and women led to decrease in time spent on unpaid work.

Cha & Song (2016) conducted a study on the role of fathers' time within the household according to their education levels. The authors used the 2009 Korean Time Use Survey and considered married couples only for the analysis. The study found that fathers' educational attainment had a positive impact on childcare and domestic time (this could be attributed to educated fathers sleeping on average less than their less educated counterparts), whereas their

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income (measured as the total proportion of household income) and age had negative impact on childcare time. As in the case of fathers, educated mothers spent on average an additional two to four hours on childcare and domestic work respectively than their less educated counterparts. Mothers' education and childcare time also positively affected the father's childcare time. Overall, the empirical findings add to the literature on fathers' time use studies as almost all other studies around fathers were conducted on Western societies.

Dermott & Pomati (2016:131-137) analysed time use for parents' activities and used the Poverty and Social Exclusion in the UK (PSE) for March and December 2012. They found no time pressure effects on parental activities (parents felt they were not pressed for time when undertaking direct parent-child activities like reading with children). Education and income affected specific parental activities differently. For example, highly educated parents were more likely to read and do homework with their children but less likely to watch television and have a meal with their children (a relative risk ratio approach was applied). Their results indicated that the level of income and education did not necessarily reduce the number of parental activities but more likely the composition of parental activities.

Numerous household compositional and demographic factors played a role in changes in household production. An example of household compositional factor was the amount of income which was associated with two common beliefs regarding its impact of household production. The first and most common economic belief, opportunity costs, says that those with high incomes were more likely to choose to work rather than devoting their time to household activities as it was too expensive to forgo the income earned in the market (Bittman *et al.* 2003). The second belief, referred to as the exchange hypothesis by Lundberg & Pollak (1996), analysed couples by dividing their family roles according to income; the partner who earned less (per hour) dedicated his/her time to household activity while the partner who earned more income dedicated his/her time to market work. Education was also related to income, as parents who were highly educated usually earn more which allows them to outsource their unpaid work (such as house maintenance and cleaning) and devote more of their time to childcare development, as opposed to uneducated parents who were unable to pay for time-saving services (England & Srivastava 2013).

Cross-couple effects also affect household activities according to Cha & Song (2016) as couples make joint time-management decisions. It was reported by Esping-Andersen (2011)

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if both parents were highly educated, their values and preferences would align for children, were more likely to pool their resources and be more actively present in their children's lives.

Ilahi & Grimard (2000) examined the effects of infrastructure improvements on household production efficiency increases in Pakistan. They applied Heckprobit and Tobit econometric models to the 1991 Pakistan Integrated Household Survey (PIHS). The authors were concerned how quality and quantity of infrastructure (water infrastructure was the main focus) affected the time women allocate to various activities (e.g., market, water collection and leisure) at both household and community levels. Improvements in public water infrastructure decreased the time women spent collecting water (there was some substitution between chores and market work). In addition, with these improvements, women had more time available on income-generating activities. Households which invested in private infrastructure reduced the total work burden of females, but it did not lead to increased market work for females. Ilahi & Grimard (2000) postulated further that improvements in water supply increased quality of water, thereby leading to possible health improvements. Assuming children also assisted in water collection, improvements in water supply then freed up children's time to invest in their human capital.

2.4.1.2 Empirical studies on time poverty

As already discussed in Section 2.2.2.4, in general, there are three commonly adopted approaches to examine time poverty: absolute threshold, relative threshold and time deficit approaches. The absolute threshold approach distinguishes an exact time poverty line while the relative threshold is based on a proportion of a particular time variable (e.g., 60% of median free time); lastly, the time deficit approach analyses whether an individual's time spent on household tasks differs from the required time on these tasks.

Absolute threshold approach

The time poverty line analysis on 2007 Pakistan Time Use Survey data by Saqib & Arif (2012) used several different time poverty lines. Their main time poverty line was based on 63 hours a week spent on committed activities (SNA and extended SNA); this equates to an individual being time poor if they spent more than 10.5 hours a day (over six days of the week) on committed activities. The lower and upper bound time poverty lines were set at 9 and 12 hours per day, respectively. For all poverty lines, females (for entire sample) were more likely than males to be time poor.

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Ribeiro & Marinho (2012) conducted a time poverty analysis on the 2009 Brazil National Household Sampling Survey (PNAD). Time poverty status was determined by comparing an individual's total work hours (paid work, unpaid work and commuting time) against the pre-determined absolute time poverty line of 64 hours a week (by adapting time poverty measures into FGT approaches). In urban areas, the shares of time-poor males and females were 12.1% and 30.7% respectively (20.2% overall). The corresponding proportions were 11.7% and 25.8% (17.1% overall) in rural areas. As was the case with female adults, girls were more likely to be time-poor than boys in all regions. A deeper approach into the intensity of time poverty (average deficit of time in relation to the poverty line for the entire sample) found that, overall, 3% of adults to be intensely time-poor (4.7% females and 17% males). The most vulnerable group was urban girls whose time poverty intensity rate was 7.8%.

Based on the core work of Vickery (1977), Arora (2015) utilises a time poverty line of 12 hours per day for the 2013 Gendered Poverty in Rural Mozambique Survey. Accounting for total work time on primary activities, the poverty headcount reveals 49.5% of women were time-poor, while only 8.3% of men were time-poor. Accounting total work time on simultaneous activities, the headcounts increased by 5.1% for females but remained the same for men. The probit regressions revealed men were significantly less likely than females to be time-poor, the presence of an additional child decreased time poverty likelihood (as kids assisted in household production), an increase in household size increased the probability of time poverty, while asset ownership variables had no significant effects on the time poverty.

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The logit econometric model of Ribeiro & Marinho (2012) found that educational attainment had a significant impact on time poverty likelihood. The study revealed that as income increased (associated with intense job market activity), household members becoming older, a decrease in number of household members (sharing of household tasks), lower educational attainment (associated with lower productivity), being female, Afro-Brazilian, multi-racial, indigenous and living in urban areas, all increased the probability of a household member becoming time-poor. Nonetheless, the presence of an additional child under five years in the household reduced time poverty probability, thus conforms to the findings of Arora (2005).

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Relative threshold approach

Bardasi & Wodon (2006) converted standard traditional concepts and techniques used in income poverty (related to Foster *et al*. 1984, i.e., headcount index, poverty gap and poverty gap squared) to time poverty. They applied these techniques to the 2002-2003 Guinea Household Survey (EIBEP). Based on the total individual work hour distribution, the authors derived two relative time poverty lines: a lower threshold of 1.5 times the median working hours and a higher threshold of two times the median working hours (these thresholds were calculated separately for children and working-age population). The working-age population poverty lines were 70.5 and 94 hours for each threshold, respectively. Using the lower threshold, the authors found that 18.8% of individuals were time-poor, women were more likely to be time-poor, residence in rural areas increased the time poverty likelihood for women, whereas residence in an urban area resulted in greater time poverty likelihood for men. Highly similar findings were observed using the higher threshold.

Bardasi & Wodon (2010) extended their analysis on the EIBEP data by considering an even lower bounded time poverty line of 50 hours and some additional consumption constraints. The time poverty headcount rate on adult women was observed to be 50.3% using the new lower bound and 24.1% when using the older lower bound (for girls it was 10.8% and 46.4% respectively). The above poverty rates of females exceeded those of males and other FGT adjusted measures. Poverty rates decreased when adding their consumption restraint (which was designed to capture consumption poverty as work hours are reduced), although the difference between gender groups increased. Furthermore, the probit regressions revealed that older individuals were more likely to be time-poor (except the very old), women were 3% more likely to be time-poor than males (it increased to 10% in rural areas), married women were 13% more likely to be time-poor than single women, and those with higher educational attainment were significantly less likely to be time-poor.

Similar to Bardasi & Wodon (2006), Gammage (2010) constructed the time poverty line between 1.5 and two times the median total hours worked (set at 12 hours for the 2000 ENCOVI). Men experienced less time poverty than females – time poverty rate was 15% for males and 33% for females. Moreover, those who spoke an indigenous language at home or lived in urban areas were significantly more likely to be time-poor than their counterparts. Gammage (2010) also explored the relationship of time poverty and income poverty, by conducting probit analysis on those who were both time- and income-poor. The regression

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results indicated that individuals who had more education or had unemployed working-age household members or had over-65-year-old household members present were less likely to be time- and income-poor. Individuals who were married or had children under the age of 7 years old were more likely to be both income- and time-poor.

Chatzitheochari & Arber (2012) applied a unique relative time poverty analysis using the 2000 UK Time Use Survey data, by breaking it into weekday and weekend analysis; two unique time poverty lines set at 60% of the median free time (residual after removing paid work, unpaid work and personal care) were created. For the weekday category using a time poverty threshold of 110 minutes (median free time was 190 minutes), the time poverty rate was similar for both genders (around 20%). For weekends using a time poverty threshold of 220 minutes (median free time was 360 minutes), the authors found that female time poverty likelihood exceeded that of males by almost six percentage points (25.2% versus 19.4%).

Examining the Chatzitheochari & Arber (2012) study further, the results of the weekday logistic regression[6] found women closer to the age of retirement, individuals who were not whites, those with fewer than seven paid work hours, men who worked shifts in unsocial hours, households who had a child younger than two years old or married women were significantly more likely to be identified as time poor. On the other hand, regarding the weekend regression[7], those who worked more than four hours on a weekend, men who worked shifts in unsocial hours, men who had children younger than two years old, women who had children less than nine years old and were between 36 and 55 years (if one did not account of marriage and children) were significantly more likely to be time poor.

Metz & Rathjen (2014a), using data from the German Socio-Economic Panel (SOEC) and German Time Use Study, proposed a new measure called the "Two Dimensional Minimum Poverty Gap" (2DGAP)[8] to capture the multi-dimensionality of poverty. It was both an index and graphical approach, which looked at the individuals' position (distance/gap) from a pre-defined poverty threshold. It was designed to propose the quickest route to remove oneself from multi-dimensionality of poverty. The authors incorporated personal leisure time to capture the time dimension for the poverty index. They also constructed income and time

[6] The study considered weekday time diary data only, that is, individuals recorded in their diaries one 24-hour weekday and one 24-hour weekend day.
[7] Again, only weekend time diary data was considered.
[8] This approach calculates the shortest route to escape multidimensional poverty.

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poverty lines at 60% of median net equivalent incomes (793.55 euros per monthly household income) and genuine personal leisure time (186 minutes per day) respectively.

Concentrating on the dimension of time, the authors found 47.4% individuals of the sample to be poor. Under the multi-dimensional approach (strong axiom focus) they identified 49.7% individuals as poor. Under the other multi-dimensional approach (weak axiom focus, allowing for substitution between poverty dimensions also above the threshold) they found 12.2% to be poor. Furthermore, under their 2DGAP (mean minimum approach) methodology, on average 26 euros and slightly more than one extra hour was needed to escape poverty. Under the other 2DGAP (income deficits not assigned to compensate leisure approach) methodology, on average 47 Euros (for a household per month) and slightly less than one extra hour per day was needed to escape poverty. Under the last 2DGAP (median minimum) methodology, on average 11 Euros per monthly household income and 43 minutes per day was needed to escape poverty.

In a study on the determinants of time poverty, Lawson (2007) utilised the 2002 Lesotho Bureaus of Statistics by classifying explanatory variables into socio-economic (e.g., education and marriage) and policy/infrastructure variables (e.g. distance to water source and nearest public transport). Their time poverty lines were based on the same poverty lines constructed by Bardasi & Wodon (2006) discussed earlier. The descriptive statistics derived by Lawson (2007) revealed that men were on average more time-poor than females, those aged 25-44 years were relatively more time-poor, female-headed households were more time-poor than male-headed households, and the incidence of time poverty increased up to the level of secondary schooling before a downward trend took place. Lawson (2007) also found that individuals residing in rural areas spent longer time to travel to health centres and primary schools, whereas females were found to travel longer distances for health care. This increase in time spent travelling for health care and schools coincided with a higher time poverty probability.

In the same study, Lawson (2007) moved on to conduct multivariate econometric analysis (five probit regressions were conducted on the samples of all adults, males, females, males-headed households and female-headed households) and found that men were significantly more time-poor than females, whilst the infrastructure explanatory variables were associated with the correct predicted sign and were statistically significant. For instance, for female

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individuals spending more than 30 minutes to the nearest source of drinking water, time poverty likelihood also increased. The largest probability increase in time poverty was experienced when individuals spent more than an hour to access the nearest public transport.

Kalenkoski *et al*. (2011) conducted a multivariate regression analysis with the American Time Use Survey (ATUS) data, by determining the variables which correlated with discretionary time (free time available after removing necessary activities like sleep and committed activities like paid and unpaid work) and time poverty likelihood. Using the time poverty line of 60% of the median discretionary time for various subgroups, the authors found an additional child to a household decreased discretionary time available and increased the probability of time poverty. They too found that a change in the number of adults had no significant effects on time poverty incidence. The factor which influenced time poverty and discretionary time most was paid work. Relating income poverty and time poverty, Kalenkoski *et al*. (2011) found only 2.18% of all individuals in the weighted sample were both time- and income-poor. Interestingly, 18.60% of the income-poor were time-poor, 21.06% of those not income-poor were time-poor while 18.16% of people with unreported income were time-poor. In addition, the time poverty probit regression results revealed income to have no effect on time poverty.

Saqib & Arif (2012) conducted logistic regression to study the determinants of time poverty. Their study was based on the time poverty line at 1.5 times the median time spent on SNA and extended SNA activities, as adopted by the Bardasi and Wodon (2006) as well as the Lawson (2007) studies. In their full model (entire sample), the authors found those employed, being female, increase in age (at a decreasing rate), being married, having children under seven years, living in an urban area and not having Matric or higher in education increased one's time poverty probability. These finding were similar to their descriptive findings mentioned earlier.

Metz & Rathjen (2014b) used the same data and classified someone as time poor if his/her genuine leisure[9] time was below 60% of the median personal genuine time. The authors first found women were more likely to be income-poor, time-poor and multi-dimensional poor (time and income were connected in this measure), before deriving that multi-dimensional

[9] See Metz & Rathjen (2014b) for the definition of genuine leisure.

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poverty and income poverty likelihood increased as the number of children in the households increased (regardless of marital status). The presence of younger children under the age of six years also increased these poverty estimates. The result was expected as children required income and time to be raised. The authors also conducted multinomial logistic regressions which revealed being female was associated with increased probability of time poverty but not income poverty. Education had no significant impact on likelihood of poverty of any kind but being an entrepreneur, having children or having bad health increased the probability of being multi-dimensional poor.

Based on previous relative threshold studies, Noh and Kim (2015) defined an individual as time-poor if their total working time exceeds 150% of the median total working time. Based on the 2004 KTUS data, they found the time poverty rates of men and women to be 11.4% and 22.4% respectively, while in 2009 the respective rates increased to 13.6% and 23%. The ANOVA analysis revealed female house owners to be three time more likely to be time-poor.

Orkoh *et al.* (2020), a very recent study, examined data from the 1998/99, 2008/09 and 2012/13 Ghana Living Standard Survey. Their recursive bivariate model was designed to address the endogenous dependent variables (binary variables of income and time poverty). Time poverty line was estimated at 1.5 (lower bound) to two (upper bound) times the median paid and unpaid hours (called contracted hours). Based on the lower bound poverty time (the focus of their study), time poverty probability was higher for individuals with no education or basic education, for men who were income- or consumption-poor than those who were not, and for consumption-poor women than those who were not. For the 1998/99 survey, being employed, income-poor or consumption-poor decreased the time poverty likelihood; however, the income and consumption poverty findings did not hold true for women. Also, an increase in household size negatively affected time poverty. For the overall sample and male sample, the authors found that there was a trade-off between income and time poverty. Nonetheless, for females there seemed to be some evidence to the contrary.

Time deficit approach

One study on time poverty and income poverty which involved the LIMCIP measure was conducted by Antonopoulos *et al.* (2012a & 2012b) on Argentina, Chile and Mexico. When calculating income-poverty lines adjusted for time-deficits (the values for their poverty thresholds was unfortunately not clearly revealed in the study), the authors found that there

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were about 5-9% (Argentina 5%, Chile 7% and Mexico 9%) hidden poor (of the total population) excluded by the official income-poor measures of these countries. The majority of the hidden poor existed in households with at least one employed member where total household income was not enough to compensate for time deficits (working poor households). For Argentina, 3% of the population was income-poor and time-poor; the corresponding proportions were 6% for Chile and 15% for Mexico.

Antonopoulos *et al.* (2012a & 2012b) also found the ratio of married women's household time to married men's household time was larger compared to the entire sample. Furthermore, they found support for the theoretical explanations on the division of labour as mentioned earlier. Concerning the time perspective, children and employment affected the amount of household work. An increase in the number of hours wives worked outside the household increased the amount of household work the husbands did, and vice versa. In terms of the relative resource perspective, wives who had a higher education than their husbands did less household work compared to uneducated wives. Wives who earned more income than their husbands also performed relatively less household work. Concerning the gender perspective, wives' housework hours in an egalitarian household were less than those from a traditional household.

In the study by Harvey & Mukhopadhyay (2007), they used the 1988 Canadian General Social Survey data to construct a time-adjusted poverty line by calculating money equivalents to time deficits. Time deficit is present when an individual's paid work time exceeds the time available for work and leisure less the minimum time for household tasks and free time. Upon analysing both single- and dual-parent households, the authors found that single-parent households with the presence of children suffered time deficits compared to dual-parent households (also with children). The time adjusted poverty line ranged between $367.89 per month for a single-parent family with one child and $569.13 per month for dual-parent family with at least children; the authors found that only 5.3% of single employed parents were income- or time-poor, whereas 77.5% of dual-parent families were neither income- or time-poor.

Studies using other approaches

Kim (2016: 238-253) examined the evolutionary aspect of poverty due to time with respect to six poverty indicators, namely economic resources, health, employment, housing, durable

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goods and social capital (see Kim (2016: 239) for further breakdown of these indicators). By examining the 1991-2008 British Household Panel Survey data, the author derived the factor loadings (weightings) of each indicator. Economic resources carried the greatest weight for the 13-year period except in 1996. This provided support for an economic resource approach being a common method used in poverty analyses. The health indicator carried quite a large weight too, indicating the need for a more multi-dimensional approach to poverty analyses. The social environment indicator seemed to be changing always as the rankings of poverty indicators (based on their weights) changed from year to year.

Rupert *et al*. (2000) investigated the inclusion of home production into the standard labour model and its effect on the measured elasticity of substitution between wages and paid market work. The authors conjectured the inclusion of household production would significantly increase predictions of the change of hours as a result of wage changes. The authors used the data from the 1965-1966 American's Use of Time, 1975-1976 Time Use Longitudinal Panel Study and 1981 Time Use Longitudinal Panel Study to test their theory, and found that intertemporal elasticity of substitution almost doubled. For every specification analysed, elasticities were larger when including household production. The increases were significant and adhered to theory (correct sign of the elasticity estimates).

In the study by Bianchi *et al.* (2000), the OLS regressions found support for two theoretical explanations of the division of labour. Regarding the time perspective, both genders spent significantly less hours on household work when they were employed (regardless whether they worked full-time or part-time) than unemployed men and women. Concerning the gender perspective, being married significantly increased household work time for women (approximately a five-hour increase) but not in the case of men. The authors also highlighted the decrease in household work over the years was more rapid for those who had more time available (e.g. the unemployed).

In another study of determinants of time use, Ilahi (2001) considered the effects of sickness, unemployment, the provision of water and energy and other factors which affected time use by gender. The author's main concern was whether women were unfairly burdened in total workload and how government service delivery changes, sickness and unexpected unemployment affected men and women time use differently. Using data from the 1994 and 1997 LSMS panel of Peru, the Generalised Least Squares estimation method was used to

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examine the proportions of time allocated to various activities. It was found that sickness had no significant effect on workload for both genders, albeit the composition of the workload was changed: women were more likely to tend to the sick whereas men to income-related activities. There were both direct (purchase medication) and indirect costs (caring for sick and completing their tasks) associated with sickness. Surprisingly, a spouse's unemployment increased the partner's work burden which resulted in the couple seeking self-employment activities to handle unemployment. Finally, improvements of water and energy infrastructure at household level reduced both genders' work burden.

In a more complex study on unpaid work in the United Kingdom, Jenkins & O'Leary (1997:158-163) decomposed the change in domestic work into its weighted sum of coefficient changes (how the relationship between personal characteristics and time allocation has changed, or the change in β) and compositional changes (how the distribution of characteristics of the population has changed, or the change in mean of Xs). For single and married men, the increase in domestic work was more often attributed to coefficient changes than the compositional changes, most notably in age, increase in number of children and the proportion working full-time. For single females, the decrease in domestic work was unclear as it depended on the value of the parameter chosen in the model. For married women the increase in domestic time was related to coefficient changes (mostly child related ones), but the changes were offset by the changing group characteristics (i.e. the reduction in the average number of children in households, the proportion of younger children and the proportion of paid work).

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Sonoda (2014) used a modified disequilibrium model by analysing data from the 2002 Chinese Household Income Project Survey. The study focused on factors which caused male household heads to participate in market work. The main factors which decreased market participation were as follows: decrease in market wages, increase in household size, increase in the number of adult members (besides having a spouse), presence of fewer children (meaning less need to see to costs of raising children), increase in profitability of farming and increase in farm production of essential daily food products (such as diary and vegetables).

The Newman (2001) study further analysed the factors which decreased household work and increased paid work time for women. The author used the Heckman self-selection model as well as Tobit and Censored Least Absolute Deviation (CLAD) models. It was found that

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household work decreased when a man believed a woman's primary role was to take care of the home (as ratio of females to males increases), household size increased and the number of children decreased. In contrast, an increase in human capital, age (at a decreasing rate), educational attainment and number of children as well as a decrease in household size (which was used to represent economies of scale) all led to increase in paid work time.

Short & Fenning (1996), using panel data from the 1989 and 1991 China Health and Nutrition Survey (CHNS), tested the idea that households who were involved in household production might be larger and more complex than other households. Such idea was linked to the two main theories of Croll (1987 & 1988): firstly, larger or extended households were perhaps better equipped to engage in household production. Secondly, those involved in household production were more likely to grow larger in size. These theories are dependent on the household's ability to recruit family members as workers and household production sustained larger/extended households (extended household refers to presence of in-laws).

Short & Fenning (1996) moved on to conduct logistic regressions; they found that in both urban and rural areas, for households involving in household production, the larger its size and the larger the proportion of households present in a community, the more likely they remained in household production. Household extension[10] was insignificant in affecting household production. Testing the reverse of the relationship, the authors found that household production did not affect its size or extension. The study concluded that larger household sizes allowed households to diversify and adjust to current economic conditions and new opportunities that might arise as household production would require some minimum level of labour power (either in work hours or number of labourers).

Another interesting notion of time poverty was discussed in Hamermesh & Lee (2005). They introduced a concept called "time stress" which reflects the scarcity of resources in time and goods. In a growing economy, the constraint of goods would diminish over time and the constraint of time would not. The presence of more goods would increase time stress as these two constraints (time and goods) are not direct substitutes. Time stress captures the state of mind which is present when time is insufficient to complete selected tasks. The authors

[10] Extension refers to the following: (1) married couple with at least one parent present or (2) two siblings are present with at least one having a married partner present or (3) another relative or non-relative is present.

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adopted a household utility approach in analysing the determinants of time stress. Conducting a bivariate probit analysis using datasets from four countries (1999 Korean Time Use Study, 2001 Household, Income and Labour Dynamics in Australia, 2002 German Socio-economic Panel and 2003 U.S Panel Study of Income Dynamics), they found time stress decreased as earnings decreased. Also they found time stress increased for both genders when household members full earning increased, additional hours of market work increased and time on household production increased (last determinant is applicable for women only).

2.4.2 Local Studies

Having reviewed the recent international empirical studies, there are some studies on time use and time poverty in South Africa, but only few studies, e.g. Kizilirmak & Memis (2009) as well as Antonopoulos & Memis (2010) that went beyond a descriptive approach. However, all studies only used the 2000 TUS data set, unless stated otherwise. This section is divided into three sub-sections: studies which are highly descriptive in nature, those adopting more sophisticated techniques (e.g., those who utilised econometric analysis) to conduct deeper empirical analysis, and lastly studies which specifically examined time poverty.

2.4.2.1 Highly descriptive studies on time use

First, the two StatsSA (2001 & 2013) studies merely adopted a descriptive approach to highlight the time spent on various categories (e.g. SNA and non-SNA production and its divisions) by gender, population group, economic activity and age cohort. The empirical findings implied that women were more likely to be time-poor as they spent longer time on average on unpaid work activities. Both StatsSA studies did not conduct detailed statistical and econometric analysis on time poverty. There was also no comparison between the two waves of TUS data.

StatsSA (2001) found men to spend more of the day in paid work compared to females (females were more involved in household maintenance and caring of household members). This result could be attributed to males participating more in SNA production and females in non-SNA production (there was no significant gender difference in time spent on non-productive activities). The gender difference remained in place even after differences in age, race, employment status and income were controlled for. The lower income earned and more additional adults present in the household led to increase in the amount of household work

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women performed. When women were unemployed, they performed a tremendous volume of household work compared to both employed and economically inactive women.

Abdourahman (2010) used the same dataset as StatsSA (2001) and found that women's non-market contribution in 2000 was double of that of males. In addition, women aged 19-65 years at the time of survey spent 215 minutes on average on unpaid work (it was 84 minutes for males). Women also enjoyed 30-40% less personal and leisure time than males.

The same dataset was explored by Wittenberg (2005) who provided a descriptive outlook on how young South Africans (20 years and younger) spent their time in a normal day. Wittenberg (2005) estimated young South Africans spent on average three hours a day at school (averaged over seven days), 1.5 hours on household work, more time on informal work than formal work and 11 hours on personal care. School attendance was lowest for Africans and those from non-urban formal areas. Females and Africans spent more time on household chores before school compared with males and other race groups, whereas males and Africans spent the least amount of time on homework.

The 2013 StatsSA findings (using the 2010 TUS data) were similar to those derived in their 2001 study. Again, it was found that men were more involved in SNA production and females in non-SNA production even when age, employment status, income and education were controlled for. In addition, married women spent more time in non-SNA production than single women. The presence of children in households decreased the amount of time spent in SNA production in both genders. Women performed more household work than men even as the number of household activities increased. Furthermore, women were also more likely to collect water and fuel irrespective of the distance to the nearest water source.

The 2010 TUS data was also used by Bhorat *et al.* (2020) to look at how different occupations were impacted by COVID-19 virus. In preventing the spread of COVID-19, many countries implemented a nationwide lockdown and only allowed "essential workers" from specific occupations to work normally. Non-essential workers (about two-thirds of the workforce) were legally ordered to operate from home if possible or simply could not work at all during specific phases of the lockdown. The lockdown would in essence reduce SNA production or paid work time, thereby allowing more time in non-market work, learning, leisure and selfcare activities. The authors found that (using TUS 2010 data), occupations

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involving more physical contact were associated with lower potential to work from home. In particular, the health sector was associated with the greatest physical interaction. The study unfortunately did not use the data to investigate time poverty at all.

Apps (2002) used the 2000 TUS and EMV98 (Nicaraguan 1998 Living Standards and Measurement Survey) data, and provided evidence for gender differences on time spent on paid and unpaid activities at adult and child levels. Both datasets revealed women to work longer total work hours (the sum of paid and unpaid hours), enjoy less leisure and consume fewer normal goods than men, on average. For children, the distinction between boys and girls was noticeable after primary school; girls were found to perform more primary care activities and boys were more likely to pursue further education. The TUS dataset revealed women to work (SNA only) 20% more than men whereas girls worked 50% more than boys. Apps (2000) also suggested care needed to be taken when measuring leisure activity as non-SNA could be viewed as leisure only. Another concern was that any inequality measure could be understated, because the poor were more likely to be inefficient at using non-market time productively while the rich individuals were more likely to supplement their non-market production with suitable or close market substitutes.

In a study on developing and developed countries time use surveys: Canada (1986,1992 and 1998), India (1998/1999), Israel (1991/1992, New Zealand (1998/1999), Palestine (1999/2000), South Africa (2000 TUS) and Netherlands (1995 and 2000), Gross & Swirski (2002) focused on paid labour, unpaid labour, total workload, domestic responsibilities (household maintenance and care work) and non-productive activities. For each country, the authors found that women participated in more unpaid labour than men. Women also performed the majority of household tasks (domestic responsibilities) regardless of their employment status. Focusing on South Africa, women spent 4% more of their daily time on productive (unpaid and paid) activities compared to men. This difference rose to 9% when unpaid activities were considered only.

2.4.2.2 Intermediate studies on time use

Kizilirmak & Memis (2009) analysed the 2000 TUS data to highlight the unpaid work burden experienced by the poor, and found women borne the largest burden. In the descriptive analysis, the authors found that income poverty was associated with more time spent by women on unpaid work but less time spent on paid work; no significant effects were found

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for men. The economically inactive and unemployed were more likely to spend time on unpaid work but less time on paid work. The traditional division of women being more likely to engage in unpaid work and men in paid work was confirmed by the significance of the marriage variable. For women, the likelihood of more time spent on unpaid work increased as the number of children under the age of five also increased. In the multivariate econometric analysis, the authors found women from poor households were more likely to spend their time on unpaid work (specifically water and fuel collection). For men, only their social care time was significantly affected by income poverty which suggested women were unfairly burdened in poor households.

In a short study, Wittenberg (2009) examined how working and private leisure were impacted by the relationship between household members. Using the 2000 TUS data, the author constructed a relationship variable based on Hamilton's genetic relatedness measure. The relationship variable significantly impacted on time spent working; close relationships were linked to higher working times (in order to support their households). The empirical analysis revealed time spent working increased with age before declining from 15 years old onwards, while men had less working time than females but higher private leisure.

One of the few empirical studies on 2010 TUS data was led by Posel & Graspa (2017). Similar to Wittenberg (2005), they focused on youth (10-17 years old) attending school. Descriptive statistics revealed large difference in schooling outcomes and socio-economic conditions (Africans had the worst of these categories). The Tobit regression analysis highlighted racial differences amongst the youth: Africans spent significantly less time on learning outside normal schooling hours and spent more time traveling to school, as well as on household and production work. Like previous studies, the gender division was present (females spent less time on learning and personal care but more time on household work).

Oosthuizen (2018) applied a different approach in studying 2010 TUS data, by incorporating wage rates from pooled 2010 Quarterly Labour Force Surveys and gender-disaggregated National Transfer Accounts (NTA). Using NTA methodology, Oosthuizen (2018) estimated household production at 27.3% of GDP in 2010[11], three-quarters of which were contributed by women. Also, most of consumption was contributed by non-market services (child care

[11] Most of the technical calculations occurred in the derivation of the variables needed to estimate household production and GDP. Please refer to Oosthuizen (2018) for further information.

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and consumption by infants and children). The study further analysed the life cycle contribution of various age groups and gender: females earned significantly less than males between the ages of 40 and 60 years old, but their unpaid services can significantly account for their decreased earnings contribution to GDP.

Lastly, for the two doctoral dissertations which analysed the 2010 TUS data, Makaluza (2019) analysed the time allocation of active job search, while Louw (2019) compared the unpaid care work time for older adults (more than 60 years old) between urban and rural areas. In the 2019 Makaluza study, the 2010 fourth quarter Quarterly Labour Force Survey (QLFS) was compared to the 2010 TUS using a two-sample proportional test and Wilcoxon rank-sum test; the datasets were similar, except when the labour force indicators were considered (e.g. significant large differences existed for the labour force absorption rate and labour force participation rate but none for the narrow unemployment rate). It was concluded both data samples appeared to be drawn from the same population.

The author found that job search was infrequent but intensively entered into (job searching does not happen often but once the process was initiated, lots of time is spent job searching). Having a partner and being unemployed (from a low-income household) increased the participation and duration of job search, while individuals who took care of household member and children were associated with a low participation and duration of job search (since women were more likely to take care of household members and children, they were the ones more likely to suffer from attaining job employment).

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Louw (2019) exposed that unpaid work and unpaid care differences between adults were negligible between urban and rural areas but significantly large when considering provinces (e.g. Limpopo had the largest difference when compared to other provinces). Age cohort 60-65 years and women spent more time on unpaid work than older age cohorts and men (these differences were proven to be insignificant upon further investigation).

2.4.2.3 Time poverty studies

Antonopoulos & Memis (2010) is a very rare study using the 2000 TUS to investigate time poverty by applying the modified Harvey and Mukhopadhyay (2007) approach. Based on the time deficits calculated and income poverty status conducted for different types of households, households were classified into four categories: income-poor and time deprived

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(PTD), not income-poor and time deprived (NPTD), income-poor and not time deprived (PNTD), not income-poor and not time deprived (NPNTD). Older female Africans, living in a single-adult home in former homelands with the presence of at least two child members were significantly more likely to be PTD. In total, 10% of the total population was in income poverty and were time deprived. Among this group of people, approximately 54% of them were in time poverty according to the normal Harvey and Mukhopadhyay (2007) method.

Table 2.3: Summary of time poverty lines adopted in the three main approaches

Study	Time poverty line
(1) Absolute approach	
Saqib & Arif (2012)	63 hours a week on committed activities (SNA and extended SNA. Converted to hours a day with bounds: Lower bound: 9 work hours a day Middle bound: 10.5 work hours a day Upper bound: 12 work hours a day
Ribeiro & Marinho (2012)	64 hours a week on paid work, unpaid work and commuting time
Arora (2015)	12 hours per day on total work time on primary activities
(2) Relative approach	
Bardasi & Wodon (2006)	Lower bound: 1.5 times the median weekly work hours Upper bound: 2 times the median weekly work hours
Lawson (2007)	Lower bound: 1.5 times the median weekly work hours Upper bound: 2 times the median weekly work hours
Bardasi & Wodon (2010)	50 hours per week on work 1.5 times the median weekly work hours
Gammage (2010)	Lower bound: 1.5 times the median weekly work hours Upper bound: 2 times the median weekly work hours
Kalenkoski *et al*. (2011)	60% of the median discretionary time
Chatzitheochari & Arber (2012)	60% the median free time (residual after removing paid work, unpaid work and personal care)
Saqib & Arif (2012)	Lower bound: 1.5 times the median weekly work hours Upper bound: 2 times the median weekly work hours
Metz & Rathjen (2014a)	60% of median personal leisure time
Metz & Rathjen (2014b)	60% of median personal genuine time
Noh and Kim (2015)	150% of median total work time
Orkoh et al. (2020)	Lower bound: 1.5 times the median contracted (paid and unpaid) work hours Upper bound: 2 times the median contracted (paid and unpaid) work hours

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(3) Time deficit approach	
Harvey & Mukhopadhyay (2007)	An individual's paid work time exceeds the time available for work and leisure less the minimum time for household tasks and free time.
Antonopoulos & Memis (2010)	An individual's paid work time exceeds the time available for work and leisure less the minimum time for household tasks and free time (with some modifications from the 2007 Harvey & Mukhopadhyay approach).

Source: Author's own compilations.

To conclude section 2.4, Table 2.3 summarises the time poverty lines used by various past local and international empirical studies in the three commonly adopted approaches, namely absolute threshold, relative threshold and time deficit approaches. One serious concern with the local empirical studies is that the TUS data was not analysed thoroughly enough to investigate time spent on various activities, not to say to examine the possible linkage between time use, time poverty and money-metric poverty, as well as compare time poverty estimates across various (absolute, relative and time deficit) approaches.

2.4.3 Why South Africa may differ from some of the observations mentioned in the literature review

Although every individual in the world must eat, sleep, rest and participate in the activities of the household, the manner and time spent in doing them would differ between structure of households and countries. South Africa is a developing country and its time use patterns would differ from other developing and developed (high income) countries possibly due to its socio-economic conditions. South Africa suffers from high unemployment, poverty and inequality (Pillay 2001). The high unemployment and poverty can cause individuals (like the father of a household) to migrate in search of work to feed their family (Hall & Mokomane 2018). The migrant finds themselves part of an extended family household, while his/her original household is now being headed by his partner, another relative (most likely his/her grandmother) or oldest child. Both households now face changes in time use patterns. The migrant is can now be responsible for non-market work in the extended household and has burdened their original household with his/her non-market work due to his/her absence.

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Added to the challenges of household structures is the location of households. Many South Africans find themselves living in rural or informal settlements where infrastructure may be lacking (lack of electricity, clean tap water and bad sanitation; Rhodes & McKenzie 2018). Having to spend time collecting water and wood (for fuel) can cause their time use patterns to differ from more developed countries. The varied public infrastructure can also impact on the quality of life (Governder, 2019). For example, poor transport systems can increase commuting times while the lack of quality clinics can impact of the health of individuals.

2.5 Conclusion

Research on poverty excluding the time dimension has led to commonly and widely accepted practices in analysing poverty (albeit diverse). Various methodologies are available to analyse time poverty but no standardised time poverty measure exists. Most methods (e.g. LIMTCP) analysing time poverty had been based on the Vickery (1977) study. Instead of applying poverty lines for both income and time separately, most approaches tried to quantify the value of time poverty (a time deficit) to adjust standard income poverty lines.

Standard formal theory on time (e.g. Becker 1965) has seen the introduction of time as an extension to already existing theoretical models on maximising utility and labour supply. Vickery (1977) provided the core theory of relating income and time poverty. It allowed for the classification of those who are income-poor and time-poor. At the minimum of levels of income and time poverty lines, it discussed a compensatory level of time and income needed to avoid being income and time poor simultaneously. The application of the critical wage theory to the analysis allowed for the classification of those time-poor, time-rich and consumption- or investment-poor.

There is an abundance of international studies but rather lack of local empirical studies on time poverty. In general, the findings from the international studies indicated that those who spent longer hours on average on work (SNA) activities were male employed individuals who resided in urban areas. On the contrary, those who spent longer hours on average on non-work and non-SNA activities were married female people with children under seven years, coming from households with deficient infrastructure such as electricity and running water.

Three common approaches were adopted to derive the time poverty line in these international studies: absolute threshold, relative threshold and time deficit approaches. The first two

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approaches are similar in nature to the money-metric poverty approaches while the third approach is designed to bridge and link income poverty and time poverty.

Regardless of which approach was used, the international empirical studies generally found[12] that the following individuals were associated with a significantly greater likelihood of time poverty: females (children, adults and unemployed), lowly educated individuals, single parents, those who travelled long distances to healthcare and schools, households with the presence of more young children (age varied amongst studies from two to nine years), households with more elderly members as well as households with poor infrastructure (e.g. using wood for heating and travelling far distances to collect water).

Almost all local studies derived descriptive statistical findings but lacked any sophisticated time poverty analysis as they were merely descriptive in their nature. On the contrary, the two South African studies which adopted intermediate statistical techniques (Kizilirmak & Memis (2009); Antonopoulos & Memis 2010) merely conducted the econometric analysis on the 2000 TUS data, yet time poverty was still not examined thoroughly. Hence, this study aims to fill the existing local research gap by examining both 2000 and 2010 TUS data to comprehensively examine time poverty, the profile of time-poor individuals, as well as the relationship (if any) between time poverty and money-metric poverty.

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[12] There were also some differences found between the past empirical studies which could be related to the quality of the data or the types of countries studied (e.g., developing and developed countries)

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CHAPTER THREE: METHODS AND DATA

3.1 Introduction

This chapter introduces the methodology and data used in this study. Section 3.2 outlines the methodology employed as well as the money-metric and time poverty lines to be used for the empirical analysis. It also outlines the econometric techniques used to determine the factors which affect time poverty probability. The methodology is applied to the 2000 and 2010 waves of the TUS. Section 3.3 provides an overview of the 2000 and 2010 TUS, while Section 3.4 discusses some of the limitations of this study, before Section 3.5 concludes the chapter.

3.2 Methods

The first part of the methodology establishes the income and poverty lines. Poverty lines are examined in Section 3.2.1, descriptive statistics are discussed in Section 3.2.2 and advanced empirical techniques are covered in Section 3.2.3. Note that all empirical findings to be presented in Chapters Four and Five are weighted results using the person weight variable.

3.2.1 Income and Time Poverty Lines

3.2.1.1 Income poverty lines

The absolute poverty line used in this study is based on the costs of basics needs (CBN) methodology introduced by Ravallion (1994). This method estimates the cost of food needed for adequate nutrition and essential non-food items. The study does not apply the food-energy intake (FEI) method which only focuses on a pre-determined energy intake requirement. The CBN method requires the cost of food items and essential food-items be calculated separately. The StatsSA (2015) most recent calculation of the CBN consumption basket is based on the 2010/2011 Income and Expenditure Survey (IES) data. Three poverty lines are constructed based on 2011 February-March prices:

- Food poverty line of R335 per household member per month for their minimum food requirements;
- Lower bound CBN poverty line of R501 per household member per month (constructed based on total expenditure patterns);
- Upper bound CBN poverty line of R779 per household member per month (constructed based on food expenditure patterns).

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For the purposes of this study, the lower bound CBN poverty line of R689[13] (adjusted for inflation to 2016 December[14] prices) will be employed. Budlender *et al*. (2015:2) established their own lower bound CBN poverty line (termed SALDRU poverty line) of R729.51 per household member per month. The difference in value between SALDRU and StatsSA (2015) highlights the contentious nature of selecting the food and non-food items for the consumption basket.[15]

3.2.1.2 Multidimensional non-income poverty lines

A multidimensional non-income socio-economic status (SES) index will be derived using the principal components analysis (PCA) approach, to be discussed later. The index at the 40th percentile in 2000 is identified as the poverty line in 2000 (i.e. a relative approach is used), before this index value is used again as the poverty line in 2010.

3.2.1.3 Time poverty lines

Absolute approach

The first of the three time poverty lines used in this study is based on the absolute threshold, which considers both paid work (labour market or SNA) and nonpaid work (non-SNA) time. Both Ribeiro & Marinho (2012) and Saqib & Arif (2012) applied an absolute approach; the former derives a 63-hour poverty line per week (based on SNA and ex-SNA production) and the latter distinguishes a 64-hour (lower threshold) and 75-hour poverty (upper threshold) line per week.

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For adults (aged 15 years or above), the poverty line is constructed based on the Basic Conditions of Employment Act (BCEA) which limits work to no more than 45 hours per week (nine hours per day) and mean non-SNA time for adults (approximately three hours per

[13] It has to be noted that in both TUSs, household income was captured in bands but not exact amounts. For this study, the midpoint method is used to estimate the household income amount. The only exception is that open interval, as the midpoint is derived as 1.1 times the lower bound – to be explained later.
[14] This is the base month in the current StatsSA CPI series.
[15] Other issues with the CBN approach are highlighted by Woolard & Leibbrandt (2006) and Haughton & Khandker (2009). The first issue is the non-food component of CBN tendency to rise as national income rises. The second issue concerns the availability of price data for the poor. The last issue concerns the comparability of the CBN poverty line across countries as the food consumed by the poor differs across countries.

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day in both waves of TUS). Therefore, the derived poverty line of 12 hours[16] is similar to two past international studies listed in Table 2.3.

For children (aged 10-14 years), the absolute time poverty line is based on mean learning time (four hours) and non-SNA activities time (1.5 hours) per day. The derived poverty line of 5.5 (4.0 + 1.5) hours caters for children, who are not allowed to work in the South African labour market and is similar to Ribeiro & Marinho (2012) who also used learning time instead of work time for children and found learning time to be 20 hours per week. (i.e. effectively four hours per day based on a 5-day school week).

Relative approach

The relative approach is based on the relative threshold conducted by Bardasi & Wodon (2006), Lawson (2007), Kalenkoski *et al*. (2011), Chatzitheochari & Arber (2012), Saqib & Arif (2012) and Metz & Rathjen (2014a & 2014b) as reviewed in the previous chapter, with the Bardasi & Wodon (2006), Lawson (2007) as well as Saqib & Arif (2012) studies being conducted on developing countries. Bardasi & Wodon (2006:5) and Lawson (2007) used a time poverty line of 1.5 times the median of the total individual working hours (paid and unpaid hours combined) and a higher threshold of two times the median. In addition, the Bardasi & Wodon (2006) time poverty lines were 70.5 and 84 hours for each threshold; Saqib & Arif (2012) revised the Bardasi & Wodon (2006) approach further by substituting committed activities (SNA activities and extended-SNA activities as shown in Figure 2.2) for total working hours, before calculating the time poverty line at 1.5 times the median time spent on committed hours.

The Chatzitheochari & Arber (2012) calculation was based on 60% of the median free time (the residual after removing paid work, unpaid work and personal care) of the working population. For the weekday the poverty threshold was 190 minutes and for the weekend 220 minutes. The Kalenkoski *et al*. (2011) calculation was based on 60% of the median discretionary time for various subgroups. Lastly, the Metz & Rathjen (2014a & 2014b) approach was based on 60% of the median genuine personal leisure time (186 minutes). This study follows closely the method applied by Saqib & Arif (2012) method by deriving the

[16] This assumes that no value added occurs with the 12 hours per day available on the sixth and seventh day. In contrast, using the relative poverty line, you also make provision for weekend hours.]

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time-poverty line at 1.5 times the median time of committed activities. In the context of TUS data, these activities involve both SNA and non-SNA production.

Similar to the absolute approach, three relative poverty lines will be constructed (see Table 3.1 for a breakdown on calculations). The first relative poverty line is based on the work of Kalenkoski *et al*. (2011), Chatzitheochari & Arber (2012) and Metz & Rathjen (2014a & 2014b). The poverty line is constructed using 60% times the median discretionary (free) time. Free time (on a daily basis[17]) is derived as the residual (left over time) once contracted[18] time, committed time[19] and personal care (selfcare) are removed from the 24 hours available in a day. An individual whose free time falls below 60% of median free time will be classified as time-poor. For adults, the poverty line was calculated at 198 and 162 minutes for 2000 and 2010 respectively, while for children it was calculated at 198 minutes for both years.

Table 3.1: The three relative time poverty lines adopted in the study

	TUS 2000 – adults	TUS 2010 – adults
Median free time of adults	330 minutes	270 minutes
Median work hours of adult employed	330 minutes	510 minutes
Median non-SNA time of adults	120 minutes	120 minutes
60% of median free time of adults	330 × 0.6 = 198 minutes	270 × 0.6 = 162 minutes
1.5 × median	(330 + 120) × 1.5 = 675 minutes	(510 + 120) × 1.5 = 945 minutes
2 × median	(330 + 120) × 2 = 900 minutes	(510 + 120) × 2 = 1 260 minutes
	TUS 2000 – children	TUS 2010 – children
Median free time of children	330 minutes	330 minutes
Median learning time of children	330 minutes	300 minutes
Non-SNA median time of children	45 minutes	45 minutes
60% of median free time of	330 × 0.6	330 × 0.6

[17] All calculations for this study are done on a daily basis in minutes even though the theory or methodology may refer to other types of periods e.g. weekly.
[18] Paid work in adults or education in children.
[19] Unpaid work or non-SNA production.

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children	= 198 minutes	= 198 minutes
1.5 × median	(330 + 45) × 1.5 = 562.5 minutes	(300 + 45) × 1.5 = 517.5 minutes
2 × median	(330 + 45) × 2 = 750 minutes	(300 + 45) × 2 = 690 minutes

The second and third relative poverty lines (see Table 3.1 for a breakdown on calculations) are derived by following the approach of Bardasi & Wodon (2006), Lawson (2007) and Saqib & Arif (2012). These two lines are more applicable as they were used for developing countries in these studies. They are derived by calculating 1.5 or 2 times the median weekly work[20] hours respectively. Any individual found to have worked more weekly hours than the derived poverty cut-offs will be regarded as time-poor. In this study, we rather look at daily median work hours given the nature of the TUS data; for adults, using 1.5 times median daily work hours, the cut-offs were 675 and 945 minutes in 2000 and 2010 respectively; on the other hand, using two times the median daily work hours, the thresholds were 900 and 1 260 minutes respectively.

In the case of children 10-14 years, since they were not legally eligible to work, learning time replaces the SNA work time of adults. Thus, the 1.5- and 2-times relative poverty lines are derived (see Table 3.1) by firstly summing the median learning and non-SNA median time of children 10-14 years. Followed, by multiplying the sum by 1.5 and 2 respectively.

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Time deficit approach

The last approach, namely time deficit approach, the methods applied by Harvey & Mukhopadhyay (2007) and Antonopoulos & Memis (2010) are adopted. The approach takes into consideration three main categories: personal necessary time (X), paid work (Y), unpaid work[21] (Z). X is the sum of median values of leisure, sleep and necessary care (see Table 3.2 for their derived values using the TUS data). Time allocated for SNA and non-SNA (T_m) are then derived: It is the residual time left after X is subtracted from the total time available in a day (see Table 3.2).

Next the required unpaid hours (T_1) are derived. The estimation is only conducted for 2010 (see Table 3.3) as Antonopoulos & Memis (2010) results (they analysed the 2000 TUS data)

[20] Paid work and unpaid hours in the case of adults; but learning time in the case of children.
[21] Both SNA and non-SNA (learning time is considered for children).

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are simply adopted for 2000. Finally, a comparison is then drawn between T_m and T_1. In the case of adults, if SNA work hours exceed the difference between T_m and T_1, then this adult experiences a time deficit[22], i.e. an individual works longer hours than what is available. Any individual who experiences a time deficit would be regarded as time-poor.

On the other hand, for children 10-14 years, who legally cannot work, learning time replaces SNA paid work. The identification of poor children 10-14 years is the same as for adults; except instead of comparing SNA work hours to the difference between T_m and T_1, learning time is compared to the difference between T_m and T_1. If learning time exceeds this ($T_m - T_1$) difference then a child 10-14 years suffers a time deficit and accordingly is distinguished as time-poor.

Table 3.2: Working hours (T_m) calculations (in minutes) in the time deficit approach

	TUS 2000	TUS 2010
(1): Leisure	230	165
(2): Sleep	540	510
(3): Necessary care	105	120
T_m [1440 minutes – (1) – (2) – (3)]	565	645

Table 3.3: Required unpaid hours (T_1) (in minutes) in the time deficit approach

2000 (based on 2010 Antonopoulos & Memis results)			
	0 child	1 child	2+ children
1 adult	154.02	228.73	234.88
2 adults	155.03	225.78	202.68
3+ adults	113.19	249.85	199.74
2010			
	0 child	1 child	2+ children
1 adult	161.07	228.11	239.36
2 adults	164.93	216.03	195.07
3+ adults	128.89	213.40	217.04

3.2.2 Derivation of numerous variables

3.2.2.1 Poverty status

[22] If learning hours exceeds ($T_m - T_1$) then a child will be classified as time-poor.

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Once the individuals' time and income poverty status have been derived, the following four groups will be identified:

(I) Income-poor and time-poor (most deprived group).

(II) Income-poor but not time-poor.

(III) Not income-poor but time-poor.

(IV) Not income poor and not time-poor (least deprived group).

;llhe primary focus of this research is to examine time and income poverty. The secondary focus in the empirical analysis includes multidimensional SES poverty status and examines the relationship amongst all poverty statuses.

3.2.2.2 Real per capita income

Real per capita income is calculated based on firstly using the midpoint method to estimate the nominal household income amount. Secondly, consumer price index (CPI) is used to convert nominal household income to real household income. Finally real household income is divided by household size to derive real per capita income.

Unfortunately, some individuals reported zero or unspecified household income (see Table 3.3). In order to ensure the empirical results remain fully robust, a sequential regression multiple imputation (SRMI) approach is adopted to impute these household incomes of the individuals (Yu 2016).

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Yu (2012) enumerates and summarises the SRMI approach based on the imputation modelling and testing of Raghunathan *et al.* (2001). Firstly, considering a sample *n*, let *X* denote a *n* by *p* matrix without any missing values (a fully observable matrix). *X* can contain any type of data i.e. binary, count, mixed variables and dummy variable of a categorical nature. Let Y_i (for $i = 1,2,...k$) represent k variables with missing values ordered from the variable with the least number of missing values to the one with the most missing values.

The joint density function i.e. $f(Y_1,Y_{2,....}Y_n|X, \beta_1, \beta_2.... \beta_n)$, used in the estimation of the missing values, can be rewritten in terms of multiplicative density functions i.e. $f_1(Y_1,|X,\beta_1)f_2(Y_2|X,Y_1,\beta_2)....\ f_n(Y_n|X,Y_1,Y_{2,....},Y_n, \beta_n)$ where β_j (j = 1, 2, ..., k) is a vector of parameters. Each conditional density model is conditional upon the type of variable present: The regression model will be of the form normal linear regression, Poisson distribution,

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generalised logit regression model and logistic regression model (polytomous) if the variables are continuous, count, binary and categorical respectively.

The sequential process involves imputing missing values of each Y_i one by one; starting from Y_i with the least missing values to the most. In the first part of the sequence, based on the chosen regression model, Y_1 missing values is imputed based on X. The second part of the sequence now imputes Y_2 based on X and the newly imputed Y_1 (now without any missing values). The sequential process continuous until all Y_i are estimated. This entire process of estimating all Y_i is known as the first round.

This sequential process is then repeated for the second round until a chosen number of rounds are completed. The second round would start by imputing Y_1 based on X and all other Y_i imputed in round 1. The process would then continue in a similar fashion when estimating the other Y_i until Y_k is estimated. The next round would then start and the process would continue until the chosen number of rounds is completed.

The household income variable limitations are discussed in Section 3.4. The self-derived real per capita income amounts, as discussed in 3.4, need to be adjusted for inflation. This adjustment would use the CPI series with base month of 2016 December. There is no month of interview variable present in both the 2000 and 2010 TUS datasets. However, since TUS 2000 took place in February (CPI = 38.4), June (CPI = 39.8) and October (40.6) the average of these three CPIs (i.e. 39.8) will be used to derive real income. Similarly, for TUS 2010 which took place in October (CPI = 71.3), November (CPI = 71.4) and December (71.5), the average of these three CPIs (i.e. 71.4) will be used.

3.2.2.3 Multidimensional socio-economic status index

A multidimensional, non-income welfare socio-economic status (SES) index is derived using the principal components analysis (PCA) method by considering the indicators as listed in Table A1 which are captured in both TUSs.[23] The indicators included to derive the index are related to, amongst others, dwelling type, energy source, water source and asset ownership.

[23] The following discussion will briefly explain PCA method. For a more detailed explanation of this method, refer to Vyas & Kumaranayake (2006) as well as Van Der Berg et al. (2003).

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PCA allows one to reduce dimensionality, that is, to compress information contained by many variables to less dimensions. The PCA approach captures the important variation of variables when a set of variables is compressed into fewer components. These components in turn allow for comparable patterns to be recognized across variables. The components of the PCA are related to variance of the variables, i.e. individual variable variances are broken down into a weighted summation related to the proportion that each individual variable share has of the total variance (Vyas & Kumaranayake (2006). Originally, each component was calculated sequentially after the previous component variation was removed; now, the second principal component is calculated using matrix algebra (elements of the eigenvalues ratios calculated to determine the explained proportion of all the variance explained in relation to each variable's principal component). This can be represented in equation terms. First, the principal component equals to:

$$P_1 = \sum_{i=1}^{n} a_{1i} X_{1i}$$

Where X_{1i} is the *i*-th correlated variable of the first principal component and a_{1i} the *i*-th weight of the first principal component (or the *i*-th sample variance of the first principal component).

The sample variance can be further broken down into a linear combination of the indicators' variances considering both the sample variances and covariance, that is:

$$a_{1i} = \frac{\sum_{i=1}^{n} r_{x_1 x_i}}{\sum_{i=1}^{n} \sum_{j=1}^{n} r_{x_j x_i}}$$

Where $r_{x_j x_i}$ is the covariance of the j-th variable and *i*-th variable.

Also, the matrix for algebra is expressed as follows:

$$\begin{bmatrix} r_{x_1 x_1} - a_{11} a_{11} & \cdots & r_{x_1 x_j} - a_{11} a_{1j} \\ \vdots & \ddots & \vdots \\ r_{x_i x_1} - a_{1i} a_{i1} & \cdots & r_{x_i x_j} - a_{1i} a_{ij} \end{bmatrix}$$

The diagonal components of the matric represent the sample variances less the product of the first principal components weight and another principle component for each variable. For example, $(r_{x_1 x_1} - a_{11} a_{11})$ is the variance of the first variable less its squared weight of the first principle component. The second element of the diagonal, $(r_{x_2 x_2} - a_{12} a_{22})$, is the variance of the second variable less its product of the first principal component and second

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principal component. The off-diagonal components adjust for covariances. For example, $(r_{x_i x_1} - a_{1i}a_{i1})$ is the covariance of the first *i*-th and first variable less the product of the first and *i*-th principal components.

The first principal components for deriving the SES index for each TUS are displayed in Table A2. It considers 16 variables across both TUSs. The standard deviations for the components of each variable are listed in table. Note that they are constructed in a manner where the mean of the principal component equals zero. The larger the magnitude of the standard deviation, the more the variable concerned is correlated to the component. For example, having a tap in dwelling has the strongest correlation and gas energy the least, in both TUSs.

3.2.3 Descriptive Analysis

Firstly, the descriptive analysis provides a general profile of the weighted sample. It provides the frequency and percentage contribution for each category of each variable. Secondly, the mean time spent on various activities by personal and household level characteristics are analysed. The analysis adopts both SNA classification and the author's own classification. For SNA classification it starts by analysing the broad categories of SNA, non-SNA and non-productive time followed by their sub-categories before looking at their various activities according to personal and household actives. For author's own classification it starts by analysing the broad categories of paid, unpaid work and nonwork activities before again looking at their sub-categories and various activities according to personal and household characteristics.

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Thirdly, the study extends the above analysis on SNA and author's own classifications by estimating the proportions of time spent on each of these activities using the same characteristics. Fourthly, it further extends the analysis by estimating the proportion of individuals who spent zero time on the same activities and characteristics.

The last part incorporates poverty status: It provides a general profile of each type of poverty status (income, SES and time poverty); followed by the characteristics of the different types of poverty by looking at types of poverty by production, personal and household characteristics (or a combination of them). It highlights how production activities differ when

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considering the income and time poverty status of these groups, ranging from gender, population group, age cohort[24], labour market status and educational attainment[25], to household size[26], income quintile and non-income welfare socio-economic status (SES) quintile. Lastly, the relationships between the various poverty measures are analysed; the primary focus would be the relationship between income and time poverty.

In addition to examining the time spent on each of the 10 categories as shown in Table 2.1 (SNA, non-SNA production and non-productive), the study will also look at the time spent on each 'special' category as derived in Table A3 in the Appendix. The derivation of each category is adapted from Kizilirmak & Memis (2009). This alternative categorisation would allow one to isolate the effects of various time use categories on various groups. For example, based on the literature discussed, one would expect category [D] (child care) to be more closely related to females, whereas category [H] (leisure) to be more relevant to labour market status.

3.2.4 Econometric Analysis

3.2.4.1 Ordinary Least Squares (OLS) model

The first part of the econometric analysis concentrates on analysing the effects of various independent variables on household and market time use (in minutes) using OLS. The OLS method involves simple computation based on a linear least squares method when calculating point estimates (Gujarati 2009; Wooldridge 2012). OLS estimators are ideal when the residuals are homoscedastic and serially uncorrelated. The model can be represented in matrix form as:

$$Y = X\beta + \varepsilon$$

Where X is an $n \times p$ matrix of regressors, and y and ε are $n \times 1$ vectors of the response variable.

3.2.4.2 Tobit model

One issue the OLS method overlooks is when zero time is reported on certain activities. Numerous econometric models are feasible to address this issue, such as Double Hurdle,

[24] Age brackets are designed to capture working-age population and the non-economically active.
[25] Categories of less than primary education, less than secondary education, Matric and tertiary education.
[26] Household size will be broken down into three categories: small-sized family (four or less household members), medium-sized family (five or six members) and large-sized family (more than six members).

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Heckman's and multivariate Tobit (also known as the censored regression model) model. However, due to the Heckman's and Double-hurdle models suffering from biased results when the index or participation equation is specified wrongly and Heckman's model using instrumental variables, the multivariate Tobit model would be the most appropriate (Flood & Gråsjö 1998:12 & Kizilirmark & Memis 2009:12).

Tobit (or censored regression) model estimates linear relationships between variables when the dependent variable needs to be censored from the left or right (below or above). The Tobit model is not only used for skewed or bounded data but for situations when values are observed below a certain threshold which should not have been observed for some reason (e.g. observing negative time). When censoring, the Tobit model provides unbiased coefficients compared to normal linear regressions but its efficiency is dependent on the error term being normally distributed.

In equation terms, Tobit model can be expressed as follows (Bierens 2004, Verbeek 2008; Wooldridge 2012):

$$y_i = y_i^* \text{ if } y_i^* > 0 \text{ or}$$
$$y_i = 0 \text{ if } y_i^* \leq 0$$

where y_i^* is the latent (observable variable):

$$y_i^* = \beta x_i + u_i$$
$$\text{where } u_i \sim N(0, \sigma^2)$$

and vector β determines the relation with the independent variables x_i.

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3.2.4.3 Multivariate Tobit model

The different time use activities are determined simultaneously. In order to handle the unobserved factors being correlated, a multivariate Tobit model would be run. The multivariate Tobit would use the full information on the errors being correlated and ultimately lead to an increase in efficiency (Kizilirmark & Memis 2009). It would also allow for one to analyse the correlations between time allocations of the different activities which are not accounted for by the independent variables.

The multivariate Tobit model can be expressed in equation terms as follows (Lee 1993 & Wooldridge 2012):

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$$Y_{mi} = Y_{mi}^{*} \text{ if } Y_{mi}^{*} > 0 \text{ or}$$

$$Y_{mi} = 0 \text{ if } Y_{mi}^{*} \leq 0$$

where Y_{mi}^{*} is the latent (observable) variable for the *m-th* dependent variable:

$$Y_{mi}^{*} = \beta_m x_i + u_{mi}$$

$$\text{where } Y_{mi} \sim N(0,\sigma^2)$$

$$\text{and } cov(u_{mi},u_{ni}) \neq 0$$

and vector β_m determines the relation with the independent variables x_{mi} and *m/n* are the dependent variables.

3.2.4.4 Probit model

The third part of our econometric analysis looks at the likelihood changes in income and time poverty (the dependent variables) based on time use patterns. It will conduct a multivariate probit analysis of how certain time use activities together with individual, household, level of education, gender, demographic and other variables impact on the probability of being time poor and income poor. A probit model would be appropriate as both poverty variables are binary (Gujarati & Porter 2009). Income poverty is a binary variable where one represents an individual who is income-poor and zero an individual who is not income-poor. Similarly, time poverty is a binary variable, with zero and one representing those who are not time-poor and time-poor, respectively.

The probit model can be explained in equation terms as follows (Bierens 2004, Verbeeck 2008, Gujarati 2009; Wooldridge 2012):

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$Y^{*} = X^{T}\beta + \varepsilon$

Where $\varepsilon \sim N(0, 1)$ and Y^{*} is a binary variable and

$$Y = \begin{bmatrix} 1 & Y* > 0 \\ 0 & otherwise \end{bmatrix} = \begin{bmatrix} 1 & -\varepsilon < X^{T}\beta \\ 0 & otherwise \end{bmatrix}$$

3.2.4.5 Bivariate probit model

This study models the poverty outcomes (income and time) jointly using a Bivariate probit model (using the same explanatory variables mentioned earlier). As both poverty variables (Y_{i1} and Y_{i2} represent income and time poverty respectively) are binary there are potentially four outcomes (see Table 3.4): being both income- and time-poor (*A: $Y_{i1} = 1, Y_{i2} = 1$*), being

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income-poor only (*C: $Y_{i1} = 1, Y_{i2} = 0$*), being time-poor only (*B: $Y_{i1} = 0, Y_{i2} = 1$*), and being neither income- nor time-poor (*D: $Y_{i1} = 0, Y_{i2} = 0$*).

Table 3.4: Summary of poverty status of the individuals in the sample

	Income poor	**Income not poor**
Time poor	A	B
Time not poor	C	D
Time poverty rate: (A + B) / (A + B + C + D) Income poverty rate: (A + C) / (A + B + C + D) Probability of being both time poor and income poor: (A) / (A + B + C + D)		

The general model for bivariate probit model can be given by (Gujarati & Porter 2009):

$Y_{i1} = X_{i1}^{T}\beta_1 + \varepsilon_{i1}$ $\quad Y_{i1} = 1$ if $Y_{i1}^{*} > 0$; or 0 otherwise

$Y_{i2} = X_{i2}^{T}\beta_2 + \varepsilon_{i2}$ $\quad Y_{i2} = 1$ if $Y_{i2}^{*} > 0$; or 0 otherwise

where the error terms (i.e. ε_{i1} and ε_{i2}) are normally distributed with a mean of zero and variance equalling to one. The covariance between the error terms is ρ.

The joint probability for all four outcomes will be based on three systematic components i.e. the marginal distributions {$Pr(Y_{i1} = 1)$ and $Pr(Y_{i2} = 1)$} and the two marginal distributions correlation parameter ρ.

The marginal distributions can be depicted by bivariate normal distributions of the two unobserved continuous variables:

$$\begin{bmatrix} Y_{i1}^{*} \\ Y_{i2}^{*} \end{bmatrix} \sim N_2 \left[\begin{pmatrix} \mu_1 \\ \mu_2 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix} \right]$$

where μ_1 and u_2 are the mean of Y_1^{*} and Y_2^{*} respectively.

The probit model lacks the ability to isolate the individual effects of each independent variable when there is some correlation between the independent variables (the concern of time spent on non-market production correlating with other factors is important). For example, spending more hours in the market place can reduce income poverty likelihood but at the same time reduce the number of hours available for non-market work, thereby increasing time poverty likelihood. The bivariate probit model allows for the interdependence of outcomes (Meng & Schmidt 1985, Chisadza 2015; Feder & Yu 2020). As this study deals with time, choices may be not be independent of each other. For example, an individual may

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be faced with allocating time between working (in order to assist with income for the household) and studying. Any time allocated to working would reduce the amount of time available for studying (choices are substitutes to each other).

3.2.4.6 Multivariate probit model

The multivariate probit model is an extension to the bivariate probit designed to handle more than two binary correlated outcomes (Green 2012). It will be incorporated to find the likelihood of the following five outcomes: people who are income poor, multidimensionally poor, time poor in the absolute approach, time poor in the relative approach, as well as time poor in the time deficit approach. The general model is depicted as follows:

$$y_{im} = X_{im}^{T}\beta_m + \varepsilon_{im} \qquad Y_{i1} = 1 \text{ if } Y_{i1}^{*} > 0; \text{ or 0 otherwise for } m = 1, \ldots, M$$

where ε_{im} is distributed multivariate normal with mean zero and a variance-covariance matrix with variances (diagonal elements) equal to one and correlations (off diagonal elements) $\rho_{mn} = \rho_{nm}$.

3.2.4.7 Explanatory variables

Unless stated otherwise, for the above discussed econometric models, the following explanatory variables are included[27]:

- Age in years and age in years squared
- Gender (reference category: female)
- Population group (reference category: African)
- Province (reference category: Western Cape)
- Highest educational attainment (reference category: none)
- Marital status (reference category: unmarried)
- Labour market status (reference category: employed)
- SES quintile (reference category: quintile1)
- Real per capita income quintile (reference category: quintile1)
- Household size
- Number of children 0-17 years in the household

[27] Real per capita and SES quintile variables are not included. Many past empirical studies reviewed in Chapter Two did not include such variables. In addition, Arora (2015) found the asset variables to be insignificant.

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3.3 Data

The primary data used for the study is the Time Use Survey (TUS) conducted by StatsSA. Currently, only two waves, conducted in 2000 and 2010, are available. The data is accessible on the StatsSA website with the main units of analysis being individual and household levels. The aim of the TUS is to provide information on gender and other interesting group differences on time spent on paid and unpaid labour activities. It also provides information on reproductive activities (e.g. caring for children, caring for household members, cooking, cleaning and collecting water and fuel), leisure activities and productive activities.

The first part of TUS covers information on up to two randomly selected members (aged 10 years and above) from each household. In 2000 TUS, more than 14 000 individuals from approximately 8 500 households took part in the survey, whereas in the 2010 TUS, more than 39 000 individuals from about 30 000 households were interviewed (seems like only one member from most households was selected). The weighted number of people in 2000 and 2010 are 25.69 million and 39.88 million respectively. TUS data is organised according to SNA categories as discussed earlier in Chapter Two (see Table 2.1).

In addition to SNA activities, both the 2000 and 2010 datasets contain information on the non-income welfare characteristics of households (e.g. type of dwelling, source and distance of energy/fuel, source and distance of water, source and total income of household, household assets and the time proximity of transport and education services to the households) and demographic characteristics of each household member (e.g. gender, age, population group, educational attainment and labour market status).

The rest (main part) of TUS of the survey uses a recall time-diary approach whereby two members of each household (over the age of 10 years) are interviewed. It contains information on the demographics (age, gender and population group, education level, number of kids under seven and 18 years etc.), the economic activities (e.g. job searching, desire to work and forms of employment) and main work activities of each respondent (if employed). It is important to note information on household income is captured in interval terms – see Table A4 in the Appendix.

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Each respondent is also required to list their activities for a continuous 24-period in 30-minute intervals. The 24-hour period starts at 04h00 the day prior to the interview until 04h00 on the day of the interview. All activities, whether taking place consecutively or simultaneously, are recorded for each 30-minute period. For this study, all activities recorded in the same 30-minute period will be allocated an equal share of time for the 30-minute period (StatsSA, 2013:7). For example, if an individual spends a 30-minute period on two activities (i.e. working and eating), it is assumed 15 minutes is spent on each activity.

3.4 Limitations

The diary component of TUS requires individuals to subjectively recall their activities during the 24-hour time period just prior to being interviewed which may bias results. Self-reported activities may not truthfully be recalled. This may not be a big issue as the recalled activities are close in time to the interviews. In addition, not enough information is available to establish the relationship between informal paid work[28] and time poverty.

In both TUSs, household income was captured in interval terms as shown in Table 3.5. In order to estimate the household income, the midpoint of the interval is used when both a lower and upper limit is present. For example, R600 is used for the interval R400-R799 in 2000. As far as the top category is concerned, since no upper limit exists, it is assumed that the mean exceeds the lower limit by 10% (Fields 1989). That is, the income amount is estimated as R11 000 for the 'R10 000 or more' category in 2000 and R12 100 for the 'R11 000 or more' category in 2010.

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There is also an issue with the household size variable as it actually refers to the number of individuals interviewed from each household (its maximum value is two) instead of the number of household members present. Fortunately, another variable, namely the number of eligible members in the household, is available in the dataset, and hence is used as a proxy for the household size variable, in order to derive the per capita income[29] variable. In addition, TUS only captured information on the number of child members (aged 0-17 years) but not elderly members in the household, and hence only the former variable can be included as an explanatory variable in the forthcoming econometric analysis.

[28] It is not possible to distinguish informal sector workers based on the data available.
[29] Some bias may be created if households consist mainly of young children, which could lead to poverty lines not being applicable for these households. Because the data set is limited to ages 10 and above it may not be an issue.

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Finally, since only a maximum of two members[30] were interviewed from each household, one must interpret the forthcoming empirical findings with caution, because strictly speaking, these results are not representative of the full South African population.

Table 3.5: Percentage of individuals in each nominal monthly household income category in each TUS, before and after SRMI

2000 TUS			**2010 TUS**		
	Before SRMI	**After SRMI**		**Before SRMI**	**After SRMI**
R0-R399	16.96	17.07	None	0.04	0.00
R400-R799	27.78	29.08	R1-R200	0.67	0.67
R800-R1 199	13.67	15.10	R201-R500	5.06	5.06
R1 200-R1 799	10.39	11.64	R501-R1 000	9.17	9.29
R1 800-R2 499	6.54	7.59	R1 001-R1 500	16.07	16.52
R2 500-R4 999	8.84	9.48	R1 501-R2 500	16.86	17.82
R5 000-R9 999	6.47	7.06	R2 501-R3 500	9.74	10.71
R10 000 or more	2.98	2.99	R3 501-R4 500	8.21	8.89
Do not know	3.77	0.00	R4 501-R6 000	6.52	7.03
Refusal	2.10	0.00	R6 001-R8 000	4.94	5.66
Unspecified	0.49	0.00	R8 001-R11 000	5.41	6.22
	100.00	100.00	R11 001 or more	11.74	12.15
			Do not know	1.90	0.00
			Refuse	2.24	0.00
			Not applicable	1.44	0.00
				100.00	100.00

Source: Author's own calculations.

3.5 Conclusion

This chapter discussed the methodology employed in the study. Three empirical approaches were discussed. Firstly, the income and poverty lines were established. Secondly, it highlighted the descriptive approach of comparing paid, unpaid and other activities amongst various categories (e.g. leisure) over time (between waves). Lastly, the econometric models

[30] The results may be biased too due to non-response, as only 9 000 of the 30 000 households had two people that were interviewed.

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deal with two areas: (1) time spent on the core activities (OLS, Tobit and multivariate Tobit models); (2) likelihood of time poverty and income poverty (probit, bivariate and multivariate probit models). This chapter also discussed the composition of the TUS data and its suitability in applying the methodology. Lastly, the chapter explained limitations found in the data.

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CHAPTER FOUR: OVERALL PATTERNS OF TIME USE[31]

4.1 Introduction

This chapter begins by highlighting the characteristics of the individuals interviewed, with various summary statistics by gender, race, province, educational entertainment, labour market status and marital status. Further, differences (if any) in mean time spent on the SNA, non-SNA and non-productive activities by the abovementioned characteristics are highlighted. It is followed by an investigation on mean time spent on the more precise categories such as child care and housework. The chapter also looks at the proportion of time spent and proportion of zero time spent on various categories of activity based classification and the study's classification. Lastly, the results of various multivariate (OLS, Tobit and multivariate Tobit) regressions on time spent on various activities are presented and discussed in detail.

4.2 Descriptive Analysis

The general profile of the weighted samples is depicted in Table 4.1. In both years, the 15-24 years cohort accounted for the largest proportion of the sample (27% and 26% respectively), followed by the 25-34 years cohort (approximately 20% share). In addition, the share represented by the working-age population (15-64 years) increased from 75% to 80% between the two survey years. Also, the mean age increased slightly from 31 to 33 years. With regard to gender, the female share was slightly more dominant (52%-53%) in both years, whereas Africans accounted for the greatest racial share as expected (just above three quarters) when it comes to the racial composition of the weighted sample.

As far as provincial composition is concerned, KwaZulu-Natal (21% in both years), Gauteng (19% in 2000 and 23% in 2010) and Eastern Cape (15% and 13% respectively) were the three most dominant provinces. About 58% of the individuals were not married, whereas 33% were either married or living together with a partner at the time of the survey. The survey participants were more educated over time, as the proportion with at least Matric rose from 21% to 28%. Moving on to labour market status of the individuals, while the number of employed increased from 11.1 to 14.2 million, employed as proportion of the weighted sample somehow dropped from 43% to 36%.

[31] Part of this chapter was published as the article "Examining time use patterns in South Africa, 2000-2010" in the Development Southern Africa journal (DOI: 10.1080/0376835X.2021.1913999) on 13 April 2021.

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Table 4.1: General profile of the weighted sample

	2000		2010	
	Number	**Percent (%)**	**Number**	**Percent (%)**
Age cohort				
10-14yrs	4 566 424	17.78	5 194 519	13.03
15-24yrs	6 989 075	27.21	10 268 221	25.75
25-34yrs	4 921 124	19.16	8 601 007	21.57
35-44yrs	3 701 821	14.41	6 055 015	15.18
45-54yrs	2 294 980	8.93	4 253 604	10.67
55-64yrs	1 578 066	6.14	2 999 549	7.52
65+yrs	1 633 881	6.36	2 505 674	6.28
Mean age (years)	*31.25*		*33.07*	
Gender				
Male	12 015 851	46.78	19 245 055	48.26
Female	13 669 520	53.22	20 632 534	51.74
Race				
African	19 527 545	76.03	31 089 630	77.96
Coloured	2 324 036	9.05	3 626 613	9.09
Indian/Asian	773 113	3.01	1 113 572	2.79
White	3 024 766	11.78	4 047 774	10.15
Province				
Western Cape	2 599 524	10.12	4 184 419	10.49
Eastern Cape	3 832 252	14.92	5 288 186	13.26
Northern Cape	534 398	2.08	909 974	2.28
Free State	1 710 318	6.66	2 297 587	5.76
KwaZulu-Natal	5 319 527	20.71	8 358 586	20.96
North West	2 163 380	8.42	2 507 537	6.29
Gauteng	4 837 116	18.83	9 215 293	23.11
Mpumalanga	1 718 675	6.69	2 881 340	7.23
Limpopo	2 970 181	11.56	4 234 667	10.62
Highest educational attainment				
None	2 117 564	8.24	1 879 261	4.71
Incomplete primary	7 525 569	29.30	8 125 330	20.38
Incomplete secondary	10 561 627	41.12	18 532 983	46.47
Matric	2 578 672	10.04	7 577 695	19.00
Post-matric	2 799 269	10.90	3 625 098	9.09
Other/Unspecified	10 267	0.40	137 222	0.34
Marital status				
Unmarried	14 923 703	58.21	22 985 113	57.64
Married/live together	8 585 421	33.49	13 483 952	33.81
Widowed/divorced	2 127 507	8.30	3 408 524	8.55
Labour market status				
Employed	11 117 351	43.28	14 217 395	35.65
Unemployed	1 872 130	7.29	2 758 074	6.92
Not economically active	12 695 890	49.43	22 902 120	57.43

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Table 4.1: Continued

	2000		2010	
	Number	**Percent (%)**	**Number**	**Percent (%)**
SES quintile				
Quintile1	5 190 524	20.21	7 977 745	20.01
Quintile2	5 116 144	19.92	8 700 572	21.82
Quintile3	5 169 776	20.13	7 781 302	19.51
Quintile4	5 262 735	20.49	7 520 400	18.86
Quintile5	4 946 192	19.26	7 897 570	19.80
Real per capita income quintile[32]				
Quintile1	6 405 495	24.94	8 893 565	22.30
Quintile2	3 886 802	15.13	7 117 911	17.85
Quintile3	5 136 883	20.00	8 769 971	21.99
Quintile4	5 262 399	20.49	7 143 419	17.91
Quintile5	4 993 792	19.44	7 952 723	19.94
Household size				
One person	1 635 889	6.37	3 087 866	7.74
Two persons	4 293 763	16.72	7 936 149	19.90
Three persons	4 591 487	17.88	8 034 714	20.15
Four to five persons	8 771 062	34.15	13 334 990	33.44
More than five persons	6 393 170	24.89	7 483 870	18.77
Mean (number of members)	*3.55*		*3.36*	
Number of children 0-17 years living in the household				
None	18 110 769	70.51	27 299 493	68.46
One child	3 174 796	12.36	5 944 799	14.91
Two children	2 369 066	9.22	4 104 693	10.29
Three children	1 193 070	4.64	1 594 313	4.00
More than three children	837 670	3.26	934 291	2.34
Mean (number of children)	*0.58*		*0.57*	

It is not always possible to achieve an exact share of 20% for each quintile, for both the SES and income quintile variables. If the variable is discrete or the number of observations is not a multiple of five, it may not be possible to divide the given observations into exact equal groups of 20% each. There may also exist a large group of people who fall between two quintiles and have exactly the same SES index or real per capita income, preventing equal proportions in each quintile. For instance, in the 2000 TUS, income quintile1 accounts for 26% at the expense of quintile2 (15% only).

During the 10-year period, the share of households with at least four members dropped from 59% to 52%, and mean household size decreased slightly from 3.55 to 3.36 persons. Lastly, the proportion of households without any children declined marginally from 70.5% to 68.5%.

[32] Results derived after the SRMI method was conducted.

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Table 4.2: Descriptive statistics on time spent on various activities (in minutes per day)

	2000				2010			
	Min	**Max**	**Mean**	**Std Dev.**	**Min**	**Max**	**Mean**	**Std Dev.**
System of National Accounts classification								
[1]: Work in establishments	0	1 225	115	228	0	1 365	142	254
[2]: Primary production not for establishments	0	845	24	75	0	945	18	67
[3]: Other production of good and services not for establishments	0	900	12	67	0	1 020	10	64
[4]: Household maintenance	0	870	131	141	0	1 230	143	148
[5]: Care of persons in the household	0	840	19	58	0	915	17	53
[6]: Community service to non-household members	0	690	4	33	0	990	5	36
[7]: Learning	0	893	102	183	0	1 080	68	155
[8]: Social and cultural	0	1 240	193	169	0	1 440	145	160
[9]: Mass media use	0	825	108	120	0	1 110	138	131
[10]: Personal care	50	1 440	732	166	0	1 440	754	167
Author's adapted classification								
[A]: Paid work (SNA production)	0	1 200	111	197	0	1 350	132	215
[B]: Unpaid work (SNA production)	0	960	40	79	0	1 110	39	75
[C]: Unpaid work – house work (Non-SNA production)	0	870	131	141	0	1 230	143	148
[D]: Unpaid work – child care (Non-SNA production)	0	745	15	48	0	825	14	48
[E]: Unpaid work – adult care (Non-SNA production)	0	660	4	25	0	690	3	21
[F]: Unpaid work – social care (Non-SNA production)	0	690	4	33	0	990	5	36
[G]: Nonwork – learning (Non-productive)	0	893	102	183	0	1 080	68	155
[H]: Nonwork – leisure (Non-productive)	0	1 240	301	195	0	1 440	283	195
[I]: Nonwork – self-care (Non-productive)	50	1 440	732	166	0	1 440	754	167
Broad SNA category								
SNA production = [1] + [2] + [3]	0	1 225	150	234	0	1 365	171	258
Non-SNA production = [4] + [5] + [6]	0	1 020	154	165	0	1 230	165	169
Non-productive = [7] + [8] + [9] + [10]	180	1 440	1 135	248	75	1 440	1 105	255

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Table 4.2 shows that both the mean SNA and non-SNA production time increased at the expense of non-productive time. The SNA production increase was mostly attributed to increase of time spent on work in establishments (115 minutes in 2000 and 142 minutes in 2010, on average); this result is not surprising, given the increase of number of employed by three million as shown in Table 4.1. The non-SNA production increase happened to household maintenance (131 minutes in 2000 versus 143 minutes in 2010, on average).

Moving to results using the author's adapted classification, mean time spent on paid work in SNA production increased (2000: 111 minutes; 2010: 132 minutes), while unpaid work in SNA production was stagnant (2000: 40 minutes; 2010: 39 minutes). House work and social care were the only categories of unpaid work whose mean times increased, while the mean time of unpaid house work exceeded the sum of the mean of all other unpaid work. The increase in mean time spent on paid work, self-care, unpaid work in housework and social care took place at the expense of mean times of learning and leisure. Furthermore, note that the absolute increase of mean time spent was the greatest in selfcare (from 732 to 754 minutes – an increase of 22 minutes), whereas the decline in mean time was the greatest in learning (from 101 to 68 minutes – a decrease of 33 minutes).

Table 4.3 proceeds to examine the mean number of minutes per day spent on the SNA production, non-SNA production and non-productive activities by various personal characteristics. The results of the table show that, in both years, the mean time spent on SNA production increased across the elder age cohorts up to 54 years, before a downward trend took place for the two oldest cohorts. The 35-44 and 45-54 years cohorts spent the largest amount of time on average on SNA production activities. This finding is expected, as middle-age cohorts are associated with greater employment likelihood (Leibbrandt *et al*. 2010; Festus *et al*. 2016). The 10-14 years cohort spent the lowest amount of time in both SNA and non-SNA production followed by the 65+ years cohort.

The mean non-SNA production time was the highest in the 24-34 years cohort in both years (194 and 195 minutes respectively), while the mean time spent on non-productive activities was the highest in the 10-14 years cohort (1 333 minutes in 2000 and 1 346 minutes in 2010), followed by the 65+ years cohort (1 220 minutes in 2000 and 1 206 minutes in 2010). The latter result is not surprising, as it is expected that the individuals from the youngest and oldest cohorts spend more time on activities like learning, mass media use, as well as social and cultural activities, but are less likely to be actively working long hours.

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Table 4.3: Mean number of minutes per day spent on productive and non-productive activities, by various personal characteristics

	2000			2010			Difference		
	SNA production	**Non-SNA production**	**Non-productive**	**SNA production**	**Non-SNA production**	**Non-productive**	**SNA production**	**Non-SNA production**	**Non-productive**
All									
All	151	154	1 135	171	165	1 105	20	11	-30
Age cohort									
10-14 years	30	77	1 333	20	74	1 346	-10	-3	13
15-24 years	88	147	1 204	91	167	1 183	3	20	-21
25-34 years	233	194	1 013	257	195	989	24	1	-24
35-44 years	260	190	991	289	181	970	29	-9	-21
45-54 years	265	165	1 010	260	174	1 007	-5	9	-3
55-64 years	181	191	1 069	175	189	1 076	-6	-2	7
65+ years	75	145	1 220	71	164	1 206	-4	19	-14
Gender									
Male	191	83	1 167	214	97	1 129	23	14	-38
Female	116	217	1 108	130	229	1 082	14	12	-26
Race									
African	136	159	1 145	160	171	1 109	24	12	-36
Coloured	201	122	1 117	186	150	1 104	-15	28	-13
Indian/Asian	163	136	1 142	228	133	1 079	65	-3	-63
White	225	144	1 071	221	145	1 074	-4	1	3
Province									
Western Cape	171	144	1 125	202	157	1 081	31	13	-44
Eastern Cape	133	162	1 145	146	184	1 110	13	22	-35
Northern Cape	169	160	1 112	151	156	1 133	-18	-4	21
Free State	147	138	1 154	143	177	1 120	-4	39	-34
KwaZulu-Natal	149	157	1 134	185	160	1 094	36	3	-40
North West	131	155	1 142	146	156	1 138	15	1	-4
Gauteng	186	150	1 103	194	159	1 087	8	9	-16
Mpumalanga	152	164	1 135	172	168	1 099	20	4	-36
Limpopo	120	145	1 175	122	171	1 147	2	26	-28

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Table 4.3: Continued

	2000			2010			Difference		
	SNA production	**Non-SNA production**	**Non-productive**	**SNA production**	**Non-SNA production**	**Non-productive**	**SNA production**	**Non-SNA production**	**Non-productive**
Highest educational attainment									
None	148	175	1 117	135	172	1 133	-13	-3	16
Incomplete primary	107	121	1 113	94	123	1 223	-13	2	110
Incomplete secondary	133	168	1 139	150	181	1 108	17	13	-31
Matric	208	173	1 059	247	176	1 017	39	3	-42
Post-Matric	288	156	996	302	149	989	14	-7	-7
Other/unspecified	163	115	1 162	264	169	1 007	101	54	-155
Marital status									
Unmarried	99	132	1 209	126	146	1 168	27	14	-41
Married/live together	237	186	1 017	254	190	996	17	4	-21
Widowed/divorced	166	181	1 093	139	194	1 107	-27	13	14
Labour market status									
Employed	297	140	1 003	414	119	907	117	-21	-96
Unemployed	79	247	1 113	55	242	1 143	-24	-5	30
Not economically active	34	152	1 255	34	184	1 222	0	32	-33
SES quintile									
Quintile1	140	162	1 137	168	178	1 095	28	16	-42
Quintile2	137	163	1 140	149	176	1 115	12	13	-25
Quintile3	129	166	1 145	153	168	1 119	24	2	-26
Quintile4	145	144	1 151	174	158	1 109	29	14	-42
Quintile5	206	133	1 101	211	144	1 085	5	11	-16
Real per capita income quintile									
Quintile1	107	156	1 177	97	171	1 173	-10	15	-4
Quintile2	90	156	1 194	117	175	1 148	27	19	-46
Quintile3	128	171	1 142	166	177	1 097	38	6	-45
Quintile4	173	155	1 112	219	156	1 065	46	1	-47
Quintile5	245	133	1 062	262	148	1 029	17	15	-33

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Table 4.3: Continued

	2000			2010			Difference		
	SNA production	**Non-SNA production**	**Non-productive**	**SNA production**	**Non-SNA production**	**Non-productive**	**SNA production**	**Non-SNA production**	**Non-productive**
Household size									
One person	257	178	1 005	279	175	985	22	-3	-20
Two persons	210	183	1 047	221	192	1 027	11	9	-20
Three persons	150	163	1 127	157	170	1 114	7	7	-13
Four to five persons	140	143	1 157	149	154	1 137	9	11	-20
More than five persons	99	137	1 204	125	146	1 169	26	9	-35
Number of children 0-17 years in the household									
None	121	123	1 197	142	139	1 159	21	16	-38
One child	200	239	1 001	228	218	993	28	-21	-8
Two children	242	218	980	244	221	975	2	3	-5
Three children	247	219	974	226	236	978	-21	17	4
More than three children	225	228	987	210	227	1 003	-15	-1	16

Note:
[1]: The mean (for all categories and production groups) is statistically significantly different from the mean of the reference category in the same year at $\alpha = 5\%$, except when comparing the mean of real per capita income quintile2 from that of quintile1, in 2010.
[2]: The 2000 mean (again for all categories and production groups) is statistically significant different from the 2010 mean at $\alpha = 5\%$ for all categories of all variables, except for the inactive.

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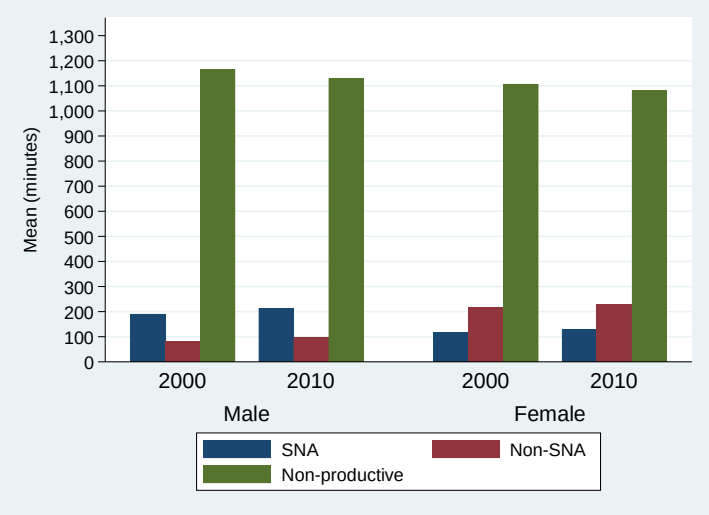
Both Table 4.3 and Figure 4.1 showed on average, males had higher SNA production but lower non-SNA production time compared to females (about one hour per day higher in SNA production and two hours lower non-SNA production). These findings are similar to Saqib & Arif (2012) who found mean time spent on SNA activities to be higher for men by approximately four hours per week. Similar to Jenkins & O'Leary (1997:155-158) & Bianchi *et al.* (2000), female non-SNA production mean duration increased between the two survey years, even though the ratio of female non-SNA production to male non-SNA production decreased on average from 2.62 to 2.30 (the 1997 Jenkins & O'Leary study found that this ratio dropped from 3.5 to 2.0). It was also found on average the ratio of mean male SNA to female SNA time remained more or less the same (1.65) between the two survey years.

Figure 4.1: Mean time spent on productive and non-productive activities by gender



Source: Author's own calculations.

Although the mean SNA production time increased the most in the Indian and African population, the white mean remained the highest in both years (225 minutes in 2000; 221 minutes in 2010) as depicted in Table 4.3 and Figure 4.2. This result is not surprising considering white individuals have the lowest unemployment likelihood in the South African labour market context (Kingdon & Knight 2004a; Banerjee *et al.* 2008). The mean non-SNA time decreased for Indians only while the mean non-productive time increased for whites only. Therefore, the whites were the only group being able to spend (albeit slightly) more time on leisure and personal care activities. This result may possibly be be attributed to the fact that whites enjoy higher employment likelihood and earn higher wages.

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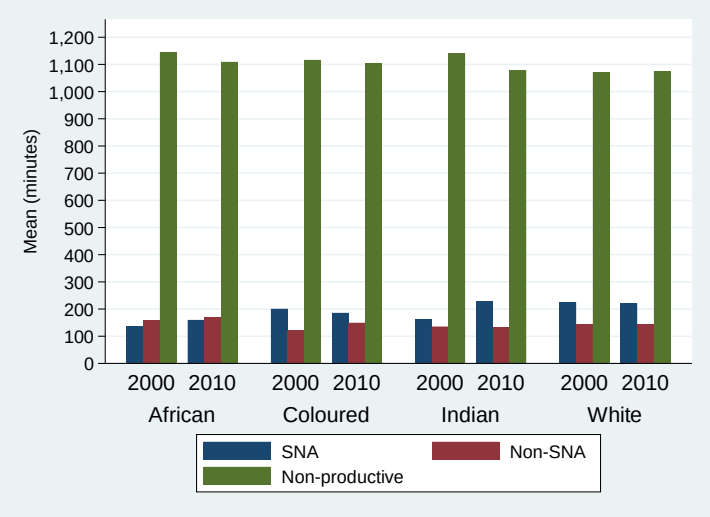
Figure 4.2: Mean time spent on productive and non-productive activities by race



Source: Author's own calculations.

As far as provincial results are concerned (see Figure 4.3), Gauteng residents had the highest mean SNA time (186 minutes) followed by the Western Cape (171 minutes) in 2000 but the order was reversed in 2010 (194 versus 202 minutes). As these two provinces are highly urbanised in their nature, the findings of Saqib & Arif (2012) would support the notion of higher mean SNA time in urbanized areas or provinces. Northern Cape is the only province whose mean non-productive time increased between the two survey waves at the cost of average time spent on SNA and non-SNA production activities.

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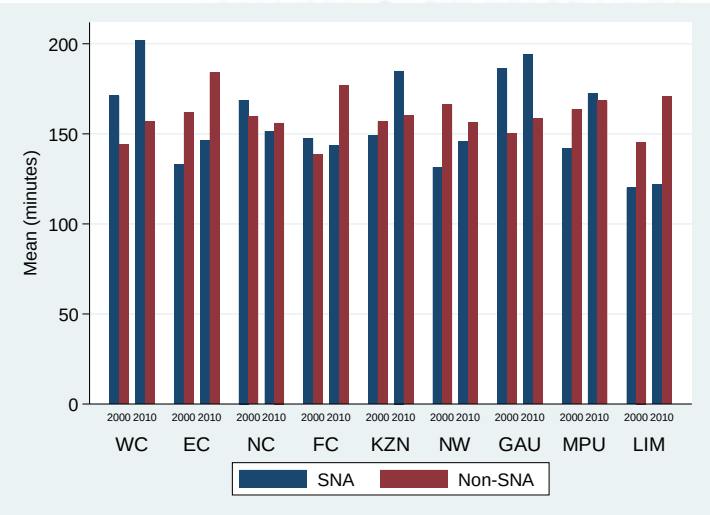
Figure 4.3: Mean time spent on productive and non-productive activities by province



Source: Author's own calculations.

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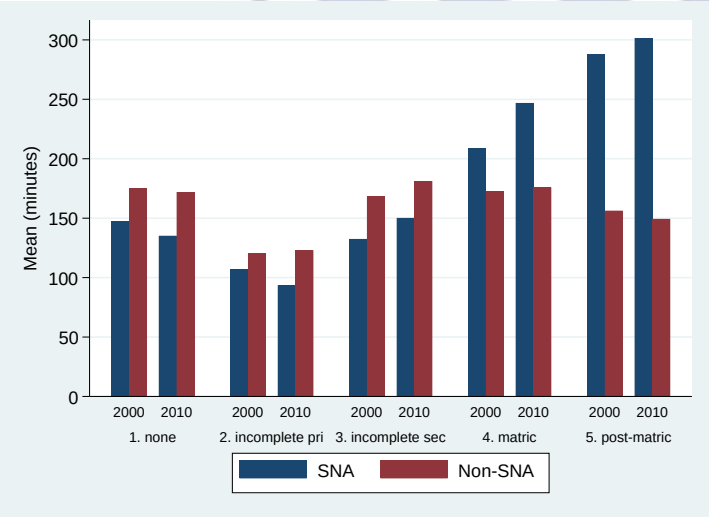
The mean SNA time of individuals with post-Matric qualifications was the highest (about 300 minutes on average), followed by those with Matric, in both years (both groups had approximately 25% higher SNA time), while those with incomplete primary education had the lowest mean SNA and non-SNA time for both survey years. These results (see Table 4.4) are expected, because higher educational attainment is associated with greater employment probability and longer time spent working (Smith *et al.* 2000).

It is not surprising that the employed enjoyed the highest mean SNA production time but the lowest mean non-SNA production time, whereas the unemployed had the highest non-SNA production mean time (above 240 minutes) in both years. These findings are similar to Bianchi *et al.* (2000) and Newman (2001) who found the employed to be involved in more SNA production and less non-SNA production activities.

Figure 4.4: Mean time spent on productive and non-productive activities by education



Source: Author's own calculations.

According to Table 4.3 and Figure 4.5, the mean SNA production time was highest for the employed in both years (297 and 414 minutes respectively), the mean time spent on non-SNA production was the highest for the unemployed individuals (247 and 242 minutes respectively) whereas the mean time spent on non-productive activities the highest for the inactive (1 255 and 1 222 minutes respectively). The employed was the only group whose mean SNA production time increased between the two years, while the inactive was the only group whose mean non-SNA production time increased.

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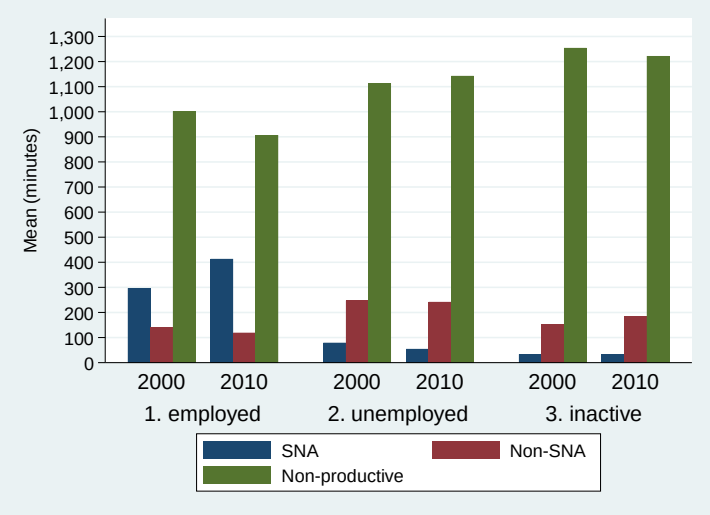
Figure 4.5: Mean time spent on productive and non-productive activities by labour market status



Source: Author's own calculations.

Those who were unmarried at the time of TUS had the lowest mean SNA and non-SNA time, while the married individuals had the lowest mean non-production time in both survey years. Married people were involved in approximately 1.5 times the amount of SNA production compared to the other groups in both survey years.

The mean SNA production time was highest in SES quintile 5 (the only quintile with mean above 200 minutes), but it was also the quintile associated with the lowest non-SNA production and non-productive mean time. Similarly, for the income quintile variable, individuals in quintile5 were associated with the highest SNA production time but the lowest non-SNA production time and non-productive activity time. Similar to the findings by Apps (2000), those with higher incomes could afford suitable market substitutes or employ others to do their household work (hence lower non-SNA production time).

The mean non-SNA production times were lowest and non-productive activity time highest for household who had more than five household members. This low non-SNA production can be associated with more members in the household being able to adjust to conditions at home, similar to the findings of Short and Fenning (1996). Non-productive activity mean time decreased for all households regardless of size, while non-SNA production times increased for all households except for those with one member.

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Mean SNA and non-SNA production times were lowest for household who have no children. The presence of the first child in the household was associated with an abrupt increase in mean and non-SNA production times of approximately 80 minutes, even though presence of an additional child did not change SNA and non-SNA production times as much. Strangely, as one will observe later, the changes in non-SNA production would mostly be linked to changes in domestic work but not childcare. The Walker (1973) study too found non-SNA production time increased when an additional child were present.

SNA and non-SNA production and non-productive mean times were further classified into 10 categories in Tables 4.4 and 4.5 according to the SNA classification, as already discussed in Chapter Two. Looking at all individuals in the weighted sample, for SNA production, the mean time spent on work in establishments increased from 115 to 142 minutes; for non-SNA production, time spent on household maintenance increased from 131 to 143 minutes; for non-productive activities, the mean time spent on mass media use and personal care increased, at the cost of learning as well as social and cultural activities.

Concerning gender, the mean work in establishment time was greater for men, while the mean household maintenance time was greater for women. For both genders, the mean times of these activities increased over time and their differences decreased (in relative terms). For example, women household maintenance was on average 2.4 times (181/74) more than men in 2000 but only 2.2 times more (195/88) in 2010. Men mean work in establishments times were 1.8 times (152/83) more than females in 2000 and 1.73 times (182/108) more in 2010.

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Mean work in establishment time was the lowest for Africans, while the mean of primary production not for establishments and household maintenance were the highest for Africans. Coloureds were the only racial group whose mean work in establishments time decreased over time, although the mean household maintenance times for all races increased over time.
Next, individuals with incomplete primary schooling were associated with the lowest mean work in establishments and household maintenance times. They also had the highest learning times, followed by those with incomplete secondary education. Higher learning times could assist in alleviating the negative circumstances they face. Also, those who were married or lived together with a partner had the highest mean work in establishments times (in excess of 80 minutes) while the unemployed had the highest mean household maintenance time. The unemployed was the only group who exceeded 200 minutes for this activity, on average.

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Table 4.4: Mean number of minutes per day spent on each category in the activity classification system, 2000

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
All	All	115	24	12	131	19	4	102	193	108	732
Age cohort	10-14 years	2	26	2	71	4	1	266	237	93	738
	15-24 years	56	26	7	124	20	3	185	198	115	706
	25-34 years	197	16	20	156	32	5	14	182	114	704
	35-44 years	225	17	16	160	24	6	6	159	113	712
	45-54 years	218	27	20	142	16	7	5	169	101	735
	55-64 years	131	32	17	166	18	7	2	183	107	776
	65+ years	24	36	15	132	8	5	1	205	108	906
Gender	Male	152	26	13	74	4	5	109	218	112	728
	Female	83	22	11	181	32	3	96	171	105	735
Race	African	93	30	13	136	18	4	110	196	97	742
	Coloured	196	1	3	106	15	1	102	149	139	726
	Indian/Asian	149	3	11	108	22	5	75	202	137	727
	White	209	4	11	120	20	4	68	178	152	674
Province	Western Cape	157	2	12	116	21	6	71	199	140	715
	Eastern Cape	70	48	15	139	19	3	115	194	92	743
	Northern Cape	152	10	7	130	22	7	88	191	109	724
	Free State	128	10	9	123	12	3	86	236	120	712
	KwaZulu-Natal	107	34	8	134	18	5	107	177	84	766
	North West	104	17	10	144	19	3	97	195	104	746
	Gauteng	170	3	14	126	20	4	82	167	144	711
	Mpumalanga	95	21	25	134	25	5	102	243	105	684
	Limpopo	64	44	11	126	16	4	150	203	86	736
Highest educational attainment	None	83	51	14	150	19	6	4	206	56	851
	Primary	59	37	11	107	11	2	152	216	83	762
	Secondary	103	18	12	143	22	3	121	184	118	717
	Matric	186	6	16	143	24	6	42	179	150	688
	Post-Matric	268	5	14	123	22	11	28	168	143	657
	Other/unspecified	142	18	4	93	13	9	54	241	94	774

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Table 4.4: Continued

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Marital status	Unmarried	66	24	9	115	14	3	171	204	109	725
	Married/live together	197	24	17	151	28	6	6	177	110	724
	Widowed/divorced	126	21	19	155	20	6	3	181	98	811
Labour market status	Employed	249	24	24	117	17	6	34	171	101	697
	Unemployed	49	26	5	207	34	6	12	212	146	743
	Inactive	7	23	3	131	18	3	174	210	109	761
SES quintile	Quintile1	78	54	9	140	19	3	116	193	39	789
	Quintile2	89	32	15	139	18	6	105	211	76	748
	Quintile3	96	21	11	142	21	4	104	196	118	727
	Quintile4	122	9	14	122	19	3	102	184	153	713
	Quintile5	191	2	12	109	19	6	82	182	156	680
Real per capita income quintile	Quintile1	51	44	12	134	18	4	133	209	78	756
	Quintile2	45	32	13	132	19	5	132	210	93	759
	Quintile3	90	25	12	147	19	4	87	201	98	757
	Quintile4	148	13	12	131	19	4	83	179	128	723
	Quintile5	229	4	12	110	18	4	74	171	143	674
Household size	One person	228	13	16	161	15	3	16	141	114	734
	Two persons	177	19	15	150	28	5	35	177	115	720
	Three persons	120	18	12	138	21	4	97	194	108	728
	Four to five persons	106	22	12	123	17	3	115	200	111	730
	More than five	52	36	10	116	15	6	155	206	99	745
Number of children in the household	None	88	22	10	113	7	3	140	205	111	741
	One child	159	25	16	180	52	6	13	165	109	714
	Two children	200	25	16	162	47	9	11	162	108	699
	Three children	198	27	22	169	47	3	9	165	92	708
	More than three	157	43	25	180	42	6	4	172	75	736

[1]: Work in establishments
[2]: Primary production not for establishments
[3]: Other production of good and services not for establishments
[4]: Household maintenance
[5]: Care of persons in the household
[6]: Community service to non-household members
[7]: Learning
[8]: Social and cultural
[9]: Mass media use
[10]: Personal care

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Table 4.5: Mean number of minutes per day spent on each category in the activity classification system, 2010

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
All	All	142	18	10	143	17	5	68	145	138	754
Age cohort	10-14 years	4	14	1	71	3	1	237	214	138	758
	15-24 years	68	16	6	145	18	4	129	161	150	742
	25-34 years	232	12	13	161	29	4	9	119	131	729
	35-44 years	257	15	17	154	21	6	5	115	126	723
	45-54 years	222	20	18	155	11	8	5	124	130	748
	55-64 years	131	33	12	171	12	6	3	129	141	803
	65+ years	29	33	8	147	11	6	2	145	149	910
Gender	Male	182	19	13	88	5	5	71	162	145	750
	Female	105	16	8	195	29	5	64	128	131	758
Race	African	127	22	12	149	17	5	72	147	129	760
	Coloured	175	4	7	123	19	7	53	145	169	737
	Indian/Asian	221	1	6	115	14	4	66	115	158	741
	White	212	3	6	127	15	3	44	132	169	728
Province	Western Cape	189	3	10	131	19	7	46	146	165	725
	Eastern Cape	96	40	11	161	17	6	70	145	106	788
	Northern Cape	138	9	5	135	16	6	81	116	165	770
	Free State	130	7	7	156	17	3	67	130	147	775
	KwaZulu-Natal	150	29	7	145	12	3	93	131	116	755
	North West	126	9	10	131	20	5	56	160	147	775
	Gauteng	180	2	13	135	20	4	54	132	163	737
	Mpumalanga	142	17	14	148	16	4	89	138	141	731
	Limpopo	78	30	14	147	18	6	55	205	123	764
Highest educational attainment	None	63	62	10	153	15	5	4	142	87	899
	Primary	58	27	8	111	8	4	129	184	119	791
	Secondary	122	16	12	157	20	5	76	140	142	751
	Matric	231	6	10	150	21	5	22	126	154	716
	Post-Matric	292	3	6	127	17	5	18	121	153	698
	Other/unspecified	236	16	11	134	35	1	18	129	144	716

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Table 4.5: Continued

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Marital status	Unmarried	103	16	8	129	13	3	113	163	142	749
	Married/live together	221	18	15	160	24	6	6	116	133	741
	Widowed/divorced	98	29	12	171	15	7	4	132	133	838
Labour market status	Employed	383	8	23	103	11	5	6	100	110	691
	Unemployed	36	16	3	203	33	6	20	166	187	771
	Inactive	6	24	3	161	19	4	111	169	150	792
SES quintile	Quintile1	111	46	11	156	17	5	65	158	57	815
	Quintile2	115	23	11	153	18	5	73	151	136	756
	Quintile3	129	12	11	145	18	5	72	144	158	746
	Quintile4	160	3	11	135	17	5	71	134	171	733
	Quintile5	200	2	8	125	16	3	58	136	171	720
Real per capita income quintile	Quintile1	49	36	11	147	19	5	92	173	115	792
	Quintile2	79	26	12	151	17	6	84	159	128	778
	Quintile3	136	18	12	153	19	5	61	136	138	762
	Quintile4	201	7	10	136	15	5	58	129	146	733
	Quintile5	253	3	7	129	16	3	46	124	156	703
Household size	One person	252	12	15	161	9	5	15	107	111	753
	Two persons	198	12	11	164	24	4	27	118	132	750
	Three persons	133	14	10	147	19	4	74	147	146	746
	Four to five persons	122	17	10	134	15	5	83	156	145	752
	More than five	86	30	9	128	14	5	97	166	134	771
Number of children in the household	None	116	18	8	129	6	4	93	157	144	765
	One child	201	15	13	172	41	5	14	115	130	734
	Two children	213	16	15	175	41	6	11	116	126	722
	Three children	186	21	18	184	46	7	9	122	116	732
	More than three	146	40	25	176	43	9	22	127	102	752

[1]: Work in establishments
[2]: Primary production not for establishments
[3]: Other production of good and services not for establishments
[4]: Household maintenance
[5]: Care of persons in the household
[6]: Community service to non-household members
[7]: Learning
[8]: Social and cultural
[9]: Mass media use
[10]: Personal care

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Table 4.6: Mean number of minutes per day spent on paid work, non-paid work, non-work, self-care and leisure activities, by various personal characteristics

	2000										2010									
	Paid	Unpaid work						Non work			Paid	Unpaid						Non work		
	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]
All																				
All	111	40	131	15	4	4	194	102	301	732	132	39	143	14	3	5	204	68	283	754
Age cohort																				
10-14yrs	11	20	71	3	1	1	96	266	330	738	8	11	71	2	1	1	86	237	351	758
15-24yrs	58	31	124	17	3	3	178	185	313	706	54	27	145	19	2	4	193	129	311	742
25-34yrs	178	55	156	26	6	5	248	14	295	704	200	57	161	25	3	4	251	9	251	729
35-44yrs	197	63	160	19	5	6	253	6	272	712	229	60	154	17	4	6	241	5	242	723
45-54yrs	205	60	142	10	6	7	225	5	270	735	206	54	155	8	3	8	228	5	254	748
55-64yrs	142	39	166	12	5	7	229	2	290	776	144	31	171	9	3	6	219	3	271	803
65+yrs	60	15	132	5	3	5	160	1	314	906	58	13	147	5	6	6	177	2	294	910
Gender																				
Male	143	47	74	2	2	5	130	109	330	728	167	47	88	3	2	5	143	71	308	750
Female	82	34	181	26	6	3	250	96	276	735	99	31	195	25	4	5	260	64	259	758
Race																				
African	95	41	136	15	4	4	200	110	293	742	121	39	149	15	2	5	209	72	277	760
Coloured	149	52	106	11	5	1	175	102	289	726	149	37	123	15	4	7	187	53	314	737
Indian/Asian	130	33	108	18	4	5	168	75	339	727	185	43	115	11	3	4	176	66	272	741
White	188	37	120	14	6	4	180	68	330	673	184	37	127	9	6	3	182	44	302	728
Province																				
Western Cape	134	37	116	15	6	6	181	71	340	715	157	44	131	14	5	7	201	46	310	725
Eastern Cape	99	34	139	16	4	3	196	115	286	743	112	34	161	15	2	6	219	70	251	788
Northern Cape	134	35	130	16	6	7	195	88	299	724	127	25	135	12	4	6	181	81	281	770
Free State	114	33	123	9	3	3	172	86	356	712	116	27	156	14	4	3	204	67	278	775
KwaZulu-Natal	101	48	134	13	5	5	208	107	261	767	143	42	145	11	1	3	202	93	247	755
North West	96	35	144	16	3	3	201	97	299	746	114	32	131	17	2	5	188	56	307	775
Gauteng	143	43	126	17	4	4	193	82	311	711	150	44	135	16	4	4	203	54	296	738
Mpumalanga	101	40	134	19	6	5	204	102	348	684	132	41	148	14	2	4	209	89	279	731
Limpopo	80	40	126	13	2	4	185	150	289	736	90	31	147	16	2	6	202	55	328	764

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Table 4.6: Continued

	2000										2010									
	Paid	Unpaid work						Non work			Paid	Unpaid work						Non work		
	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]
Highest educational attainment																				
None	105	42	150	15	4	6	218	4	262	851	103	32	153	12	3	5	204	4	229	899
Incomplete primary	69	38	107	9	3	2	158	152	299	762	68	25	111	7	1	4	148	129	303	791
Incomplete secondary	95	37	143	18	4	3	206	121	302	717	114	37	157	17	3	5	218	76	282	751
Matric	164	44	143	19	5	6	217	42	329	688	196	51	150	18	3	5	227	22	279	716
Post-Matric	236	51	123	16	6	11	208	28	311	657	245	56	127	13	5	5	205	18	274	698
Other/unspecified	120	43	93	10	2	9	158	54	334	774	218	46	134	20	14	1	215	18	273	716
Marital status																				
Unmarried	66	33	115	11	3	3	165	171	313	725	94	32	129	11	2	3	179	113	305	749
Married/live together	185	52	151	22	6	6	238	6	287	724	203	52	160	20	4	6	242	6	249	741
Widowed/divorced	125	40	155	15	5	6	221	3	280	811	110	29	171	13	3	7	223	4	265	838
Labour market status																				
Employed	237	61	117	13	4	6	201	34	272	697	336	78	103	9	2	5	197	6	210	691
Unemployed	18	61	207	26	8	6	308	12	358	743	15	40	203	28	4	6	282	20	352	771
Inactive	14	19	131	15	4	3	171	174	319	761	19	14	161	16	3	4	198	111	319	792
SES quintile																				
Quintile1	90	51	140	16	3	3	213	116	232	789	122	47	156	15	1	5	224	65	215	815
Quintile2	93	43	139	14	4	6	206	105	287	748	113	36	153	16	2	5	212	83	286	756
Quintile3	91	37	142	17	4	4	204	104	314	727	118	35	145	15	3	5	203	72	301	745
Quintile4	112	33	122	14	5	3	177	102	336	713	137	37	135	14	3	5	194	71	305	733
Quintile5	170	37	109	13	5	6	170	82	339	680	172	39	125	11	5	3	183	58	307	720
Real per capita income quintile																				
Quintile1	65	42	134	14	4	4	198	133	287	756	64	32	147	16	3	5	203	92	289	792
Quintile2	57	32	132	15	5	5	189	132	303	759	85	32	151	16	2	6	206	83	287	778
Quintile3	90	38	147	16	3	4	209	87	298	757	129	37	153	17	3	5	214	61	274	762
Quintile4	133	40	131	16	3	4	195	83	307	723	173	46	136	12	3	5	202	58	275	733
Quintile5	202	43	110	13	5	4	176	74	314	674	214	48	129	12	4	3	196	46	280	703

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Table 4.6: Continued

	2000										2010									
	Paid	Unpaid work						Non work			Paid	Unpaid work						Non work		
	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]
Household size																				
One person	205	52	161	12	3	3	230	16	255	734	224	55	161	8	1	5	230	15	218	753
Two persons	164	47	150	22	6	5	230	35	292	720	174	47	164	21	3	4	239	27	249	750
Three persons	113	37	138	16	5	4	200	97	303	728	121	35	147	15	4	4	205	74	293	746
Four to five persons	101	39	123	14	4	3	182	115	312	730	113	36	134	13	3	5	191	83	301	752
More than five persons	63	35	116	11	4	6	172	155	305	745	94	31	128	12	2	5	177	97	300	771
Number of children in the household																				
None	87	34	113	5	2	3	157	140	316	741	109	33	129	4	2	4	172	93	301	765
One child	150	50	180	43	9	6	288	13	274	714	178	51	172	36	5	5	269	14	246	734
Two children	189	53	162	37	10	9	271	11	270	699	193	51	175	35	5	6	273	11	242	722
Three children	187	60	169	39	8	3	279	9	257	708	175	51	184	41	5	7	287	9	237	732
More than three	153	72	180	33	10	6	300	4	247	736	161	49	176	40	3	9	276	22	229	752

Note: [A]: Paid work activities [B]: Unpaid work-SNA [C]: Unpaid work – housework [D]: Unpaid work – childcare [E]: Unpaid work – adult care
[F]: Unpaid work – social care [G]: Learning [H]: Leisure [I]: Selfcare

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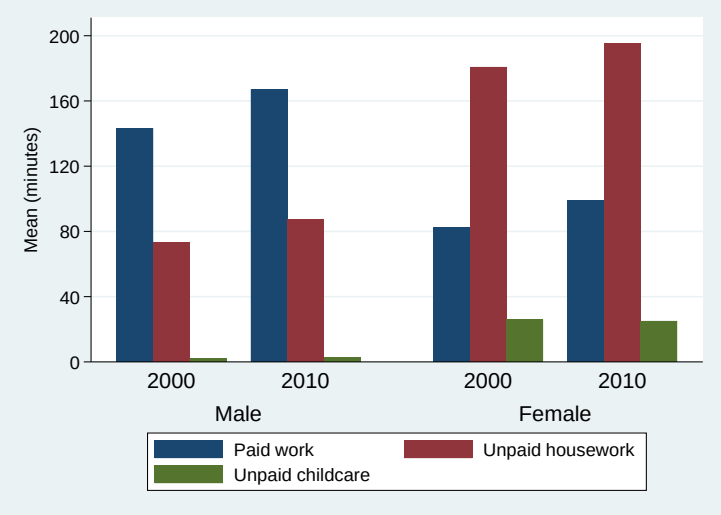
Looking at the remaining results from Tables 4.4 and 4.5, higher SES quintiles were associated with mean times which were higher for work in establishments, but lower for primary production not for establishments and household maintenance (with the only anomaly being quintile3 for household maintenance). Not surprisingly, people from higher income quintiles enjoyed higher mean times for work in establishments and lower mean times for primary production not for establishments. Moreover, mean work in establishments time increased over time for household size and decreased for increasing household size. Ignoring the two-person households, mean household maintenance times decreased as household size increased.

Table 4.6 proceeds to examine the mean number of minutes per day spent on paid work, non-paid work (which includes both SNA and non-SNA activities) and non-work activities by using the author's adapted classification in Table A.3 in the Appendix. Over time, the mean paid and unpaid work times increased (from 111 minutes to 132 minutes and 194 to 204 minutes, respectively) at the expense of the learning and leisure activities.

Figure 4.6: Mean time spent on selected activities by gender



Source: Author's own calculations.

Similarly, mean paid and unpaid work times increased for both genders, although female individuals' mean unpaid work time remained higher than males. As seen in Figure 4.6, the higher mean unpaid work time was related to higher time spent on housework and childcare activities. This result conformed to Ilahi (2001) and Gross & Swirski (2002), who found women's activities to be more concentrated in household work, and Jenkins & O'Leary

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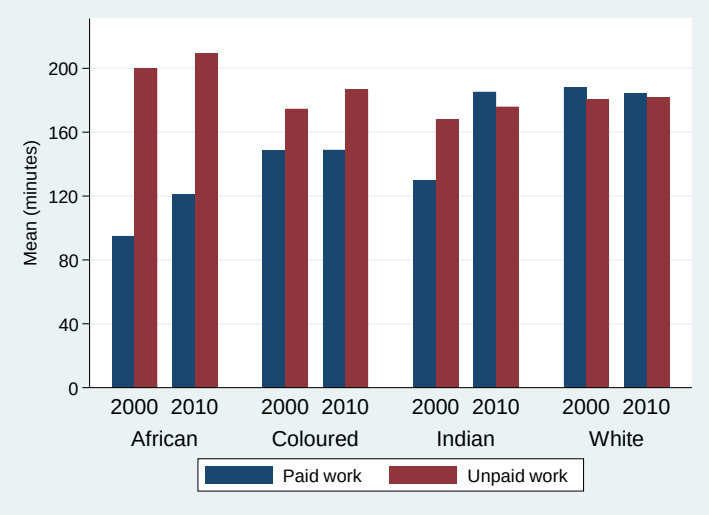
(1997:155-158) who found men's household work time increased due to coefficient changes related to age and increase in the number of children.

With regard to race, Figure 4.7 shows that besides having the lowest mean paid work time, Africans were associated with the highest mean unpaid housework time, followed surprisingly by white individuals. According to England & Srivastava (2013), one would have expected white people to afford market alternatives for housework (due to their higher average earnings). In addition, Table 4.6 shows mean unpaid work times increased for all races besides whites, while paid work increased for all races besides the coloured individuals.

Figure 4.7: Mean time spent on paid and unpaid work activities by race



Source: Author's own calculations.

Moving on to examine the provincial results, the Gauteng residents had the highest mean paid work (143 minutes) followed by Western Cape and Northern Cape (134 minutes in both provinces) in 2000; in 2010 the Western Cape (157 minutes) overtook the Gauteng (150 minutes) province. With regard to key results by marital status, the mean paid and unpaid work times were lowest for the unmarried individuals, probably due to them having relatively fewer family responsibilities. Figure 4.8 further explored the marital status of females alone: married females had the highest mean housework and child care times. This result is similar to Bianchi *et al.* (2000) who found married women to spend longer time to perform more housework and childcare tasks.

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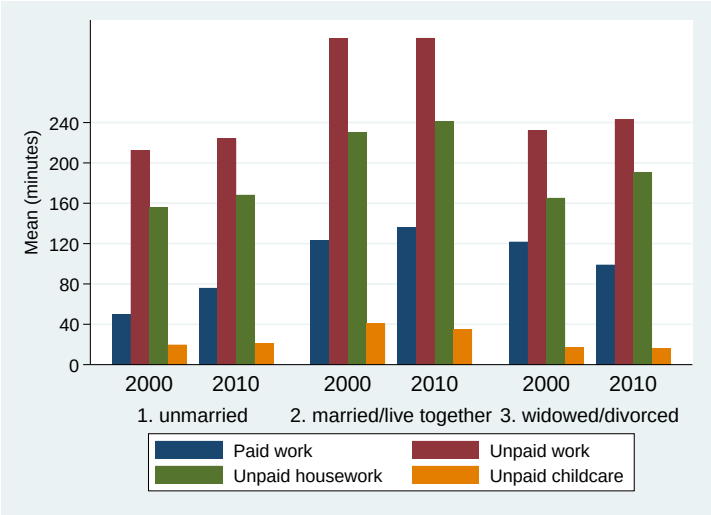
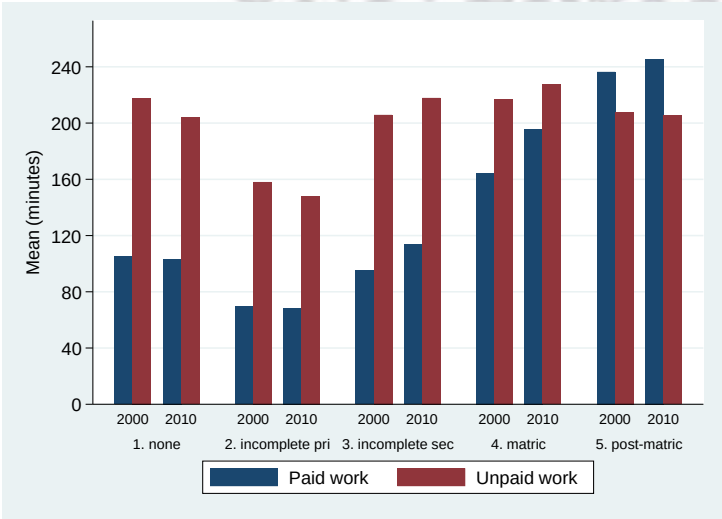
Figure 4.8: Mean time spent on selected activities of females, by marital status



Source: Author's own calculations.

Mean paid work time for those with post-Matric qualifications and mean unpaid work for matriculants were the highest amongst all other education categories for both surveyed years (2000: 236 minutes; 2010: 245 minutes). It is surprising to observe individuals with incomplete primary school spent the least amount of time on unpaid work (see Figure 4.9) but the most time on learning (probably to improve their personal circumstances) and self-care, on average.

Figure 4.9: Mean time spent on paid and unpaid work activities by educational attainment



Source: Author's own calculations.

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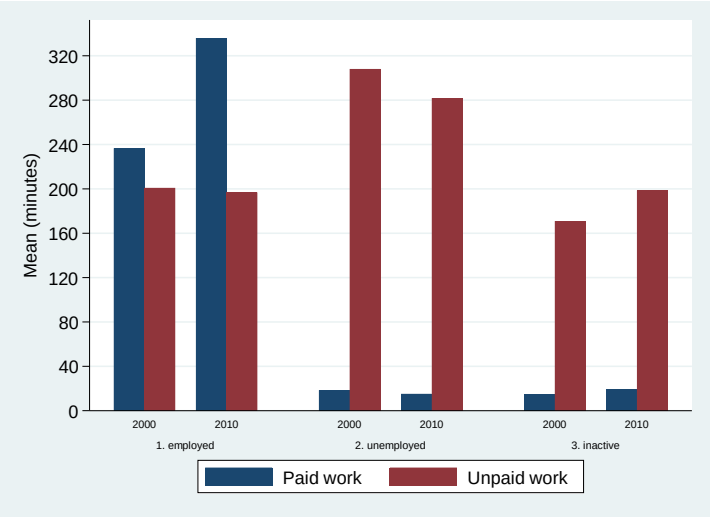
The unemployed spent the longest duration of time on average on unpaid work (mainly due to housework and childcare), while their mean paid work decreased over time (see Figure 4.10).[33] Walker (1973) and Newman (2001) also found the unemployed (women) to spend more time on household tasks. In order to address their mean paid and unpaid work times (which were the lowest amongst all labour market status categories), the inactive invested more time in learning (their learning times far exceed the other groups; more than five times higher).

Figure 4.10: Mean time spent on paid and unpaid work activities by labour market status



Source: Author's own calculations.

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Generally, for both SES and income quintiles the mean paid and unpaid work times increased over time (the exception being SES quintile3 for unpaid work and income quintile1 for paid work) mainly due to mean learning and leisure times which decreased. The increase in unpaid work for the higher income quintiles differs from the findings of England & Srivastava (2013) that the wealthy were able to afford market alternatives for their household work.

Similar to the results by gender, mean paid and unpaid work times of each household size category increased over time. Also, mean paid work time decreased as household size increased (maybe due to the responsibilities being shared). However, mean paid work time did not increase continuously as more children were present in a household – the mean initially increased until two children before it decreased. Finally, mean unpaid work time was

[33] There were few people being distinguished as unemployed or inactive using their answers on the labour market activities section of the questionnaire, yet they reported non-zero time spent on paid work.

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lowest for households who had no children (mainly due to low mean housework times). In addition, their learning times were a lot higher than those who had children, maybe because they had more free time available (i.e. no tasks related to child rearing).

Tables 4.7-4.9 depicts the proportion of time spent on each category of activity based on both the SNA (4.7-4.8) and author's adapted (4.9) classifications. Overall, the individuals of the sample spent over 50% of their time on personal care. This was followed by more than 10% of their time being spent on social and cultural activities. The percentage of time spent on household maintenance and work in establishments increased from 9.1% to 10.0% and 8.0% to 9.9%, respectively.

The middle-age cohorts' work in establishment time share exceeded the sample average (8.0% in 2000 and 9.9% in 2010) by at least five percentage points. Their work in establishment percentage share too increased over time at the cost of their social and cultural activities. With regard to gender, gender differences were again highlighted; male individuals' percentage of time spent on work in establishments exceeded that of females by 4.8 percentage points in 2000 and 5.4 percentage points in 2010, while female percentage household maintenance exceeded that of males by 7.5 percentage points in both years.

Compared with other races, Africans spent the smallest proportion of time on work in establishments but the greatest proportion of time on household maintenance. For all race groups, both the abovementioned two time shares increased over time, except for Coloured individuals whose percentage of time spent on work in establishments decreased. It is also interesting to notice that the Indians had the highest percentage work in establishments time share in 2010. Regarding the key highlights at provincial level, the share of time spent on primary production not for work establishments was the highest in Eastern Cape. In contrast, Gauteng was the province with the highest share of time spent on work in establishments (11.8%) in 2000, followed by the Western Cape (10.9%) in 2000; their positions were reversed in 2010.

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Table 4.7: Proportion of time spent on each category in the activity classification system, 2000

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
All	All	8.0	1.7	0.9	9.1	1.3	0.3	7.1	13.4	7.5	50.8
Age cohort	10-14 years	0.1	1.8	0.2	4.9	0.3	0.1	18.4	16.4	6.4	51.3
	15-24 years	3.9	1.8	0.5	8.6	1.4	0.2	12.9	13.7	8.0	49.0
	25-34 years	13.7	1.1	1.4	10.9	2.2	0.3	1.0	12.6	7.9	48.9
	35-44 years	15.7	1.2	1.1	11.1	1.7	0.4	0.4	11.1	7.8	49.5
	45-54 years	15.1	1.9	1.4	9.8	1.1	0.5	0.4	11.8	7.0	51.0
	55-64 years	9.1	2.2	1.2	11.5	1.2	0.5	0.2	12.7	7.4	53.9
	65+ years	1.7	2.5	1.0	9.2	0.6	0.3	0.1	14.2	7.5	62.9
Gender	Male	10.5	1.8	0.9	5.1	0.3	0.4	7.6	15.1	7.8	50.6
	Female	5.7	1.5	0.8	12.6	2.2	0.2	6.7	11.9	7.3	51.1
Race	African	6.5	2.1	0.9	9.4	1.3	0.3	7.7	13.6	6.7	51.5
	Coloured	13.6	0.1	0.2	7.4	1.1	0.1	7.1	10.4	9.7	50.4
	Indian/Asian	10.3	0.2	0.7	7.5	1.6	0.3	5.2	14.0	9.5	50.5
	White	14.5	0.3	0.8	8.3	1.4	0.3	4.7	12.4	10.5	46.8
Province	Western Cape	10.9	0.1	0.8	8.1	1.5	0.4	4.9	13.8	9.7	49.6
	Eastern Cape	4.9	3.3	1.1	9.7	1.3	0.2	8.0	13.5	6.4	51.6
	Northern Cape	10.6	0.7	0.5	9.1	1.5	0.5	6.1	13.2	7.6	50.3
	Free State	8.9	0.7	0.6	8.6	0.8	0.2	6.0	16.4	8.3	49.4
	KwaZulu-Natal	7.4	2.3	0.6	9.3	1.3	0.3	7.4	12.3	5.8	53.2
	North West	7.2	1.2	0.7	10.0	1.3	0.2	6.7	13.6	7.2	51.8
	Gauteng	11.8	0.2	0.9	8.7	1.4	0.3	5.7	11.6	10.0	49.4
	Mpumalanga	6.6	1.5	1.7	9.3	1.7	0.4	7.1	16.9	7.3	47.5
	Limpopo	4.5	3.1	0.8	8.7	1.1	0.3	10.4	14.1	6.0	51.1
Highest educational attainment	None	5.7	3.6	0.9	10.4	1.3	0.4	0.3	14.3	3.9	59.1
	Primary	4.1	2.6	0.7	7.4	0.8	0.2	10.5	15.0	5.8	52.9
	Secondary	7.1	1.2	0.8	9.9	1.5	0.2	8.4	12.8	8.2	49.8
	Matric	12.9	0.4	1.1	9.9	1.7	0.4	2.9	12.5	10.4	47.8
	Post-Matric	18.6	0.4	1.0	8.5	1.6	0.8	1.9	11.7	10.0	45.6
	Other/unspecified	9.8	1.2	0.2	6.5	0.9	0.6	3.7	16.7	6.5	53.7

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Table 4.7: Continued

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Marital status	Unmarried	4.6	1.7	0.6	8.0	0.9	0.2	11.9	14.1	7.6	50.4
	Married/live together	13.7	1.6	1.2	10.5	2.0	0.4	0.4	12.3	7.6	50.3
	Widowed/divorced	8.7	1.5	1.3	10.8	1.4	0.4	0.2	12.6	6.8	56.3
Labour market status	Employed	17.3	1.7	1.7	8.1	1.2	0.4	2.4	11.8	7.0	48.4
	Unemployed	3.4	1.8	0.3	14.4	2.4	0.4	0.8	14.7	10.2	51.6
	Inactive	0.5	1.6	0.2	9.1	1.3	0.2	12.1	14.6	7.6	52.9
SES quintile	Quintile1	5.4	3.7	0.6	9.7	1.3	0.2	8.1	13.4	2.7	54.8
	Quintile2	6.2	2.2	1.0	9.7	1.2	0.4	7.3	14.7	5.3	52.0
	Quintile3	6.7	1.5	0.8	9.9	1.4	0.3	7.2	13.6	8.2	50.5
	Quintile4	8.5	0.6	1.0	8.5	1.3	0.2	7.1	12.7	10.6	49.5
	Quintile5	13.3	0.2	0.8	7.6	1.3	0.4	5.7	12.6	10.9	47.2
Real per capita income quintile	Quintile1	3.5	3.1	0.8	9.3	1.3	0.2	9.3	14.5	5.4	52.5
	Quintile2	3.2	2.2	0.9	9.2	1.3	0.3	9.2	14.6	6.5	52.7
	Quintile3	6.3	1.7	0.9	10.2	1.4	0.3	6.0	13.9	6.8	52.5
	Quintile4	10.3	0.9	0.8	9.1	1.3	0.3	5.7	12.4	8.9	50.2
	Quintile5	15.9	0.3	0.8	7.7	1.3	0.3	5.1	11.8	10.0	46.8
Household size	One person	15.8	0.9	1.1	11.2	1.0	0.2	1.1	9.8	7.9	51.0
	Two persons	12.3	1.3	1.0	10.4	1.9	0.4	2.4	12.3	8.0	50.0
	Three persons	8.3	1.3	0.9	9.5	1.5	0.3	6.7	13.5	7.5	50.6
	Four to five persons	7.4	1.5	0.8	8.5	1.2	0.2	8.0	13.9	7.7	50.7
	More than five	3.6	2.5	0.7	8.0	1.1	0.4	10.7	14.3	6.9	51.7
Number of children in the household	None	6.1	1.5	0.7	7.8	0.5	0.2	9.7	14.2	7.7	51.4
	One child	11.1	1.7	1.1	12.5	3.6	0.4	0.9	11.5	7.6	49.6
	Two children	13.9	1.8	1.1	11.3	3.3	0.6	0.7	11.3	7.5	48.6
	Three children	13.7	1.9	1.5	11.8	3.2	0.2	0.6	11.4	6.4	49.2
	More than three	10.9	3.0	1.7	12.5	2.9	0.4	0.3	12.0	5.2	51.1

[1]: Work in establishments
[2]: Primary production not for establishments
[3]: Other production of good and services not for establishments
[4]: Household maintenance
[5]: Care of persons in the household
[6]: Community service to non-household members
[7]: Learning
[8]: Social and cultural
[9]: Mass media use
[10]: Personal care

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Table 4.8: Proportion of time spent on each category in the activity classification system, 2010

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
All	All	9.9	1.2	0.7	10.0	1.2	0.3	4.7	10.0	9.6	52.4
Age cohort	10-14 years	0.3	1.0	0.1	4.9	0.2	0.1	16.4	14.8	9.6	52.6
	15-24 years	4.7	1.1	0.4	10.1	1.3	0.2	9.0	11.2	10.4	51.6
	25-34 years	16.1	0.8	0.9	11.2	2.0	0.3	0.6	8.3	9.1	50.6
	35-44 years	17.8	1.0	1.2	10.7	1.5	0.4	0.3	8.0	8.8	50.2
	45-54 years	15.4	1.4	1.3	10.8	0.7	0.5	0.3	8.6	9.0	51.9
	55-64 years	9.1	2.3	0.8	11.9	0.9	0.4	0.2	9.0	9.8	55.8
	65+ years	2.0	2.3	0.5	10.2	0.7	0.4	0.2	10.0	10.3	63.2
Gender	Male	12.7	1.3	0.9	6.1	0.3	0.3	4.9	11.3	10.1	52.1
	Female	7.3	1.1	0.6	13.6	2.0	0.3	4.5	8.9	9.1	52.6
Race	African	8.8	1.5	0.8	10.3	1.2	0.3	5.0	10.2	9.0	52.8
	Coloured	12.2	0.3	0.5	8.6	1.3	0.5	3.7	10.0	11.8	51.2
	Indian/Asian	15.4	0.1	0.4	8.0	1.0	0.3	4.6	8.0	11.0	51.4
	White	14.7	0.2	0.4	8.8	1.0	0.2	3.1	9.2	11.8	50.6
Province	Western Cape	13.1	0.2	0.7	9.1	1.3	0.5	3.2	10.1	11.4	50.4
	Eastern Cape	6.7	2.8	0.7	11.2	1.2	0.4	4.9	10.1	7.4	54.8
	Northern Cape	9.6	0.6	0.3	9.3	1.1	0.4	5.6	8.1	11.4	53.5
	Free State	9.0	0.5	0.5	10.8	1.2	0.2	4.7	9.1	10.2	53.8
	KwaZulu-Natal	10.4	2.0	0.5	10.1	0.9	0.2	6.4	9.1	8.0	52.5
	North West	8.8	0.6	0.7	9.1	1.4	0.4	3.9	11.1	10.2	53.8
	Gauteng	12.5	0.1	0.9	9.4	1.4	0.3	3.8	9.2	11.3	51.2
	Mpumalanga	9.9	1.1	0.9	10.3	1.1	0.3	6.2	9.6	9.8	50.8
	Limpopo	5.4	2.1	1.0	10.2	1.2	0.4	3.8	14.2	8.5	53.1
Highest educational attainment	None	4.4	4.3	0.7	10.6	1.0	0.3	0.3	9.9	6.0	62.4
	Primary	4.0	1.9	0.6	7.7	0.6	0.3	9.0	12.8	8.3	54.9
	Secondary	8.4	1.1	0.8	10.9	1.4	0.3	5.3	9.7	9.9	52.1
	Matric	16.0	0.4	0.7	10.4	1.5	0.3	1.5	8.7	10.7	49.7
	Post-Matric	20.3	0.2	0.4	8.8	1.2	0.4	1.2	8.4	10.6	48.5
	Other/unspecified	16.4	1.1	0.8	9.3	2.4	0.0	1.3	9.0	10.0	49.7

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Table 4.8: Continued

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Marital status	Unmarried	7.1	1.1	0.5	9.0	0.9	0.2	7.9	11.3	9.8	52.0
	Married/live together	15.4	1.3	1.0	11.1	1.7	0.4	0.4	8.0	9.2	51.5
	Widowed/divorced	6.8	2.0	0.9	11.9	1.1	0.5	0.3	9.2	9.3	58.2
Labour market status	Employed	26.6	0.5	1.6	7.2	0.8	0.3	0.4	7.0	7.6	48.0
	Unemployed	2.5	1.1	0.2	14.1	2.3	0.4	1.4	11.5	13.0	53.5
	Inactive	0.4	1.7	0.2	11.2	1.3	0.3	7.7	11.8	10.4	55.0
SES quintile	Quintile1	7.7	3.2	0.8	10.9	1.2	0.3	4.5	10.9	4.0	56.6
	Quintile2	8.0	1.6	0.7	10.7	1.2	0.3	5.0	10.5	9.4	52.5
	Quintile3	9.0	0.8	0.8	10.0	1.3	0.4	5.0	10.0	10.9	51.8
	Quintile4	11.1	0.2	0.7	9.4	1.2	0.4	4.9	9.3	11.9	50.9
	Quintile5	13.9	0.1	0.6	8.7	1.1	0.2	4.1	9.4	11.9	50.0
Real per capita income quintile	Quintile1	3.4	2.5	0.8	10.2	1.3	0.3	6.4	12.0	8.0	55.0
	Quintile2	5.5	1.8	0.8	10.5	1.2	0.4	5.8	11.0	8.9	54.0
	Quintile3	9.5	1.2	0.8	10.6	1.3	0.3	4.2	9.5	9.6	52.9
	Quintile4	14.0	0.5	0.7	9.5	1.1	0.3	4.0	8.9	10.1	50.9
	Quintile5	17.5	0.2	0.5	9.0	1.1	0.2	3.2	8.6	10.9	48.8
Household size	One person	17.5	0.8	1.1	11.2	0.6	0.4	1.0	7.4	7.7	52.3
	Two persons	13.7	0.8	0.8	11.4	1.7	0.3	1.9	8.2	9.2	52.1
	Three persons	9.2	1.0	0.7	10.2	1.3	0.3	5.2	10.2	10.1	51.8
	Four to five persons	8.5	1.2	0.7	9.3	1.1	0.4	5.8	10.8	10.1	52.2
	More than five	5.9	2.1	0.6	8.9	1.0	0.3	6.7	11.5	9.3	53.6
Number of children in the household	None	8.1	1.2	0.6	8.9	0.4	0.3	6.5	10.9	10.0	53.1
	One child	14.0	1.0	0.9	12.0	2.8	0.3	0.9	8.0	9.0	51.0
	Two children	14.8	1.1	1.0	12.1	2.8	0.4	0.8	8.0	8.7	50.2
	Three children	12.9	1.5	1.3	12.8	3.2	0.5	0.6	8.4	8.0	50.9
	More than three	10.1	2.8	1.7	12.2	3.0	0.6	1.5	8.8	7.1	52.2

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[8]: Social and cultural
[9]: Mass media use
[10]: Personal care

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Table 4.9: Proportion of time spent on paid work, non-paid work, non-work, self-care and leisure activities, by various personal characteristics

	2000										2010									
	Paid	Unpaid work						Non work			Paid	Unpaid						Non work		
	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]
All																				
All	7.7	2.8	9.1	1.0	0.3	0.3	13.5	7.1	20.9	50.8	9.2	2.7	10.0	1.0	0.2	0.3	14.1	4.7	19.6	52.4
Age cohort																				
10-14yrs	0.7	1.4	4.9	0.2	0.1	0.1	6.7	18.4	22.9	51.3	0.6	0.8	4.9	0.1	0.1	0.1	6.0	16.4	24.4	52.6
15-24yrs	4.0	2.1	8.6	1.2	0.2	0.2	12.4	12.9	21.7	49.0	4.4	1.9	10.1	1.1	0.1	0.2	13.4	9.0	21.6	51.6
25-34yrs	12.4	3.8	10.9	1.8	0.4	0.3	17.2	1.0	20.5	48.9	13.9	3.9	11.2	1.8	0.2	0.3	17.4	0.6	17.4	50.6
35-44yrs	13.6	4.4	11.1	1.3	0.4	0.4	17.6	0.4	18.9	49.5	15.9	4.2	10.7	1.2	0.3	0.4	16.8	0.3	16.8	50.2
45-54yrs	14.2	4.2	9.8	0.7	0.4	0.5	15.6	0.4	18.8	51.0	14.3	3.8	10.8	0.5	0.2	0.5	15.8	0.3	17.6	51.9
55-64yrs	9.9	2.7	11.5	0.9	0.4	0.5	15.9	0.2	20.1	53.9	10.0	2.1	11.9	0.6	0.2	0.4	15.2	0.2	18.8	55.8
65+yrs	4.1	1.1	9.2	0.3	0.2	0.3	11.1	0.1	21.8	62.9	4.0	0.9	10.2	0.3	0.4	0.4	12.3	0.2	20.4	63.2
Gender																				
Male	9.9	3.3	5.1	0.1	0.1	0.4	9.0	7.6	22.9	50.6	11.6	3.3	6.1	0.2	0.1	0.3	10.0	4.9	21.4	52.1
Female	5.7	2.3	12.6	1.8	0.4	0.2	17.4	6.7	19.2	51.1	6.9	2.1	13.6	1.7	0.3	0.3	18.0	4.5	18.0	52.6
Race																				
African	6.6	2.9	9.4	1.0	0.3	0.3	13.9	7.7	20.3	51.5	8.4	2.7	10.3	1.0	0.2	0.3	14.5	5.0	19.2	52.8
Coloured	10.3	3.6	7.4	0.7	0.3	0.1	12.1	7.1	20.1	50.4	10.3	2.6	8.6	1.1	0.3	0.5	13.0	3.7	21.8	51.2
Indian/Asian	9.0	2.3	7.5	1.3	0.3	0.3	11.7	5.2	23.5	50.5	12.9	3.0	8.0	0.8	0.2	0.3	12.2	4.6	18.9	51.4
White	13.1	2.5	8.3	1.0	0.4	0.3	12.5	4.7	22.9	46.8	12.8	2.6	8.8	0.6	0.4	0.2	12.6	3.1	21.0	50.6
Province																				
Western Cape	9.3	2.6	8.1	1.0	0.4	0.4	12.6	4.9	23.6	49.6	10.9	3.1	9.1	1.0	0.3	0.5	14.0	3.2	21.5	50.4
Eastern Cape	6.9	2.4	9.7	1.1	0.2	0.2	13.6	8.0	19.9	51.6	7.8	2.4	11.2	1.0	0.1	0.4	15.2	4.9	17.4	54.8
Northern Cape	9.3	2.4	9.1	1.1	0.4	0.5	13.5	6.1	20.8	50.3	8.8	1.7	9.3	0.8	0.2	0.4	12.6	5.6	19.5	53.5
Free State	7.9	2.3	8.6	0.7	0.2	0.2	11.9	6.0	24.7	49.4	8.1	1.9	10.8	1.0	0.2	0.2	14.2	4.7	19.3	53.8
KwaZulu-Natal	7.0	3.3	9.3	0.9	0.4	0.3	14.3	7.4	18.1	53.2	9.9	2.9	10.1	0.8	0.1	0.2	14.0	6.4	17.1	52.5
North West	6.7	2.4	10.0	1.1	0.2	0.2	14.0	6.7	20.8	51.8	7.9	2.2	9.1	1.2	0.2	0.4	13.1	3.9	21.3	53.8
Gauteng	10.0	3.0	8.7	1.2	0.3	0.3	13.4	5.7	21.6	49.4	10.4	3.1	9.4	1.1	0.3	0.3	14.1	3.8	20.5	51.2
Mpumalanga	7.0	2.8	9.3	1.3	0.4	0.4	14.2	7.1	24.2	47.5	9.2	2.8	10.3	0.9	0.2	0.3	14.5	6.2	19.4	50.8
Limpopo	5.6	2.8	8.7	0.9	0.2	0.3	12.8	10.4	20.1	51.1	23.3	5.4	7.2	0.6	0.2	0.3	13.7	0.4	14.6	48.0

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Table 4.9: Continued

	2000										2010									
	Paid	Unpaid work						Non work			Paid	Unpaid work						Non work		
	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]
Highest educational attainment																				
None	7.3	2.9	10.4	1.0	0.3	0.4	15.1	0.3	18.2	59.1	1.1	2.8	14.1	2.0	0.3	0.4	19.6	1.4	24.5	53.5
Incomplete primary	4.8	2.6	7.4	0.6	0.2	0.2	11.0	10.5	20.8	52.9	1.3	1.0	11.2	1.1	0.2	0.3	13.8	7.7	22.2	55.0
Incomplete secondary	6.6	2.6	9.9	1.2	0.3	0.2	14.3	8.4	20.9	49.8	6.3	2.2	10.2	1.1	0.1	0.4	14.0	3.8	22.8	53.1
Matric	11.4	3.1	9.9	1.3	0.4	0.4	15.1	2.9	22.8	47.8	7.2	2.2	10.6	0.8	0.2	0.3	14.2	0.3	15.9	62.4
Post-Matric	16.4	3.6	8.5	1.1	0.4	0.8	14.4	1.9	21.6	45.6	4.8	1.7	7.7	0.5	0.1	0.3	10.3	9.0	21.1	54.9
Other/unspecified	8.4	3.0	6.5	0.7	0.2	0.6	10.9	3.7	23.2	53.7	7.9	2.5	10.9	1.2	0.2	0.3	15.1	5.3	19.6	52.1
Marital status																				
Unmarried	4.6	2.3	8.0	0.7	0.2	0.2	11.5	11.9	21.7	50.4	13.6	3.6	10.4	1.2	0.2	0.3	15.8	1.5	19.4	49.7
Married/live together	12.8	3.6	10.5	1.5	0.4	0.4	16.5	0.4	20.0	50.3	17.0	3.9	8.8	0.9	0.3	0.4	14.3	1.2	19.0	48.5
Widowed/divorced	8.7	2.8	10.8	1.0	0.4	0.4	15.4	0.2	19.4	56.3	15.1	3.2	9.3	1.4	1.0	0.0	14.9	1.3	19.0	49.7
Labour market status																				
Employed	16.4	4.2	8.1	0.9	0.3	0.4	13.9	2.4	18.9	48.4	6.5	2.2	9.0	0.8	0.1	0.2	12.4	7.9	21.2	52.0
Unemployed	1.3	4.2	14.4	1.8	0.5	0.4	21.4	0.8	24.9	51.6	14.1	3.6	11.1	1.4	0.3	0.4	16.8	0.4	17.3	51.5
Inactive	1.0	1.3	9.1	1.0	0.3	0.2	11.9	12.1	22.2	52.9	7.6	2.0	11.9	0.9	0.2	0.5	15.5	0.3	18.4	58.2
SES quintile																				
Quintile1	6.2	3.5	9.7	1.1	0.2	0.2	14.8	8.1	16.1	54.8	8.4	3.2	10.9	1.1	0.1	0.3	15.6	4.5	14.9	56.6
Quintile2	6.5	3.0	9.7	1.0	0.2	0.4	14.3	7.3	20.0	52.0	7.8	2.5	10.7	1.1	0.1	0.3	14.7	5.0	19.9	52.5
Quintile3	6.3	2.6	9.9	1.2	0.3	0.3	14.1	7.2	21.8	50.5	8.2	2.4	10.0	1.1	0.2	0.4	14.1	5.0	20.9	51.8
Quintile4	7.8	2.3	8.5	1.0	0.3	0.2	12.3	7.1	23.3	49.5	9.5	2.5	9.4	1.0	0.2	0.4	13.5	4.9	21.2	50.9
Quintile5	11.8	2.5	7.6	0.9	0.4	0.4	11.8	5.7	23.5	47.2	11.9	2.7	8.7	0.8	0.3	0.2	12.7	4.1	21.3	50.0
Real per capita income quintile																				
Quintile1	4.5	2.9	9.3	1.0	0.3	0.2	13.8	9.3	19.9	52.5	4.5	2.2	10.2	1.1	0.2	0.3	14.1	6.4	20.0	55.0
Quintile2	4.0	2.2	9.2	1.0	0.3	0.3	13.1	9.2	21.1	52.7	5.9	2.2	10.5	1.1	0.1	0.4	14.3	5.8	19.9	54.0
Quintile3	6.2	2.6	10.2	1.1	0.2	0.3	14.5	6.0	20.7	52.5	8.9	2.6	10.6	1.1	0.2	0.3	14.8	4.2	19.0	52.9
Quintile4	9.2	2.8	9.1	1.1	0.2	0.3	13.6	5.7	21.3	50.2	12.0	3.2	9.5	0.8	0.2	0.3	14.0	4.0	19.1	50.9
Quintile5	14.0	3.0	7.7	0.9	0.4	0.3	12.2	5.1	21.8	46.8	14.9	3.3	9.0	0.8	0.3	0.2	13.6	3.2	19.5	48.8

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Table 4.9: Continued

	2000										2010									
	Paid	Unpaid work						Non work			Paid	Unpaid work						Non work		
	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]
Household size																				
One person	14.2	3.6	11.2	0.8	0.2	0.2	16.0	1.1	17.7	51.0	15.6	3.8	11.2	0.6	0.1	0.4	16.0	1.0	15.1	52.3
Two persons	11.4	3.3	10.4	1.5	0.4	0.4	16.0	2.4	20.3	50.0	12.1	3.2	11.4	1.4	0.2	0.3	16.6	1.9	17.3	52.1
Three persons	7.8	2.6	9.5	1.1	0.3	0.3	13.9	6.7	21.0	50.6	8.4	2.4	10.2	1.1	0.3	0.3	14.2	5.2	20.3	51.8
Four to five persons	7.0	2.7	8.5	0.9	0.2	0.2	12.7	8.0	21.6	50.7	7.8	2.5	9.3	0.9	0.2	0.4	13.2	5.8	20.9	52.2
More than five persons	4.4	2.4	8.0	0.8	0.3	0.4	12.0	10.7	21.2	51.7	6.5	2.2	8.9	0.8	0.1	0.3	12.3	6.7	20.9	53.6
Number of children in the household																				
None	6.0	2.4	7.8	0.3	0.1	0.2	10.9	9.7	21.9	51.4	7.6	2.3	8.9	0.3	0.1	0.3	11.9	6.5	20.9	53.1
One child	10.4	3.5	12.5	3.0	0.6	0.4	20.0	0.9	19.0	49.6	12.4	3.5	12.0	2.5	0.3	0.3	18.7	0.9	17.1	51.0
Two children	13.1	3.6	11.3	2.6	0.7	0.6	18.8	0.7	18.8	48.6	13.4	3.6	12.1	2.4	0.4	0.4	18.9	0.8	16.8	50.2
Three children	13.0	4.2	11.8	2.7	0.5	0.2	19.4	0.6	17.8	49.2	12.1	3.5	12.8	2.8	0.3	0.5	19.9	0.6	16.5	50.9
More than three	10.6	5.0	12.5	2.3	0.7	0.4	20.8	0.3	17.2	51.1	11.2	3.4	12.2	2.8	0.2	0.6	19.1	1.5	15.9	52.2

Note: [A]: Paid work activities [B]: Unpaid work-SNA [C]: Unpaid work – housework [D]: Unpaid work – childcare [E]: Unpaid work – adult care
[F]: Unpaid work – social care [G]: Learning [H]: Leisure [I]: Selfcare

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Proceeding to the results by educational attainment, individuals with incomplete education had the lowest percentage household maintenance and work in establishments time share, as they invested most in the learning activity. The percentage of time spent on work in establishments was the highest for those with post-Matric qualifications, followed by those with Matric only (20% and 16% respectively, in 2010).

The percentage of time spent on both work in establishments and household maintenance were the lowest for unmarried people. This finding possibly can be attributed to the fact that they invested a greater share of their time on learning. For the results by labour market status, the percentage of time spent on work in establishment was highest for the employed (17.3% in 2000 and 26.6% in 2010).

Proceeding to SES quintile and real per capita income quintiles, the percentage of time spent on work in establishments was the highest in quintile5 followed by quintiles4 (for both SES and income quintiles). Moreover, the time spent percentages for work in establishments increased over time for both SES and income quintiles (an exception was income quintile1).

As household size increased, the share of time devoted to work in establishment and household maintenance decreased, whereas the respective shares on learning as well as social and cultural activities increased. With more members sharing responsibilities as household size increased, they could have allocated more time to develop themselves and those outside the household or it could be attributed to more members falling in the education age groups. Furthermore, the share of time on work in establishments and household maintenance were the lowest for households without children even though percentage time allocated to these categories increased over time. Households without children too allocated the highest percentage of their time to learning, although it decreased over time.

Moving on to Table 4.9, individuals allocated the greatest share of time (slightly above 50%) on selfcare, followed by leisure (about 20%), paid work activities (8%-9%) and learning (5%-7%). Moving on to the key results by age cohort, the table indicates that individuals from the middle-age cohorts spent the highest percentage of time on both paid and unpaid SNA work activities, at about 14% and 4% respectively.

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With regard to the findings by gender, Table 4.9 shows that while males spent a relatively greater share of time on paid work activities (around 10%, compared to 6% in the case of females), the opposite happened when it comes to unpaid household work, as this time share for female (13%) was more than double the male time share (5%-6%). Proceeding to race, the share of time spent on paid work was the lowest for Africans but the time share on unpaid work was the highest for them. Africans also spent a relatively greater time share (around 10%) on unpaid household work activities, compared to the other three race groups.

Some interesting findings by educational attainment category are observed. First, the share of time spent on paid work by individuals with more than Matric dropped from 16.4% to 4.8% (almost 12 percentage points) over time, they moved from having the highest percentage to the third lowest in paid work. The decrease was offset by the increased time share on learning (1.9% in 2000 and 9.0% in 2010) and personal time (45.6% versus 54.9%). Similar to the education category, those employed moved from having the highest percentage to the lowest in paid work. Again, the drop was offset by increased learning and personal time. In addition, the unmarried moved from having the smallest percentage in unpaid work to having the highest percentage in unpaid work over time.

For both the SES and income quintile categorical variables, individuals from the higher quintiles were associated with greater share of time spent on paid work activities and leisure, but small share on selfcare. In addition, individuals coming from households with fewer members spent a greater proportion of time on both paid work and unpaid household activities, but a lower share of time on learning. Finally, in general people coming from households with more children spent a greater percentage of their time on paid work and unpaid household work activities.

To conclude the descriptive statistics section, Tables 4.10-4.12 show the percentage of individuals in the weighted sample spending zero time on each activity, again using the SNA classification (Tables 4.10 and 4.11) and author's adapted classification (Table 4.12). The aim of these statistics is to highlight the high percentage of individuals spending zero time on activities which may cause the forthcoming OLS and Tobit regression results to differ significantly.

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Table 4.10: Proportion of individuals spending zero time on each category in the activity classification system, 2000

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
All	All	75.7	80.8	94.4	19.5	81.3	96.2	71.6	13.4	30.2	0.0
Age cohort	10-14 years	97.6	72.9	97.9	25.9	93.4	96.0	27.9	4.7	33.0	0.0
	15-24 years	86.3	78.9	96.3	14.9	83.2	96.7	52.7	10.5	28.5	0.0
	25-34 years	60.0	85.5	92.0	17.1	70.6	96.7	93.7	16.4	27.3	0.0
	35-44 years	55.1	86.6	92.9	19.2	73.6	95.9	94.1	19.4	26.5	0.0
	45-54 years	55.7	82.6	91.1	20.1	81.5	95.5	95.0	16.3	31.2	0.0
	55-64 years	73.2	80.1	92.1	19.5	80.2	95.4	97.0	18.1	32.0	0.0
	65+ years	93.0	82.4	93.6	28.1	90.3	95.1	99.1	18.8	43.1	0.0
Gender	Male	69.1	80.9	94.9	31.3	93.9	96.1	70.3	10.7	28.9	0.0
	Female	81.5	80.7	93.9	9.1	70.3	96.3	72.7	15.7	31.3	0.0
Race	African	79.8	75.8	94.4	16.9	82.0	95.9	69.9	13.9	35.8	0.0
	Coloured	60.9	98.5	97.4	29.2	87.0	98.2	73.8	15.9	7.8	0.0
	Indian/Asian	69.8	96.5	95.7	26.9	76.0	97.5	78.6	10.0	17.0	0.0
	White	56.9	96.5	92.5	27.8	79.4	96.8	76.2	12.0	10.0	0.0
Province	Western Cape	68.8	97.3	95.5	25.7	79.0	96.1	78.3	12.1	15.4	0.0
	Eastern Cape	82.2	65.6	93.4	18.5	80.8	97.2	67.4	14.4	38.1	0.0
	Northern Cape	69.5	92.0	95.4	21.2	75.4	95.3	75.6	11.4	30.9	0.0
	Free State	70.7	84.2	95.4	16.9	80.8	96.0	73.4	6.4	21.8	0.0
	KwaZulu-Natal	78.7	74.8	95.8	16.0	85.0	95.1	72.0	13.9	42.5	0.0
	North West	76.2	78.8	94.1	13.4	78.9	95.6	72.4	18.8	32.9	0.0
	Gauteng	66.1	96.5	93.8	22.6	79.4	97.0	76.1	17.8	20.2	0.0
	Mpumalanga	78.0	78.6	88.5	17.0	81.8	94.7	68.4	6.1	27.4	0.0
	Limpopo	85.8	70.0	95.8	23.5	83.4	97.2	62.2	9.6	31.3	0.0
Highest educational attainment	None	81.3	70.9	94.1	21.8	83.6	94.7	98.2	17.4	58.1	0.0
	Primary	86.3	70.3	94.8	22.1	87.8	96.6	58.2	9.1	40.8	0.0
	Secondary	78.2	83.4	94.6	16.4	78.7	96.6	68.3	14.4	25.6	0.0
	Matric	62.5	93.8	94.3	19.8	76.6	96.7	87.2	17.5	14.3	0.0
	Post-Matric	45.5	95.1	92.5	21.9	76.4	94.2	85.2	14.6	12.1	0.0
	Other/unspecified	71.1	74.6	98.9	27.8	82.1	89.8	76.5	4.4	29.9	0.0

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Table 4.10: Continued

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Marital status	Unmarried	84.8	78.2	95.8	18.2	86.6	96.5	54.5	11.3	30.4	0.0
	Married/live together	60.4	84.1	92.4	22.8	72.9	95.8	94.9	15.5	27.7	0.0
	Widowed/divorced	73.2	86.1	91.8	15.1	77.9	95.6	97.0	19.6	38.4	0.0
Labour market status	Employed	49.8	83.8	90.5	22.1	80.4	96.1	87.6	16.4	28.4	0.0
	Unemployed	86.0	83.0	97.1	11.8	70.9	96.2	94.9	15.2	26.9	0.0
	Inactive	96.8	77.9	97.3	18.3	83.6	96.2	54.1	10.5	32.2	0.0
SES quintile	Quintile1	83.4	60.6	95.7	16.0	82.9	96.3	70.6	12.9	63.7	0.0
	Quintile2	80.3	72.4	93.9	16.0	81.7	94.9	69.4	11.9	40.2	0.0
	Quintile3	79.5	81.1	95.0	17.0	81.5	96.6	72.1	14.5	23.9	0.0
	Quintile4	74.2	93.2	93.4	20.8	79.8	97.1	71.3	14.8	13.9	0.0
	Quintile5	60.4	97.3	93.8	28.0	80.7	96.0	74.6	12.8	8.4	0.0
Real per capita income quintile	Quintile1	87.4	65.7	94.6	17.3	80.9	96.2	64.0	11.4	44.1	0.0
	Quintile2	88.6	75.5	94.2	17.9	82.4	95.1	65.2	11.7	36.1	0.0
	Quintile3	79.9	79.2	94.6	15.4	82.1	95.9	75.9	14.1	37.0	0.0
	Quintile4	69.5	88.2	95.0	18.5	81.8	96.9	77.1	16.0	21.2	0.0
	Quintile5	54.6	95.4	93.5	26.4	80.5	96.6	76.6	13.5	12.6	0.0
Household size	One person	53.0	86.3	92.9	7.9	86.7	96.9	93.4	25.2	33.4	0.0
	Two persons	63.3	84.2	93.1	16.6	75.3	95.6	88.4	14.4	27.0	0.0
	Three persons	74.9	84.1	94.7	18.7	78.4	96.4	71.7	12.5	30.0	0.0
	Four to five persons	77.6	81.6	94.7	22.7	82.4	97.2	67.6	12.8	28.5	0.0
	More than five	87.7	73.7	94.9	20.5	84.5	94.9	60.1	11.1	33.9	0.0
Number of children in the household	None	80.7	80.8	95.3	20.3	91.6	96.3	62.5	11.9	30.0	0.0
	One child	66.5	82.3	92.3	13.8	55.6	95.6	92.5	18.1	31.2	0.0
	Two children	60.4	83.8	93.3	19.6	56.6	95.6	93.1	14.5	25.3	0.0
	Three children	59.5	79.0	91.7	21.5	59.0	97.1	92.9	17.5	31.3	0.0
	More than three	68.9	70.5	89.6	20.1	58.2	96.3	96.3	17.5	41.5	0.0

[1]: Work in establishments
[2]: Primary production not for establishments
[3]: Other production of good and services not for establishments
[4]: Household maintenance
[5]: Care of persons in the household
[6]: Community service to non-household members
[7]: Learning
[8]: Social and cultural
[9]: Mass media use
[10]: Personal care

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Table 4.11: Proportion of individuals spending zero time on each category in the activity classification system, 2010

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
All	All	70.6	85.9	93.5	18.3	83.1	96.2	78.1	28.1	21.6	0.0
Age cohort	10-14 years	91.9	82.4	96.6	25.7	94.9	97.1	34.6	9.6	20.2	0.0
	15-24 years	82.4	84.5	95.0	12.9	84.1	96.6	63.2	23.0	20.6	0.0
	25-34 years	56.6	89.4	93.4	15.9	73.4	96.5	93.1	35.0	21.9	0.0
	35-44 years	51.3	89.8	91.4	19.7	78.0	96.0	92.9	35.3	21.7	0.0
	45-54 years	57.3	86.9	90.7	21.5	86.3	94.9	94.1	33.4	22.3	0.0
	55-64 years	73.3	81.9	91.9	18.7	86.8	95.4	94.4	33.1	22.0	0.0
	65+ years	92.6	80.7	92.8	23.7	90.5	96.0	95.5	30.6	25.9	0.0
Gender	Male	64.1	85.6	93.5	28.0	94.0	96.4	77.1	25.1	20.5	0.0
	Female	76.7	86.2	93.5	9.2	72.9	96.1	79.0	30.8	22.6	0.0
Race	African	73.3	82.8	93.1	15.7	83.1	96.4	76.9	27.8	24.2	0.0
	Coloured	63.2	96.7	94.6	25.9	78.8	95.4	82.3	28.8	13.4	0.0
	Indian/Asian	59.4	97.1	96.2	36.4	87.1	96.9	80.0	35.2	11.9	0.0
	White	59.6	96.9	94.7	25.9	86.0	96.0	83.4	27.0	11.8	0.1
Province	Western Cape	58.8	96.7	92.4	23.5	79.7	94.5	82.9	31.4	16.7	0.1
	Eastern Cape	75.5	72.0	94.4	13.1	83.3	95.9	77.6	24.0	30.0	0.0
	Northern Cape	73.3	90.9	95.2	23.0	80.9	95.1	77.1	32.1	16.5	0.0
	Free State	72.6	91.3	94.0	14.5	81.6	97.1	77.7	32.7	18.5	0.0
	KwaZulu-Natal	71.2	79.0	94.8	18.1	87.4	96.6	73.6	30.9	25.3	0.0
	North West	73.9	87.8	93.8	23.0	83.7	96.5	81.2	32.1	24.1	0.0
	Gauteng	65.2	95.7	92.9	19.5	81.4	96.5	80.6	28.4	14.0	0.0
	Mpumalanga	71.6	86.4	93.1	16.9	83.3	96.3	71.5	23.3	15.1	0.0
	Limpopo	82.7	79.4	91.6	16.4	82.4	96.6	80.4	20.9	30.9	0.0
Highest educational attainment	None	85.6	68.9	92.6	21.4	86.1	96.6	95.4	31.5	45.1	0.0
	Primary	83.4	78.2	93.8	22.6	90.2	96.2	62.5	18.9	27.6	0.0
	Secondary	73.9	85.9	92.9	15.3	81.1	96.4	76.6	29.1	21.0	0.0
	Matric	57.6	93.7	94.1	17.9	80.4	96.4	89.2	33.3	14.8	0.0
	Post-Matric	45.1	95.8	94.8	22.5	81.5	95.2	88.1	30.7	13.5	0.0
	Other/unspecified	59.0	90.4	98.0	34.1	76.0	97.2	91.6	16.4	13.8	1.6

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Table 4.11: Continued

		SNA production			Non-SNA production			Non-productive			
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Marital status	Unmarried	76.8	85.3	94.5	16.2	86.8	96.6	66.8	24.0	21.2	0.0
	Married/live together	58.2	88.0	92.3	22.9	76.8	95.8	93.2	33.5	20.9	0.0
	Widowed/divorced	78.6	82.2	91.5	14.1	83.3	95.7	95.1	34.1	27.3	0.0
Labour market status	Employed	29.9	93.1	90.5	25.8	85.3	96.4	93.5	38.3	22.7	0.0
	Unemployed	86.9	87.1	95.4	8.4	72.3	95.1	89.8	21.8	14.2	0.0
	Inactive	93.9	81.3	95.1	14.8	83.1	96.3	67.2	22.4	21.8	0.0
SES quintile	Quintile1	75.8	67.9	93.0	14.4	84.8	96.3	80.2	25.6	55.7	0.0
	Quintile2	75.5	81.8	93.0	13.8	82.0	96.3	76.4	27.3	19.4	0.0
	Quintile3	73.3	88.4	93.1	17.4	82.6	96.1	76.7	29.0	12.5	0.0
	Quintile4	66.9	95.6	93.8	20.2	82.3	96.1	77.4	31.2	9.6	0.0
	Quintile5	61.0	97.0	94.6	26.3	83.9	96.4	79.9	27.4	9.9	0.0
Real per capita income quintile	Quintile1	85.8	73.9	92.4	15.3	83.0	95.8	72.1	22.1	31.8	0.0
	Quintile2	81.1	79.9	93.1	15.9	82.1	96.0	74.8	24.3	25.8	0.0
	Quintile3	71.4	85.7	93.0	16.8	80.9	96.5	79.5	29.8	22.0	0.0
	Quintile4	61.8	92.7	93.9	19.3	84.4	96.2	80.7	31.6	16.1	0.0
	Quintile5	52.1	96.4	94.8	22.8	84.0	96.6	83.0	32.0	13.1	0.0
Household size	One person	51.9	88.7	92.3	8.0	91.0	96.0	92.0	43.1	30.2	0.0
	Two persons	61.7	89.8	93.0	17.3	78.4	96.8	88.1	33.1	22.7	0.0
	Three persons	72.3	87.7	93.6	18.1	80.5	96.4	75.9	27.3	19.3	0.0
	Four to five persons	73.7	85.6	93.7	20.3	84.0	96.2	74.4	25.1	19.7	0.0
	More than five	80.6	79.3	94.1	20.2	86.0	95.6	70.6	22.5	22.6	0.0
Number of children in the household	None	74.9	85.6	94.0	18.4	92.7	96.4	72.1	25.2	21.0	0.0
	One child	61.3	88.0	92.8	17.1	62.5	96.3	90.9	35.3	22.0	0.0
	Two children	58.5	88.0	92.1	18.5	62.4	95.4	91.3	35.1	21.3	0.0
	Three children	63.7	83.6	92.0	18.8	59.9	96.0	92.1	30.4	25.5	0.0
	More than three	70.3	76.9	91.2	19.5	64.0	94.9	90.0	29.1	30.2	0.2

[1]: Work in establishments
[2]: Primary production not for establishments
[3]: Other production of good and services not for establishments
[4]: Household maintenance
[5]: Care of persons in the household
[6]: Community service to non-household members
[7]: Learning
[8]: Social and cultural
[9]: Mass media use
[10]: Personal care

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Table 4.12: Proportion of individuals spending zero time spent on paid work, non-paid work, non-work, self-care and leisure activities, by various personal characteristics

	2000										2010									
	Paid	Unpaid work						Non work			Paid	Unpaid						Non work		
	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]
All																				
All	68.2	61.5	19.5	83.5	94.1	96.2	10.3	71.6	4.5	0.0	63.9	63.9	18.3	85.1	95.8	96.2	8.6	78.1	6.1	0.0
Age cohort																				
10-14yrs	89.4	73.4	25.9	95.7	97.2	96.0	20.9	27.9	1.5	0.0	88.5	81.3	25.7	96.4	98.1	97.1	21.2	34.6	1.4	0.0
15-24yrs	80.6	69.2	14.9	84.3	95.3	96.7	9.2	52.7	3.4	0.0	78.2	72.9	12.9	85.4	97.0	96.6	7.2	63.2	4.6	0.0
25-34yrs	55.6	50.2	17.1	72.4	91.9	96.7	5.3	93.7	5.0	0.0	52.8	51.8	15.9	74.7	94.5	96.5	3.6	93.1	7.8	0.0
35-44yrs	50.6	46.5	19.2	76.1	91.7	95.9	4.7	94.1	5.8	0.0	45.0	47.6	19.7	80.4	93.8	96.0	4.3	92.9	7.6	0.0
45-54yrs	46.4	46.4	20.1	85.7	92.7	95.5	5.9	95.0	5.5	0.0	47.5	53.1	21.5	89.6	95.4	94.9	6.4	94.1	7.5	0.0
55-64yrs	57.2	63.7	19.5	84.5	91.9	95.4	7.0	97.0	6.2	0.0	57.6	68.4	18.7	90.1	95.5	95.4	9.3	94.4	7.3	0.0
65+yrs	75.6	83.0	28.1	92.3	96.3	95.1	21.8	99.1	10.4	0.0	73.3	85.6	23.7	93.8	96.3	96.0	18.0	95.5	8.3	0.0
Gender																				
Male	60.6	56.9	31.3	95.8	97.1	96.1	14.9	70.3	3.8	0.0	57.3	58.2	28.0	96.0	97.2	96.4	12.2	77.1	5.3	0.0
Female	74.9	65.6	9.1	72.7	91.4	96.3	6.2	72.7	5.2	0.0	70.0	69.3	9.2	75.0	94.5	96.1	5.2	79.0	6.8	0.0
Race																				
African	70.7	61.3	16.9	83.8	94.8	95.9	9.2	69.9	5.4	0.0	65.2	64.4	15.7	84.5	96.6	96.4	7.5	76.9	6.8	0.0
Coloured	64.0	62.4	29.2	89.8	94.4	98.2	12.7	73.8	1.4	0.0	63.2	63.1	25.9	81.9	92.9	95.4	12.3	82.3	3.6	0.0
Indian/Asian	69.1	67.4	26.9	78.5	92.9	97.5	14.7	78.6	2.7	0.0	58.3	60.2	36.4	89.3	96.6	96.9	14.9	80.0	3.1	0.0
White	53.1	57.7	27.8	83.4	90.7	96.8	13.2	76.2	1.1	0.0	56.4	62.0	25.9	91.1	92.0	96.0	11.7	83.4	3.9	0.1
Province																				
Western Cape	67.9	67.3	25.7	82.5	90.9	96.1	14.3	78.3	2.8	0.0	61.1	59.1	23.5	82.9	92.8	94.5	10.2	82.9	5.0	0.1
Eastern Cape	64.5	59.9	18.5	82.5	95.7	97.2	9.6	67.4	6.5	0.0	62.6	60.4	13.1	84.9	96.1	95.9	7.4	77.6	8.6	0.0
Northern Cape	68.0	63.6	21.2	79.7	90.2	95.3	11.8	75.6	3.6	0.0	68.8	70.6	23.0	83.7	93.5	95.1	13.0	77.1	5.1	0.0
Free State	68.1	60.6	16.9	83.5	94.5	96.0	8.8	73.4	2.2	0.0	68.3	69.2	14.5	84.3	94.4	97.1	8.2	77.7	6.1	0.0
KwaZulu-Natal	70.0	57.2	16.0	86.8	93.9	95.1	7.8	72.0	6.5	0.0	60.7	60.0	18.1	88.3	98.1	96.6	7.5	73.6	7.1	0.0
North West	72.4	60.9	13.4	81.1	94.4	95.6	8.1	72.4	5.5	0.0	68.8	67.8	23.0	85.0	97.0	96.5	11.9	81.2	7.9	0.0
Gauteng	65.8	64.4	22.6	81.4	94.1	97.0	11.1	76.1	4.0	0.0	63.2	65.4	19.5	84.4	94.1	96.5	8.4	80.6	4.4	0.0
Mpumalanga	66.0	61.8	17.0	84.6	92.4	94.7	9.1	68.4	2.2	0.0	64.2	64.3	16.9	84.5	97.0	96.3	7.3	71.5	3.3	0.0
Limpopo	72.5	62.1	23.5	84.9	96.5	97.2	13.4	62.2	3.1	0.0	69.7	70.9	16.4	83.8	97.2	96.6	9.1	80.4	6.7	0.0

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Table 4.12: Continued

	2000										2010									
	Paid	Unpaid work						Non work			Paid	Unpaid work						Non work		
	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]
Highest educational attainment																				
None	64.5	62.3	21.8	85.3	95.2	94.7	14.1	98.2	11.1	0.0	62.4	70.1	21.4	87.7	97.4	96.6	14.4	95.4	14.3	0.0
Incomplete primary	74.4	62.4	22.1	89.5	96.0	96.6	14.6	58.2	4.8	0.0	73.7	71.9	22.6	91.8	97.6	96.2	15.9	62.5	5.4	0.0
Incomplete secondary	73.5	65.6	16.4	80.9	93.9	96.6	8.9	68.3	4.3	0.0	68.0	66.5	15.3	83.0	95.9	96.4	6.9	76.6	6.2	0.0
Matric	59.8	59.6	19.8	78.6	92.6	96.7	7.4	87.2	3.2	0.0	54.4	55.6	17.9	82.3	94.8	96.4	5.0	89.2	5.0	0.0
Post-Matric	42.5	45.3	21.9	80.0	90.3	94.2	3.7	85.2	1.2	0.0	42.0	47.4	22.5	85.2	92.9	95.2	5.2	88.1	5.1	0.0
Other/unspecified	66.1	60.0	27.8	84.0	95.2	89.8	14.0	76.5	4.0	0.0	51.2	56.4	34.1	88.9	83.9	97.2	9.6	91.6	9.3	1.6
Marital status																				
Unmarried	78.6	67.1	18.2	88.2	95.6	96.5	12.1	54.5	3.9	0.0	72.3	68.6	16.2	88.3	96.9	96.6	9.6	66.8	5.2	0.0
Married/live together	51.5	51.1	22.8	75.9	91.4	95.8	7.0	94.9	4.8	0.0	49.7	53.9	22.9	79.3	93.9	95.8	6.6	93.2	6.9	0.0
Widowed/divorced	63.1	64.5	15.1	80.3	94.2	95.6	10.6	97.0	8.2	0.0	63.4	72.2	14.1	86.1	95.5	95.7	9.3	95.1	9.1	0.0
Labour market status																				
Employed	39.7	41.2	22.1	82.9	93.5	96.1	5.6	87.6	5.6	0.0	24.9	30.0	25.8	87.3	95.6	96.4	4.2	93.5	9.3	0.0
Unemployed	90.8	72.3	11.8	72.9	90.8	96.2	5.6	94.9	3.7	0.0	88.0	80.0	8.4	74.0	93.8	95.1	4.6	89.8	2.0	0.0
Inactive	89.9	77.7	18.3	85.5	95.1	96.2	15.1	54.1	3.7	0.0	85.2	83.1	14.8	85.1	96.1	96.3	11.8	67.2	4.6	0.0
SES quintile																				
Quintile1	68.4	52.4	16.0	83.8	96.3	96.3	9.0	70.6	9.4	0.0	61.9	55.7	14.4	85.5	97.7	96.3	7.3	80.2	14.2	0.0
Quintile2	71.4	59.0	16.0	83.4	94.6	94.9	8.5	69.4	5.3	0.0	66.0	66.4	13.8	83.5	96.7	96.3	7.0	76.4	5.3	0.0
Quintile3	72.5	65.0	17.0	83.4	94.5	96.6	9.5	72.1	4.0	0.0	67.4	68.2	17.4	84.4	96.2	96.1	8.1	76.7	4.0	0.0
Quintile4	70.5	70.4	20.8	82.7	93.3	97.1	10.9	71.3	2.5	0.0	65.2	66.7	20.2	84.4	95.1	96.1	9.2	77.4	3.3	0.0
Quintile5	58.0	60.6	28.0	84.2	91.7	96.0	13.5	74.6	1.4	0.0	58.9	62.7	26.3	87.9	93.1	96.4	11.4	79.9	3.4	0.0
Real per capita income quintile																				
Quintile1	75.3	58.5	17.3	83.1	94.3	96.2	10.7	64.0	5.4	0.0	73.3	70.3	15.3	84.8	96.7	95.8	9.8	72.1	7.2	0.0
Quintile2	76.3	70.3	17.9	84.1	94.5	95.1	10.7	65.2	5.3	0.0	71.4	69.7	15.9	83.5	96.6	96.0	9.0	74.8	5.9	0.0
Quintile3	73.1	64.9	15.4	83.2	95.3	95.9	8.1	75.9	5.5	0.0	64.7	65.1	16.8	82.6	95.6	96.5	7.3	79.5	7.1	0.0
Quintile4	65.4	62.3	18.5	83.6	94.6	96.9	9.5	77.1	4.2	0.0	58.3	59.9	19.3	86.6	95.8	96.2	7.6	80.7	5.9	0.0
Quintile5	51.1	54.3	26.4	84.2	91.6	96.6	11.2	76.6	2.3	0.0	50.2	53.4	22.8	87.0	94.0	96.6	8.5	83.0	4.7	0.0

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Table 4.12: Continued

	2000										2010									
	Paid	Unpaid work						Non work			Paid	Unpaid work						Non work		
	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]	[A]	[B]	[C]	[D]	[E]	[F]	Total	[G]	[H]	[I]
Household size																				
One person	50.4	48.9	7.9	87.5	96.4	96.9	2.8	93.4	10.2	0.0	46.8	49.0	8.0	91.7	98.0	96.0	3.1	92.0	13.0	0.0
Two persons	56.5	53.4	16.6	77.6	92.1	95.6	5.9	88.4	4.6	0.0	56.5	57.6	17.3	80.3	94.5	96.8	5.1	88.1	7.2	0.0
Three persons	69.1	63.8	18.7	81.2	93.1	96.4	9.7	71.7	4.6	0.0	67.1	66.5	18.1	83.1	94.6	96.4	8.7	75.9	5.0	0.0
Four to five persons	71.0	63.7	22.7	84.6	94.4	97.2	12.7	67.6	3.6	0.0	67.1	66.5	20.3	86.3	95.8	96.2	10.3	74.4	4.7	0.0
More than five persons	76.3	65.7	20.5	86.6	95.1	94.9	12.3	60.1	4.2	0.0	69.6	69.5	20.2	87.5	97.5	95.6	11.3	70.6	5.8	0.0
Number of children in the household																				
None	73.7	66.1	20.3	93.5	96.9	96.3	12.7	62.5	4.4	0.0	68.4	68.1	18.4	94.6	97.4	96.4	10.5	72.1	5.6	0.0
One child	58.9	53.4	13.8	58.0	86.5	95.6	3.3	92.5	5.3	0.0	55.5	55.5	17.1	64.9	92.6	96.3	3.8	90.9	7.3	0.0
Two children	52.7	49.8	19.6	59.8	86.6	95.6	5.4	93.1	3.1	0.0	52.0	53.8	18.5	64.7	91.2	95.4	5.0	91.3	7.3	0.0
Three children	50.7	45.6	21.5	63.2	88.4	97.1	5.5	92.9	6.3	0.0	54.6	54.5	18.8	62.4	92.3	96.0	4.5	92.1	6.9	0.0
More than three	55.1	48.5	20.1	60.4	90.7	96.3	6.0	96.3	7.0	0.0	53.6	57.0	19.5	65.3	95.2	94.9	5.4	90.0	6.7	0.2

Note: [A]: Paid work activities [B]: Unpaid work-SNA [C]: Unpaid work – housework [D]: Unpaid work – childcare [E]: Unpaid work – adult care
[F]: Unpaid work – social care [G]: Learning [H]: Leisure [I]: Selfcare

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Under the SNA classification, Tables 4.10 and 4.11 show clearly that overall, all individuals reported to have spent some time on personal care (regardless of the sub-population category); hence, the zero time proportion was zero in the last column of both tables. There were also relatively lower proportions of individuals claiming they spent zero time on household maintenance (2000: 19.5%; 2010: 18.3%), social and cultural activities (2000: 13.4%; 2010: 28.1%) as well as mass media use (2000: 30.2%; 2010: 21.6%). On the other hand, above 70% of the population reported no time spent on work in establishments.

With regard to the results by age cohort, the proportion of individuals spending zero time on work in establishments was the lowest for the 35-44 years and 45-54 years cohorts (around 55%); this result is not surprising as the middle-aged individuals were more likely to be actively working in the labour market. As expected, a much lower share of youth aged 10-14 years reported spending zero time on learning (2000: 27.9%; 2010: 34.6%); this result is also expected because these young people were expected to still be attending educational institutions at the time of the survey.

The results by gender are highly similar except these two findings: first, proportion of females spending zero time on work in establishments was clearly higher when compared to males, by about 10 percentage points. On the other hand, the shares of female individuals reporting zero time spent on household maintenance (9%) and care of persons in the household (72%), was much lower compared to males (about 30% and 94% respectively), that is, a difference of 20 percentage points. These results suggest the more traditional view of the household that men work while women stay at home.

As far as results by race are concerned, since Africans were relatively more likely to be unemployed, it is not surprising that the proportion of African spending zero time on work in establishments was a bit higher compared to the corresponding shares in the other three race groups. Similarly, the proportion of individuals reporting zero time spent on work in establishments was the lowest in Gauteng and Western Cape (the two most developed provinces associated with more abundant work opportunities and greater employment likelihood). Furthermore, higher educational attainment is associated with greater employment probability, and thus the share of people spending zero time on work in establishments plummeted rapidly as we move across to the more educated categories.

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Looking at the other results, it is interesting that a higher share of unmarried individuals spent zero amount of time to care of persons in the household, but a much lower share of them spent zero time on learning. These results suggest the unmarried individuals enjoy more freedom to pursue learning and other activities that take place outside the households. For those in the lower SES and income quintiles, a much higher proportion of them reported zero time spent on work in establishments (they were probably associated with greater unemployment probability and thereby not working) as well as mass media use (they may not be able to afford the cost to use these mass media).

Finally, for individuals coming from households with more members, a higher percentage reported zero time spent on work in establishments and household maintenance, but a smaller proportion of them claimed they spent zero time on learning as well as social and cultural activities. On the other hand, for people coming from households without any children, a very high proportion (90%) spent zero time to care of persons in the household but a relatively lower share (2000: 62%, 2010: 72%) spent no time on learning. These results suggest individuals without kids enjoy more freedom.

Moving on to Table 4.12, during the 10-year period under study, it is encouraging that the proportion of individuals reporting zero time on total paid work and total unpaid work decreased, while the share of individuals who spent zero time on two non-work activities (learning and leisure) increased a bit. Looking at the zero-time proportion in greater detail by each unpaid work activity, this proportion was much lower for the housework (category [C]).

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For the remainder of the discussion in connection with Table 4.12, more emphasis is placed on the unpaid work, since the results on paid work and non-work activities are highly similar to the results derived in Tables 4.10-4.11 and discussed above. First, the share of individuals spending zero time on total unpaid work is clearly higher (about 20%) for the youngest and oldest age cohorts. This result is not surprising as it is expected that the middle-aged individuals would spend more time on the unpaid work activities. In addition, a relatively lower percentage of females (5%-6%) reported spending zero time on unpaid work compared with the male percentage (12%-15%). This zero-time proportion was also relatively lower for Africans compared with the other three race groups.

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As expected, the two most educated categories (Matric and post-Matric) were associated with a lower share of individuals claiming they spent zero time on both paid work and unpaid work activities. This relatively lower proportion was also found in married individuals compared to those who were unmarried, widowed or divorced. Furthermore, a much smaller proportion of people who were classified as employed spent zero time on paid work activities (employed individuals are rather expected to spend a lot of time to work in the labour market to earn remuneration), compared to unemployed and inactive.

For those coming from the richer SES and income quintiles, a much lower proportion spent zero time on paid work but a slightly greater percentage of them spent zero time on unpaid work in general. Lastly, for people coming from households with more members but no children, a greater percentage reported spending zero time on unpaid work activities.

To conclude the discussion of Tables 4.10-4.12, none of the individuals in the weighted sample reported spending zero time on personal care (a very essential activity), while the zero-time proportion was relatively lower for activities such as social and cultural activities, mass media use, household maintenance and unpaid work activities such as housework.

4.3 Econometric Analysis

In this section, the results of the multivariate regressions are presented by examining the impact of various demographic, educational attainment, labour market status and household-level characteristics on the time spent on various categories of activities. Tables 4.13-4.15 and A4-A14 first present the results of the regressions on SNA production, non-SNA production and non-productive time, before Tables 4.15-4.17 and A15-A30 move on to investigate the results of regressions on time spent on total paid work, total unpaid work, leisure and selfcare activities.

Before the key results are discussed, please take note of two issues. First, OLS and multivariate Tobit regressions are exactly the same in terms of the coefficients, except that the standard errors are slightly different (see Table A4 as an example on the 2000 multivariate Tobit regressions on SNA production, non-SNA production and non-productive activities, as compared to Table 4.13). Hence, for the remainder of this section, only the OLS regressions are shown and discussed in detail in the main text. Secondly, the OLS and Tobit regression results (for both parameters and standard errors of parameters) are exactly the

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same, when it comes to the time spent on non-productive (see Tables 4.13-4.14) and selfcare (Tables 4.16-4.17) activities, because it was already shown earlier that in the full weighted sample, all individuals spent non-zero time on these activities – refer to the findings of Tables 4.10-4.12 as discussed earlier.

Tables 4.13 and 4.14[34] revealed there was a significant non-linear relationship between age and the dependent variables of each regression: Both SNA and non-SNA production time were associated with a concave relationship with age, meaning as age of the persons increased, both SNA and non-SNA production time increased but at a decreasing rate. The increase in SNA production with age was similarly found by Walker (1973), Sharp *et al.* (1998) and Cha & Song (2016) as reviewed in Chapter Two. In contrast, there was a convex relationship between age and non-productive time; that is, as the individuals got older, non-productive production time decreased at an increasing rate. The youth therefore would enjoy the longest non-productive activities' time.

Compared with the reference gender category (females), men were associated with significantly higher SNA production but lower non-SNA production time, ceteris paribus. With regard to the former finding, the coefficient decreased over time (OLS estimates – 2000: 51.07; 2010: 37.77; Tobit estimates – 2000: 88.66; 2010: 71.23). This result is similar to Saqib and Arif (2012) who found men to have higher SNA production times as well as Bianchi *et al.* (2000) and Jenkins & O'Leary (1997) who found gender differences in SNA production time to decrease over time. The fact that females spent relatively longer time on non-SNA production (negative male dummy coefficient in the regressions) conforms to the descriptive statistics findings in Table 4.3.

Regarding results by race, after controlling for differences in other characteristics, both OLS and Tobit regressions show that Coloured, Indian and white individuals spent significantly less time on non-SNA production but more time on non-productive activities. One concerning finding is that in 2010, the above mentioned three race groups were associated with significantly less time spent on SNA production in both OLS and Tobit regressions. This finding was also observed in the 2000 Tobit regression, but the Coloured and white dummy coefficients were positive and significant in the 2000 OLS regression.

[34] Reference categories for tables 4.13-4.14: African, Eastern Cape, no education, single and inactive

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Table 4.13: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time, 2000

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	7.2217***	16.5204***	6.3614***	7.7714***	-13.5831***	-13.5831***
	(0.0121)	(0.0265)	(0.0089)	(0.0107)	(0.0123)	(0.0123)
Age squared	-0.0801***	-0.1945***	-0.0670***	-0.0835***	0.1471***	0.1471***
	(0.0001)	(0.0003)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Gender: Male	51.0746***	88.6588***	-121.8060***	-148.3922***	70.7315***	70.7315***
	(0.0783)	(0.1588)	(0.0578)	(0.0687)	(0.0796)	(0.0796)
Race: Coloured	26.4577***	-12.3768***	-50.9356***	-73.9553***	24.4779***	24.4779***
	(0.2308)	(0.4762)	(0.1703)	(0.2064)	(0.2348)	(0.2348)
Race: Indian/Asian	-0.7135***	-48.3320***	-39.7154***	-52.8080***	40.4289***	40.4289***
	(0.1677)	(0.3546)	(0.1238)	(0.1471)	(0.1706)	(0.1706)
Race: White	5.4928***	-2.2525***	-25.8450***	-40.1293***	20.3522***	20.3522***
	(0.1389)	(0.2816)	(0.1025)	(0.1231)	(0.1413)	(0.1413)
Province: Western Cape	16.9665***	-45.4464***	-12.4969***	-15.2643***	-4.4696***	-4.4696***
	(0.1754)	(0.3638)	(0.1295)	(0.1533)	(0.1784)	(0.1784)
Province: Northern Cape	37.1560***	0.3685	2.7102***	5.7157***	-39.8663***	-39.8663***
	(0.2891)	(0.6026)	(0.2134)	(0.2528)	(0.2941)	(0.2941)
Province: Free State	5.3228***	-46.6043***	-35.7861***	-36.0815***	30.4634***	30.4634***
	(0.1762)	(0.3582)	(0.1300)	(0.1534)	(0.1792)	(0.1792)
Province: KwaZulu-Natal	27.9046***	25.7208***	-8.0796***	-5.0754***	-19.8251***	-19.8251***
	(0.1309)	(0.2595)	(0.0966)	(0.1139)	(0.1332)	(0.1332)
Province: North West	-3.3657***	-46.8099***	-0.1476	3.4360***	3.5133***	3.5133***
	(0.1631)	(0.3289)	(0.1204)	(0.1416)	(0.1659)	(0.1659)
Province: Gauteng	8.1937***	-73.0743***	-19.8422***	-24.7305***	11.6485***	11.6485***
	(0.1335)	(0.2719)	(0.0986)	(0.1166)	(0.1358)	(0.1358)
Province: Mpumalanga	-3.5444***	-48.7314***	-1.5472***	-0.2636*	5.0916***	5.0916***
	(0.1762)	(0.3543)	(0.1300)	(0.1533)	(0.1792)	(0.1792)
Province: Limpopo	12.5253***	1.1814***	-25.2228***	-33.1925***	12.6975***	12.6975***
	(0.1487)	(0.2976)	(0.1097)	(0.1303)	(0.1513)	(0.1513)
Education: Incomplete primary	14.1525***	33.2601***	-0.1936	0.8565***	-13.9589***	-13.9589***
	(0.1627)	(0.3237)	(0.1201)	(0.1418)	(0.1655)	(0.1655)
Education: Incomplete secondary	-3.3767***	-35.2080***	25.7526***	33.5313***	-22.3759***	-22.3759***
	(0.1584)	(0.3155)	(0.1169)	(0.1377)	(0.1611)	(0.1611)
Education: Matric	17.3244***	-8.5352***	26.3460***	31.8252***	-43.6703***	-43.6703***
	(0.1960)	(0.3894)	(0.1447)	(0.1707)	(0.1994)	(0.1994)
Education: Post-Matric	43.4217***	42.9381***	14.0652***	22.2221***	-57.4870***	-57.4870***
	(0.1974)	(0.3849)	(0.1457)	(0.1721)	(0.2008)	(0.2008)
Education: Other/unspecified	47.8481***	61.1468***	-12.4899***	-13.0354***	-35.3582***	-35.3582***
	(0.6096)	(1.2635)	(0.4500)	(0.5393)	(0.6202)	(0.6202)
Marital status: Married/live together	15.0923***	28.0200***	10.2381***	7.0886***	-25.3304***	-25.3304***
	(0.1222)	(0.2367)	(0.0902)	(0.1062)	(0.1243)	(0.1243)
Marital status: Widowed/divorced	4.8876***	7.9054***	-15.4673***	-16.6351***	10.5797***	10.5797***
	(0.1800)	(0.3523)	(0.1329)	(0.1558)	(0.1831)	(0.1831)
Labour market status: Unemployed	-1.9718***	15.2336***	46.3332***	49.1117***	-44.3614***	-44.3614***
	(0.1582)	(0.3388)	(0.1168)	(0.1363)	(0.1610)	(0.1610)
Labour market status: Employed	204.5903***	382.8033***	-45.6636***	-50.6508***	-158.9267***	-158.9267***
	(0.0944)	(0.1967)	(0.0697)	(0.0823)	(0.0961)	(0.0961)
Household size	-8.4102***	-15.0776***	-11.4444***	-14.9965***	19.8545***	19.8545***
	(0.0346)	(0.0688)	(0.0255)	(0.0300)	(0.0352)	(0.0352)
Number of children 0-17 years	7.4977***	10.6509***	19.6783***	18.9320***	-27.1760***	-27.1760***
	(0.0442)	(0.0851)	(0.0326)	(0.0385)	(0.0450)	(0.0450)
Constant	-85.5941***	-442.9317***	147.4403***	133.2195***	1378.1538***	1378.1538***
	(0.3035)	(0.6270)	(0.2240)	(0.2659)	(0.3087)	(0.3087)
Weighted sample size	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578
R^2 or Pseudo R^2	0.3430	0.0499	0.2750	0.0286	0.3920	0.0359

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table 4.14: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time, 2010

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	2.4484***	5.9468***	9.4296***	11.0560***	-11.8780***	-11.8780***
	(0.0094)	(0.0197)	(0.0073)	(0.0086)	(0.0098)	(0.0098)
Age squared	-0.0261***	-0.0661***	-0.1039***	-0.1230***	0.1301***	0.1301***
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Gender: Male	37.7730***	71.2252***	-112.0052***	-132.6595***	74.2322***	74.2322***
	(0.0597)	(0.1181)	(0.0464)	(0.0543)	(0.0626)	(0.0626)
Race: Coloured	-17.8254***	-73.7007***	-23.4107***	-33.0901***	41.2361***	41.2361***
	(0.1270)	(0.2538)	(0.0987)	(0.1162)	(0.1333)	(0.1333)
Race: Indian/Asian	-3.9306***	-63.7523***	-30.8707***	-53.6249***	34.8013***	34.8013***
	(0.1825)	(0.3654)	(0.1419)	(0.1710)	(0.1915)	(0.1915)
Race: White	-6.8335***	-37.3135***	-25.6514***	-35.6650***	32.4849***	32.4849***
	(0.1100)	(0.2179)	(0.0855)	(0.1012)	(0.1154)	(0.1154)
Province: Western Cape	-6.9220***	-38.1293***	-10.2947***	-13.4438***	17.2167***	17.2167***
	(0.1352)	(0.2626)	(0.1051)	(0.1228)	(0.1418)	(0.1418)
Province: Northern Cape	-7.1844***	-72.5193***	-20.6356***	-28.7208***	27.8200***	27.8200***
	(0.2115)	(0.4335)	(0.1644)	(0.1934)	(0.2219)	(0.2219)
Province: Free State	-24.5527***	-110.6437***	-17.4730***	-21.2546***	42.0257***	42.0257***
	(0.1442)	(0.2935)	(0.1121)	(0.1302)	(0.1514)	(0.1514)
Province: KwaZulu-Natal	22.3183***	12.0259***	-20.5374***	-25.1233***	-1.7808***	-1.7808***
	(0.1031)	(0.1979)	(0.0801)	(0.0931)	(0.1082)	(0.1082)
Province: North West	-27.1250***	-106.5750***	-30.0454***	-42.5523***	57.1704***	57.1704***
	(0.1399)	(0.2816)	(0.1088)	(0.1276)	(0.1468)	(0.1468)
Province: Gauteng	-20.3383***	-105.9688***	-24.2430***	-30.1089***	44.5813***	44.5813***
	(0.1011)	(0.1999)	(0.0786)	(0.0915)	(0.1061)	(0.1061)
Province: Mpumalanga	2.0039***	-49.4202***	-14.3786***	-17.6047***	12.3747***	12.3747***
	(0.1338)	(0.2631)	(0.1040)	(0.1209)	(0.1404)	(0.1404)
Province: Limpopo	-16.1881***	-65.9532***	-18.4290***	-23.4645***	34.6171***	34.6171***
	(0.1194)	(0.2362)	(0.0929)	(0.1079)	(0.1253)	(0.1253)
Education: Incomplete primary	-20.1007***	-43.8551***	-1.0782***	-0.2507*	21.1789***	21.1789***
	(0.1580)	(0.3090)	(0.1228)	(0.1441)	(0.1658)	(0.1658)
Education: Incomplete secondary	-22.3875***	-68.6163***	35.0554***	43.9515***	-12.6679***	-12.6679***
	(0.1525)	(0.2982)	(0.1186)	(0.1390)	(0.1601)	(0.1601)
Education: Matric	-11.9953***	-64.5307***	42.7656***	52.3925***	-30.7703***	-30.7703***
	(0.1652)	(0.3226)	(0.1284)	(0.1504)	(0.1733)	(0.1733)
Education: Post-Matric	-37.7396***	-88.6170***	29.5603***	38.4856***	8.1792***	8.1792***
	(0.1830)	(0.3526)	(0.1422)	(0.1669)	(0.1920)	(0.1920)
Education: Other/unspecified	18.2955***	-19.6584***	47.4081***	41.4066***	-65.7035***	-65.7035***
	(0.5137)	(0.9959)	(0.3993)	(0.4794)	(0.5390)	(0.5390)
Marital status: Married/live together	7.0994***	15.7242***	16.5399***	10.8841***	-23.6393***	-23.6393***
	(0.0866)	(0.1651)	(0.0674)	(0.0784)	(0.0909)	(0.0909)
Marital status: Widowed/divorced	-2.6322***	7.0195***	-0.1077	-0.4831***	2.7398***	2.7398***
	(0.1369)	(0.2670)	(0.1064)	(0.1235)	(0.1436)	(0.1436)
Labour market status: Unemployed	16.1055***	39.1543***	11.3792***	12.3698***	-27.4847***	-27.4847***
	(0.1208)	(0.2582)	(0.0939)	(0.1080)	(0.1268)	(0.1268)
Labour market status: Employed	368.0008***	590.7249***	-123.4014***	-141.6476***	-244.5995***	-244.5995***
	(0.0773)	(0.1587)	(0.0601)	(0.0702)	(0.0811)	(0.0811)
Household size	1.6132***	5.6373***	-16.2989***	-20.0149***	14.6857***	14.6857***
	(0.0256)	(0.0499)	(0.0199)	(0.0232)	(0.0269)	(0.0269)
Number of children 0-17 years	-2.6380***	-4.2421***	19.5941***	19.5576***	-16.9561***	-16.9561***
	(0.0341)	(0.0656)	(0.0265)	(0.0310)	(0.0358)	(0.0358)
Constant	-2.4435***	-255.3818***	129.3514***	115.0266***	1313.0920***	1313.0920***
	(0.2460)	(0.4944)	(0.1913)	(0.2243)	(0.2582)	(0.2582)
Weighted sample size	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589
R^2 or Pseudo R^2	0.5040	0.0729	0.3030	0.0312	0.4400	0.0417

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Whilst the negative coefficients contradict the descriptive statistics findings (especially that white individuals spent significantly more time on average on SNA production), these results may be attributed to the fact that the superior educational attainment and employed status of the white individuals were already controlled for in the regressions, and the Tobit regression coefficients for race adjusted the coefficients of OLS regressions downwards because a high proportion of African individuals reported zero time spent on SNA production. We will revert back to the peculiar signs of the race dummy variables when we move on to discuss Table 4.15 (when we re-ran the same regressions but excluded the labour market status dummy variables).

The provincial results are somewhat mixed. First of all, compared with Eastern Cape (reference category), in general almost all other provinces were associated with significantly less time spent on non-SNA production but more time spent on non-productive activities. For the regressions on SNA production, it is noticed that the coefficients had different signs in some provinces when comparing the OLS and Tobit regressions. For example, in 2000 the Western Cape dummy coefficient was 16.97 in the OLS regression but rather -45.45 in the Tobit regression. Again, these peculiar findings may be attributed to the fact that other differences in characteristics have been controlled for, and after considering the proportion of individuals spending zero time on SNA production, the Tobit regression coefficients could differ from the OLS estimates somewhat.

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One would expect those who have higher education to have higher SNA and lower non-productive production, based on Newman (2001) who found education leads to more market work. However, having a higher education was not necessarily associated with more SNA production (using OLS). For example, studying further than Matric significantly increased SNA production in 2000 by 17 minutes but significantly decreased SNA production in 2010 by 12 minutes. Also, for individuals with Matric, the Tobit regressions revealed a significant negative relationship with SNA production but a positive relationship for OLS regression for 2000 (indicating it was important to take care of lower bounds and upper bounds and to consider the relationship between the types of production). These results (negative signs of coefficients for the highly educated dummy variables) are in contrast with the descriptive statistics findings. Again, we will revert back to this issue later when we discuss Table 4.15.

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Other possible reasons that explain why higher educational attainment may not have led to higher SNA production can be attributed to Cha & Song (2016) who found higher education actually led to higher non-SNA production (through child care and domestic time), as well as Bianchi *et al.* (2000) who found higher education only led to higher SNA production for men. An alternative reason could relate to the value of SNA production, as each person may be compensated differently for every minute of their SNA production.

People who were married[35] or lived together with their partners enjoy significantly longer time spent on SNA and non-SNA production, compared with other individuals, ceteris paribus. This result is not surprising, as it was reviewed earlier that Jenkins & O'Leary (1997:155-158) found that marriage led to total work increasing (work and house work combined). In addition, employed individuals spent significantly longer time on SNA production (the coefficient increased between 2000 and 2010 in both OLS and Tobit regressions), but significantly less time on non-SNA production and non-productive activities, ceteris paribus. In particular, the parameter of the employed dummy was extremely large in the regressions (2000 OLS: 204.59, 2000 Tobit: 382.80; 2010 OLS: 368.01; 2010 Tobit: 590.73). This result is expected as the employed individuals were the ones spending much longer time on SNA production activities – refer back to the results in Table 4.3. Furthermore, employed people are more likely to be highly educated coming from the white population group. Hence, the inclusion of the employed dummy explanatory variable may somewhat lead to imperfect multicollinearity with race and education, thereby explaining the peculiar signs of the race and education dummy variables in the SNA regressions, as found earlier.[36]

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Larger household size[37] was associated with significantly shorter non-SNA production but longer non-productive activities' time in both OLS and Tobit regressions in 2000 and 2010.

[35] People who have higher incomes may be more inclined to marry (hence there could be endogeneity present). Unfortunately, those living together and those married were lumped under the same category making it difficult to investigate this issue.

[36] Table 4.15, to be presented later, will present the results of the SNA production, non-SNA production and non-productive time spent regressions by excluding the labour market status variables. However, for consistency sake (e.g. to compare the results of various regressions with different dependent variables), with the exception of this table, we would still include labour market status dummy variables in the other regressions. We would also want to conform with the theoretical framework (e.g. see Figure 2.3 – the impact of economic factors such as labour market status and wages on time spent on numerous activities) and the econometric models of the past empirical studies.

[37] For future research, it may be better to replace the household size variable with one for the number of adult members (above 17 years old) to avoid the possibility of multicollinearity with the number of children 0-17

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However, the household size coefficient was negative in 2000 before becoming positive in 2010 in the SNA production time regressions, after controlling for differences in other characteristics. Lastly, the greater the number of children present in the household, significantly more time was spent on non-SNA production but less time on non-productive activities. On the other hand, the coefficient of this variable was positive in 2000 but negative in 2010.

As a result of some peculiar findings in terms of the sign of the parameters of the race and education, and even the two household-level explanatory variables in the SNA production regressions, it is strongly suspected that the inclusion of the labour market status dummy variables is the culprit behind these odd findings that do not conform with the descriptive statistics results as presented in Section 4.2 earlier. Therefore, in Table 4.15, the SNA regressions are re-run by taking out all labour market status dummy variables.

With the exclusion of the labour dummy variables, the gender gap has significantly increased on SNA production time (e.g. in the 2000 OLS estimates, the male dummy parameter increases from 51.07 in Table 4.13 to 80.75 in Table 4.15). Whilst the peculiar negative signs of the three race dummy variables still happen in Table 4.15, the Matric and post-Matric educational attainment dummy variables now enjoy the correct positive (and significant) sign after omitting the labour market status dummy variables. Lastly, the household size variable now consistently has a negative sign in both years, whereas the number of children variable in general has a positive sign in both years except for the 2010 Tobit regression. To conclude, for the overall population, after excluding the labour market status dummy variables, the results of the OLS and Tobit regressions on SNA production are now better aligned with the results of past empirical studies as well as the Section 4.2 descriptive statistics findings.

Appendix A5-A8 presents the OLS and Tobit regressions on the same three dependent variables (SNA production, non-SNA production and non-productive time), but by gender. The results are highly similar to what was discussed above in connection with Tables 4.13-4.14, except a few points were worth mentioning. First, for the SNA production regressions, once again the parameter was very large for the employed dummy variable (e.g. 2010 male Tobit regression: 609.59; 2010 female Tobit regression: 563.47). Next, married or living with

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years variable (This is applicable to all regressions run with the household size and children 0-17 years variable together)

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a partner significantly increased gender differences: married males enjoyed significantly longer time spent on SNA and less on non-SNA production compared to single males, while married women enjoyed significantly longer time spent on non-SNA production, compared to single females, ceteris paribus. These results were similar to Antonopoulos et al. (2012a & 2012b) who found gender differences increased for married couples and Bianchi et al. (2000) who found housework (non-SNA production) increased for married females.

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Table 4.15: OLS and Tobit regressions on SNA production and total paid work by excluding the labour market status explanatory dummy variables, 2000 and 2010

	SNA production				Total paid work			
	2000		2010		2000		2010	
	OLS	Tobit	OLS	Tobit	OLS	Tobit	OLS	Tobit
Age	15.0400***	34.7097***	18.1282***	40.2570***	11.2673***	40.7712***	14.4970***	44.5871***
	(0.0124)	(0.0283)	(0.0110)	(0.0245)	(0.0105)	(0.0343)	(0.0092)	(0.0267)
Age squared	-0.1714***	-0.4082***	-0.2087***	-0.4668***	-0.1268***	-0.4518***	-0.1654***	-0.4977***
	(0.0001)	(0.0003)	(0.0001)	(0.0003)	(0.0001)	(0.0004)	(0.0001)	(0.0003)
Gender: Male	80.7492***	149.8983***	84.7002***	159.9255***	65.3665***	207.4212***	68.4866***	172.5298***
	(0.0848)	(0.1757)	(0.0748)	(0.1526)	(0.0713)	(0.2130)	(0.0625)	(0.1616)
Race: Coloured	22.5411***	-14.8799***	-3.9555***	-48.8618***	20.6083***	37.5592***	6.0857***	-7.1557***
	(0.2539)	(0.5277)	(0.1612)	(0.3277)	(0.2133)	(0.6041)	(0.1347)	(0.3387)
Race: Indian/Asian	6.8030***	-30.8237***	6.9479***	-45.2225***	17.7225***	20.9803***	13.0776***	-14.1063***
	(0.1845)	(0.3915)	(0.2316)	(0.4699)	(0.1550)	(0.4456)	(0.1935)	(0.4789)
Race: White	10.5387***	9.3183***	-4.1914***	-31.1000***	20.2323***	46.0034***	7.6658***	-2.9426***
	(0.1525)	(0.3137)	(0.1395)	(0.2826)	(0.1281)	(0.3536)	(0.1165)	(0.2886)
Province: Western Cape	-6.2008***	-90.6177***	26.3635***	16.1206***	-11.3677***	-95.8555***	15.3207***	1.6974***
	(0.1927)	(0.4033)	(0.1714)	(0.3421)	(0.1619)	(0.4627)	(0.1432)	(0.3593)
Province: Northern Cape	5.9775***	-57.5310***	-6.8381***	-79.8730***	3.1636***	-64.0788***	1.3096***	-48.8505***
	(0.3177)	(0.6665)	(0.2683)	(0.5607)	(0.2670)	(0.7694)	(0.2242)	(0.5849)
Province: Free State	-15.7057***	-87.7243***	-20.1913***	-112.0562***	-10.3082***	-99.6879***	-9.9889***	-71.4632***
	(0.1936)	(0.3994)	(0.1831)	(0.3805)	(0.1627)	(0.4744)	(0.1530)	(0.3998)
Province: KwaZulu-Natal	5.5599***	-19.7891***	28.6306***	21.1332***	-6.2252***	-73.6182***	23.4280***	31.2959***
	(0.1437)	(0.2903)	(0.1309)	(0.2603)	(0.1207)	(0.3513)	(0.1093)	(0.2773)
Province: North West	-19.3510***	-79.3678***	-19.1694***	-100.9763***	-16.1619***	-119.0763***	-12.8109***	-80.0228***
	(0.1793)	(0.3678)	(0.1776)	(0.3658)	(0.1506)	(0.4481)	(0.1484)	(0.3881)
Province: Gauteng	-1.9739***	-97.3904***	2.3069***	-73.7652***	-4.3620***	-99.1403***	-0.9226***	-52.7693***
	(0.1468)	(0.3038)	(0.1282)	(0.2594)	(0.1234)	(0.3544)	(0.1071)	(0.2735)
Province: Mpumalanga	-6.9126***	-60.2139***	14.5557***	-32.5347***	-9.5750***	-56.7623***	11.3839***	-10.7816***
	(0.1938)	(0.3973)	(0.1699)	(0.3439)	(0.1629)	(0.4679)	(0.1419)	(0.3637)
Province: Limpopo	-14.0444***	-52.0698***	-20.5161***	-83.3826***	-18.6654***	-92.3513***	-16.6783***	-65.0813***
	(0.1631)	(0.3330)	(0.1516)	(0.3103)	(0.1370)	(0.4058)	(0.1267)	(0.3323)

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Table 4.15: Continued

	SNA production				Total paid work			
	2000		2010		2000		2010	
	OLS	Tobit	OLS	Tobit	OLS	Tobit	OLS	Tobit
Education: Incomplete primary	17.4361***	37.3686***	-3.9902***	-11.5554***	12.5616***	23.9894***	-0.9606***	-20.5706***
	(0.1790)	(0.3620)	(0.2006)	(0.4079)	(0.1504)	(0.4219)	(0.1676)	(0.4247)
Education: Incomplete secondary	-2.8550***	-36.1066***	-9.6511***	-37.8569***	2.1375***	-23.5743***	-6.0728***	-27.8850***
	(0.1741)	(0.3520)	(0.1936)	(0.3922)	(0.1463)	(0.4092)	(0.1617)	(0.4058)
Education: Matric	37.5260***	31.2991***	50.2617***	57.1887***	41.1901***	90.5130***	44.8115***	85.7401***
	(0.2143)	(0.4316)	(0.2088)	(0.4200)	(0.1800)	(0.4944)	(0.1745)	(0.4332)
Education: Post-Matric	86.2195***	118.0366***	84.8167***	121.3145***	85.5808***	165.0242***	75.6465***	146.0868***
	(0.2159)	(0.4286)	(0.2300)	(0.4571)	(0.1814)	(0.4884)	(0.1921)	(0.4687)
Education: Other/unspecified	57.0652***	72.8652***	69.7285***	79.6245***	44.5915***	85.0995***	68.5333***	108.0553***
	(0.6708)	(1.4032)	(0.6521)	(1.2893)	(0.5636)	(1.6346)	(0.5448)	(1.3042)
Marital status: Married/live together	35.9732***	64.7956***	37.5271***	66.0405***	34.3714***	78.5355***	31.9262***	60.9228***
	(0.1340)	(0.2646)	(0.1096)	(0.2138)	(0.1126)	(0.3035)	(0.0916)	(0.2193)
Marital status: Widowed/divorced	36.3093***	60.8911***	11.5314***	24.1627***	30.8424***	77.9201***	9.0083***	25.3080***
	(0.1974)	(0.3939)	(0.1737)	(0.3470)	(0.1659)	(0.4487)	(0.1451)	(0.3547)
Household size	-13.0184***	-24.8135***	-14.8300***	-24.0550***	-11.7246***	-30.2482***	-12.8845***	-26.0796***
	(0.0380)	(0.0769)	(0.0322)	(0.0645)	(0.0319)	(0.0901)	(0.0269)	(0.0671)
Number of children 0-17 years	9.0102***	11.5693***	1.2785***	-0.8473***	6.0423***	11.9980***	0.7730***	-0.5253***
	(0.0486)	(0.0955)	(0.0433)	(0.0855)	(0.0408)	(0.1089)	(0.0362)	(0.0881)
Constant	-125.3088***	-572.8257***	-160.4947***	-694.9432***	-99.1059***	-891.2703***	-136.8427***	-934.6176***
	(0.3324)	(0.7029)	(0.3092)	(0.6507)	(0.2793)	(0.8638)	(0.2583)	(0.7065)
Weighted sample size	25 604 578	25 604 578	39 877 589	39 877 589	25 604 578	25 604 578	39 877 589	39 877 589
R^2 or Pseudo R^2	0.205	0.0269	0.200	0.0260	0.204	0.0426	0.195	0.0354

Source: Own calculations using the 2000 and 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Secondly, the presence of children significantly increased gender differences too: females enjoyed significantly longer time on non-SNA production (at the cost of their non-productive production significantly decreasing) as the number of children explanatory variable had a parameter size of about 30 in both OLS and Tobit regressions in both years, whereas this parameter was much smaller in magnitude in the male regressions (2000: -2.7 in OLS; 2010: -6.4 in Tobit; 2010 OLS and Tobit: slightly greater than three). These findings were consistent with Kizilirmak & Memis (2009) who found females with children were burdened by non-market work activities. Thirdly, the presence of an additional child in the household had a much more significant and negative impact on the female individuals' time spent on non-productive activities, as indicated by the parameter of about -28.5. This parameter was 'only' -23.2 in 2000 and even positive (2.6) in 2010, for the male regressions.

Moving to Appendix A9-A14 (OLS and Tobit regressions by race), again the results in general are highly similar to the regression results for the overall population (Tables 4.13-4.14), except the following findings are worth mentioning. First of all, as previously discussed, the employed dummy variable had a huge parameter in the SNA production regressions, ranging from as small as 180.22 in the 2000 African OLS regression to as large as 757.49 in the 2010 white Tobit regression. Also, some of the education dummy variables had the peculiar negative sign. Nonetheless, the parameters of these education variables were relatively greater in the white regressions (e.g. 406.52 for the post-Matric dummy in the 2000 OLS regression). Furthermore, the parameters in both the employed and unemployed dummy variables were relatively greater in the white non-SNA production and non-productive time regressions, compared to the results on Africans and Coloured individuals.

Tables 4.16-4.17 present the OLS and Tobit regression results on time spent on paid work, unpaid work, leisure and selfcare, whereas Tables A15-A18, A19-A24 and A25-A30 in the Appendix show the results by gender, race and labour market status, respectively. Note that the OLS and Tobit estimates in selfcare regressions are exactly the same in 2000 because all people reported spending non-zero time on selfcare; in 2010 there were very slight differences in the estimates because of the presence of a negligible proportion of people who reported spending zero time on selfcare (refer back to Table 4.12 – for example, the 0.1% share of the white individuals in the last column of the table.)

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Table 4.16: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare time, 2000

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	4.9721***	17.4491***	8.6110***	10.1107***	-0.9342***	-1.1744***	-0.5242***	-0.5242***
	(0.0101)	(0.0307)	(0.0093)	(0.0105)	(0.0119)	(0.0124)	(0.0096)	(0.0096)
Age squared	-0.0530***	-0.1801***	-0.0941***	-0.1116***	0.0107***	0.0125***	0.0357***	0.0357***
	(0.0001)	(0.0004)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Gender: Male	40.1285***	129.7171***	-110.8600***	-121.9850***	56.7157***	58.2689***	4.9882***	4.9882***
	(0.0651)	(0.1863)	(0.0604)	(0.0664)	(0.0766)	(0.0799)	(0.0619)	(0.0619)
Race: Coloured	22.7929***	35.3553***	-47.2708***	-57.9921***	16.6020***	20.8823***	-13.6610***	-13.6610***
	(0.1919)	(0.5352)	(0.1781)	(0.1970)	(0.2259)	(0.2351)	(0.1825)	(0.1825)
Race: Indian/Asian	10.6119***	-3.3053***	-51.0409***	-58.7599***	41.4232***	44.1227***	0.5562***	0.5562***
	(0.1394)	(0.3949)	(0.1294)	(0.1423)	(0.1641)	(0.1711)	(0.1327)	(0.1327)
Race: White	13.9626***	32.2975***	-34.3148***	-44.4181***	28.3980***	31.4812***	-34.1378***	-34.1378***
	(0.1155)	(0.3072)	(0.1072)	(0.1187)	(0.1359)	(0.1415)	(0.1099)	(0.1099)
Province: Western Cape	8.4603***	-42.5547***	-3.9907***	-7.8214***	25.0369***	26.3061***	-8.8103***	-8.8103***
	(0.1458)	(0.4078)	(0.1353)	(0.1486)	(0.1717)	(0.1790)	(0.1387)	(0.1387)
Province: Northern Cape	31.2246***	7.7668***	8.6417***	8.1982***	-11.9754***	-10.8335***	-16.4521***	-16.4521***
	(0.2403)	(0.6829)	(0.2230)	(0.2454)	(0.2829)	(0.2950)	(0.2286)	(0.2286)
Province: Free State	7.9218***	-52.9491***	-38.3852***	-40.0410***	70.2405***	74.4741***	-28.4444***	-28.4444***
	(0.1465)	(0.4172)	(0.1359)	(0.1490)	(0.1724)	(0.1797)	(0.1393)	(0.1393)
Province: KwaZulu-Natal	13.4375***	-18.0557***	6.3876***	8.5620***	-34.6586***	-35.6135***	23.1897***	23.1897***
	(0.1088)	(0.3073)	(0.1010)	(0.1105)	(0.1281)	(0.1339)	(0.1035)	(0.1035)
Province: North West	-2.8775***	-82.0716***	-0.6358***	-0.2862**	13.9446***	15.3591***	1.4759***	1.4759***
	(0.1356)	(0.3932)	(0.1258)	(0.1378)	(0.1596)	(0.1667)	(0.1290)	(0.1290)
Province: Gauteng	5.1385***	-70.5461***	-16.7870***	-21.6698***	18.3685***	19.9840***	-6.7690***	-6.7690***
	(0.1110)	(0.3091)	(0.1030)	(0.1131)	(0.1307)	(0.1364)	(0.1056)	(0.1056)
Province: Mpumalanga	-5.8461***	-45.9126***	0.7545***	0.4487***	64.6293***	69.0381***	-57.7692***	-57.7692***
	(0.1465)	(0.4070)	(0.1359)	(0.1489)	(0.1724)	(0.1797)	(0.1394)	(0.1394)
Province: Limpopo	4.1400***	-24.4901***	-16.8374***	-21.7989***	-1.6141***	1.2603***	-12.1475***	-12.1475***
	(0.1236)	(0.3545)	(0.1147)	(0.1262)	(0.1455)	(0.1518)	(0.1176)	(0.1176)

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Table 4.16: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	10.3194***	17.9575***	3.6396***	8.0595***	14.4003***	17.9513***	-40.8921***	-40.8921***
	(0.1353)	(0.3672)	(0.1255)	(0.1379)	(0.1592)	(0.1669)	(0.1287)	(0.1287)
Education: Incomplete secondary	2.8679***	-30.6230***	19.5080***	27.0478***	25.6756***	30.4394***	-76.9151***	-76.9151***
	(0.1317)	(0.3575)	(0.1222)	(0.1340)	(0.1550)	(0.1625)	(0.1252)	(0.1252)
Education: Matric	27.6882***	38.6286***	15.9821***	23.6724***	59.7173***	65.8256***	-91.8899***	-91.8899***
	(0.1630)	(0.4343)	(0.1512)	(0.1657)	(0.1918)	(0.2007)	(0.1550)	(0.1550)
Education: Post-Matric	50.3952***	69.3837***	7.0917***	18.2599***	54.1683***	62.4831***	-115.7142***	-115.7142***
	(0.1641)	(0.4252)	(0.1523)	(0.1667)	(0.1932)	(0.2019)	(0.1561)	(0.1561)
Education: Other/unspecified	37.9902***	65.2896***	-2.6321***	5.8140***	50.7551***	55.4545***	-49.4966***	-49.4966***
	(0.5069)	(1.4420)	(0.4703)	(0.5180)	(0.5966)	(0.6223)	(0.4822)	(0.4822)
Marital status: Married/live together	15.0807***	38.1802***	10.2497***	11.0805***	2.3377***	4.5318***	-14.5117***	-14.5117***
	(0.1016)	(0.2642)	(0.0943)	(0.1028)	(0.1196)	(0.1250)	(0.0966)	(0.0966)
Marital status: Widowed/divorced	2.0532***	16.5953***	-12.6329***	-14.5213***	7.6719***	9.0552***	9.1726***	9.1726***
	(0.1497)	(0.3891)	(0.1389)	(0.1517)	(0.1762)	(0.1842)	(0.1424)	(0.1424)
Labour market status: Unemployed	-33.6539***	-95.0747***	78.0153***	81.2302***	41.8896***	42.4021***	6.6013***	6.6013***
	(0.1316)	(0.4759)	(0.1221)	(0.1331)	(0.1549)	(0.1614)	(0.1252)	(0.1252)
Labour market status: Employed	172.5069***	469.2755***	-13.5802***	-8.8698***	-55.7059***	-57.8944***	-45.7798***	-45.7798***
	(0.0785)	(0.2412)	(0.0728)	(0.0799)	(0.0924)	(0.0964)	(0.0747)	(0.0747)
Household size	-7.8095***	-16.7232***	-12.0450***	-13.3157***	11.2164***	12.2100***	-1.5280***	-1.5280***
	(0.0288)	(0.0789)	(0.0267)	(0.0292)	(0.0339)	(0.0354)	(0.0274)	(0.0274)
Number of children 0-17 years	5.1179***	10.4112***	22.0581***	21.2747***	-13.1735***	-13.3048***	-4.7872***	-4.7872***
	(0.0368)	(0.0946)	(0.0341)	(0.0373)	(0.0433)	(0.0452)	(0.0350)	(0.0350)
Constant	-69.1748***	-706.2832***	131.0210***	101.8858***	234.7367***	225.2248***	806.2926***	806.2926***
	(0.2523)	(0.7471)	(0.2341)	(0.2584)	(0.2970)	(0.3105)	(0.2400)	(0.2400)
Weighted sample size	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578
R^2 or Pseudo R^2	0.3560	0.0268	0.2760	0.0911	0.0910	0.0074	0.1790	0.0151

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table 4.17: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare time, 2010

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	1.4661***	6.0047***	10.4119***	11.7339***	-1.0776***	-1.2885***	1.2535***	1.2557***
	(0.0078)	(0.0205)	(0.0075)	(0.0082)	(0.0092)	(0.0098)	(0.0079)	(0.0079)
Age squared	-0.0137***	-0.0506***	-0.1164***	-0.1322***	0.0107***	0.0127***	0.0135***	0.0134***
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Gender: Male	29.0941***	75.6735***	-103.3263***	-111.3567***	61.2115***	63.6731***	8.6725***	8.6676***
	(0.0494)	(0.1221)	(0.0475)	(0.0514)	(0.0588)	(0.0622)	(0.0501)	(0.0501)
Race: Coloured	-5.6353***	-36.8955***	-35.6008***	-42.1208***	39.8566***	43.6911***	-8.9376***	-8.9294***
	(0.1051)	(0.2567)	(0.1011)	(0.1096)	(0.1252)	(0.1322)	(0.1066)	(0.1066)
Race: Indian/Asian	2.8635***	-41.2627***	-37.6648***	-47.7368***	28.7821***	33.1166***	-2.4295***	-2.4314***
	(0.1511)	(0.3631)	(0.1452)	(0.1583)	(0.1799)	(0.1899)	(0.1531)	(0.1532)
Race: White	4.5180***	-10.5065***	-37.0029***	-43.0673***	32.5751***	35.2160***	-20.0159***	-20.0338***
	(0.0910)	(0.2162)	(0.0875)	(0.0950)	(0.1084)	(0.1145)	(0.0923)	(0.0923)
Province: Western Cape	-12.7465***	-59.7823***	-4.4702***	-6.0322***	59.5726***	62.1164***	-33.9279***	-33.9485***
	(0.1119)	(0.2704)	(0.1076)	(0.1162)	(0.1332)	(0.1410)	(0.1134)	(0.1134)
Province: Northern Cape	2.3612***	-45.5299***	-30.1812***	-35.1565***	20.3870***	22.7198***	-12.4470***	-12.4481***
	(0.1750)	(0.4441)	(0.1683)	(0.1829)	(0.2084)	(0.2204)	(0.1774)	(0.1774)
Province: Free State	-13.0019***	-77.8911***	-29.0238***	-31.7713***	38.7374***	41.9045***	-6.9087***	-6.9076***
	(0.1194)	(0.3030)	(0.1148)	(0.1239)	(0.1422)	(0.1506)	(0.1210)	(0.1210)
Province: KwaZulu-Natal	18.0017***	18.7900***	-16.2208***	-16.6530***	-3.2164***	-2.1931***	-25.0910***	-25.0896***
	(0.0853)	(0.2059)	(0.0820)	(0.0884)	(0.1016)	(0.1078)	(0.0865)	(0.0865)
Province: North West	-19.2617***	-94.5226***	-37.9087***	-44.3027***	67.0580***	69.2488***	-9.2695***	-9.2678***
	(0.1158)	(0.2946)	(0.1113)	(0.1207)	(0.1379)	(0.1461)	(0.1174)	(0.1174)
Province: Gauteng	-19.3456***	-94.6220***	-25.2357***	-28.8334***	59.7698***	64.4194***	-25.9797***	-25.9743***
	(0.0837)	(0.2067)	(0.0805)	(0.0869)	(0.0997)	(0.1056)	(0.0849)	(0.0849)
Province: Mpumalanga	1.1216***	-36.1904***	-13.4963***	-14.3010***	37.3679***	43.1979***	-48.1411***	-48.1382***
	(0.1108)	(0.2729)	(0.1065)	(0.1148)	(0.1319)	(0.1395)	(0.1123)	(0.1123)
Province: Limpopo	-13.2871***	-51.5665***	-21.3300***	-23.6097***	80.9960***	84.1414***	-26.5419***	-26.5392***
	(0.0988)	(0.2476)	(0.0950)	(0.1026)	(0.1177)	(0.1247)	(0.1002)	(0.1002)

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Table 4.17: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	-14.5601***	-44.5360***	-6.6189***	-6.8108***	50.1883***	57.1829***	-48.6209***	-48.6110***
	(0.1308)	(0.3128)	(0.1257)	(0.1366)	(0.1557)	(0.1659)	(0.1326)	(0.1326)
Education: Incomplete secondary	-16.2199***	-64.1545***	28.8878***	34.9889***	49.9214***	57.4534***	-73.7042***	-73.6974***
	(0.1262)	(0.3006)	(0.1214)	(0.1317)	(0.1503)	(0.1602)	(0.1280)	(0.1280)
Education: Matric	-6.5731***	-46.1627***	37.3433***	43.8045***	75.1837***	85.1194***	-87.6228***	-87.6137***
	(0.1367)	(0.3244)	(0.1314)	(0.1424)	(0.1628)	(0.1733)	(0.1386)	(0.1386)
Education: Post-Matric	-27.0172***	-69.9249***	18.8380***	24.8600***	96.4122***	107.6982***	-92.9667***	-92.9546***
	(0.1514)	(0.3511)	(0.1456)	(0.1576)	(0.1803)	(0.1917)	(0.1535)	(0.1535)
Education: Other/unspecified	24.9936***	1.8541*	40.7099***	47.4086***	43.3998***	47.6953***	-103.1763***	-103.7247***
	(0.4251)	(0.9790)	(0.4088)	(0.4413)	(0.5062)	(0.5377)	(0.4310)	(0.4312)
Marital status: Married/live together	5.5528***	11.1543***	18.0865***	17.8005***	-13.1002***	-11.9750***	-14.6496***	-14.6432***
	(0.0717)	(0.1662)	(0.0689)	(0.0741)	(0.0854)	(0.0906)	(0.0727)	(0.0727)
Marital status: Widowed/divorced	-3.6055***	7.9539***	0.8657***	1.5867***	3.4793***	4.0066***	-2.5453***	-2.5464***
	(0.1133)	(0.2666)	(0.1089)	(0.1174)	(0.1349)	(0.1431)	(0.1149)	(0.1149)
Labour market status: Unemployed	-5.8462***	-33.9839***	33.3310***	35.4008***	31.8695***	33.7147***	-6.9842***	-6.9901***
	(0.1000)	(0.3060)	(0.0961)	(0.1033)	(0.1190)	(0.1255)	(0.1014)	(0.1014)
Labour market status: Employed	308.5280***	598.5679***	-63.9286***	-62.2450***	-117.9695***	-124.4233***	-93.6317***	-93.6437***
	(0.0640)	(0.1693)	(0.0615)	(0.0663)	(0.0762)	(0.0807)	(0.0649)	(0.0649)
Household size	0.9848***	6.7029***	-15.6705***	-16.9199***	12.7120***	13.8292***	-2.4346***	-2.4341***
	(0.0212)	(0.0510)	(0.0204)	(0.0220)	(0.0252)	(0.0268)	(0.0215)	(0.0215)
Number of children 0-17 years	-2.3195***	-4.0602***	19.2756***	18.7252***	-8.6119***	-8.6521***	-2.4124***	-2.4226***
	(0.0283)	(0.0663)	(0.0272)	(0.0293)	(0.0336)	(0.0357)	(0.0286)	(0.0287)
Constant	-5.3482***	-401.6342***	132.2561***	109.4919***	177.8835***	161.9910***	833.3794***	833.3407***
	(0.2036)	(0.5159)	(0.1958)	(0.2129)	(0.2425)	(0.2575)	(0.2065)	(0.2065)
Sample size	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589
R^2 or Pseudo R^2	0.5100	0.0674	0.2670	0.0112	0.1560	0.0059	0.1690	0.0153

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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The results of the total paid work regressions are highly similar to those of the SNA productive regressions in Tables 4.13-4.14. Most notably, the parameter of the employed dummy was very large (e.g., 598.57 in the 2010 Tobit regression) and some of the parameters had peculiar signs (e.g., race and education dummies). Hence, for the remainder of the discussion, the focus will be on explaining the key results of the regressions on time spent on total unpaid work, leisure and selfcare activities.

There was a significant concave relationship between age and total unpaid work time (time spent on unpaid work increased at a decreasing rate as age increased), while the relationship between age and leisure as well as selfcare time was convex (time spent on these activities decreased at an increasing rate for older individuals). Hence, these results suggest the youth and elderly people were significantly more likely to enjoy longer leisure and selfcare time (non-productive activities) but spend less time on both paid and unpaid work.

Compared with the reference gender category (females), men were associated with significantly longer leisure and selfcare time but shorter unpaid work time. The latter results were consistent with the findings of the 2009 Kizilirmak & Memis (they found women had longer unpaid work time) and 2010 Abdourahman (the author found women had shorter leisure and personal time than men) studies.

Regarding results by race, after controlling for differences in other characteristics, in general, both OLS and Tobit regressions showed that Coloured, Indian and white individuals spent significantly shorter time on unpaid work and selfcare, but longer time on leisure activities. Regarding the results by province, once again the results are somewhat mixed. First, compared with Eastern Cape (reference category), individuals from many other provinces were associated with significantly less time spent on unpaid work (all provincial dummy variable parameters were negative in the 2010 regressions) but longer time on leisure (in 2010, all provincial dummy variables except KwaZulu-Natal had positive parameters). In addition, except for KwaZulu-Natal and North West in 2000, individuals from provinces other than Eastern Cape spent significantly shorter duration of time on selfcare activities.

In general, a higher educational attainment was associated with significantly more time spent on both unpaid work and leisure activities, but less time spent on selfcare, as indicated by the results in the two regression tables. In addition, people who were married or lived together

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with their partners spent significantly longer time on both paid and unpaid work. This result was consistent with the empirical findings of the 2009 Kizilirmak & Memis study, i.e., married male and female individuals had significantly greater paid and unpaid work time, respectively.

It was already mentioned earlier that employed individuals spent significantly longer time on paid work, compared to both unemployed and inactive. However, when it comes to total unpaid work time, the duration of time spent on these work activities was significantly greater for unemployed, despite a huge drop of the parameter (2000: about 80; 2010: 33-35). Unemployed individuals were also found to spend significantly longer time on leisure, but the opposite happened to the employed individuals, compared with the reference category (inactive). Furthermore, unemployed people spent significantly shorter time on selfcare in both years, as indicated by the greatest parameter in absolute terms but with negative sign.

Larger household size was associated with significantly shorter unpaid work and selfcare times but longer leisure time, for both OLS and Tobit regressions in both years. In contrast, the presence of an additional child in the household led to a significant increase in total unpaid work time, but significant decline in both leisure and selfcare time. The latter finding is not surprising, as the (possibly adult) individuals had to invest more time to take care of the child members of households by giving up personal and selfcare activities to some extent.

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Going back to Table 4.15, the total paid work time regressions were re-run by excluding the labour market status dummy variables; just like the SNA production regression results in the same table. The results of the regression have improved somewhat as a result of the exclusion of the abovementioned explanatory dummy variables. For example, all race dummy variables have now become positive and statistically significant, apart from the 2010 Tobit regression. Moreover, the two most educated dummy variables (Matric and post-Matric) are now positive and significant in all regressions in both years under study.[38]

Appendix A15-A18 in the Appendix presents the OLS and Tobit regressions on the same four dependent variables (paid work, unpaid work, leisure and selfcare time), but by gender. The results were highly similar to what was discussed above in connection with Tables 4.13-4.14,

[38] Similar to what was mentioned in the previous footnote, for consistent comparison purpose, the labour market status dummy variables were still included as explanatory variables in appendix A15-A26.

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except a few points from Tables A5-A8 were worth mentioning. First, male selfcare time was not associated with a negative relationship with age: selfcare time rather significantly increased with age at an increasing rate in 2000 and at a decreasing rate in 2010. Second and similar to regressions A5-A8, marriage or living with a partner significantly increased gender differences compared to single individuals: married males enjoyed significantly less time on unpaid work compared to single males, while married women enjoyed significantly longer time on unpaid work, compared to single females, ceteris paribus. This result was similar to Kizilirmak & Memis (2009) who found married females were more likely to spend more time on unpaid work. Also, it highlights the traditional role of females within the household.

Moving to the regressions by race (refer to Tables A19-A24), few dissimilarities were observed. First, Africans' selfcare time relationship with age was significant in both years, but changed from negative to positive across the two surveys, after controlling for other differences in characteristics. Next, for the total unpaid work time regressions, the more education dummy variables in general had positive signs for Africans and Coloureds, but negative signs for white individuals. For the leisure regressions, the education dummy variables had a positive sign for Africans, but the sign changed from negative in 2000 to positive in 2010 for the Coloured population. For all three race groups[39], the unemployed dummy variable had a positive parameter in the total unpaid work time regressions. However, this dummy variable was positive in the leisure time regressions only for Africans and Coloureds. Furthermore, both the employed and unemployed dummy variables had significantly negative parameters in the selfcare time regressions, meaning the inactive spent the longest time on selfcare, relatively speaking.

Moving on to Tables A25-A30 (the regression by labour market status), the following results are worth to be mentioned. First, in Tables A25-A26, for the employed individuals, older married males who were not Africans, resided in provinces other than Eastern Cape, Limpopo and Mpumalanga, were highly educated, and came from households with more members but fewer children spent significantly more time on paid work. Older female African employed with incomplete secondary education spent significantly longer time on unpaid work. In addition, male employed individuals were associated with significantly

[39] The fourth race group Indian/Asian was ignored because of their relatively small, weighted sample size. And they were not the focus of this study due to the mixture of racial groups

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longer time spent on leisure. Highly educated employed people spent significantly more time on leisure but less time on selfcare.

As far as the unemployed and inactive individuals are concerned (Tables A27-A29), for both groups, older individuals spent more time on unpaid work and leisure, but less time on selfcare. While, male unemployed and inactive people spent significantly less time on unpaid work, but more time on leisure and selfcare. In general, more educated unemployed and inactive spent significantly longer time on unpaid work and leisure, but less time on selfcare.

4.4 Conclusion

This chapter conducted descriptive and econometric analyses on time spent on various categories of activities. The chapter began by presenting information on the characteristics of the weighted sample in each wave of TUS. Overall, the sample comprised of more than 50% females, 58% unmarried individuals, 75% Africans with a mean age of slightly over 30 years. More than half of the individuals resided in KwaZulu-Natal, Gauteng, Western Cape and Eastern Cape. A high proportion (about 70%) of households contained no children albeit households comprised of at least three persons on average. Only 20% of the weighted sample attained at least Matric in 2000 and 28% in 2010, while 11.1 and 14.2 million were employed in 2000 and 2010 respectively.

Using the SNA classification, the largest component, namely non-productive time, decreased overtime as a result of the increase in both SNA and non-SNA production time. Despite decrease in mean non-productive time, it was still about seven times the mean of SNA and non-SNA production time in 2010. The increase in SNA and non-SNA production time was mostly attributed to work in establishments (SNA) and household maintenance (non-SNA) time, respectively. Based on the author's classification, mean paid and unpaid work time increased at the cost of non-work overtime. The unpaid work time increase was mostly attributed to the increase in housework, while the decrease in mean non-work activities was attributed to learning and leisure. Despite the decrease in non-work time, it remained three times greater than the sum of paid and unpaid work time.

Delving deeper into the SNA classification (author's classification in parenthesis), the mean SNA production (paid work) time, especially work in establishments, was particularly higher for middle-aged white male individuals who were highly educated, residents in Western Cape

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and Gauteng, married and employed people who came from richer income and SES deciles with smaller number of household members without children.

In contrast, mean non-SNA production (unpaid work) time, especially household maintenance (housework), was relatively higher for unemployed female Africans coming from the poorer quintiles. Some notable highlights for SNA production and non-SNA production time are as follows: although males had higher SNA production and lower non-SNA production than females, the mean differences between genders decreased over time. Moreover, despite whites having the highest SNA production time in both years, SNA production time gap decreased for Africans (female Africans who were middle-aged, unemployed, had little to no education, resided in the Eastern Cape, divorced or widowed, coming from the poorer quintiles).

Further investigation in SNA classification categories (author's classification in parenthesis) found mean time spent on work in establishments (paid work time) was greater for men but increased for both. It was also found that household maintenance (housework and childcare) time of women was higher when compared to male individuals. In addition, Africans were found to be the racial group with the highest mean times for primary production not for establishments and household maintenance (unpaid work time and housework time).

Individuals who had incomplete primary education had the lowest mean work in establishments and household maintenance times. Those who were married or lived together with a partner had the highest mean work in establishments, while those unmarried had the lowest mean paid and unpaid work times. Also, the unemployed had the highest mean household maintenance time. Lastly, mean time spent on work for establishments (both paid and unpaid work) increased over time for each household size but decreased (only for paid work) for larger households.

In terms of proportion of time spent on each category of activity and non-zero-time reported on activities, individuals spent over 50% of their time on personal care whereas approximately 20% of their time was spent on SNA and non-SNA production (paid and unpaid work) together. Also, the full 100% of the weighted sample in both years reported spending non-zero time on personal selfcare activities.

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Moving on to the key highlights of the multivariate econometric analysis, many similarities were found between the SNA production and paid work times regressions. Both SNA production and paid work times were significantly higher for 25-34, 34-44 and 45-54 years cohorts, males, whites, Western Cape and Gauteng residents, individuals with at least Matric, married and employed individuals coming from households with one to two members and one child, from SES quintile5 and income quintile5.

In addition, there were parallels between non-SNA production and unpaid time regressions as well. Both were significantly higher for 25-34 and 34-44 years cohorts, females, Africans, Eastern Cape and Mpumalanga residents, matriculants, married, divorced or widowed people, unemployed, coming from households with one to two people and at least one child, in SES quintiles 1-3 and income quintiles 1-3. Non-SNA production regressions were equally significantly highest for those with incomplete education and widowed, while unpaid work regressions were significantly highest for those with no education.

The remaining regressions showed non-productive time was significantly higher for 10-14 years and 65+ years cohorts, males, Africans, Limpopo residents with no schooling or incomplete primary education, unmarried and labour market inactive individuals, coming from households with more than five persons but no children, in SES quintile4 and income quintiles 1-2. On the other hand, leisure time was significantly higher for individuals from the 10-14, 15-24 and 65+ years cohorts, males, non-Africans, unmarried and unemployed individuals, who came from households with at least three members but no children present, in SES quintiles 3-5. Finally, selfcare time was significantly higher for those aged 10-14, 55-64 and 65+ years, divorced/widowed female Africans with no schooling or incomplete primary education, inactive in the labour market, coming from households with more than five persons with no children, in SES quintile1 and income quintiles 1-3.

Lastly, some of the SNA production and paid work regression parameters had some peculiar signs (possibly wrong) as they differed from the descriptive statistics and past empirical literature. It was hypothesized (because of the ridiculous size of the parameter) and shown that this was most likely owing to the inclusion of the employed dummy variable. However, this dummy variable was still included for the econometric analysis to conform with the theoretical discussions in Chapter Two and regressions were also run without this variable to better understand the underlying forces affecting time use, apart from employment status.

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CHAPTER FIVE: TIME POVERTY AND ITS RELATIONSHIP WITH INCOME POVERTY

5.1 Introduction

This chapter covers time poverty and its relationship with income poverty. It is divided into four sections: Section 5.2 presents the descriptive statistics, which highlight the poverty headcounts of the various poverty measures followed by profiling the poor by various personal characteristics. The section proceeds to look at the relationship between money-metric poverty and the different approaches of time poverty, and concludes by enumerating the number of times defined by each poverty status and highlighting the characteristics of the poor according to the number of the times defined as time-poor.

Section 4.3, the econometric analysis, investigates the poverty likelihood of each approach using probit, bivariate probit and multivariate probit regressions. The likelihood analysis extends by conducting bivariate and multivariate probit regressions on money-metric poverty and time poverty probabilities. Lastly, Section 5.4 concludes the chapter.

5.2 Descriptive Statistics

To make the discussion easier to follow, for the remainder of the study abbreviations are used to represent each poverty approach:

- Method [1]: Money-metric poverty approach
- Method [2]: Non-money-metric multidimensional poverty approach
- Method [3]: Time poverty, absolute approach
- Method [4a]: Time poverty, relative approach – 60% of median free time[40]
- Method [4b]: Time poverty, relative approach – 1.5 times median work hours [41]
- Method [4c]: Time poverty, relative approach – two times median work hours[42]
- Method [5]: Time poverty, time deficit approach.

[40] The relative poverty line is set based on 60% of median free time
[41] The relative poverty line is set based on 1.5 times median work hours
[42] The relative poverty line is set based on two times median work hours

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Whilst there are three relative time poverty approaches adopted in this study, unless stated otherwise, the primary focus would be on Method [4a], which is the more commonly adopted approach from the past international empirical studies reviewed in Chapter Two.

Table 5.1 shows the poverty headcount rates of the full weighted sample in each approach. The results clearly indicate very different poverty headcount rates for each method. Method [1] had the highest population headcount rate amongst all methods, while method [4a] had the highest rate amongst all time poverty measures. Also, method [4a] was the only method whose headcount rate increased negligently from 2000 to 2010. Overall, the decrease in money-metric, non-money-metric and time poverty rates (except method [4a]) could indicate the population suffered from less income, multi-dimensional and time poverty.

Table 5.1: Poverty headcount rates (%) in each poverty approach

	TUS 2000	**TUS 2010**	**Difference (percentage points)**
Method [1]	53.9	34.7	-19.2
Method [2]	40.0	31.2	-8.8
Method [3]	16.1	14.1	-2.0
Method [4a]	28.1	28.3	0.2
Method [4b]	10.3	2.5	-7.8
Method [4c]	0.4	0.1	-0.3
Method [5]	22.2	21.3	-0.9

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Table 5.2 shows the poverty headcount ratios in each approach by various personal characteristics. Firstly, the results derived from methods [1] and [2] will be reviewed before looking at the time poverty rate estimates. The youth cohort aged 10-24 years suffered the greatest poverty headcount rate in methods [1] and [2] (over 64% and 43% in 2000, respectively). The result was anticipated considering the youth low education levels and their higher unemployment rate.

Moving on to gender, the poverty headcount rate was the highest for females based on method [1] but lower for method [2] when compared to males. These results could be attributed to lower employment rates of females relative to men. On the other hand, Africans

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had the highest poverty headcount rates and whites the lowest for both method [1] and [2]. One too can attribute the result to lower employment rates of Africans and their higher involvement in non-SNA activities.

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Table 5.2: Poverty headcount rates in each poverty approach, by various personal characteristics (%)

	2000 TUS							2010 TUS						
	[1]	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**	**[1]**	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**
All														
All	53.86	39.99	16.14	28.11	10.32	0.42	22.17	34.72	31.21	14.15	28.38	2.46	0.11	21.28
Age cohort														
10-14 years	69.13	44.99	60.84	18.42	9.26	0.31	14.08	48.00	34.09	52.99	17.55	14.76	0.82	5.19
15-24 years	64.21	43.55	2.17	14.65	3.34	0.07	9.92	43.94	35.58	3.21	15.32	0.37	0.00	8.77
25-34 years	42.00	36.69	10.47	36.76	16.05	1.02	32.38	29.68	33.29	12.82	37.54	1.06	0.01	33.23
35-44 years	41.22	33.60	9.36	39.08	17.35	0.56	38.80	26.17	27.13	13.22	39.27	0.67	0.01	39.50
45-54 years	44.63	35.07	10.60	42.38	16.10	0.56	37.62	28.60	25.11	10.23	37.53	0.41	0.01	33.14
55-64 years	50.38	38.69	5.42	38.42	10.05	0.28	22.11	28.59	26.31	6.01	32.17	0.87	0.00	18.43
65+ years	47.59	43.31	1.28	31.98	2.12	0.12	7.12	25.09	26.29	1.60	26.53	0.12	0.00	4.13
Gender														
Male	52.34	40.30	15.63	23.71	9.66	0.56	27.66	33.27	31.70	14.57	26.06	2.16	0.09	27.23
Female	55.20	39.71	16.58	31.98	10.91	0.30	17.33	36.08	30.76	13.75	30.55	2.75	0.14	15.72
Race														
African	66.45	50.67	16.84	29.18	9.92	0.41	18.88	42.33	39.12	14.66	29.30	2.73	0.13	19.32
Coloured	18.98	3.01	17.33	26.50	10.25	0.23	35.76	16.78	7.32	13.32	24.07	1.33	0.00	25.17
Indian/Asian	28.39	13.93	14.20	24.33	11.05	0.36	26.36	4.03	0.23	13.40	30.46	1.58	0.00	33.18
White	1.31	0.72	12.85	24.75	12.51	0.59	36.71	0.78	0.44	11.16	24.60	1.72	0.09	29.59
Province														
Western Cape	23.62	13.52	14.44	23.81	12.60	0.96	27.58	15.08	9.27	15.42	26.13	1.92	0.00	26.29
Eastern Cape	67.43	60.67	15.53	28.56	9.64	0.17	17.10	44.68	50.59	11.58	30.53	2.31	0.23	13.93
Northern Cape	46.02	33.42	20.14	30.67	11.28	0.16	28.31	33.20	22.74	15.44	26.36	2.70	0.16	20.00
Free State	58.04	40.27	12.15	19.85	7.17	0.50	21.18	36.07	22.20	13.25	28.88	2.28	0.08	18.15
KwaZulu-Natal	63.36	47.75	16.68	34.80	9.69	0.36	22.02	42.88	39.69	16.78	33.57	3.91	0.23	23.36
North West	62.78	41.90	17.53	30.52	11.93	0.56	18.10	36.57	31.91	11.61	27.17	1.52	0.04	18.76
Gauteng	37.72	23.44	14.79	29.24	12.28	0.62	28.90	19.85	18.12	14.50	26.83	2.21	0.04	26.39
Mpumalanga	54.90	31.49	17.49	18.84	10.24	0.37	18.20	39.93	28.48	17.16	26.77	2.47	0.12	22.84
Limpopo	63.99	54.02	19.42	25.38	7.66	0.02	17.94	52.91	48.59	9.78	23.03	1.48	0.06	12.66

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Table 5.2: Continued

	2000 TUS							2010 TUS						
	[1]	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**	**[1]**	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**
Highest educational attainment														
None	70.74	64.27	5.70	44.85	8.78	0.21	16.91	49.91	59.07	4.13	39.90	0.13	0.00	10.99
Incomplete primary	70.47	55.48	31.82	27.33	8.02	0.38	16.36	49.42	44.31	28.78	25.44	6.49	0.21	11.25
Incomplete secondary	55.26	38.53	10.89	25.50	10.24	0.28	19.44	38.91	33.77	10.05	26.50	1.82	0.15	18.18
Matric	30.40	16.24	7.45	25.56	11.58	0.75	29.75	19.52	17.13	12.33	32.02	0.86	0.00	32.86
Post-Matric	12.65	7.32	9.74	29.87	16.73	0.87	44.85	4.85	4.52	11.32	30.38	1.29	0.00	40.08
Other/unspecified	56.88	40.15	14.88	24.34	12.91	2.39	27.19	19.23	11.64	12.86	44.72	2.44	0.00	37.39
Marital status														
Unmarried	64.24	43.58	21.67	21.32	7.49	0.35	15.28	42.80	34.40	17.15	22.49	3.81	0.19	15.04
Married/live together	36.99	33.54	9.03	37.43	15.12	0.57	34.35	21.55	25.68	11.30	37.11	0.75	0.01	33.64
Widowed/divorced	48.89	40.56	5.96	38.05	10.89	0.37	21.30	32.34	31.59	5.16	33.58	0.15	0.00	14.42
Labour market status														
Employed	41.94	35.41	13.82	39.35	18.21	0.88	42.94	16.88	24.51	18.87	47.86	1.47	0.03	55.85
Unemployed	63.99	40.09	1.87	22.27	4.43	0.11	7.90	49.35	33.36	2.83	15.56	0.60	0.03	2.58
Not economically active	62.80	43.98	20.28	19.14	4.29	0.07	6.10	44.03	35.11	12.58	17.83	3.30	0.18	2.07
SES quintile														
Quintile1	80.55	100.00	18.77	40.06	10.36	0.25	18.32	56.96	100.00	13.67	42.12	2.76	0.19	17.90
Quintile2	73.42	99.29	17.69	30.27	10.12	0.29	18.28	50.03	51.36	14.72	26.80	2.57	0.03	17.31
Quintile3	60.96	0.00	16.69	26.04	10.20	0.37	18.92	38.38	0.00	14.71	24.73	2.86	0.24	19.43
Quintile4	46.71	0.00	13.95	20.89	8.97	0.58	21.65	20.71	0.00	14.45	23.94	1.93	0.04	23.46
Quintile5	5.82	0.00	13.53	23.19	12.04	0.65	34.13	5.13	0.00	13.15	24.07	2.17	0.06	28.80
Real per capita income quintile														
Quintile1	100.00	63.86	19.19	27.31	7.32	0.13	13.88	100.00	52.39	12.76	25.29	2.70	0.16	8.69
Quintile2	100.00	51.35	16.33	25.18	7.16	0.24	12.14	69.58	42.13	14.22	26.38	3.24	0.17	12.95
Quintile3	68.95	51.18	14.54	29.86	9.55	0.30	17.30	0.00	32.87	13.43	30.15	2.23	0.11	20.59
Quintile4	0.00	24.42	15.41	29.68	12.70	0.81	26.96	0.00	19.47	15.83	29.83	2.35	0.08	29.69
Quintile5	0.00	5.41	14.50	27.95	14.89	0.67	40.48	0.00	6.47	14.91	30.38	1.87	0.05	36.01

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Table 5.2: Continued

	2000 TUS							2010 TUS						
	[1]	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**	**[1]**	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**
Household size														
One person	29.91	47.18	12.80	43.54	18.52	1.25	37.10	14.39	48.96	15.43	45.10	1.23	0.06	35.38
Two persons	17.07	37.88	10.87	34.45	14.05	0.69	31.72	16.38	33.31	12.45	35.94	1.30	0.03	29.62
Three persons	41.98	36.89	16.39	28.29	10.35	0.63	22.29	31.80	26.57	15.50	25.59	2.75	0.17	19.54
Four to five persons	59.92	38.30	16.29	25.22	9.29	0.21	21.08	37.34	27.06	13.50	24.20	2.57	0.10	18.16
More than five persons	84.92	44.09	20.13	23.73	7.11	0.18	13.33	61.02	34.04	15.10	23.93	3.72	0.18	14.03
Number of children 0-17 years in the household														
None	55.35	40.95	18.88	22.92	7.89	0.36	17.28	34.99	31.40	15.29	24.06	3.24	0.15	15.99
One child	48.19	36.26	7.94	37.92	13.22	0.67	31.96	32.56	29.30	11.01	36.00	0.70	0.03	32.76
Two children	44.05	32.55	10.93	39.67	19.27	0.69	36.57	29.82	28.31	12.90	39.20	0.83	0.02	34.19
Three children	48.20	37.63	9.77	43.71	15.07	0.47	35.57	40.25	35.65	11.19	40.50	0.61	0.00	30.71
More than three children	78.99	57.56	11.62	48.36	19.86	0.17	30.87	52.77	43.08	11.03	37.95	1.37	0.00	29.78

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With regard to results by geographical location, employment hubs and highly urbanised provinces like Gauteng and the Western Cape had the lowest poverty headcount rates based on method [1] and [2], while Eastern Cape (a more rural/farm area) had the highest estimates.

Different to the descriptive findings found for educational attainment in Chapter Four, education seems to play a big role with regards poverty headcount rates (for method [1] and method [2]). The two lowest educational attainment groups had poverty headcount rates of more than 70% individuals and near 50% combined based on method [1] in 2000 and 2010 respectively, while over 55% and 44% based on the method [2] in both years, respectively. Inferior educational attainment affects people's ability to find employment or better remunerated work, thereby making it more difficult to combat income and non-income poverty.

The unmarried, those who were not employed (unemployed and not economically active) and those from lower SES and income quintiles were also associated with the highest incidence of poverty (for both method [1] and [2]). This could be attributed to the unmarried mostly likely being young (and thereby unemployed and studying) or them not sharing in the responsibility of household expenses (as they have no commitments to a spouse of household). For obvious reasons the employed earn an income which can help combat both monetary and non-money metric poverties. By design, both SES quintile1 and quintile2 had a poverty headcount rate of 100% (method [1]) in 2000, although this headcount rate reduced by almost 50% over the years for quintile 2.

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The first real difference between method [1] and [2] occurred in household size. A higher household size (more than five members in total) was associated with a higher poverty headcount for method [1], while a smaller household size (size of one) was associated with a higher rate for method [2]. Based on method [1], lower headcount rates were associated for households with children, while for method [2] for household without children. The result related to method [1] differed from Gammage (2010) who found households with children were more likely monetary poor. Also, an extra child to feed would increase the financial burden on a family especially as a child is unable or not allowed to participate in the labour market.

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The time poverty measures (method [3], [4a] and [5]) provided less similarities as observed for method [1] and [2]. Quite noticeably, individuals from the 10-14 years age cohort had the highest poverty headcount rate with regards to method [3] and the middle-age cohorts had the highest poverty headcount rate with regards to method [4a] and [5]. The latter result was not surprising considering the middle-age cohorts were more likely to be employed. However, the higher rate found for the age cohort 10-14 years could be related to the substitution of learning for SNA work.

Again, depending on the method used, the incidence of time poverty varied by gender and race. Method [3] and [4a] revealed females and method [5] revealed males to have the highest poverty headcount rates compared to their opposite gender. The incidence poverty between method [3] and [4a] varied by only five percentage points amongst races. Different to the results of method [1] and [2], the African population did not dominate (i.e. have the highest poverty headcount rates) any of the time poverty measures: they only had the highest rates for method [3] in 2000 and method [4a] in 2000; they too had the lowest incidence of poverty for method [5] amongst all population groups. As Africans are known to have high unemployment rates, it may suggest employment (or paid/SNA time) to play a bigger factor in time poverty than household maintenance (or non-SNA time). The empirical findings in Chapter Four showed women to be more involved in household maintenance and child care which could be the reason why they suffered higher poverty headcount rates based on method [3] and [4a] than males. Bardasi & Wodon (2006), Chatzitheochari & Arber (2012), Ribeiro & Marinho (2012), Saqib & Arif (2012) and Arora (2015) and studies on absolute time poverty also found women suffered more time poverty than males.

Again, the time measures for provinces were not consistent with each other. In 2010, the Western Cape had the highest ratio of individuals being absolute time poor, while Gauteng the highest ratio of time deficits. The Western Cape and Gauteng mimic each other closely in both years. Method [3] and [5] revealed the headcount rates to be highest for incomplete primary and post-Matric education categories, respectively. It is possible that post-Matriculants work extremely long hours which causes their SNA times to exceed (T_1-T_m) difference (as it was observed those who were employed suffered higher time deficits). The result associated to post-Matric education group differed from Bardasi & Wodon (2010) who found highly educated individuals less likely to be relative time poor. However, Lawson (2007) and Saqib & Arif (2012), who found the incidence of time poverty was highest for the

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lowly educated, were similar to the result associated to the incomplete secondary education categories.

Another difference between time measures was found by marital status: the unmarried had the highest headcount rate according to methods [3] and [5] but the lowest rate according to method [4a]. Little conclusions could be drawn for income and SES quintiles except the highest quintiles (both income and SES) were associated with the highest poverty headcount rates based on method [5], while rates were quite similar between each quintile (both income and SES) based on method [4a]). Smaller-sized households were associated with more relative time poverty and highest time deficits, while households with an additional child were associated with more relative time poverty. Early the empirical results of Chapter Four showed an increase in children led to higher unpaid work and non-SNA work which could relate to higher relative time poverty rates. Gammage (2010) too found households with children were more likely time-poor.

It appears methods [3], [4a] and [5] have contrasting headcount rates for each personal characteristic. It could be due to the impact of the learning variable: the learning variable was utilised for the headcount rates of the non-working population and therefore would exclude the working population based on method [3]. Since the working population were found to have a smaller proportion of the time poor, the differences found in headcount rates could be compounded.

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Table 5.3 provides a detailed breakdown on the profile of the poor in each method for both waves of data, and again we first examine the results derived from methods [1] and [2] before proceeding to investigate the results associated with time poverty methods [3]-[5]. First, the youth formed the majority of those classified poor (over 43% based on method [1] and [2]), while age cohorts 10-14 years and 65+ years were the only age cohorts to experience a decrease in proportion for both methods over time. It was not surprising to find females and Africans account for the largest proportion of those classified poor by method [1] and [2]; and although the proportion of females classified as poor decreased over time, unfortunately for Africans it did not happen.

Highly populated province, KwaZulu-Natal contained about 25% of the poor classified by methods [1] and [2], while Gauteng (with a larger population size) contained fewer than 10

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percent compared to KwaZulu-Natal. The majority of those classified as poor had not completed Matric (over 88% in methods [1] and [2]), were unmarried and economically inactive. Worryingly, the share of matriculants and not employed (who formed part of those classified poor) increased over time.

Another concern was individuals from lower SES and income quintiles accounted for more of the poor according to method [1] and the lowest SES quintile according to method [2] over time. Larger households (more than three people) and ones without children formed the largest share of income and non-money-metric poor, despite a reduction between surveys.

Moving on to results derived from time poverty methods [3], [4a] and [5], parallel to the discussion on the two previous methods, age cohort 10-14 years formed the largest proportion of the absolute time-poor, while contrastingly the middle age cohorts 25-34 years, 35-44 years and 45-54 years accounted for more of the poor based on the latter two methods (method [4a] and [5]).

Comparing females to males, females accounted for the majority of the poor under methods [3] and [4a] and males under method [5]. Over time, the majority observed for females weakened but not in the case of males. In addition, Africans were observed to have a strengthened majority (proportions increased over time) between surveys for all three time poverty methods. Furthermore, the bulk of the time poor resided in the three largest provinces, namely Gauteng, KwaZulu-Natal and Western Cape. KwaZulu-Natal formed the majority of the poor under methods [3] and [4a] and Gauteng the majority under method [5].

Interestingly, those without any education and matriculants constituted the smallest proportion of the poor according to all three methods. Only under method [3] were the unmarried at least 60 percentage points larger than those married. The gap was miniscule (less than 1.5 percentage points) under method [4a], while those married formed the largest proportion under method [5]. The relative time poor and time-deficit poor consisted mostly of employed individuals, while the absolute time poor consisted mainly of economically inactive individuals.

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Table 5.3 Profile of the poor, by various personal characteristics (%)

	2000 TUS							2010 TUS						
	[1]	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**	**[1]**	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**
Age cohort														
10-14 years	22.82	20.00	67.14	11.67	15.98	13.03	11.31	18.01	14.23	48.79	8.06	78.03	94.75	3.18
15-24 years	32.44	29.64	3.66	14.18	8.81	4.50	12.18	32.59	29.36	5.85	13.90	3.87	0.81	10.62
25-34 years	14.94	17.58	12.44	25.08	29.83	45.97	28.02	18.44	23.01	19.54	28.53	9.24	2.43	33.68
35-44 years	11.03	12.11	8.36	20.06	24.25	18.94	25.25	11.44	13.20	14.19	21.01	4.15	0.76	28.18
45-54 years	7.40	7.84	5.84	13.40	13.86	11.76	15.08	8.79	8.58	7.71	14.11	1.76	1.25	16.61
55-64 years	5.75	5.94	2.06	8.37	5.97	3.98	6.11	6.19	6.34	3.19	8.53	2.66	0.00	6.51
65+ years	5.62	6.89	0.50	7.24	1.31	1.82	2.04	4.54	5.29	0.71	5.87	0.29	0.00	1.22
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Gender														
Male	45.46	47.15	45.35	39.48	43.79	62.26	58.40	46.24	49.01	49.70	44.31	42.29	36.49	61.77
Female	54.54	52.85	54.65	60.52	56.21	37.74	41.60	53.76	50.99	50.30	55.69	57.71	63.51	38.23
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Race														
African	93.80	96.34	79.29	78.89	73.01	74.14	64.73	95.05	97.70	80.78	80.49	86.22	92.25	70.77
Coloured	1.06	0.23	3.23	2.83	2.98	1.60	4.84	4.39	2.13	8.57	7.71	4.90	0.00	10.76
Indian/Asian	4.77	3.15	7.98	7.85	9.70	7.79	10.78	0.32	0.02	2.64	3.00	1.79	0.00	4.35
White	0.29	0.21	9.40	10.39	14.30	16.47	19.54	0.23	0.14	8.01	8.80	7.09	7.75	14.12
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Province														
Western Cape	4.44	3.42	9.08	8.60	12.39	23.03	12.63	4.56	3.12	11.44	9.66	8.20	0.00	12.96
Eastern Cape	18.68	22.64	14.36	15.16	13.95	5.99	11.51	17.06	21.50	10.86	14.27	12.45	26.83	8.68
Northern Cape	1.78	1.74	2.59	2.27	2.27	0.80	2.65	2.18	1.66	2.49	2.12	2.50	3.24	2.14
Free State	7.18	6.71	5.01	4.70	4.63	7.77	6.36	5.99	4.10	5.40	5.86	5.34	4.25	4.91
KwaZulu-Natal	24.36	24.73	21.39	25.62	19.43	17.43	20.56	25.89	26.66	24.86	24.79	33.29	42.19	23.01
North West	9.82	8.83	9.11	9.10	9.69	11.02	6.85	6.62	6.43	5.16	6.02	3.89	2.06	5.55
Gauteng	13.19	11.04	17.27	19.60	22.42	27.57	24.57	13.21	13.42	23.69	21.85	20.69	7.75	28.67
Mpumalanga	6.82	5.27	7.23	4.47	6.62	5.87	5.48	8.31	6.59	8.76	6.82	7.25	7.62	7.76
Limpopo	13.74	15.62	13.96	10.47	8.61	0.53	9.39	16.18	16.53	7.34	8.62	6.40	6.05	6.32
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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Table 5.3: Continued

	2000 TUS							2010 TUS						
	[1]	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**	**[1]**	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**
Highest educational attainment														
None	10.83	13.25	2.91	13.14	7.01	4.03	6.29	6.77	8.92	1.38	6.63	0.24	0.00	2.44
Incomplete primary	38.33	40.65	57.75	28.48	22.76	25.98	21.62	29.00	28.92	41.45	18.26	53.63	37.62	10.77
Incomplete secondary	42.19	39.62	27.75	37.31	40.79	27.58	36.05	52.08	50.28	33.02	43.40	34.42	61.63	39.72
Matric	5.67	4.08	4.64	9.15	11.28	17.81	13.50	10.68	10.43	16.57	21.44	6.61	0.76	29.34
Post-Matric	2.56	2.00	6.58	11.58	17.66	22.33	22.05	1.27	1.32	7.27	9.73	4.76	0.00	17.12
Other/unspecified	0.42	0.40	0.37	0.35	0.50	2.26	0.49	0.19	0.13	0.31	0.54	0.34	0.00	0.60
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Marital status														
Unmarried	69.45	63.48	78.20	44.18	42.22	47.51	40.15	71.05	63.53	69.87	45.68	89.20	97.99	40.75
Married/live together	23.01	28.10	18.73	44.59	49.03	45.23	51.88	20.99	27.82	27.01	44.21	10.29	2.01	53.46
Widowed/divorced	7.54	8.42	3.06	11.23	8.74	7.26	7.97	7.96	8.65	3.12	10.11	0.51	0.00	5.79
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Labour market status														
Employed	33.70	38.33	37.03	60.55	76.30	89.46	83.79	17.33	28.00	47.56	60.12	21.29	8.61	93.58
Unemployed	8.66	7.31	0.85	5.78	3.14	1.83	2.60	9.83	7.39	1.38	3.79	1.69	2.14	0.84
Not economically active	57.64	54.36	62.12	33.66	20.56	8.71	13.61	72.84	64.61	51.06	36.08	77.02	89.26	5.58
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
SES quintile														
Quintile1	30.22	50.54	23.51	28.81	20.30	12.03	16.71	32.82	64.10	19.33	29.69	22.39	34.52	16.83
Quintile2	27.15	49.46	21.79	21.40	19.49	13.42	16.40	31.44	35.90	22.70	20.60	22.76	6.76	17.75
Quintile3	22.78	0.00	20.82	18.64	19.89	17.38	17.18	21.57	0.00	20.30	17.00	22.61	41.56	17.82
Quintile4	17.77	0.00	17.71	15.23	17.80	27.84	20.01	11.25	0.00	19.27	15.91	14.78	7.27	20.79
Quintile5	2.08	0.00	16.17	15.92	22.51	29.33	29.71	2.92	0.00	18.40	16.80	17.46	9.89	26.81
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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Table 5.3: Continued

	2000 TUS							2010 TUS						
	[1]	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**	**[1]**	**[2]**	**[3]**	**[4a]**	**[4b]**	**[4c]**	**[5]**
Real per capita income quintile														
Quintile1	46.30	39.83	29.59	24.18	17.65	7.45	15.59	64.23	37.43	20.11	19.87	24.43	30.98	9.11
Quintile2	28.10	19.43	15.30	13.54	10.49	8.48	8.28	35.77	24.10	17.94	16.59	23.48	27.41	10.87
Quintile3	25.60	25.60	18.04	21.28	18.54	14.06	15.64	0.00	23.16	20.88	23.37	19.92	20.60	21.28
Quintile4	0.00	12.51	19.58	21.65	25.23	39.09	24.94	0.00	11.18	20.05	18.83	17.07	12.50	25.00
Quintile5	0.00	2.63	17.49	19.36	28.09	30.92	35.55	0.00	4.13	21.02	21.35	15.09	8.51	33.75
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Household size														
One person	3.54	7.52	5.05	9.86	11.42	18.75	10.65	3.21	12.15	8.45	12.30	3.87	4.00	12.88
Two persons	5.30	15.84	11.26	20.48	22.75	27.36	23.91	9.39	21.24	17.52	25.20	10.47	5.80	27.70
Three persons	13.93	16.49	18.19	18.02	17.96	26.79	18.01	18.45	17.15	22.08	18.17	22.45	29.88	18.51
Four to five persons	37.99	32.71	34.47	30.63	30.72	16.70	32.47	35.97	28.99	31.92	28.51	34.92	29.78	28.54
More than five persons	39.24	27.45	31.04	21.01	17.15	10.40	14.96	32.98	20.47	20.03	15.82	28.30	30.53	12.37
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number of children 0-17 years in the household														
None	72.46	72.22	82.52	57.52	53.91	59.13	55.01	68.99	68.87	74.02	58.04	89.99	93.48	51.45
One child	11.06	11.21	6.05	16.59	15.75	19.38	17.73	13.98	13.99	11.61	18.91	4.26	4.59	22.96
Two children	7.54	7.51	6.26	13.05	17.27	14.99	15.26	8.84	9.34	9.39	14.22	3.46	1.93	16.54
Three children	4.16	4.37	2.82	7.24	6.79	5.18	7.47	4.63	4.57	3.16	5.70	0.99	0.00	5.77
More than three children	4.78	4.69	2.35	5.61	6.27	1.33	4.54	3.56	3.23	1.83	3.13	1.30	0.00	3.28
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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In general, the make-up of absolute and relative time poor increased in proportion with lower SES quintiles and those that suffered time deficits increased in proportion with higher SES and income quintiles. The largest proportion of those classified as poor (for all three methods) is made up of households with four to five members. The proportions of poor were also larger the fewer children were present.

It needs to be emphasized that even though females and African still formed the largest proportion of time-poor for each method undertaken, the female proportions were much higher with regards to method [4a] and lower with regards to method [5], while the proportion of Africans was relatively lower in method [5]. Also, the proportions of the highly educated and employed were much higher for the method [4a] and [5] but lower for household with no children and unmarried individuals when compared to other poverty methods.

Now we proceed to the 2×2 matrices which examine the relationship between money-metric poverty and each type of time poverty. First, based on method [3], approximately 58% of the time-poor were also income-poor in 2000, as shown in Table 5.4[43]. This proportion decreased by almost 27 percentage points to 31.56% in 2010. During the same period, the proportion of income-poor decreased regardless of their time poverty status (2000: 53.82%; 2010: 34.72%).

Similarly, in Table 5.5 with regard to method [4a]: 52.15% of the time-poor were also income-poor in 2000, but this proportion dropped by almost 20 percentage points to 31.69% in 2010. Lastly, with regard to Table 5.6 which is associated with method [5], the proportion of time-poor who were also income-poor more than halved, from 34.17% to 16.48%.

Table 5.4: Relationship between money-metric poverty and time poverty absolute approach, row totals

[43] For tables 5.4-5.6 the overall population who are time not poor is grouped into two categories: (1) those income and (2) income not poor. The proportion of individuals falling into each category is then calculated (represent by the top row. This is followed (in the second row) by the overall population who are time poor being grouped into two categories: (1) those income and (2) income not poor. The proportion of individuals falling into each category is then calculated.

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	TUS 2000		
	Income not poor	Income poor	Total
Time not poor	46.99	53.01	100.00
Time poor	41.99	58.01	100.00
Total	46.18	53.82	100.00
	TUS 2010		
	Income not poor	Income poor	Total
Time not poor	64.76	35.24	100.00
Time poor	68.44	31.56	100.00
Total	65.28	34.72	100.00

Table 5.5: Relationship between money-metric poverty and time poverty relative (60% of median free time) approach, row totals

	TUS 2000		
	Income not poor	Income poor	Total
Time not poor	45.53	54.47	100.00
Time poor	47.85	52.15	100.00
Total	46.18	53.82	100.00
	TUS 2010		
	Income not poor	Income poor	Total
Time not poor	64.08	35.92	100.00
Time poor	68.31	31.69	100.00
Total	65.28	34.72	100.00

Table 5.6: Relationship between money-metric poverty and time poverty time deficit approach, row totals

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	TUS 2000		
	Income not poor	Income poor	Total
Time not poor	40.59	59.41	100.00
Time poor	65.83	34.17	100.00
Total	46.18	53.82	100.00
	TUS 2010		
	Income not poor	Income poor	Total
Time not poor	60.35	39.65	100.00
Time poor	83.52	16.48	100.00
Total	65.28	34.72	100.00

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Tables 5.7-5.9[44] also show the results of the 2×2 matrices, but this time the cell totals are shown, and in all three tables, the proportion of people who were both income- and time-poor decreased whereas the percentage of individuals who were neither time- nor income-poor increased over time. First, in Table 5.7, the income-poor and time-poor share dropped from 9.36% to 4.46%, while the time non-poor and income non-poor share rose from 39.41% and 55.60% when considering time poverty method [3].

Table 5.7: Relationship between money-metric poverty and time poverty absolute approach, cells totals

	TUS 2000		
	Income not poor	Income poor	Total
Time not poor	39.41	44.46	83.86
Time poor	6.78	9.36	16.14
Total	46.18	53.82	100.00
	TUS 2010		
	Income not poor	Income poor	Total
Time not poor	55.60	30.26	85.85
Time poor	9.68	4.46	14.15
Total	65.28	34.72	100.00

Table 5.8 shows the results using time poverty method [4a]; there was a 5.67 percentage points decline in the proportion of people who were time-poor and income-poor, whereas the share of people who were both income non-poor and time non-poor increased from 32.73% to 45.86%.

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A similar reassuring finding was found in Table 5.5 with regard to method [4a]: 52.15% of the time-poor were also income-poor in 2000, but this proportion dropped by almost 20 percentage points to 31.69% in 2010. Lastly, with regard to Table 5.6 which is associated with method [5], the proportion of time-poor who were also income-poor more than halved, from 34.17% to 16.48%.

[44] For tables 5.7-5.9 the overall population is grouped into four categories: (1) those time poor and income not poor, (2), those time poor and income poor, (3) those time not poor and income not poor and lastly (4) those time not poor and income poor. The proportion of individuals falling into each category is then calculated.

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Table 5.8: Relationship between money-metric poverty and time poverty relative (60% of median free time) approach, cell totals

	TUS 2000		
	Income not poor	Income poor	Total
Time not poor	32.73	39.16	71.89
Time poor	13.45	14.66	28.11
Total	46.18	53.82	100.00
	TUS 2010		
	Income not poor	Income poor	Total
Time not poor	45.86	25.73	71.62
Time poor	19.39	8.99	28.38
Total	65.28	34.72	100.00

Lastly, looking at Table 5.9 which considered time poverty method [5], people who were both income-poor and time-poor represented about 7.5% of the total weighted sample in 2000 before dropping to 3.5% in 2010. On the other hand, there was a more than 15 percentage point increase in the proportion of people who were neither time-poor nor income-poor (2000: 31.59%; 2010: 47.51%).

Table 5.9: Relationship between money-metric poverty and time poverty time deficit approach, cell totals

	TUS 2000		
	Income not poor	Income poor	Total
Time not poor	31.59	46.24	77.83
Time poor	14.59	7.57	22.17
Total	46.18	53.82	100.00
	TUS 2010		
	Income not poor	Income poor	Total
Time not poor	47.51	31.21	78.72
Time poor	17.77	3.51	21.28
Total	65.28	34.72	100.00

Proceeding to the relationship between all three poverty approaches (money-metric, non-money-metric and time poverty), individuals who were income, multidimensional and time poor (based on method [3]) represented 5.86% of the total weighted sample in 2000 before reducing to 2.10% in 2010 (the lowest proportion), as shown in Table 5.10. On the other

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hand, individuals who were not poor at all were the largest group (the gap between largest group and smallest widened over time).

Moving on to method [4a], although the share of money-metric, non-money-metric and time poor individuals reduced by 4.53 percentage points (from 10.05% to 5.52%, as shown in Table 5.11), it did not reduce to the smallest share as above. Quite similar to Table 5.10, non-poor individuals share was the largest amongst all increasing by over 10 percentage points.

Lastly, considering time poverty method [5], the results in Table 5.12 resembled the previous tables (Tables 5.10-5.11) closely. Again, the share of money-metric, non-money-metric and time poor individuals declined over time: a reduction of nearly three percentage points (becoming the lowest proportion in 2010 amongst all poverty categories). Once more the non-poor individuals increased: an increase of nearly 12 percentage points.

Table 5.10: Relationship between money-metric poverty, non-money-metric poverty and time poverty absolute approach

Money-metric poverty	Non-money-metric poverty	Time poverty (absolute)	TUS 2000	TUS 2010
Yes	Yes	Yes	5.86	2.10
Yes	Yes	No	24.85	15.37
Yes	No	Yes	3.50	2.36
Yes	No	No	19.60	14.88
No	Yes	Yes	1.43	2.19
No	Yes	No	7.80	11.55
No	No	Yes	5.34	7.49
No	No	No	31.61	44.05
			100.00	100.00

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Table 5.11: Relationship between money-metric poverty, non-money-metric poverty and time poverty relative approach

Money-metric poverty	Non-money-metric poverty	Time poverty (relative)	TUS 2000	TUS 2010
Yes	Yes	Yes	10.05	5.52
Yes	Yes	No	20.66	11.96
Yes	No	Yes	4.61	3.47
Yes	No	No	18.49	13.77
No	Yes	Yes	4.03	6.02
No	Yes	No	5.20	7.72
No	No	Yes	9.42	13.37
No	No	No	27.53	38.17
			100.00	100.00

Table 5.12: Relationship between money-metric poverty, non-money-metric poverty and time poverty time deficit approach

Money-metric poverty	Non-money-metric poverty	Time poverty (time deficit)	TUS 2000	TUS 2010
Yes	Yes	Yes	4.49	1.69
Yes	Yes	No	26.23	15.78
Yes	No	Yes	3.09	1.81
Yes	No	No	20.01	15.43
No	Yes	Yes	2.85	3.72
No	Yes	No	6.38	10.01
No	No	Yes	11.74	14.05
No	No	No	25.21	37.50
			100.00	100.00

Tables 5.13-5.14 show the number of times defined as poor, firstly by time poverty approaches only (Table 5.13) and lastly by the main five poverty approaches discussed in this study (i.e. method [1], [2], [3], [4a], and [5] in Table 5.14). Table 5.13 showed that approximately 57% of individuals were not classified as time-poor at all in 2000 increasing to round 60% in 2010. On the other hand, near 6% of individuals were classified as time-poor

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under all three approaches. When considering all five measures of poverty, Table 5.14 shows that the share of individuals never poor was 20.74% in 2000 increasing to 30.73% in 2010.

Table 5.13: Proportion of times defined as poor (based on frequency) – time poverty only

	TUS 2000	TUS 2010
None	57.32	60.18
Once	24.62	22.17
Twice	12.41	11.32
Three	5.66	6.33
	100.00	100.00

Table 5.14: Proportion of times defined as poor (based on frequency) – money-metric poverty, non-money-metric poverty and the three time poverty approaches

	TUS 2000	TUS 2010
None	20.74	30.73
Once	27.90	29.42
Twice	30.26	23.73
Three	14.07	12.02
Four	5.58	3.68
Five	1.45	0.41
	100.00	100.00

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Table 5.15 shows the characteristics of the poor by the number of times defined as time-poor. First, the youth, 10-24 years, formed the majority share of those never classified as time-poor (over 45%) and only age category never to decrease over time. Age cohort 25-34 years formed the majority of those classified three times as poor (the proportion increased over time). It was not surprising the share of females and Africans too was largest amongst the time poor (regardless of the number of times) or non-poor in 2000. Surprisingly share of males were highest of those classified as twice or thrice as time poor in 2010 (this possibly could be linked to the higher employment rates among males and employment results below).

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Highly populated province, KwaZulu-Natal consisted of approximately 19%, of those never poor, while Gauteng (which has a larger population size) consisted of between 17-24%. The shares of these provinces were highest for the time poor irrespective the number of times determined as time poor. In addition, the majority classified as time-poor (again irrespective of the numbers of times classified as time poor) had not completed Matric and unmarried. One worrying finding is that the share of matriculants classified any number of times poor increased over time.

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Table 5.15: Characteristics of the poor, by number of times defined in time poverty (%)

	TUS 2000				TUS 2010			
	None	**One**	**Two**	**Three**	**None**	**One**	**Two**	**Three**
Age cohort								
10-14 years	11.90	27.38	23.12	24.41	9.94	21.07	17.11	6.95
15-24 years	38.93	11.85	12.85	6.91	35.16	12.71	9.71	10.62
25-34 years	17.37	19.58	22.28	28.97	18.69	21.88	28.51	35.40
35-44 years	11.55	16.80	20.72	19.50	11.74	17.70	22.50	26.06
45-54 years	7.12	9.52	13.48	13.91	9.12	11.82	14.72	14.09
55-64 years	5.85	7.24	5.69	4.98	7.78	7.98	6.33	5.55
65+ years	7.28	7.64	1.87	1.33	7.57	6.84	1.12	1.35
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Gender								
Male	47.50	43.17	49.53	49.73	47.91	43.35	55.86	55.24
Female	52.50	56.83	50.47	50.27	52.09	56.65	44.14	44.76
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Race								
African	76.64	77.17	71.55	74.01	78.01	79.14	76.25	76.46
Coloured	2.70	2.95	4.27	3.56	9.31	8.53	8.93	9.35
Indian/Asian	9.36	8.46	8.55	9.89	2.49	2.87	4.12	3.07
White	11.14	11.24	15.60	12.54	10.20	9.47	10.69	11.13
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Province								
Western Cape	10.54	8.83	10.49	11.21	10.51	9.60	9.93	14.44
Eastern Cape	15.60	14.05	15.34	10.99	13.21	16.40	10.82	7.09
Northern Cape	1.86	2.13	2.82	2.48	2.28	2.44	2.18	1.99
Free State	7.34	6.38	5.43	3.68	5.90	5.82	5.16	5.34
KwaZulu-Natal	19.17	22.12	24.31	21.98	19.16	22.14	26.66	23.72
North West	8.34	8.82	7.36	9.12	6.42	6.73	5.87	4.19
Gauteng	17.80	19.69	20.03	23.13	23.11	20.53	25.14	28.46
Mpumalanga	7.42	6.12	4.74	5.61	7.27	6.49	7.56	8.81
Limpopo	11.93	11.87	9.47	11.81	12.13	9.85	6.68	5.97
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Highest educational attainment								
None	7.36	11.34	7.40	5.47	4.48	7.10	2.70	2.14
Incomplete primary	24.93	38.67	31.00	28.87	18.28	27.70	22.08	11.58
Incomplete secondary	46.93	31.36	34.40	39.46	51.15	38.65	39.86	41.30
Matric	11.03	7.35	10.34	11.42	18.02	16.28	22.78	31.09
Post-Matric	9.38	10.84	16.32	14.65	7.80	10.00	11.66	13.57
Other/unspecified	0.38	0.43	0.55	0.14	0.27	0.26	0.92	0.31
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Marital status								
Unmarried	63.03	52.93	50.88	48.79	62.50	51.82	49.44	46.52
Married/live together	28.92	37.50	41.78	43.93	28.74	37.68	45.12	48.29
Widowed/divorced	8.04	9.58	7.34	7.28	8.77	10.50	5.44	5.19
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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Table 5.15: Continued

	TUS 2000				TUS 2010			
	None	**One**	**Two**	**Three**	**None**	**One**	**Two**	**Three**
Labour market status								
Employed	33.18	45.30	71.18	75.12	20.19	40.93	76.48	91.16
Unemployed	9.56	5.42	3.71	0.50	9.55	4.31	1.35	0.99
Not economically active	57.26	49.29	25.11	24.39	70.27	54.76	22.17	7.84
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
SES quintile								
Quintile1	17.77	23.35	24.12	22.74	17.16	26.11	24.00	18.52
Quintile2	19.42	21.83	18.74	18.50	22.89	20.62	19.09	20.76
Quintile3	21.19	18.83	18.15	19.25	20.71	17.28	17.66	19.27
Quintile4	22.66	17.93	16.94	17.40	19.52	16.96	19.05	18.92
Quintile5	18.95	18.06	22.04	22.11	19.72	19.04	20.20	22.53
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Real per capita income quintile								
Quintile1	25.59	26.22	21.88	18.50	24.60	23.16	15.94	8.84
Quintile2	16.75	14.31	11.22	10.61	19.13	17.38	15.39	11.69
Quintile3	20.74	20.11	17.51	18.03	21.89	22.20	22.09	22.07
Quintile4	19.73	20.19	23.24	23.78	16.90	16.69	20.63	27.00
Quintile5	17.20	19.17	26.15	29.07	17.48	20.57	25.96	30.40
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Household size								
One person	5.14	6.38	9.33	12.12	6.10	8.01	10.98	16.67
Two persons	15.28	17.23	20.26	21.23	17.60	21.62	24.88	26.85
Three persons	17.51	18.72	19.39	15.14	20.53	20.43	18.65	18.24
Four to five persons	35.46	32.72	31.93	31.76	35.53	31.89	29.67	25.75
More than five persons	26.61	24.95	19.09	19.74	20.24	18.06	15.82	12.49
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number of children 0-17 years in the household								
None	75.93	64.44	61.85	61.65	73.53	63.74	57.26	56.83
One child	10.68	14.36	15.15	13.39	12.95	16.25	19.81	20.03
Two children	7.52	10.55	12.62	13.74	8.31	12.12	14.28	15.60
Three children	3.49	6.19	6.19	6.38	3.28	4.97	5.14	5.43
More than three children	2.38	4.46	4.19	4.84	1.93	2.93	3.52	2.11
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Money-metric poverty								
Poor	56.51	55.13	44.70	40.83	37.90	35.50	26.81	15.92
Not poor	43.49	44.87	55.30	59.17	62.10	64.50	73.19	84.08
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Non-money-metric SES poverty								
Poor	37.02	45.00	42.87	41.24	28.81	37.36	33.69	28.08
Not poor	62.98	55.00	57.13	58.76	71.19	62.64	66.31	71.92
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Interestingly, the share of employed formed the majority of individuals classified time-poor numerous times: 71.18% (under two methods) and 75.12% (under three methods) in 2000,

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and 76.48% and 91.16% in 2010, respectively. It could imply the employed work excessive number of hours leaving them with insufficient time for leisure and other activities. Another concern was individuals from higher income quintiles and the money-metric nonpoor accounted for the majority of those determined twice or thrice as time poor. One would have expected them to afford time saving measures (hire a housekeeper or nanny) but maybe the opportunity cost of earning a higher income outweighs taking leisure or participating in other activities. There were no distinguishable patterns for SES quintile category, while the non-money-metric nonpoor, larger households and households without children formed the largest share of those determined or not determined as time poor numerous times.

5.3 Econometric Analysis

Moving on to the probit, bivariate probit and multivariate probit regressions where the main analysis would focus on the coefficient signs (marginal effects for the probit regressions have been derived and are shown in Tables A31-A32), tables 5.16-5.17 depict the probit regressions for each method. Method [1], [2], [4a] and [5] were associated with a significant concave relationship with age, i.e., as age increased the likelihood of poverty associated with these methods significantly increased but at a decreasing rate (meaning the oldest have the highest probability of being relative time poor and suffering from time deficits). Similarly, Bardasi & Wodon (2006) probit regression revealed older individuals were more likely time poor and Saqib & Arif (2012) found a concave relationship for time poverty too. This result differs from the results in Table 5.2 which found the oldest to never have the highest poverty headcount rates or form the largest proportion of the poor. Only method [3], which confirmed Ribeiro & Marinho (2012) study, was associated with a significant convex relationship with age, i.e., the probability of becoming absolute time poor significantly decreased with age at an increasing rate.

Men were associated with the significantly higher probability of multidimensional poverty and time deficit poverty, while females had a significantly greater likelihood probability of being both absolute and relative time poor. Females too had significantly lower probability of being money-metric poor over time. This result could be supported by Tables 5.2-5.3 which revealed men to have the highest poverty headcounts for methods [2] and [5] and for them to constitute the highest proportion of the poor under method [5]. Also, females had the highest poverty headcount rates and formed the largest proportion of the poor for method [3] and [4a]. Looking at the past empirical work, Ilahi (2001) suggested females' total work hours

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were more than men and therefore could increase the chances of time poverty. Similarly, Bardasi & Wodon (2006), Chatzitheochari & Arber (2012), Ribeiro & Marinho (2012), Saqib & Arif (2012) and Arora (2015) estimated females time poverty likelihood to be higher than males and boys. The result differed from Lawson (2007) who found men to be significantly more time poor than females, while Metz & Rathjen (2014b) study was the only one to suggest no link between females and income poverty likelihood.

Moving on to race, after controlling for differences in other characteristics, being African was associated with a significantly higher probability of being poor for all methods besides method [3] and [5]. This result is despite Africans forming the majority of the poor (see Table 5.3), but could be linked to their higher poverty headcounts under method [1], [2] and [4a]. Unfortunately, there was no local empirical study which analysed the links between race and time poverty. Therefore, the closest study to link this result would be the Ribeiro & Marinho (2012) study, which found that non-Caucasians (basically non-whites), who had mix race and heritage, were more likely to be time poor[45].

Advancing to provinces, the likelihood of being money-metric and multidimensional poor was significantly highest for residents of the Eastern Cape compared to all other provinces (the only exception being Limpopo in 2010). Also, Gauteng and the Western Cape had a significantly lower probability of time poverty according to method [4a] (exception being Gauteng in 2000 for based on method [5]), but significantly higher probability based on method [3] when compared to the Eastern Cape (could be due to these provinces consisting of the majority share of the time poor – see Table 5.3). Since these two provinces (Gauteng and the Western Cape) are urban in nature, they confirmed the results conducted by Ribeiro & Marinho (2012) and Saqib & Arif (2012) with regards to method [3].

Further advancing to education, individuals with higher education (Matric or higher) were significantly less likely to be poor according to all five poverty methods (except for matriculants in 2010 based on method [3]. It could be attributed to most of the poor not completing Matric (see Table 5.3) and having the highest poverty and headcount rates for methods [1] and [2]. Bardasi & Wodon (2006), Gammage (2010), Ribeiro & Marinho (2012) and Saqib & Arif (2012) linked increased education to increased productivity and a lower

[45] Study was conducted in Brazil

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likelihood of time poverty. However, Cha & Song (2016) differed as they linked educational attainment to increased non-market time and higher likelihood of time poverty.

The first truly mixed results appeared for marital status even though single individuals formed most of the poor in Table 5.3 (except for method [4a]). Initially, the results revealed unmarried individuals had a significantly lower probability of being poor based on method [2], [4a] and [5] but over time a significantly higher probability in 2010 compared to widowed and divorced individuals. Also, unmarried individuals had significantly higher likelihood of being money-metric poor and absolute time-poor. This outcome is peculiar considering Saqib & Arif (2012) showed being married increased time poverty, while Bardasi & Wodon (2006) discovered married women to be 13% more likely time poor but not different from Gammage who found the married less likely to be income and time poor.

As expected, the employed were significantly less likely to be money-metric and multidimensional poor (the unemployed formed the majority of those classified as poor and had the higher poverty headcount rates – refer to Tables 5.2 and 5.3), but more likely to be absolute and relative time poor (as they formed the majority group of those categories in Table 5.3). The employed were possibly able to use their wage income to combat money metric and multidimensional poverty but did not utilise their income to buy suitable non-market replacements to save on time or spent too much time in wage work. Also, Newman (2001) found female employment increased non-market work for men and since men form the majority of the employed it could directly affect the probabilities of time poverty associated with employment. Linking employment with paid work, Kalenkoski *et al.* (2011) and Saqib & Arif (2012) studies showed employment to increase likelihood of time poverty.

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Table 5.16: Probit regressions on poverty likelihood under each approach, 2000

	[1]	[2]	[3]	[4a]	[4b]	[4c]	[5]
Age	0.0149***	0.0079***	-0.1049***	0.0313***	0.0091***	-0.0006	0.0133***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0005)	(0.0001)
Age squared	-0.0002***	-0.0001***	0.0009***	-0.0003***	-0.0002***	-0.0001***	-0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Gender: Male	-0.0364***	0.0668***	-0.1519***	-0.3118***	-0.1675***	0.1201***	0.2616***
	(0.0006)	(0.0006)	(0.0007)	(0.0006)	(0.0007)	(0.0024)	(0.0006)
Race: Coloured	-1.3049***	-1.9012***	0.1509***	-0.2412***	-0.0712***	-0.3237***	0.4265***
	(0.0019)	(0.0032)	(0.0020)	(0.0017)	(0.0022)	(0.0086)	(0.0017)
Race: Indian/Asian	-0.8150***	-1.0340***	-0.0858***	-0.2088***	-0.1836***	-0.4636***	0.0902***
	(0.0013)	(0.0014)	(0.0015)	(0.0013)	(0.0016)	(0.0051)	(0.0014)
Race: White	-2.2080***	-2.0764***	0.0000	-0.2100***	-0.1312***	-0.3029***	0.1873***
	(0.0022)	(0.0027)	(0.0013)	(0.0010)	(0.0013)	(0.0038)	(0.0011)
Province: Western Cape	-0.6397***	-0.7582***	0.2347***	-0.0342***	0.1826***	0.8416***	0.2335***
	(0.0015)	(0.0015)	(0.0016)	(0.0013)	(0.0016)	(0.0054)	(0.0014)
Province: Northern Cape	-0.0372***	-0.1835***	0.3850***	0.1629***	0.1835***	0.1573***	0.3981***
	(0.0023)	(0.0022)	(0.0025)	(0.0021)	(0.0027)	(0.0124)	(0.0023)
Province: Free State	-0.0866***	-0.6165***	-0.0625***	-0.3623***	-0.2442***	0.3991***	0.0796***
	(0.0014)	(0.0013)	(0.0016)	(0.0014)	(0.0018)	(0.0059)	(0.0015)
Province: KwaZulu-Natal	-0.0801***	-0.2474***	0.1788***	0.2832***	0.0680***	0.3185***	0.2626***
	(0.0011)	(0.0009)	(0.0012)	(0.0010)	(0.0013)	(0.0051)	(0.0011)
Province: North West	-0.0644***	-0.6721***	0.1569***	0.0462***	0.1176***	0.3433***	0.0174***
	(0.0013)	(0.0012)	(0.0014)	(0.0012)	(0.0015)	(0.0055)	(0.0014)
Province: Gauteng	-0.4688***	-0.8844***	0.2238***	0.0030***	0.0271***	0.4181***	0.1950***
	(0.0011)	(0.0010)	(0.0012)	(0.0010)	(0.0013)	(0.0048)	(0.0011)
Province: Mpumalanga	-0.4331***	-0.9276***	0.1451***	-0.4060***	-0.0092***	0.2487***	-0.0397***
	(0.0014)	(0.0013)	(0.0015)	(0.0014)	(0.0017)	(0.0062)	(0.0015)
Province: Limpopo	-0.3075***	-0.2992***	0.1931***	-0.0505***	-0.0797***	-0.5758***	0.2175***
	(0.0011)	(0.0011)	(0.0013)	(0.0011)	(0.0015)	(0.0122)	(0.0013)
Education: Incomplete primary	-0.1694***	-0.2759***	0.4239***	-0.1176***	0.0651***	0.2169***	0.1583***
	(0.0013)	(0.0012)	(0.0017)	(0.0011)	(0.0016)	(0.0059)	(0.0014)
Education: Incomplete secondary	-0.4429***	-0.6609***	-0.1384***	-0.3450***	0.0659***	-0.0022	0.0276***
	(0.0012)	(0.0011)	(0.0017)	(0.0011)	(0.0015)	(0.0059)	(0.0013)
Education: Matric	-0.8144***	-1.2296***	-0.2573***	-0.4744***	-0.0224***	0.1980***	0.0793***
	(0.0016)	(0.0015)	(0.0020)	(0.0014)	(0.0018)	(0.0064)	(0.0016)
Education: Post-Matric	-1.3839***	-1.6778***	-0.0583***	-0.4853***	0.1074***	0.2171***	0.2767***
	(0.0017)	(0.0017)	(0.0020)	(0.0014)	(0.0018)	(0.0063)	(0.0016)
Education: Other/unspecified	-0.0133***	-0.3108***	-0.0786***	-0.4230***	0.2263***	0.8751***	0.3713***
	(0.0050)	(0.0046)	(0.0055)	(0.0047)	(0.0057)	(0.0109)	(0.0052)
Marital status: Married/live together	-0.3806***	-0.0938***	0.2187***	-0.0002	0.1443***	-0.0555***	0.1288***
	(0.0010)	(0.0009)	(0.0012)	(0.0009)	(0.0011)	(0.0032)	(0.0009)
Marital status: Widowed/divorced	-0.0854***	-0.0516***	0.1025***	-0.0739***	0.0553***	-0.1067***	0.0145***
	(0.0015)	(0.0014)	(0.0019)	(0.0012)	(0.0016)	(0.0051)	(0.0014)
Labour market status: Unemployed	0.3580***	0.0408***	-0.6213***	-0.0161***	-0.1411***	0.0021	-0.0403***
	(0.0012)	(0.0012)	(0.0023)	(0.0012)	(0.0019)	(0.0081)	(0.0016)
Labour market status: Employed	-0.1231***	-0.0106***	0.4301***	0.5427***	0.7065***	0.7538***	1.1664***
	(0.0008)	(0.0007)	(0.0009)	(0.0007)	(0.0009)	(0.0040)	(0.0008)
Household size	0.4695***	-0.1593***	-0.0583***	-0.0969***	-0.0833***	-0.1456***	-0.0836***
	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0003)	(0.0010)	(0.0003)
Number of children 0-17 years	0.0627***	0.0361***	0.0878***	0.1045***	0.0980***	0.0289***	0.0949***
	(0.0004)	(0.0003)	(0.0004)	(0.0003)	(0.0004)	(0.0013)	(0.0003)
Constant	-0.7081***	1.5286***	0.7217***	-0.7535***	-1.5179***	-3.0547***	-1.8289***
	(0.0024)	(0.0023)	(0.0028)	(0.0022)	(0.0030)	(0.0108)	(0.0026)
Weighted sample size	25 685 371	25 685 371	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578
R^2 or Pseudo R^2	0.3622	0.2429	0.1879	0.1109	0.1040	0.1415	0.2254

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table 5.17: Probit regressions on poverty likelihood under each approach, 2010

	[1]	[2]	[3]	[4a]	[4b]	[4c]	[5]
Age	0.0351***	0.0166***	-0.1194***	0.0146***	-0.1301***	-0.2130***	-0.0022***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0010)	(0.0001)
Age squared	-0.0004***	-0.0003***	0.0011***	-0.0001***	0.0013***	0.0021***	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Gender: Male	0.0009*	0.0515***	-0.1284***	-0.2768***	-0.1899***	-0.1749***	0.2763***
	(0.0005)	(0.0005)	(0.0006)	(0.0005)	(0.0010)	(0.0035)	(0.0006)
Race: Coloured	-0.6231***	-0.9639***	-0.1446***	-0.2726***	-0.3286***	dropped	0.0489***
	(0.0011)	(0.0013)	(0.0012)	(0.0010)	(0.0025)	dropped	(0.0012)
Race: Indian/Asian	-1.4699***	-2.6379***	-0.1108***	-0.1656***	-0.3187***	dropped	0.1366***
	(0.0024)	(0.0071)	(0.0017)	(0.0014)	(0.0035)	dropped	(0.0017)
Race: White	-1.7215***	-1.9386***	-0.1054***	-0.2632***	-0.0282***	0.2142***	0.0509***
	(0.0023)	(0.0028)	(0.0011)	(0.0009)	(0.0020)	(0.0068)	(0.0010)
Province: Western Cape	-0.4048***	-0.8882***	0.2535***	-0.1872***	0.1419***	dropped	0.1369***
	(0.0012)	(0.0013)	(0.0013)	(0.0010)	(0.0024)	dropped	(0.0013)
Province: Northern Cape	-0.0594***	-0.5198***	0.2664***	-0.1000***	0.1780***	0.0595***	0.2247***
	(0.0017)	(0.0017)	(0.0020)	(0.0016)	(0.0036)	(0.0105)	(0.0022)
Province: Free State	-0.1353***	-0.9428***	0.1185***	-0.1523***	0.0418***	-0.3478***	0.0898***
	(0.0011)	(0.0012)	(0.0014)	(0.0011)	(0.0025)	(0.0083)	(0.0016)
Province: KwaZulu-Natal	-0.0075***	-0.2111***	0.3152***	0.0778***	0.2902***	-0.0001	0.4669***
	(0.0008)	(0.0008)	(0.0010)	(0.0008)	(0.0017)	(0.0044)	(0.0011)
Province: North West	-0.1937***	-0.6241***	0.0283***	-0.2081***	-0.1535***	-0.5039***	0.1144***
	(0.0011)	(0.0011)	(0.0014)	(0.0011)	(0.0027)	(0.0096)	(0.0015)
Province: Gauteng	-0.4837***	-0.9035***	0.2139***	-0.2797***	0.0858***	-0.6301***	0.2082***
	(0.0008)	(0.0008)	(0.0010)	(0.0008)	(0.0017)	(0.0069)	(0.0011)
Province: Mpumalanga	-0.1488***	-0.7108***	0.2641***	-0.2095***	0.0171***	-0.2125***	0.3553***
	(0.0010)	(0.0010)	(0.0013)	(0.0010)	(0.0023)	(0.0066)	(0.0014)
Province: Limpopo	0.1231***	-0.2009***	-0.1085***	-0.2746***	-0.2406***	-0.5610***	0.0118***
	(0.0009)	(0.0009)	(0.0012)	(0.0009)	(0.0022)	(0.0075)	(0.0014)
Education: Incomplete primary	-0.0903***	-0.4865***	0.6469***	-0.1982***	0.9992***	5.4745	0.1185***
	(0.0012)	(0.0012)	(0.0020)	(0.0012)	(0.0084)	(186.2015)	(0.0019)
Education: Incomplete secondary	-0.2896***	-0.8117***	0.0211***	-0.3787***	0.7762***	6.0576	-0.0284***
	(0.0012)	(0.0012)	(0.0020)	(0.0011)	(0.0084)	(186.2015)	(0.0018)
Education: Matric	-0.7035***	-1.2903***	0.0204***	-0.4303***	0.5868***	5.4331	0.0583***
	(0.0013)	(0.0013)	(0.0021)	(0.0012)	(0.0086)	(186.2015)	(0.0019)
Education: Post-Matric	-1.2372***	-1.9730***	-0.0866***	-0.6852***	0.8176***	dropped	-0.0933***
	(0.0018)	(0.0018)	(0.0022)	(0.0014)	(0.0087)	dropped	(0.0019)
Education: Other/unspecified	-0.4878***	-1.2632***	0.1652***	0.0672***	1.1672***	dropped	0.3044***
	(0.0046)	(0.0052)	(0.0051)	(0.0038)	(0.0113)	dropped	(0.0049)
Marital status: Married/live together	-0.3500***	-0.0116***	0.2174***	0.0822***	0.1126***	0.2438***	0.0958***
	(0.0007)	(0.0007)	(0.0008)	(0.0006)	(0.0019)	(0.0110)	(0.0008)
Marital status: Widowed/divorced	-0.0718***	0.0216***	0.0147***	0.0278***	-0.5382***	dropped	-0.0286***
	(0.0011)	(0.0011)	(0.0016)	(0.0010)	(0.0057)	dropped	(0.0014)
Labour market status: Unemployed	0.2253***	0.0488***	-0.1871***	-0.0759***	-0.1294***	0.1740***	0.0584***
	(0.0009)	(0.0009)	(0.0018)	(0.0010)	(0.0034)	(0.0112)	(0.0018)
Labour market status: Employed	-0.4972***	-0.0872***	1.2335***	0.9359***	0.7328***	0.7129***	2.1818***
	(0.0006)	(0.0006)	(0.0009)	(0.0006)	(0.0018)	(0.0072)	(0.0009)
Household size	0.2828***	-0.2022***	-0.0359***	-0.0821***	0.0124***	-0.0819***	-0.0201***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0005)	(0.0018)	(0.0003)
Number of children 0-17 years	0.0818***	0.0567***	0.0337***	0.0639***	-0.0450***	-0.0471***	0.0881***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0008)	(0.0040)	(0.0003)
Constant	-1.0658***	1.5044***	0.4285***	-0.3962***	-0.8687***	-5.3106	-2.3151***
	(0.0019)	(0.0019)	(0.0027)	(0.0019)	(0.0087)	(186.2015)	(0.0029)
Weighted sample size	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589
R^2 or Pseudo R^2	0.2445	0.2241	0.1867	0.1287	0.1970	0.2148	0.4184

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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In general, larger household size was associated with significant lower probability of being poor for all methods under investigation besides method [1] (probability was probably higher due them having the largest proportion of the money metric poor; see Table 5.3). According to Ribeiro & Marinho (2012), additional household members allow for shared household tasks, thereby reducing the probability of time poverty. In contrast, Arora (2015) and Orkoh et al. (2020) estimated an increase in household membership to negatively affect the probability of time poverty. Finally, the greater the number of children in the household, the significantly greater the likelihood of poverty under all methods. This is a strange result considering household with children were associated with less income poverty, relative poverty and time deficits as discovered in Table 5.3. According to Bianchi et al. (2000) the presence of children increased household work for both genders and the cost of rearing children therefore could contribute to increased likelihood of poverty. In contrast, Ribeiro & Marinho (2012) and Arora (2015) estimated time poverty likelihood to decrease. Arora (2015) believed an additional child could assist with household production. Again, Metz & Rathjen (2014b) were the only researchers to suggest an increase in the number of children would negatively affect the chances of becoming non-money-metric poor.

Moving to Tables 5.18-5.20, the bivariate probit regression considered the relationship between two dependent variables (the two poverty status variables). When comparing signs of coefficients between Table 5.18 and the earlier probit regressions very little differences were found. The only difference observed was for marital status where single individuals were now associated with a significantly lower likelihood of being absolute time poor (originally a higher likelihood).

The comparison with Table 5.19 revealed the first difference in coefficient signs to occur for gender variable; females were no longer significantly more likely to be time-poor for both years, instead in 2000 males were now significantly more likely to be time-poor. Similarly, Africans were no longer significantly more likely to be time-poor in each year but only in 2010. With regards to education, individuals with higher education had significantly lower likelihood of being time-poor over time which had previously been the case for both 2000 and 2010. Lastly, single individuals remained more likely to be time-poor in 2010.

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The comparison between Table 5.20 and the earlier probit regressions showed that age no longer had a significant concave relationship for time poverty; instead, the likelihood significantly decreased with age with the rate of decreasing varying for each year. Males were now significantly more likely to be money-metric poor in 2000 and time-poor in 2010, while Africans were the least likely to be time-poor in 2010.

Finally, when comparing the coefficient signs of the multivariate probit regressions (Table 5.21-5.22) to the earlier probit regressions, quite a few differences were found. Again, age was no longer significantly concave in nature under method [5]. In fact, no visible relationship was apparent over time, while Africans were become significantly absolute time-poor over time. It became easier to interpret the relationship of time poverty for urban provinces: Western Cape and Gauteng had significantly lower probability of relative time poverty but significantly higher probability of being absolute and time-deficit poverty. Also, higher educational attainment was associated with a significantly lower likelihood of being poor under all methods besides method [5] (it was higher under the earlier probit regressions), while the employed had a significantly higher chance of being time poor (methods [3] to [5]). Lastly, the nature of the overall relationships for marital status became indeterminate for method [2] and [5].

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Table 5.18: Bivariate probit regressions on money-metric poverty and time poverty (absolute approach) likelihoods

	TUS 2000		TUS 2010	
	Money-metric poverty	**Time poverty (absolute)**	**Money-metric poverty**	**Time poverty (absolute)**
Age	0.0143***	-0.1051***	0.0348***	-0.1194***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Age squared	-0.0002***	0.0009***	-0.0004***	0.0011***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Gender: Male	-0.0359***	-0.1528***	0.0005	-0.1284***
	(0.0006)	(0.0007)	(0.0005)	(0.0006)
Race: Coloured	-1.2975***	0.1465***	-0.6216***	-0.1442***
	(0.0019)	(0.0020)	(0.0011)	(0.0012)
Race: Indian/Asian	-0.8133***	-0.0903***	-1.4656***	-0.1118***
	(0.0013)	(0.0015)	(0.0023)	(0.0017)
Race: White	-2.2049***	-0.0032**	-1.7205***	-0.1067***
	(0.0022)	(0.0013)	(0.0023)	(0.0011)
Province: Western Cape	-0.6390***	0.2357***	-0.4062***	0.2527***
	(0.0015)	(0.0016)	(0.0012)	(0.0013)
Province: Northern Cape	-0.0339***	0.3868***	-0.0590***	0.2657***
	(0.0023)	(0.0025)	(0.0017)	(0.0020)
Province: Free State	-0.0805***	-0.0661***	-0.1358***	0.1178***
	(0.0014)	(0.0016)	(0.0011)	(0.0014)
Province: KwaZulu-Natal	-0.0791***	0.1794***	-0.0073***	0.3148***
	(0.0011)	(0.0012)	(0.0008)	(0.0010)
Province: North West	-0.0662***	0.1558***	-0.1937***	0.0278***
	(0.0013)	(0.0014)	(0.0011)	(0.0014)
Province: Gauteng	-0.4663***	0.2220***	-0.4832***	0.2137***
	(0.0011)	(0.0012)	(0.0008)	(0.0010)
Province: Mpumalanga	-0.4328***	0.1425***	-0.1496***	0.2641***
	(0.0014)	(0.0015)	(0.0010)	(0.0013)
Province: Limpopo	-0.3040***	0.1918***	0.1230***	-0.1087***
	(0.0011)	(0.0013)	(0.0009)	(0.0012)
Education: Incomplete primary	-0.1716***	0.4230***	-0.0915***	0.6444***
	(0.0013)	(0.0017)	(0.0012)	(0.0020)
Education: Incomplete secondary	-0.4441***	-0.1371***	-0.2908***	0.0186***
	(0.0012)	(0.0017)	(0.0012)	(0.0020)
Education: Matric	-0.8131***	-0.2568***	-0.7033***	0.0184***
	(0.0016)	(0.0020)	(0.0013)	(0.0021)
Education: Post-Matric	-1.3842***	-0.0578***	-1.2382***	-0.0892***
	(0.0017)	(0.0020)	(0.0018)	(0.0022)
Education: Other/unspecified	-0.0074	-0.0661***	-0.4828***	0.1696***
	(0.0050)	(0.0054)	(0.0046)	(0.0051)
Marital status: Married/live together	-0.3803***	0.2191***	-0.3494***	0.2187***
	(0.0010)	(0.0012)	(0.0007)	(0.0008)
Marital status: Widowed/divorced	-0.0842***	0.1073***	-0.0711***	0.0177***
	(0.0015)	(0.0019)	(0.0011)	(0.0016)
Labour market status: Unemployed	0.3601***	-0.6172***	0.2260***	-0.1867***
	(0.0012)	(0.0023)	(0.0009)	(0.0018)
Labour market status: Employed	-0.1198***	0.4331***	-0.4971***	1.2335***
	(0.0008)	(0.0009)	(0.0006)	(0.0009)
Household size	0.4683***	-0.0582***	0.2827***	-0.0354***
	(0.0003)	(0.0003)	(0.0002)	(0.0002)
Number of children 0-17 years	0.0632***	0.0878***	0.0821***	0.0322***
	(0.0004)	(0.0004)	(0.0003)	(0.0003)
Constant	-0.6994***	0.7256***	-1.0595***	0.4289***
	(0.0024)	(0.0028)	(0.0019)	(0.0027)
Weighted sample size	25 604 578	25 604 578	39 877 589	39 877 589

Source: Own calculations using the 2000 and 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table 5.19: Bivariate probit regressions on money-metric poverty and time poverty (relative approach) likelihoods

	TUS 2000		TUS 2010	
	Money-metric poverty	**Time poverty (relative)**	**Money-metric poverty**	**Time poverty (relative)**
Age	0.0143***	0.0126***	0.0351***	0.0147***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Age squared	-0.0002***	-0.0002***	-0.0004***	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Gender: Male	-0.0371***	0.2627***	0.0019***	-0.2764***
	(0.0006)	(0.0006)	(0.0005)	(0.0005)
Race: Coloured	-1.2933***	0.4310***	-0.6217***	-0.2729***
	(0.0019)	(0.0017)	(0.0011)	(0.0010)
Race: Indian/Asian	-0.8175***	0.0851***	-1.4672***	-0.1655***
	(0.0013)	(0.0014)	(0.0023)	(0.0014)
Race: White	-2.2021***	0.1863***	-1.7213***	-0.2638***
	(0.0022)	(0.0011)	(0.0023)	(0.0009)
Province: Western Cape	-0.6265***	0.2383***	-0.4052***	-0.1866***
	(0.0015)	(0.0014)	(0.0012)	(0.0010)
Province: Northern Cape	-0.0275***	0.3987***	-0.0582***	-0.0995***
	(0.0023)	(0.0023)	(0.0017)	(0.0016)
Province: Free State	-0.0802***	0.0790***	-0.1344***	-0.1523***
	(0.0014)	(0.0015)	(0.0011)	(0.0011)
Province: KwaZulu-Natal	-0.0785***	0.2601***	-0.0063***	0.0782***
	(0.0011)	(0.0011)	(0.0008)	(0.0008)
Province: North West	-0.0668***	0.0131***	-0.1935***	-0.2080***
	(0.0013)	(0.0014)	(0.0011)	(0.0011)
Province: Gauteng	-0.4686***	0.1922***	-0.4802***	-0.2806***
	(0.0011)	(0.0011)	(0.0008)	(0.0008)
Province: Mpumalanga	-0.4309***	-0.0414***	-0.1455***	-0.2098***
	(0.0014)	(0.0015)	(0.0010)	(0.0010)
Province: Limpopo	-0.3049***	0.2157***	0.1247***	-0.2745***
	(0.0011)	(0.0013)	(0.0009)	(0.0009)
Education: Incomplete primary	-0.1736***	0.1612***	-0.0929***	-0.1975***
	(0.0013)	(0.0014)	(0.0012)	(0.0012)
Education: Incomplete secondary	-0.4457***	0.0266***	-0.2923***	-0.3783***
	(0.0012)	(0.0013)	(0.0012)	(0.0011)
Education: Matric	-0.8134***	0.0779***	-0.7080***	-0.4296***
	(0.0016)	(0.0016)	(0.0013)	(0.0012)
Education: Post-Matric	-1.3799***	0.2755***	-1.2407***	-0.6841***
	(0.0017)	(0.0016)	(0.0018)	(0.0014)
Education: Other/unspecified	-0.0260***	0.3785***	-0.4846***	0.0682***
	(0.0050)	(0.0051)	(0.0046)	(0.0038)
Marital status: Married/live together	-0.3824***	0.1278***	-0.3496***	0.0821***
	(0.0010)	(0.0009)	(0.0007)	(0.0006)
Marital status: Widowed/divorced	-0.0888***	0.0172***	-0.0723***	0.0278***
	(0.0015)	(0.0014)	(0.0011)	(0.0010)
Labour market status: Unemployed	0.3608***	-0.0322***	0.2255***	-0.0763***
	(0.0012)	(0.0016)	(0.0009)	(0.0010)
Labour market status: Employed	-0.1204***	1.1687***	-0.4956***	0.9356***
	(0.0008)	(0.0008)	(0.0006)	(0.0006)
Household size	0.4677***	-0.0843***	0.2826***	-0.0826***
	(0.0003)	(0.0003)	(0.0002)	(0.0002)
Number of children 0-17 years	0.0638***	0.0953***	0.0816***	0.0643***
	(0.0004)	(0.0003)	(0.0003)	(0.0003)
Constant	-0.6960***	-1.8139***	-1.0641***	-0.3960***
	(0.0024)	(0.0026)	(0.0019)	(0.0019)
Weighted sample size	25 604 578	25 604 578	39 877 589	39 877 589

Source: Own calculations using the 2000 and 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table 5.20: Bivariate probit regressions on money-metric poverty and time poverty (time deficit approach) likelihoods

	TUS 2000		TUS 2010	
	Money-metric poverty	**Time poverty (time deficit)**	**Money-metric poverty**	**Time poverty (time deficit)**
Age	0.0348***	-0.1194***	0.0350***	-0.0020***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Age squared	-0.0004***	0.0011***	-0.0004***	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Gender: Male	0.0005	-0.1284***	0.0010**	0.2750***
	(0.0005)	(0.0006)	(0.0005)	(0.0006)
Race: Coloured	-0.6216***	-0.1442***	-0.6239***	0.0481***
	(0.0011)	(0.0012)	(0.0011)	(0.0012)
Race: Indian/Asian	-1.4656***	-0.1118***	-1.4709***	0.1376***
	(0.0023)	(0.0017)	(0.0024)	(0.0017)
Race: White	-1.7205***	-0.1067***	-1.7208***	0.0505***
	(0.0023)	(0.0011)	(0.0023)	(0.0010)
Province: Western Cape	-0.4062***	0.2527***	-0.4043***	0.1339***
	(0.0012)	(0.0013)	(0.0012)	(0.0013)
Province: Northern Cape	-0.0590***	0.2657***	-0.0589***	0.2226***
	(0.0017)	(0.0020)	(0.0017)	(0.0022)
Province: Free State	-0.1358***	0.1178***	-0.1341***	0.0876***
	(0.0011)	(0.0014)	(0.0011)	(0.0016)
Province: KwaZulu-Natal	-0.0073***	0.3148***	-0.0068***	0.4635***
	(0.0008)	(0.0010)	(0.0008)	(0.0011)
Province: North West	-0.1937***	0.0278***	-0.1936***	0.1099***
	(0.0011)	(0.0014)	(0.0011)	(0.0015)
Province: Gauteng	-0.4832***	0.2137***	-0.4821***	0.2091***
	(0.0008)	(0.0010)	(0.0008)	(0.0011)
Province: Mpumalanga	-0.1496***	0.2641***	-0.1492***	0.3542***
	(0.0010)	(0.0013)	(0.0010)	(0.0014)
Province: Limpopo	0.1230***	-0.1087***	0.1239***	0.0113***
	(0.0009)	(0.0012)	(0.0009)	(0.0014)
Education: Incomplete primary	-0.0915***	0.6444***	-0.0890***	0.1132***
	(0.0012)	(0.0020)	(0.0012)	(0.0019)
Education: Incomplete secondary	-0.2908***	0.0186***	-0.2882***	-0.0356***
	(0.0012)	(0.0020)	(0.0012)	(0.0018)
Education: Matric	-0.7033***	0.0184***	-0.7006***	0.0497***
	(0.0013)	(0.0021)	(0.0013)	(0.0018)
Education: Post-Matric	-1.2382***	-0.0892***	-1.2334***	-0.1034***
	(0.0018)	(0.0022)	(0.0018)	(0.0019)
Education: Other/unspecified	-0.4828***	0.1696***	-0.4938***	0.3080***
	(0.0046)	(0.0051)	(0.0046)	(0.0049)
Marital status: Married/live together	-0.3494***	0.2187***	-0.3509***	0.0981***
	(0.0007)	(0.0008)	(0.0007)	(0.0008)
Marital status: Widowed/divorced	-0.0711***	0.0177***	-0.0741***	-0.0247***
	(0.0011)	(0.0016)	(0.0011)	(0.0014)
Labour market status: Unemployed	0.2260***	-0.1867***	0.2253***	0.0604***
	(0.0009)	(0.0018)	(0.0009)	(0.0018)
Labour market status: Employed	-0.4971***	1.2335***	-0.4992***	2.1798***
	(0.0006)	(0.0009)	(0.0006)	(0.0009)
Household size	0.2827***	-0.0354***	0.2830***	-0.0199***
	(0.0002)	(0.0002)	(0.0002)	(0.0003)
Number of children 0-17 years	0.0821***	0.0322***	0.0822***	0.0860***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Constant	-1.0595***	0.4289***	-1.0678***	-2.3077***
	(0.0019)	(0.0027)	(0.0019)	(0.0029)
Weighted sample size	39 877 589	39 877 589	39 877 589	39 877 589

Source: Own calculations using the 2000 and 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10 at %

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Table 5.21: Multivariate probit regressions on poverty likelihood under each approach, 2000

	[1]	[2]	[3]	[4a]	[4b]	[4c]	[5]
Age	0.0140***	0.0082***	-0.1052***	0.0307***	0.0009***	-0.0418***	0.0113***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0005)	(0.0001)
Age squared	-0.0002***	-0.0001***	0.0009***	-0.0003***	-0.0001***	0.0004***	-0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Gender: Male	-0.0336***	0.0743***	-0.1368***	-0.3115***	-0.1947***	0.0696***	0.2569***
	(0.0006)	(0.0006)	(0.0007)	(0.0006)	(0.0007)	(0.0023)	(0.0006)
Race: Coloured	-1.2841***	-1.8417***	0.1323***	-0.2344***	-0.0637***	-0.3193***	0.4033***
	(0.0019)	(0.0031)	(0.0020)	(0.0016)	(0.0019)	(0.0092)	(0.0017)
Race: Indian/Asian	-0.8242***	-1.0596***	-0.0551***	-0.1982***	-0.1335***	-0.4440***	0.0921***
	(0.0013)	(0.0014)	(0.0015)	(0.0012)	(0.0014)	(0.0050)	(0.0013)
Race: White	-2.1882***	-2.0434***	0.0108***	-0.1998***	-0.0871***	-0.2055***	0.1985***
	(0.0022)	(0.0026)	(0.0012)	(0.0010)	(0.0011)	(0.0037)	(0.0010)
Province: Western Cape	-0.6385***	-0.7609***	0.2342***	-0.0194***	0.1679***	0.7971***	0.2084***
	(0.0015)	(0.0015)	(0.0015)	(0.0013)	(0.0015)	(0.0050)	(0.0014)
Province: Northern Cape	-0.0357***	-0.1649***	0.3621***	0.1711***	0.1769***	0.0868***	0.3655***
	(0.0022)	(0.0022)	(0.0024)	(0.0021)	(0.0024)	(0.0114)	(0.0022)
Province: Free State	-0.0909***	-0.6231***	-0.0347***	-0.3235***	-0.1544***	0.4726***	0.1028***
	(0.0014)	(0.0013)	(0.0016)	(0.0013)	(0.0016)	(0.0055)	(0.0014)
Province: KwaZulu-Natal	-0.0894***	-0.2638***	0.1612***	0.2761***	0.0492***	0.3410***	0.2351***
	(0.0011)	(0.0009)	(0.0011)	(0.0009)	(0.0011)	(0.0047)	(0.0010)
Province: North West	-0.0788***	-0.6846***	0.1509***	0.0540***	0.1323***	0.3548***	0.0287***
	(0.0013)	(0.0012)	(0.0014)	(0.0012)	(0.0014)	(0.0051)	(0.0013)
Province: Gauteng	-0.4808***	-0.8944***	0.2394***	-0.0153***	0.0204***	0.4295***	0.1573***
	(0.0011)	(0.0010)	(0.0012)	(0.0010)	(0.0011)	(0.0045)	(0.0010)
Province: Mpumalanga	-0.4371***	-0.9256***	0.1485***	-0.3762***	0.0333***	0.2858***	-0.0300***
	(0.0014)	(0.0013)	(0.0015)	(0.0014)	(0.0015)	(0.0057)	(0.0014)
Province: Limpopo	-0.3156***	-0.3128***	0.1682***	-0.0458***	-0.0926***	-0.4499***	0.1924***
	(0.0011)	(0.0010)	(0.0013)	(0.0011)	(0.0013)	(0.0104)	(0.0012)
Education: Incomplete primary	-0.1663***	-0.2888***	0.3816***	-0.1119***	0.0668***	0.2847***	0.1534***
	(0.0013)	(0.0012)	(0.0017)	(0.0011)	(0.0014)	(0.0059)	(0.0013)
Education: Incomplete secondary	-0.4447***	-0.6794***	-0.1893***	-0.3478***	-0.0190***	-0.0931***	-0.0148***
	(0.0012)	(0.0011)	(0.0017)	(0.0011)	(0.0013)	(0.0058)	(0.0013)
Education: Matric	-0.8074***	-1.2348***	-0.3034***	-0.4678***	-0.0775***	0.0912***	0.0585***
	(0.0016)	(0.0015)	(0.0020)	(0.0014)	(0.0017)	(0.0063)	(0.0015)
Education: Post-Matric	-1.3769***	-1.6473***	-0.1014***	-0.4822***	0.0497***	0.2164***	0.2430***
	(0.0017)	(0.0017)	(0.0020)	(0.0014)	(0.0016)	(0.0062)	(0.0015)
Education: Other/unspecified	-0.0403***	-0.2995***	-0.1173***	-0.4590***	0.1634***	0.9284***	0.3474***
	(0.0049)	(0.0044)	(0.0052)	(0.0046)	(0.0047)	(0.0100)	(0.0048)
Marital status: Married/live together	-0.3819***	-0.0834***	0.1837***	-0.0144***	0.1218***	-0.0053	0.0995***
	(0.0010)	(0.0009)	(0.0011)	(0.0008)	(0.0010)	(0.0033)	(0.0009)
Marital status: Widowed/divorced	-0.0855***	-0.0430***	0.1026***	-0.0903***	0.0319***	-0.0422***	-0.0053***
	(0.0015)	(0.0014)	(0.0018)	(0.0012)	(0.0015)	(0.0049)	(0.0014)
Labour market status: Unemployed	0.3463***	0.0378***	-0.5484***	-0.0218***	-0.1114***	0.2648***	-0.0150***
	(0.0012)	(0.0012)	(0.0022)	(0.0012)	(0.0016)	(0.0079)	(0.0015)
Labour market status: Employed	-0.1247***	-0.0142***	0.4381***	0.5365***	0.6647***	0.8396***	1.1529***
	(0.0008)	(0.0007)	(0.0009)	(0.0007)	(0.0009)	(0.0045)	(0.0008)
Household size	0.4654***	-0.1576***	-0.0546***	-0.1063***	-0.0984***	-0.1575***	-0.0855***
	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0003)	(0.0010)	(0.0003)
Number of children 0-17 years	0.0649***	0.0315***	0.1016***	0.1136***	0.1273***	0.0514***	0.1090***
	(0.0004)	(0.0003)	(0.0004)	(0.0003)	(0.0003)	(0.0013)	(0.0003)
Constant	-0.6748***	1.5374***	0.7358***	-0.7084***	-1.2231***	-2.3354***	-1.7184***
	(0.0024)	(0.0022)	(0.0028)	(0.0021)	(0.0026)	(0.0104)	(0.0024)
Weighted sample size	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table 5.22: Multivariate probit regressions on poverty likelihood under each approach, 2010

	[1]	[2]	[3]	[4a]	[4b]	[4c]	[5]
Age	0.0344***	0.0159***	-0.1136***	0.0149***	-0.1103***	-0.1541***	-0.0015***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0009)	(0.0001)
Age squared	-0.0004***	-0.0003***	0.0011***	-0.0001***	0.0011***	0.0015***	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Gender: Male	0.0037***	0.0511***	-0.1312***	-0.2709***	-0.1695***	-0.0352***	0.2548***
	(0.0005)	(0.0005)	(0.0006)	(0.0005)	(0.0009)	(0.0031)	(0.0006)
Race: Coloured	-0.6269***	-0.9623***	-0.1535***	-0.2552***	-0.3802***	-12.3952	0.0562***
	(0.0011)	(0.0013)	(0.0012)	(0.0010)	(0.0022)	(.)	(0.0011)
Race: Indian/Asian	-1.4681***	-2.6173***	-0.1337***	-0.1629***	-0.4455***	-11.0237	0.0979***
	(0.0024)	(0.0072)	(0.0017)	(0.0014)	(0.0031)	(.)	(0.0016)
Race: White	-1.7143***	-1.9070***	-0.1253***	-0.2676***	-0.0293***	0.2054***	0.0077***
	(0.0023)	(0.0027)	(0.0011)	(0.0008)	(0.0017)	(0.0056)	(0.0010)
Province: Western Cape	-0.3948***	-0.8878***	0.2309***	-0.1928***	0.1692***	-12.0608	0.0786***
	(0.0012)	(0.0013)	(0.0013)	(0.0010)	(0.0021)	(.)	(0.0013)
Province: Northern Cape	-0.0501***	-0.5068***	0.2371***	-0.0909***	0.1365***	0.0089	0.1746***
	(0.0017)	(0.0017)	(0.0020)	(0.0016)	(0.0031)	(0.0085)	(0.0021)
Province: Free State	-0.1302***	-0.9404***	0.0987***	-0.1539***	0.0259***	-0.1850***	0.0343***
	(0.0011)	(0.0011)	(0.0014)	(0.0011)	(0.0022)	(0.0067)	(0.0015)
Province: KwaZulu-Natal	-0.0029***	-0.2125***	0.2934***	0.0753***	0.2639***	-0.0023	0.3872***
	(0.0008)	(0.0008)	(0.0010)	(0.0008)	(0.0015)	(0.0038)	(0.0010)
Province: North West	-0.1848***	-0.6282***	0.0153***	-0.1990***	-0.1264***	-0.4304***	0.0964***
	(0.0011)	(0.0011)	(0.0014)	(0.0011)	(0.0023)	(0.0086)	(0.0014)
Province: Gauteng	-0.4652***	-0.8964***	0.1806***	-0.2802***	0.0366***	-0.5169***	0.1335***
	(0.0008)	(0.0008)	(0.0010)	(0.0008)	(0.0015)	(0.0056)	(0.0010)
Province: Mpumalanga	-0.1383***	-0.7080***	0.2288***	-0.2159***	0.0318***	-0.1808***	0.2520***
	(0.0010)	(0.0010)	(0.0013)	(0.0010)	(0.0020)	(0.0057)	(0.0013)
Province: Limpopo	0.1285***	-0.2021***	-0.1037***	-0.2594***	-0.1884***	-0.4031***	-0.0470***
	(0.0009)	(0.0009)	(0.0012)	(0.0009)	(0.0020)	(0.0068)	(0.0013)
Education: Incomplete primary	-0.0929***	-0.4884***	0.6067***	-0.1916***	0.8342***	1.4685***	0.1034***
	(0.0012)	(0.0012)	(0.0020)	(0.0011)	(0.0069)	(0.3928)	(0.0017)
Education: Incomplete secondary	-0.2913***	-0.8129***	-0.0215***	-0.3817***	0.5730***	1.7317***	-0.1095***
	(0.0012)	(0.0012)	(0.0020)	(0.0011)	(0.0069)	(0.3928)	(0.0016)
Education: Matric	-0.7090***	-1.2875***	-0.0395***	-0.4193***	0.4518***	1.2119***	-0.0106***
	(0.0013)	(0.0013)	(0.0021)	(0.0012)	(0.0070)	(0.3930)	(0.0017)
Education: Post-Matric	-1.2466***	-1.9583***	-0.1295***	-0.6654***	0.6113***	-1.99e+03	-0.1270***
	(0.0018)	(0.0018)	(0.0022)	(0.0013)	(0.0071)	(0.0010)	(0.0018)
Education: Other/unspecified	-0.5009***	-1.2398***	0.1809***	0.0167***	1.0930***	-115.9840	0.1447***
	(0.0046)	(0.0051)	(0.0049)	(0.0037)	(0.0093)	(0.0038)	(0.0048)
Marital status: Married/live together	-0.3462***	-0.0102***	0.2065***	0.0833***	0.0756***	0.1980***	0.1219***
	(0.0007)	(0.0007)	(0.0008)	(0.0006)	(0.0016)	(0.0093)	(0.0007)
Marital status: Widowed/divorced	-0.0715***	0.0194***	0.0306***	0.0282***	-0.2775***	-12.1883	-0.0087***
	(0.0011)	(0.0011)	(0.0016)	(0.0010)	(0.0040)	(0.0019)	(0.0013)
Labour market status: Unemployed	0.2252***	0.0540***	-0.2257***	-0.0840***	-0.1637***	0.2798***	0.0145***
	(0.0009)	(0.0009)	(0.0018)	(0.0010)	(0.0032)	(0.0093)	(0.0017)
Labour market status: Employed	-0.4927***	-0.0856***	1.1498***	0.9128***	0.6280***	0.8278***	2.1369***
	(0.0006)	(0.0006)	(0.0009)	(0.0006)	(0.0018)	(0.0078)	(0.0009)
Household size	0.2795***	-0.2034***	-0.0350***	-0.0835***	0.0056***	-0.0504***	-0.0190***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0004)	(0.0015)	(0.0002)
Number of children 0-17 years	0.0810***	0.0565***	0.0428***	0.0662***	-0.0289***	-0.1021***	0.0951***
	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0007)	(0.0033)	(0.0003)
Constant	-1.0445***	1.5149***	0.4223***	-0.3897***	-0.9205***	-2.0922***	-2.1496***
	(0.0019)	(0.0019)	(0.0026)	(0.0018)	(0.0075)	(0.3929)	(0.0027)
Weighted sample size	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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5.4 Conclusion

In summary, the chapter explored different types of poverty, their relationship to one another and how covariates affect the likelihood of each type of poverty. Both income poverty and multidimensional poverty rates were the highest for the young, females, Africans, the economically inactive and unemployed, large households with children and those who resided in the Eastern Cape province. High absolute and relative time poverty headcount rates were experienced by females and unmarried individuals, while time deficit poverty rates were largest for males, African, the unmarried and those from small households.

Generally, the money-metric, multidimensional, absolute and relative time poor were more likely to be female, lowly educated, unmarried, from large households and have no children present, while those suffering from time deficits were mostly men, lowly educated, married, employed and from large households but no child present in the households. The proportion of those suffering from multiple different types of poverty decreased, while those not suffering from any type of poverty increased over time.

Lastly, the likelihood of income and multidimensional poverty increased with age, Africans, individuals from the Eastern Cape, low education and the non-employed and for additional children. The likelihood of absolute and relative time poverty increased for females, Africans, the employed, for additional children, low education and small households. Furthermore, the likelihood of time deficits increased for males, Africans, additional children, low educations and small households.

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The bivariate and multivariate probit regressions brought to light some peculiar relationships presented by the probit regressions and descriptive statistics. Categories of variables which had the highest poverty headcount rates and formed the largest proportion of the poor did not necessarily end up being significant for some regressions. Generally, in terms of the regression comparisons, the signs of the coefficients were similar but there were a few differences mostly with regards to method [4a] and [5]. Differences were found for age, marital status, gender, race and education for bivariate regressions, while differences were found for age, gender, race, education, employment status and marital status for the multivariate regressions.

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CHAPTER SIX: CONCLUSION

6.1 Introduction

The final chapter concludes the study and is divided in three sections. Section 6.1 introduces the chapter. Section 6.2 provides a review of empirical findings as found in Chapters Four and Five. The review of findings is essential to provide guidance and solution for any policy concerns and issues which were discovered in the descriptive and empirical analysis. Hence section 6.3 covers the policy recommendation drawn from other research and formulated based on this study (author's suggested policy recommendations).

6.2 Review of Findings

After reviewing the dimensions and measures of standard poverty (i.e. poverty in terms of income and consumption levels) in Chapter two, the study was expanded by considering time as a dimension of poverty; firstly, by looking at household resources and their use. It was followed by defining household production and establishing a framework to analysis time poverty with reference to SNA classification and the author's own classification. Secondly, the study discussed various measurements of time poverty based on the theoretical literature and core models established by Becker (1965) and Vickery (1977). Lastly the methods, data and limitations of this study were established in Chapter Three, leading to various descriptive and empirical findings in the next two chapters.

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The beginning of Chapter Four started with the descriptive analysis for the overall population and found the weighted population to be mainly young (15-34 years old), African, female, residing in KwaZulu-Natal and Gauteng, unmarried, having not completed Matric, economically inactive, living in a four- or five-member households and with no children present. The descriptive statistics were then expanded based on the System of National Accounts (SNA) classification and the author's adapted classification. Both SNA and non-SNA production time were found to have increased over time at the expense of the non-productive time (the largest classification) mainly due to the increase in work in establishment and household maintenance categories. Similarly, mean paid and unpaid work increased.

After the broader descriptive analysis, the mean number of minutes per day was calculated for various personal characteristics and their divisions based on each classification. The

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results were complemented by in-depth graphs to highlight certain personal characteristics. In the end, mean SNA production and paid work time were higher for highly educated married employed white middle-aged individuals living in Western Cape and Gauteng from higher income and SES deciles with few household members and no children. On the other hand, non-SNA production and unpaid work time were relatively higher for unemployed female Africans from the lower quintiles. Lastly, the descriptive statistics of Chapter Four considered the proportion of time spent on each category followed by the proportion of individuals spending zero time for each category. It was found that all survey participants spent some time on selfcare, as selfcare accounted for the greatest proportion of the total time (24 hours spent in the day).

Moving to the empirical analysis of Chapter Four were OLS and Tobit regressions were regressed on SNA, non-SNA, non-productive production, paid and unpaid work, leisure and selfcare time. SNA production and paid work times were significantly higher for middle-aged cohorts, whites, educated (matric or higher) individuals, married and employed individuals, males, Western Cape and Gauteng residents, households with one to two members (with one child present), coming from the highest SES and income quintile. Non-SNA production and unpaid time regressions were significantly higher for middle-aged cohorts, females, Africans, Eastern Cape and Mpumalanga, matriculants, non-single individuals, unemployed, coming from households with one to two people with at least one child and from lower SES and income quintiles (quintiles 1-3).

In the other regressions, non-productive production time was significantly higher for the youngest and oldest cohorts, males, Africans, Limpopo residents, lower than incomplete secondary education, unmarried and economically inactive individuals, coming from households with more than five persons with no children. Leisure time was significantly higher for individuals from the non-middle-aged cohorts, males, non-Africans, unmarried and unemployed individuals, who came from households with at least three members with no children present. Lastly, selfcare time was significantly higher for those aged non-middle-aged cohorts, female, Africans, divorced/widowed, less than incomplete secondary education, economically inactive, coming from households with more than five persons with no children.

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Chapter Five investigated poverty headcount ratios and the profile of the poor under different poverty approaches. The youth, females, Africans, individuals from Eastern Cape, those with low little education, unmarried, those not employed, those from lower SES and income quintiles, coming from larger households with children present had the highest money-metric poverty headcounts rates. The non-money-metric poverty headcount rates differed slightly from money-metric headcount rates by being associated with smaller households but no children present.

The 10-14 years age cohort, females, those with incomplete primary and Matric education, as well as unmarried individuals had the highest absolute time poverty headcounts rates. The middle-aged cohorts, females, those not married, coming from smaller households but with children present had the highest relative time poverty headcount rates. Lastly, the middle-aged cohorts, males, non-African, those with incomplete primary and Matric education, unmarried, coming from higher SES and income quintiles and smaller-sized households experienced the largest time deficit poverty. Table 6.1 below describes the characteristics of the poor (for the listed categories) in each approach (for method [4] the focus is on method [4a]).

Generally, the proportion of those who were time (all three methods considered) and income poor using row and cell totals decreased, those who were neither income nor time poor increased. Meanwhile, those poor according to three different time poverty measures decreased over time. As a result, an individual was most likely to be time-poor (for all three time poverty measures) if they were 25-34 years old, female, African, reside in KwaZulu-Natal or Gauteng, never matriculated, unmarried, employed, was money-metric and multidimensional poor and came from a large household with no children.

Chapter Five ended with the econometric analysis. It started with probit regressions which revealed a higher likelihood of income poverty associated with ageing (concave relationship), females, Africans, residents from the Eastern Cape, unmarried, larger households and additional children while lower a likelihood were linked to higher education and employed individuals. A higher likelihood of multidimensional poverty was associated with ageing (concave relationship), males, Africans, residents of the Eastern Cape and an additional child while a lower likelihood were linked to higher education, employed individuals from larger households. Higher likelihood of absolute time poverty was associated with females,

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Africans, unmarried, employed individuals and an additional child while lower likelihood were linked to ageing (convex), higher education and larger households. Higher likelihood of relative time poverty was associated with ageing (concave relationship), females, Africans, employed individuals and an additional child while lower likelihood were linked to higher education and larger households. Lastly, higher likelihood of time deficits was associated with ageing (concave relationship), males, African and an additional child while lower likelihood were linked to higher education and larger households.

Table 6.1: Summary of the profile of poor in each approach

	[1]	**[2]**	**[3]**	**[4a]**	**[5]**
Age cohort	15-24 years	15-24 years	10-14 years	35-34 years	25-34 years
Gender	Female	Female	Female	Female	Male
Race	African	African	African	African	African
Province	KwaZulu-Natal Eastern Cape	KwaZulu-Natal Eastern Cape	KwaZulu-Natal Gauteng	KwaZulu-Natal Gauteng	KwaZulu-Natal Gauteng
Education	Incomplete primary and secondary	Incomplete primary and secondary	Incomplete primary	Incomplete secondary	Incomplete secondary
Marital status	Married	Married	Married	Unmarried Married	Married
Labour market status	Inactive	Inactive	Inactive	Employed	Employed
SES quintile	Quintile1	Quintile1	Bottom 3 quintiles	Bottom 3 quintiles	Quintile5
Income quintile	Quintile1	Quintile1	Quintile3 in 2000 but uncertain in 2010[46]	Uncertain[47]	Quintile5
Household size	4-5 persons	4-5 persons	4-5 persons	4-5 persons	4-5 persons
Number of children	None	None	None	None	None

When proceeding to the bivariate and multivariate probit regressions, the direction of some of the above relationships changed. The bivariate regression on absolute poverty showed deviation with respect to marital status, while the regression on relative poverty showed deviation with respect to gender, race, education and marital status, while the regression on time deficits showed deviation with respect to age, gender, race and education amongst a few other covariates. Lastly the multivariate probit regression highlighted the similar issues

[46] Proportions are quite close, hence no dominant quintile in 2010.
[47] No outstanding quintile in both 2000 and 2010.

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noticed through the bivariate regressions but also brought more clarity for troublesome variables such as province and education.

Overall, the findings of the empirical work fit the analytic framework well as many of the methodology utilised in this study is based on the analytic framework or on the methodology of various authors time poverty studies (their methodology is based on both the analytic and theoretical framework). Unfortunately, none of the methods applied considered any income component (income budget) as mentioned in the theory by Becker (1965), Vickery (1977) and Singh *et al.* (1986), although household per capita income was considered as independent variable when analysing time poverty (the methodology did consider the time aspects of Vickery, 1977 and Singh *et al.*, 1986). The study considered income and time poverty in isolation and then established relationship between the two by considering individuals who suffered from both types of poverty. This approach differs form Vickery (1977) who proposed for every income (time) level there is a minimum level of time (income) needed to not to be poor.

6.3 Policy Recommendations and Future Work

South Africa is a country plagued by unemployment, lack of adequate infrastructure (infrastructure quality varies across South Africa), inequality and poverty (Pillay 2001). Numerous policies have been suggested and implemented with various degrees of success but none of them have considered time poverty. However, policy on time poverty cannot be designed and implemented in isolation as theory and empirical work (from other studies and this one) have shown there is some discord between time poverty and income poverty. Thus, addressing them individual can have multiple ramifications. Like the above factors which have plague South Africa, time poverty studies have also found Africans and females to be part of the vulnerable groups. Therefore, policy for these vulnerable groups needs to be expanded to include the concern of time poor.

In simplest terms, to combat time poverty one must create more time for an individual which is physically impossible as one cannot add more hours to a day. However, it is possible to free more time for an individual or make the individual more efficient in time use. Regarding freeing more time for individual, government has very little control or say in the activities of a household. They can assist in improving on the quality of infrastructure as addressing issues related to water infrastructure (supply of running water to households) and efficiency in

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transport systems can free time for individual as less time is spent on household tasks (Pillay 2001, Lawson 2008, Spinney & Millward 2010 and Kerr 2017).

But as government, one can better address issues in the market; government can alter individual's earnings per hour by amending minimum wage laws or providing programs which improve skill and education levels (Bardasi & Wodon 2006). The increased earnings could reduce the need for individuals to work longer hours in the workplace and increased skill and education levels can make individuals more productive (thereby earn more and free free more time for other activities).

Unfortunately, unlike in the case of minimum wages (better earnings) which can lead to freeing more time for an individual, creating jobs (thereby addressing poverty) can have negative impact on time poverty (Chatzitheochari & Arber 2012). Individuals may still be required to do the spend the same amount of time doing household work or have to work long hours if wages per hour is too little. These all-inclusive policies can be an efficient (as one may not need to create new policy but utilise a more appropriate one) and cost saving policy (no need for a 100% new policy) that meets multiple targets for government if implemented well.

There is still much needed investigation for time poverty. In general, there is only two sets of data for time use (latest was published in 2010). In order to provide deeper insights (e.g. chronic poverty), more points of data are needed. That does not mean the current research on the available data encompasses everything. Firstly, a more inclusive poverty approach can be conducted which considers elements of income and time poverty and complies with the theoretical framework of Vickery (1977). Also, the study can be expanded by looking at the impact of income poverty (inserted as an independent variable) in the time poverty regressions as to gain more insights into the discord between these two poverties. The interaction on various variables (subgroups) can be investigated too. For example, looking closer at the interaction between income & marital status, education & marital status and race & gender which have economic and historical foundations for further study (Perry-Jenkins & Folk 1994). It is possible the marriage effects are driven by institutionalized and historic differences in education levels between men and women and that marriage changes the workloads between gender to compensate for this.

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APPENDIX

Table A1: Non-income welfare indicators included for the SES index

Variable	Category	2000	2010
Dwelling	[1]: Formal house/flat	1: House or brick structure	1: House or brick structure
		3: Flat	3: Flat
		4: Town house	4: Cluster house
			5: Townhouse
			6: Semi-detached house
	[2]: Single room or flatlet	5: House in backyard	7: Dwelling in backyard
		8: Room on a shared property	10: Room on a shared property
	[3]: Other	2: Traditional	2: Traditional
		6: Informal in backyard	8: Informal in backyard
		7: Informal not in backyard	9: Informal not in backyard
		9: Caravan/Tent	11: Caravan/Tent
		10: Other	12: Other
		99: Unspecified	99: Unspecified
Energy	[1]: Electricity or solar	1: Electricity	1: Electricity from mains
		8: Solar energy	2: Electricity from generator
			9: Solar energy
	[2]: Gas	2: Gas	3: Gas
	[3]: Other	3: Paraffin	4: Paraffin
		4: Wood	5: Wood
		5: Coal	6: Coal
		7: Animal dung	8: Animal dung
		9: Other	10: None
		99: Unspecified	11: Other
			99: Unspecified

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Table A1: Continued

Variable	Category	2000	2010
Water	[1]: Tap in dwelling	1: Tap water in dwelling	1: Tap water in dwelling
	[2]: Tap on premises	2: Tap on site or in yard	2: Tap water in yard
	[3]: Public tap or tanker	3: Public tap	5: Neighbour's tap
		4: Water carrier/tanker	6: Public tap
			7: Water carrier/tanker
	[4]: Rainwater tank, borehole or well	5: Borehole on site	3: Borehole in yard
		6: Borehole off site	4: Rainwater tank in yard
		7: Rainwater tank on site	8: Borehole outside yard
	[5]: Other	8: Flowing waters/stream	9: Flowing water/stream/river
		9: Dam/Pool/Stagnant water	10: Stagnant water/dam/pool
		10: Well	11: Well
		11: Spring	12: Spring
		12: Vendor	13: Vendor
		13: Other	14: Other
		99: Unspecified	99: Unspecified
Washing machine	[1]: Yes	1: Yes	1: Yes
	[2]: No	2: No	2: No
		9: Unspecified	9: Unspecified
Vacuum cleaner	[1]: Yes	1: Yes	1: Yes
	[2]: No	2: No	2: No
		9: Unspecified	9: Unspecified
Refrigerator	[1]: Yes	1: Yes	1: Yes
	[2]: No	2: No	2: No
		9: Unspecified	9: Unspecified
Television	[1]: Yes	1: Yes	1: Yes
	[2]: No	2: No	2: No
		9: Unspecified	9: Unspecified

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Table A1: Continued

Variable	Category	2000	2010
Radio	[1]: Yes	1: Yes	1: Yes
	[2]: No	2: No	2: No
		9: Unspecified	9: Unspecified
Car	[1]: Yes	1: Yes	1: Yes
	[2]: No	2: No	2: No
		9: Unspecified	9: Unspecified
Clock	[1]: Yes	1: Yes	1: Yes
	[2]: No	2: No	2: No
		9: Unspecified	9: Unspecified
Telephone	[1]: Yes	1: Yes	Landline = 1: yes **OR** Cellphone = 1: yes
	[2]: No	2: No	The rest
		9: Unspecified	

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Table A2: First principal components for deriving the SES index in each survey

	TUS 2000	TUS 2010
Dwelling: formal house/flat	0.0823	0.2884
Dwelling: single room of flatlet	0.0329	-0.0551
Energy: electricity or solar	0.3351	0.2961
Energy: gas	0.0123	-0.0130
Water: tap in dwelling	0.3452	0.3654
Water: tap on premises	0.0766	-0.1117
Water: public tap or tanker	0.1828	-0.2316
Water: rainwater tank, borehole or well	0.0593	-0.0342
Washing machine: yes	0.3375	0.3562
Vacuum cleaner: yes	0.3186	0.2989
Refrigerator: yes	0.3279	0.3162
Television: yes	0.2883	0.2842
Radio: yes	0.1581	0.1909
Car: yes	0.2920	0.3116
Clock: yes	0.1890	0.2731
Landline or cellular telephone: yes	0.3179	0.1415
Proportion (%) of variation explained by the first principal components	32.19%	26.99%

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Table A3: Classification of the time use variables into author's adapted categories

1: Work in establishments	111	Wage and salary employment	[A]
	112	Home-based work establishment	[A]
	113	Paid domestic work	[A]
	114	Unpaid employment in establishment	[B]
	115	Work as employer/self-employed	[A]
	130	Work in apprenticeship	[A]
	140	Short break from work	[B]
	150	Seeking employment	[B]
	180	Travel to/from work and seeking employment	[B]
	188	Waiting for travel to/from work and seek employment	[B]
	190	Employment in establishment not elsewhere classified	[B]
2: Primary production not for establishments	210	Crop farming	[A]
	220	Tending animals and fish farming	[A]
	230	Hunting and gathering wild products	[A]
	236	Collecting fuel	[B]
	240	Digging, stone cutting and carving	[A]
	250	Collecting water	[B]
	260	Purchase and sale primary production	[A]
	280	Travel related to primary production activities	[B]
	288	Waiting for primary production travel	[B]
	290	Primary production not elsewhere classified	[A]
3. Other production of goods and services not for establishments	310	Food processing and preservation	[A]
	320	Preparing and selling food and beverage	[A]
	330	Making and selling food and beverage	[A]
	340	Build and extension of dwelling	[A]
	350	Petty trading and door and door	[A]
	360	Fitting, maintaining tools and machinery	[A]
	370	Provision of services for income	[A]
	380	Travel related to services for income and other production of goods	[B]
	388	Waiting for travel related to services for income and other production of goods	[B]
	390	Non-establishment production not elsewhere classified	[A]
4. Household maintenance	410	Preparing food and drink	[C]
	420	Cleaning and upkeep of dwelling	[C]
	430	Care of textile	[C]
	440	Shopping for personal and household goods	[C]
	441	Accessing government services	[C]
	448	Waiting to access government services	[C]
	450	Household management	[C]
	460	DIY home improvements	[C]
	470	Pet care	[C]
	480	Travel related to household maintenance	[C]
	488	Waiting for travel related to household maintenance	[C]
	490	Household maintenance, not elsewhere classified	[C]
	491	Chopping wood not for cooking	[C]
5. Care of persons in the household	511	Physical care of children: spontaneous	[D]
	512	Physical care of children: prompted	[D]
	521	Teaching of household children: spontaneous	[D]
	522	Teaching of household children: prompted	[D]
	531	Accompanying children: spontaneous	[D]
	532	Accompanying children: prompted	[D]
	540	Physical care of non-child household members	[E]
	550	Accompanying adults	[E]
	561	Supervising those needing care: spontaneous	[E]
	562	Supervising those needing care: prompted	[E]
	580	Travel related to care	[E]
	588	Waiting for travel related to care	[E]
	590	Care of household members, not elsewhere classified	[E]

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Table A3: Continued

6. Community service to non-household members	610	Community organised construction	[F]
	615	Cleaning of classrooms	[F]
	620	Community organized work	[F]
	630	Organizational volunteering	[F]
	650	Participation of meetings	[F]
	660	Involvement in civic responsibility	[F]
	671	Caring for non-household children: spontaneous	[F]
	672	Caring for non-household children: prompted	[F]
	673	Caring for non-household adults	[F]
	674	Other informal help to other households	[F]
	680	Travel related to community services	[F]
	690	Community services not elsewhere classified	[F]
7. Learning	710	School, technikon, college, university attendance	[G]
	720	Homework	[G]
	730	Additional study, non-formal education	[G]
	740	Work-related training	[G]
	780	Travel related to learning	[G]
	788	Waiting for learning travel	[G]
	790	Learning not elsewhere classified	[G]
8. Social and cultural	810	Participating in cultural activities	[H]
	820	Participating in religious activities	[H]
	831	Socialising with family	[H]
	832	Socialising with non-family	[H]
	833	Socialising with both family and non-family	[H]
	840	Arts, music and hobbies	[H]
	850	Indoor and outdoor sports participation	[H]
	860	Games and other pastimes	[H]
	870	Spectator to sports, exhibitions, concerts	[H]
	880	Travel related to social and cultural	[H]
	888	Waiting for social and cultural travel	[H]
	890	Social, cultural, recreational not elsewhere classified	[H]
9. Mass media	910	Reading	[H]
	920	Watching TV and video	[H]
	930	Listening to music or radio	[H]
	940	Accessing information by computer	[H]
	950	Visiting library	[H]
	980	Travel related to mass media use	[H]
	990	Mass media use and entertainment not elsewhere classified	[H]
10. Personal care	10	Sleep and related activities	[I]
	20	Eating and drinking	[I]
	30	Personal hygiene and health	[I]
	41	Receiving medical/personal care from professionals	[I]
	42	Receiving medical/personal care from household members	[I]
	43	Receiving medical/personal care from non-household members	[I]
	48	Waiting for medical/personal care	[I]
	50	Doing nothing, rest and relaxation	[I]
	60	Individual religious practice	[I]
	80	Travel related to personal care	[I]
	88	Waiting for personal care travel	[I]
	90	Personal care and self-maintenance not elsewhere classified	[I]

Note:
[A]: Paid work (SNA production)
[B]: Unpaid work (SNA production)
[C]: Unpaid work – house work (Non-SNA production)
[D]: Unpaid work – child care (Non-SNA production)
[E]: Unpaid work – adult care (Non-SNA production)
[F]: Unpaid work – social care (Non-SNA production)
[G]: Nonwork – learning (Non-productive)
[H]: Nonwork – leisure (Non-productive)
[I]: Nonwork – self-care (Non-productive)

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Table A4: Multivariate Tobit regressions on SNA production, non-SNA production and non-productive time, 2000

	SNA production	Non-SNA production	Non-productive
Age	7.2217***	6.3614***	-13.5831***
	(0.0127)	(0.0061)	(0.0132)
Age squared	-0.0801***	-0.0670***	0.1471***
	(0.0001)	(0.0001)	(0.0002)
Gender: Male	51.0746***	-121.8060***	70.7315***
	(0.0819)	(0.0393)	(0.0853)
Race: Coloured	26.4577***	-50.9356***	24.4779***
	(0.2415)	(0.1158)	(0.2515)
Race: Indian/Asian	-0.7135***	-39.7154***	40.4289***
	(0.1755)	(0.0841)	(0.1828)
Race: White	5.4928***	-25.8450***	20.3522***
	(0.1453)	(0.0697)	(0.1514)
Province: Western Cape	16.9665***	-12.4969***	-4.4696***
	(0.1835)	(0.0880)	(0.1912)
Province: Northern Cape	37.1560***	2.7102***	-39.8663***
	(0.3025)	(0.1450)	(0.3150)
Province: Free State	5.3228***	-35.7861***	30.4634***
	(0.1843)	(0.0884)	(0.1920)
Province: KwaZulu-Natal	27.9046***	-8.0796***	-19.8251***
	(0.1370)	(0.0657)	(0.1427)
Province: North West	-3.3657***	-0.1476*	3.5133***
	(0.1707)	(0.0818)	(0.1778)
Province: Gauteng	8.1937***	-19.8422***	11.6485***
	(0.1397)	(0.0670)	(0.1455)
Province: Mpumalanga	-3.5444***	-1.5472***	5.0916***
	(0.1843)	(0.0884)	(0.1920)
Province: Limpopo	12.5253***	-25.2228***	12.6975***
	(0.1556)	(0.0746)	(0.1620)
Education: Incomplete primary	14.1525***	-0.1936**	-13.9589***
	(0.1702)	(0.0816)	(0.1773)
Education: Incomplete secondary	-3.3767***	25.7526***	-22.3759***
	(0.1657)	(0.0794)	(0.1726)
Education: Matric	17.3244***	26.3460***	-43.6703***
	(0.2051)	(0.0983)	(0.2136)
Education: Post-Matric	43.4217***	14.0652***	-57.4870***
	(0.2065)	(0.0990)	(0.2151)
Education: Other/unspecified	47.8481***	-12.4899***	-35.3582***
	(0.6379)	(0.3058)	(0.6644)
Marital status: Married/live together	15.0923***	10.2381***	-25.3304***
	(0.1278)	(0.0613)	(0.1332)
Marital status: Widowed/divorced	4.8876***	-15.4673***	10.5797***
	(0.1884)	(0.0903)	(0.1962)
Labour market status: Unemployed	-1.9718***	46.3332***	-44.3614***
	(0.1656)	(0.0794)	(0.1724)
Labour market status: Employed	204.5903***	-45.6636***	-158.9267***
	(0.0988)	(0.0474)	(0.1029)
Household size	-8.4102***	-11.4444***	19.8545***
	(0.0362)	(0.0174)	(0.0377)
Number of children 0-17 years	7.4977***	19.6783***	-27.1760***
	(0.0463)	(0.0222)	(0.0482)
Constant	-85.5941***	147.4403***	1378.1538***
	(0.3175)	(0.1522)	(0.3307)
Weighted sample size	25 604 578	25 604 578	25 604 578
R-squared or Pseudo R-squared	0.3430	0.2750	0.3920

Source: Own calculations using the 2000 and 2020 TUS data.
*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A5: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time for the male population, 2000

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	9.4020***	18.7664***	3.1413***	4.1134***	-12.5433***	-12.5433***
	(0.0204)	(0.0395)	(0.0107)	(0.0145)	(0.0199)	(0.0199)
Age squared	-0.1082***	-0.2209***	-0.0269***	-0.0370***	0.1351***	0.1351***
	(0.0002)	(0.0005)	(0.0001)	(0.0002)	(0.0002)	(0.0002)
Race: Coloured	46.4781***	37.3185***	-31.4190***	-64.4979***	-15.0591***	-15.0591***
	(0.3670)	(0.6799)	(0.1920)	(0.2722)	(0.3568)	(0.3568)
Race: Indian/Asian	-14.4972***	-64.3400***	-28.9102***	-48.3140***	43.4074***	43.4074***
	(0.2786)	(0.5265)	(0.1457)	(0.1998)	(0.2709)	(0.2709)
Race: White	4.8153***	-15.7190***	-14.5172***	-29.4726***	9.7019***	9.7019***
	(0.2193)	(0.4061)	(0.1147)	(0.1579)	(0.2132)	(0.2132)
Province: Western Cape	33.1104***	-27.0284***	3.2827***	6.1788***	-36.3931***	-36.3931***
	(0.2873)	(0.5347)	(0.1503)	(0.2039)	(0.2793)	(0.2793)
Province: Northern Cape	64.1968***	36.7099***	-5.6869***	2.8806***	-58.5099***	-58.5099***
	(0.4673)	(0.8655)	(0.2445)	(0.3318)	(0.4543)	(0.4543)
Province: Free State	21.2825***	-26.0199***	-21.7743***	-19.4051***	0.4919*	0.4919*
	(0.2840)	(0.5217)	(0.1486)	(0.2005)	(0.2761)	(0.2761)
Province: KwaZulu-Natal	31.9608***	-3.1159***	-7.6232***	0.1061	-24.3376***	-24.3376***
	(0.2148)	(0.3913)	(0.1124)	(0.1515)	(0.2088)	(0.2088)
Province: North West	1.1973***	-34.0834***	6.9549***	15.1975***	-8.1522***	-8.1522***
	(0.2619)	(0.4729)	(0.1370)	(0.1838)	(0.2546)	(0.2546)
Province: Gauteng	16.0574***	-64.6433***	-17.7937***	-21.8666***	1.7363***	1.7363***
	(0.2155)	(0.3972)	(0.1128)	(0.1531)	(0.2096)	(0.2096)
Province: Mpumalanga	8.6697***	-34.1707***	1.8609***	7.1519***	-10.5306***	-10.5306***
	(0.2855)	(0.5210)	(0.1494)	(0.2008)	(0.2776)	(0.2776)
Province: Limpopo	7.6123***	-23.8212***	-19.2370***	-30.0402***	11.6247***	11.6247***
	(0.2435)	(0.4470)	(0.1274)	(0.1744)	(0.2368)	(0.2368)
Education: Incomplete primary	18.9681***	50.1315***	2.4446***	3.9901***	-21.4127***	-21.4127***
	(0.2850)	(0.5184)	(0.1491)	(0.2024)	(0.2771)	(0.2771)
Education: Incomplete secondary	-3.0137***	-23.3084***	15.1826***	24.4033***	-12.1689***	-12.1689***
	(0.2807)	(0.5098)	(0.1468)	(0.1991)	(0.2729)	(0.2729)
Education: Matric	13.3839***	5.1408***	11.6982***	15.1772***	-25.0821***	-25.0821***
	(0.3371)	(0.6084)	(0.1764)	(0.2393)	(0.3278)	(0.3278)
Education: Post-Matric	31.2659***	42.1640***	27.2566***	40.4740***	-58.5225***	-58.5225***
	(0.3365)	(0.6021)	(0.1761)	(0.2390)	(0.3272)	(0.3272)
Education: Other/unspecified	47.0850***	71.2851***	5.9279***	8.8834***	-53.0129***	-53.0129***
	(1.0039)	(1.8805)	(0.5252)	(0.7209)	(0.9761)	(0.9761)
Marital status: Married/live together	26.4291***	38.8454***	-15.5480***	-25.9720***	-10.8811***	-10.8811***
	(0.2139)	(0.3735)	(0.1119)	(0.1520)	(0.2080)	(0.2080)
Marital status: Widowed/divorced	-46.6087***	-80.2200***	9.8710***	13.0689***	36.7377***	36.7377***
	(0.3814)	(0.6930)	(0.1996)	(0.2655)	(0.3709)	(0.3709)
Labour market status: Unemployed	11.4871***	59.6932***	18.4792***	19.7725***	-29.9663***	-29.9663***
	(0.2675)	(0.5149)	(0.1399)	(0.1870)	(0.2601)	(0.2601)
Labour market status: Employed	201.9093***	381.1450***	-17.2207***	-22.1380***	-184.6886***	-184.6886***
	(0.1584)	(0.3035)	(0.0829)	(0.1118)	(0.1540)	(0.1540)
Household size	-15.8016***	-20.8063***	-7.3486***	-12.0296***	23.1502***	23.1502***
	(0.0564)	(0.1020)	(0.0295)	(0.0396)	(0.0549)	(0.0549)
Number of children 0-17 years	25.9002***	30.7538***	-2.7188***	-6.4488***	-23.1814***	-23.1814***
	(0.0781)	(0.1348)	(0.0409)	(0.0564)	(0.0760)	(0.0760)
Constant	-55.7794***	-398.7353***	61.8066***	36.9466***	1433.9728***	1433.9728***
	(0.5061)	(0.9440)	(0.2648)	(0.3595)	(0.4921)	(0.4921)
Weighted sample size	11 985 715	11 985 715	11 985 715	11 985 715	11 985 715	11 985 715
R^2 or Pseudo R^2	0.3500	0.0479	0.0520	0.0063	0.3790	0.0342

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A6: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time for the male population, 2010

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	3.2954***	6.6504***	5.0557***	6.3329***	-8.3511***	-8.3511***
	(0.0157)	(0.0297)	(0.0090)	(0.0118)	(0.0156)	(0.0156)
Age squared	-0.0383***	-0.0763***	-0.0489***	-0.0628***	0.0872***	0.0872***
	(0.0002)	(0.0004)	(0.0001)	(0.0001)	(0.0002)	(0.0002)
Race: Coloured	-33.3464***	-94.3013***	-12.7205***	-25.0108***	46.0669***	46.0669***
	(0.1981)	(0.3595)	(0.1141)	(0.1499)	(0.1967)	(0.1967)
Race: Indian/Asian	-3.1219***	-47.3813***	-26.1868***	-52.9476***	29.3087***	29.3087***
	(0.2847)	(0.5098)	(0.1640)	(0.2232)	(0.2827)	(0.2827)
Race: White	-3.9337***	-36.2000***	-8.7392***	-18.7876***	12.6729***	12.6729***
	(0.1724)	(0.3082)	(0.0993)	(0.1310)	(0.1712)	(0.1712)
Province: Western Cape	-4.8230***	-43.4488***	2.6403***	0.6816***	2.1827***	2.1827***
	(0.2136)	(0.3753)	(0.1230)	(0.1598)	(0.2121)	(0.2121)
Province: Northern Cape	-3.9562***	-64.3177***	-16.7458***	-28.2617***	20.7021***	20.7021***
	(0.3322)	(0.6053)	(0.1913)	(0.2517)	(0.3299)	(0.3299)
Province: Free State	-25.2197***	-104.8594***	-10.9509***	-14.1959***	36.1706***	36.1706***
	(0.2324)	(0.4196)	(0.1339)	(0.1725)	(0.2308)	(0.2308)
Province: KwaZulu-Natal	10.5948***	-22.6357***	-8.1156***	-12.9931***	-2.4792***	-2.4792***
	(0.1640)	(0.2868)	(0.0945)	(0.1216)	(0.1629)	(0.1629)
Province: North West	-35.6822***	-114.9409***	-18.4964***	-35.2863***	54.1786***	54.1786***
	(0.2200)	(0.3947)	(0.1267)	(0.1658)	(0.2185)	(0.2185)
Province: Gauteng	-29.4776***	-122.3494***	-6.9641***	-13.3430***	36.4417***	36.4417***
	(0.1598)	(0.2845)	(0.0920)	(0.1188)	(0.1587)	(0.1587)
Province: Mpumalanga	0.3059	-57.2595***	-5.7368***	-9.3813***	5.4309***	5.4309***
	(0.2113)	(0.3738)	(0.1217)	(0.1569)	(0.2099)	(0.2099)
Province: Limpopo	-28.9095***	-94.0971***	-13.8700***	-21.4642***	42.7795***	42.7795***
	(0.1905)	(0.3417)	(0.1097)	(0.1417)	(0.1892)	(0.1892)
Education: Incomplete primary	-21.4462***	-39.0343***	4.8392***	7.1920***	16.6070***	16.6070***
	(0.2692)	(0.4778)	(0.1551)	(0.2039)	(0.2674)	(0.2674)
Education: Incomplete secondary	-24.9436***	-56.9490***	29.6827***	42.3072***	-4.7390***	-4.7390***
	(0.2607)	(0.4617)	(0.1501)	(0.1975)	(0.2589)	(0.2589)
Education: Matric	-17.7397***	-57.8782***	34.1447***	48.1384***	-16.4050***	-16.4050***
	(0.2781)	(0.4913)	(0.1602)	(0.2105)	(0.2762)	(0.2762)
Education: Post-Matric	-50.9636***	-93.3356***	26.1122***	38.8225***	24.8515***	24.8515***
	(0.3061)	(0.5357)	(0.1763)	(0.2321)	(0.3040)	(0.3040)
Education: Other/unspecified	23.3665***	2.8555**	46.1792***	37.7342***	-69.5457***	-69.5457***
	(0.7465)	(1.2864)	(0.4299)	(0.5848)	(0.7414)	(0.7414)
Marital status: Married/live together	25.4986***	40.1942***	-19.1603***	-34.4172***	-6.3383***	-6.3383***
	(0.1496)	(0.2536)	(0.0862)	(0.1124)	(0.1486)	(0.1486)
Marital status: Widowed/divorced	1.4847***	3.5826***	-13.5223***	-15.8189***	12.0376***	12.0376***
	(0.2675)	(0.4786)	(0.1541)	(0.1981)	(0.2657)	(0.2657)
Labour market status: Unemployed	33.2400***	84.2870***	15.5877***	17.4481***	-48.8277***	-48.8277***
	(0.1947)	(0.3685)	(0.1121)	(0.1421)	(0.1933)	(0.1933)
Labour market status: Employed	391.7020***	609.5889***	-75.2338***	-96.9968***	-316.4682***	-316.4682***
	(0.1270)	(0.2384)	(0.0731)	(0.0949)	(0.1261)	(0.1261)
Household size	2.7300***	7.8827***	-13.8581***	-18.9983***	11.1281***	11.1281***
	(0.0399)	(0.0704)	(0.0230)	(0.0298)	(0.0396)	(0.0396)
Number of children 0-17 years	-5.9754***	-8.6007***	3.4076***	3.0925***	2.5678***	2.5678***
	(0.0590)	(0.1007)	(0.0340)	(0.0446)	(0.0586)	(0.0586)
Constant	15.3996***	-214.6035***	67.0595***	48.1790***	1357.5409***	1357.5409***
	(0.4041)	(0.7326)	(0.2327)	(0.3040)	(0.4013)	(0.4013)
Weighted sample size	19 245 055	19 245 055	19 245 055	19 245 055	19 245 055	19 245 055
R^2 or Pseudo R^2	0.5020	0.0694	0.1010	0.0116	0.4670	0.0448

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A7: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time for the female population, 2000

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	6.0829***	15.1828***	8.1245***	9.4619***	-14.2074***	-14.2074***
	(0.0142)	(0.0353)	(0.0133)	(0.0145)	(0.0155)	(0.0155)
Age squared	-0.0688***	-0.1836***	-0.0842***	-0.1000***	0.1530***	0.1530***
	(0.0002)	(0.0004)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Race: Coloured	8.2364***	-62.9047***	-67.8402***	-77.8600***	59.6039***	59.6039***
	(0.2823)	(0.6594)	(0.2627)	(0.2844)	(0.3074)	(0.3074)
Race: Indian/Asian	10.8221***	-31.2676***	-47.2203***	-52.1279***	36.3982***	36.3982***
	(0.1978)	(0.4677)	(0.1841)	(0.1982)	(0.2154)	(0.2154)
Race: White	7.4402***	12.5069***	-38.3110***	-50.5744***	30.8708***	30.8708***
	(0.1717)	(0.3842)	(0.1598)	(0.1738)	(0.1870)	(0.1870)
Province: Western cape	3.2108***	-61.6334***	-23.7068***	-30.6010***	20.4960***	20.4960***
	(0.2090)	(0.4840)	(0.1945)	(0.2095)	(0.2275)	(0.2275)
Province: Northern Cape	13.3132***	-33.0738***	8.4983***	6.1961***	-21.8115***	-21.8115***
	(0.3478)	(0.8224)	(0.3237)	(0.3484)	(0.3787)	(0.3787)
Province: Free State	-11.4008***	-70.2179***	-42.9591***	-45.0408***	54.3599***	54.3599***
	(0.2127)	(0.4815)	(0.1979)	(0.2125)	(0.2316)	(0.2316)
Province: KwaZulu-Natal	24.6773***	50.2481***	-9.7050***	-10.8668***	-14.9724***	-14.9724***
	(0.1558)	(0.3368)	(0.1450)	(0.1556)	(0.1696)	(0.1696)
Province: North West	-10.9802***	-61.1069***	-3.8893***	-3.4610***	14.8695***	14.8695***
	(0.1979)	(0.4487)	(0.1842)	(0.1972)	(0.2155)	(0.2155)
Province: Gauteng	-2.0466***	-87.2319***	-16.8737***	-20.9954***	18.9203***	18.9203***
	(0.1613)	(0.3652)	(0.1501)	(0.1613)	(0.1757)	(0.1757)
Province: Mpumalanga	-10.8279***	-56.5291***	-6.8850***	-9.6427***	17.7129***	17.7129***
	(0.2119)	(0.4709)	(0.1972)	(0.2119)	(0.2307)	(0.2307)
Province: Limpopo	18.4000***	25.9257***	-31.2614***	-35.0003***	12.8614***	12.8614***
	(0.1776)	(0.3880)	(0.1652)	(0.1776)	(0.1933)	(0.1933)
Education: Incomplete primary	7.9259***	22.4170***	1.7119***	4.4349***	-9.6377***	-9.6377***
	(0.1857)	(0.4039)	(0.1728)	(0.1861)	(0.2022)	(0.2022)
Education: Incomplete secondary	-7.3971***	-43.3351***	41.6018***	48.4523***	-34.2047***	-34.2047***
	(0.1798)	(0.3927)	(0.1673)	(0.1797)	(0.1957)	(0.1957)
Education: Matric	19.9248***	-11.5920***	40.6082***	48.1736***	-60.5329***	-60.5329***
	(0.2272)	(0.4977)	(0.2114)	(0.2271)	(0.2474)	(0.2474)
Education: Post-Matric	47.3999***	45.1096***	13.0953***	20.5450***	-60.4952***	-60.4952***
	(0.2319)	(0.4940)	(0.2158)	(0.2318)	(0.2525)	(0.2525)
Education: Other/unspecified	45.9386***	51.7378***	-30.4164***	-31.4827***	-15.5222***	-15.5222***
	(0.7260)	(1.6561)	(0.6757)	(0.7370)	(0.7905)	(0.7905)
Marital status: Married/live together	1.6012***	11.3426***	33.0254***	35.3201***	-34.6266***	-34.6266***
	(0.1402)	(0.3008)	(0.1304)	(0.1396)	(0.1526)	(0.1526)
Marital status: Widowed/divorced	19.0602***	34.4855***	-19.2347***	-20.7554***	0.1745	0.1745
	(0.1929)	(0.4068)	(0.1795)	(0.1926)	(0.2100)	(0.2100)
Labour market status: Unemployed	-12.9481***	-28.0938***	72.3236***	72.9688***	-59.3755***	-59.3755***
	(0.1852)	(0.4460)	(0.1724)	(0.1841)	(0.2017)	(0.2017)
Labour market status: Employed	197.8868***	374.1050***	-57.0731***	-59.4236***	-140.8137***	-140.8137***
	(0.1119)	(0.2542)	(0.1042)	(0.1118)	(0.1219)	(0.1219)
Household size	-3.5543***	-10.5977***	-13.2469***	-14.6248***	16.8012***	16.8012***
	(0.0417)	(0.0916)	(0.0388)	(0.0416)	(0.0454)	(0.0454)
Number of children 0-17 years	-4.0725***	-5.5269***	32.9969***	33.2071***	-28.9245***	-28.9245***
	(0.0506)	(0.1086)	(0.0471)	(0.0505)	(0.0551)	(0.0551)
Constant	-59.9151***	-392.5127***	103.7099***	79.1475***	1396.2053***	1396.2053***
	(0.3552)	(0.8153)	(0.3306)	(0.3577)	(0.3868)	(0.3868)
Weighted sample size	13 618 863	13 618 863	13 618 863	13 618 863	13 618 863	13 618 863
R^2 or Pseudo R^2	0.3260	0.0492	0.2290	0.0212	0.4000	0.0371

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A8: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time for the female population, 2010

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	1.9325***	5.2122***	11.6504***	13.0780***	-13.5829***	-13.5829***
	(0.0112)	(0.0262)	(0.0109)	(0.0119)	(0.0124)	(0.0124)
Age squared	-0.0200***	-0.0583***	-0.1275***	-0.1441***	0.1474***	0.1474***
	(0.0001)	(0.0003)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Race: Coloured	-1.2396***	-50.1583***	-32.3813***	-37.4574***	33.6209***	33.6209***
	(0.1594)	(0.3544)	(0.1542)	(0.1664)	(0.1761)	(0.1761)
Race: Indian/Asian	-5.2696***	-77.9779***	-40.3168***	-55.9960***	45.5865***	45.5865***
	(0.2290)	(0.5194)	(0.2215)	(0.2426)	(0.2530)	(0.2530)
Race: White	-7.1280***	-35.4813***	-48.2096***	-56.0437***	55.3377***	55.3377***
	(0.1377)	(0.3059)	(0.1332)	(0.1446)	(0.1521)	(0.1521)
Province: Western cape	-9.2245***	-33.2938***	-20.5266***	-24.0461***	29.7512***	29.7512***
	(0.1676)	(0.3636)	(0.1621)	(0.1745)	(0.1852)	(0.1852)
Province: Northern Cape	-11.8150***	-83.9242***	-24.4080***	-27.8778***	36.2230***	36.2230***
	(0.2634)	(0.6175)	(0.2548)	(0.2748)	(0.2910)	(0.2910)
Province: Free State	-23.9136***	-114.5218***	-24.4273***	-27.4805***	48.3409***	48.3409***
	(0.1757)	(0.4074)	(0.1700)	(0.1826)	(0.1942)	(0.1942)
Province: KwaZulu-Natal	33.7439***	45.3549***	-30.4980***	-34.8796***	-3.2459***	-3.2459***
	(0.1270)	(0.2700)	(0.1228)	(0.1320)	(0.1403)	(0.1403)
Province: North West	-21.2430***	-99.5226***	-39.6563***	-45.5847***	60.8993***	60.8993***
	(0.1742)	(0.3987)	(0.1685)	(0.1816)	(0.1924)	(0.1924)
Province: Gauteng	-11.9047***	-87.8401***	-38.4549***	-42.6522***	50.3596***	50.3596***
	(0.1255)	(0.2782)	(0.1214)	(0.1304)	(0.1387)	(0.1387)
Province: Mpumalanga	2.6839***	-41.6143***	-20.9580***	-23.6196***	18.2741***	18.2741***
	(0.1660)	(0.3665)	(0.1606)	(0.1725)	(0.1834)	(0.1834)
Province: Limpopo	-4.7005***	-38.1743***	-24.1353***	-26.1726***	28.8358***	28.8358***
	(0.1467)	(0.3222)	(0.1419)	(0.1523)	(0.1621)	(0.1621)
Education: Incomplete primary	-18.2466***	-43.9485***	-1.6710***	-0.5079***	19.9176***	19.9176***
	(0.1849)	(0.3998)	(0.1789)	(0.1931)	(0.2043)	(0.2043)
Education: Incomplete secondary	-21.2633***	-75.6607***	45.6277***	51.4747***	-24.3644***	-24.3644***
	(0.1781)	(0.3859)	(0.1723)	(0.1858)	(0.1968)	(0.1968)
Education: Matric	-7.1715***	-64.9935***	56.9371***	62.9455***	-49.7657***	-49.7657***
	(0.1955)	(0.4249)	(0.1891)	(0.2038)	(0.2160)	(0.2160)
Education: Post-Matric	-22.1013***	-76.7542***	43.4096***	49.0937***	-21.3083***	-21.3083***
	(0.2178)	(0.4649)	(0.2107)	(0.2271)	(0.2407)	(0.2407)
Education: Other/unspecified	-4.2650***	-62.6464***	57.5957***	63.1679***	-53.3307***	-53.3307***
	(0.7084)	(1.6338)	(0.6853)	(0.7378)	(0.7826)	(0.7826)
Marital status: Married/live together	-9.9649***	-7.3297***	44.2960***	47.0386***	-34.3311***	-34.3311***
	(0.1020)	(0.2177)	(0.0986)	(0.1059)	(0.1126)	(0.1126)
Marital status: Widowed/divorced	-7.4622***	2.2800***	9.2116***	10.2739***	-1.7494***	-1.7494***
	(0.1516)	(0.3238)	(0.1466)	(0.1576)	(0.1674)	(0.1674)
Labour market status: Unemployed	2.0306***	-8.0393***	15.4274***	15.1574***	-17.4580***	-17.4580***
	(0.1478)	(0.3643)	(0.1430)	(0.1529)	(0.1633)	(0.1633)
Labour market status: Employed	338.2657***	563.4688***	-146.8586***	-155.9919***	-191.4070***	-191.4070***
	(0.0953)	(0.2135)	(0.0921)	(0.0992)	(0.1052)	(0.1052)
Household size	1.3750***	3.7875***	-16.3767***	-17.8750***	15.0017***	15.0017***
	(0.0325)	(0.0707)	(0.0314)	(0.0338)	(0.0359)	(0.0359)
Number of children 0-17 years	-1.1450***	-1.3993***	29.6246***	29.9794***	-28.4796***	-28.4796***
	(0.0400)	(0.0863)	(0.0387)	(0.0415)	(0.0442)	(0.0442)
Constant	11.5345***	-223.6101***	81.4617***	56.4565***	1347.0039***	1347.0039***
	(0.2925)	(0.6522)	(0.2829)	(0.3063)	(0.3231)	(0.3231)
Weighted sample size	20 632 534	20 632 534	20 632 534	20 632 534	20 632 534	20 632 534
R^2 or Pseudo R^2	0.4840	0.0720	0.2600	0.0242	0.4280	0.0406

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A9: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time for the African population, 2000

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	7.7907***	16.7482***	5.9821***	7.3738***	-13.7728***	-13.7728***
	(0.0132)	(0.0282)	(0.0100)	(0.0119)	(0.0138)	(0.0138)
Age squared	-0.0842***	-0.1939***	-0.0647***	-0.0825***	0.1489***	0.1489***
	(0.0002)	(0.0003)	(0.0001)	(0.0001)	(0.0002)	(0.0002)
Gender: Male	50.2060***	88.9521***	-126.7649***	-150.2080***	76.5589***	76.5589***
	(0.0871)	(0.1740)	(0.0660)	(0.0766)	(0.0909)	(0.0909)
Province: Western Cape	38.9790***	-33.9016***	-11.4599***	-11.5808***	-27.5191***	-27.5191***
	(0.2648)	(0.5397)	(0.2008)	(0.2314)	(0.2764)	(0.2764)
Province: Northern Cape	24.5936***	-58.6365***	-13.0192***	-13.2214***	-11.5744***	-11.5744***
	(0.4536)	(0.9525)	(0.3440)	(0.3968)	(0.4734)	(0.4734)
Province: Free State	0.0567	-61.8572***	-31.0116***	-31.7773***	30.9549***	30.9549***
	(0.1847)	(0.3708)	(0.1401)	(0.1621)	(0.1928)	(0.1928)
Province: KwaZulu-Natal	25.2805***	18.3375***	-6.8187***	-4.1160***	-18.4618***	-18.4618***
	(0.1354)	(0.2631)	(0.1027)	(0.1186)	(0.1413)	(0.1413)
Province: North West	-12.0149***	-68.0670***	5.4418***	9.8524***	6.5731***	6.5731***
	(0.1665)	(0.3309)	(0.1263)	(0.1454)	(0.1738)	(0.1738)
Province: Gauteng	-1.4895***	-100.2104***	-17.3477***	-20.5829***	18.8373***	18.8373***
	(0.1440)	(0.2916)	(0.1092)	(0.1264)	(0.1503)	(0.1503)
Province: Mpumalanga	-0.5772***	-44.1662***	2.6534***	4.8256***	-2.0763***	-2.0763***
	(0.1816)	(0.3584)	(0.1377)	(0.1589)	(0.1895)	(0.1895)
Province: Limpopo	9.4879***	-11.6811***	-22.0145***	-29.1594***	12.5266***	12.5266***
	(0.1491)	(0.2930)	(0.1131)	(0.1316)	(0.1556)	(0.1556)
Education: Incomplete primary	19.7074***	40.7470***	-6.6954***	-7.8637***	-13.0121***	-13.0121***
	(0.1673)	(0.3246)	(0.1269)	(0.1469)	(0.1746)	(0.1746)
Education: Incomplete secondary	-0.3669**	-27.9575***	19.5284***	22.7477***	-19.1615***	-19.1615***
	(0.1654)	(0.3217)	(0.1255)	(0.1450)	(0.1727)	(0.1727)
Education: Matric	21.0024***	-13.9368***	21.6434***	24.9570***	-42.6458***	-42.6458***
	(0.2208)	(0.4306)	(0.1674)	(0.1927)	(0.2304)	(0.2304)
Education: Post-Matric	37.5339***	21.0965***	-5.4422***	-7.0141***	-32.0916***	-32.0916***
	(0.2272)	(0.4317)	(0.1723)	(0.1992)	(0.2371)	(0.2371)
Education: Other/unspecified	16.2869***	-0.2900	-40.2226***	-42.6808***	23.9357***	23.9357***
	(0.7131)	(1.4989)	(0.5408)	(0.6314)	(0.7443)	(0.7443)
Marital status: Married/live together	17.0500***	27.5778***	-4.0127***	-11.3307***	-13.0373***	-13.0373***
	(0.1347)	(0.2565)	(0.1022)	(0.1177)	(0.1406)	(0.1406)
Marital status: Widowed/divorced	1.9735***	3.0636***	-26.5158***	-29.4405***	24.5423***	24.5423***
	(0.2003)	(0.3853)	(0.1519)	(0.1747)	(0.2091)	(0.2091)
Labour market status: Unemployed	-10.9309***	-4.1428***	42.6002***	43.8863***	-31.6693***	-31.6693***
	(0.1687)	(0.3508)	(0.1279)	(0.1465)	(0.1760)	(0.1760)
Labour market status: Employed	180.2151***	320.8588***	-35.1336***	-39.1636***	-145.0815***	-145.0815***
	(0.1041)	(0.2092)	(0.0790)	(0.0912)	(0.1087)	(0.1087)
Household size	-11.8161***	-20.1720***	-10.8304***	-13.9779***	22.6464***	22.6464***
	(0.0371)	(0.0723)	(0.0281)	(0.0324)	(0.0387)	(0.0387)
Number of children 0-17 years	4.8339***	6.8331***	21.8906***	21.1906***	-26.7244***	-26.7244***
	(0.0481)	(0.0916)	(0.0365)	(0.0422)	(0.0502)	(0.0502)
Constant	-72.8289***	-381.6763***	160.0829***	149.5117***	1352.7460***	1352.7460***
	(0.3250)	(0.6579)	(0.2465)	(0.2867)	(0.3392)	(0.3392)
Weighted sample size	19 457 575	19 457 575	19 457 575	19 457 575	19 457 575	19 457 575
R^2 or Pseudo R^2	0.3140	0.0431	0.2770	0.0282	0.3680	0.0333

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A10: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time for the African population, 2010

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	2.9474***	6.8795***	9.5160***	11.1096***	-12.4634***	-12.4634***
	(0.0105)	(0.0217)	(0.0084)	(0.0098)	(0.0112)	(0.0112)
Age squared	-0.0303***	-0.0724***	-0.1102***	-0.1306***	0.1404***	0.1404***
	(0.0001)	(0.0003)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Gender: Male	37.0070***	70.7081***	-117.4739***	-135.6873***	80.4669***	80.4669***
	(0.0663)	(0.1305)	(0.0530)	(0.0606)	(0.0702)	(0.0702)
Province: Western Cape	-18.3219***	-57.6178***	-14.6075***	-17.9094***	32.9294***	32.9294***
	(0.1935)	(0.3658)	(0.1545)	(0.1760)	(0.2048)	(0.2048)
Province: Northern Cape	-10.9643***	-87.1007***	-27.2010***	-34.6540***	38.1653***	38.1653***
	(0.2828)	(0.5723)	(0.2257)	(0.2590)	(0.2993)	(0.2993)
Province: Free State	-24.2083***	-118.6833***	-20.8554***	-26.2978***	45.0637***	45.0637***
	(0.1513)	(0.3077)	(0.1208)	(0.1377)	(0.1602)	(0.1602)
Province: KwaZulu-Natal	21.3532***	5.6074***	-20.7329***	-24.6535***	-0.6204***	-0.6204***
	(0.1080)	(0.2056)	(0.0862)	(0.0981)	(0.1143)	(0.1143)
Province: North West	-30.7141***	-120.2335***	-31.8432***	-44.1307***	62.5573***	62.5573***
	(0.1452)	(0.2920)	(0.1159)	(0.1332)	(0.1537)	(0.1537)
Province: Gauteng	-17.4193***	-105.2399***	-29.9092***	-36.3865***	47.3285***	47.3285***
	(0.1092)	(0.2144)	(0.0872)	(0.0993)	(0.1156)	(0.1156)
Province: Mpumalanga	-1.8332***	-61.5678***	-17.1933***	-20.9444***	19.0265***	19.0265***
	(0.1388)	(0.2724)	(0.1108)	(0.1262)	(0.1469)	(0.1469)
Province: Limpopo	-16.5916***	-73.7328***	-20.6801***	-26.2358***	37.2717***	37.2717***
	(0.1215)	(0.2388)	(0.0970)	(0.1106)	(0.1286)	(0.1286)
Education: Incomplete primary	-21.7654***	-45.6232***	-8.0219***	-9.9688***	29.7873***	29.7873***
	(0.1638)	(0.3152)	(0.1308)	(0.1504)	(0.1734)	(0.1734)
Education: Incomplete secondary	-23.6547***	-66.7009***	26.0931***	30.3238***	-2.4385***	-2.4385***
	(0.1606)	(0.3087)	(0.1282)	(0.1474)	(0.1700)	(0.1700)
Education: Matric	-7.4761***	-59.1712***	36.7738***	40.5661***	-29.2977***	-29.2977***
	(0.1772)	(0.3405)	(0.1415)	(0.1624)	(0.1876)	(0.1876)
Education: Post-Matric	-53.2535***	-113.9471***	13.8918***	15.3019***	39.3617***	39.3617***
	(0.2077)	(0.3916)	(0.1658)	(0.1907)	(0.2199)	(0.2199)
Education: Other/unspecified	-13.3408***	-67.1995***	93.1524***	98.8690***	-79.8116***	-79.8116***
	(0.6390)	(1.2837)	(0.5101)	(0.5813)	(0.6763)	(0.6763)
Marital status: Married/live together	10.6941***	21.9578***	11.1505***	1.9568***	-21.8446***	-21.8446***
	(0.0943)	(0.1787)	(0.0753)	(0.0859)	(0.0998)	(0.0998)
Marital status: Widowed/divorced	-9.5601***	-12.5576***	7.3160***	7.6408***	2.2440***	2.2440***
	(0.1551)	(0.2994)	(0.1238)	(0.1410)	(0.1641)	(0.1641)
Labour market status: Unemployed	12.5397***	27.2574***	9.4888***	10.2165***	-22.0286***	-22.0286***
	(0.1272)	(0.2677)	(0.1015)	(0.1146)	(0.1346)	(0.1346)
Labour market status: Employed	358.8624***	552.7436***	-119.5719***	-136.0931***	-239.2905***	-239.2905***
	(0.0870)	(0.1731)	(0.0694)	(0.0795)	(0.0921)	(0.0921)
Household size	2.6125***	6.3273***	-17.1902***	-20.6725***	14.5777***	14.5777***
	(0.0278)	(0.0539)	(0.0222)	(0.0254)	(0.0294)	(0.0294)
Number of children 0-17 years	-4.3224***	-6.8948***	19.9382***	19.6894***	-15.6158***	-15.6158***
	(0.0371)	(0.0709)	(0.0296)	(0.0339)	(0.0392)	(0.0392)
Constant	-10.4145***	-251.7836***	150.0879***	141.7666***	1300.3267***	1300.3267***
	(0.2632)	(0.5232)	(0.2101)	(0.2416)	(0.2786)	(0.2786)
Weighted sample size	31 089 630	31 089 630	31 089 630	31 089 630	31 089 630	31 089 630
R^2 or Pseudo R^2	0.4950	0.0685	0.3050	0.0309	0.4370	0.0414

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A11: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time for the Coloured population, 2000

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	-2.5122***	3.9152***	13.1469***	17.5031***	-10.6347***	-10.6347***
	(0.1017)	(0.2606)	(0.0650)	(0.0851)	(0.0899)	(0.0899)
Age squared	0.0249***	-0.0566***	-0.1528***	-0.1971***	0.1279***	0.1279***
	(0.0013)	(0.0032)	(0.0008)	(0.0010)	(0.0011)	(0.0011)
Gender: Male	77.1821***	159.4702***	-94.5341***	-138.8422***	17.3519***	17.3519***
	(0.4875)	(1.1209)	(0.3114)	(0.4133)	(0.4309)	(0.4309)
Province: Western Cape	178.0603***	167.5141***	-70.5769***	-142.7365***	-107.4835***	-107.4835***
	(3.1961)	(6.2308)	(2.0412)	(2.5763)	(2.8248)	(2.8247)
Province: Northern Cape	198.8266***	-1.12e+03	-82.2432***	-1.00e+03	-116.5834***	-116.5834***
	(6.2900)	(3.24e+04)	(4.0172)	(2.33e+04)	(5.5592)	(5.5592)
Province: Free State	142.4285***	48.7330***	-28.0688***	-16.3684***	-114.3597***	-114.3597***
	(6.8654)	(12.3815)	(4.3847)	(5.4730)	(6.0679)	(6.0678)
Province: KwaZulu-Natal	130.5705***	35.6387***	-1.8536	-39.0910***	-128.7170***	-128.7170***
	(3.0035)	(5.6005)	(1.9183)	(2.4084)	(2.6546)	(2.6546)
Province: North West	N/A	N/A	N/A	N/A	N/A	N/A
	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
Province: Gauteng	145.2571***	71.8761***	-25.0693***	-87.6012***	-120.1878***	-120.1878***
	(3.0471)	(5.7184)	(1.9461)	(2.4503)	(2.6931)	(2.6931)
Province: Mpumalanga	94.7498***	-101.0911***	50.0628***	13.9489***	-144.8127***	-144.8127***
	(4.6932)	(10.1679)	(2.9974)	(3.8603)	(4.1480)	(4.1479)
Province: Limpopo	-27.2113**	-179.5318***	95.2381***	106.3508***	-68.0268***	-68.0268***
	(11.0430)	(21.5008)	(7.0528)	(8.7946)	(9.7601)	(9.7600)
Education: Incomplete primary	-54.1629***	-255.2119***	88.5076***	93.3153***	-34.3447***	-34.3447***
	(1.5971)	(5.0678)	(1.0200)	(1.2976)	(1.4116)	(1.4116)
Education: Incomplete secondary	-26.8285***	-76.6078***	78.2968***	92.0044***	-51.4683***	-51.4683***
	(1.4904)	(4.4987)	(0.9519)	(1.2017)	(1.3173)	(1.3173)
Education: Matric	-4.4904***	2.8543	124.5385***	142.4682***	-120.0481***	-120.0481***
	(1.5472)	(4.5615)	(0.9882)	(1.2490)	(1.3675)	(1.3675)
Education: Post-Matric	22.5545***	39.9460***	108.5660***	137.2923***	-131.1205***	-131.1205***
	(1.6138)	(4.6063)	(1.0307)	(1.3058)	(1.4263)	(1.4263)
Education: Other/unspecified	N/A	N/A	N/A	N/A	N/A	N/A
	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
Marital status: Married/live together	59.4423***	106.6270***	38.0599***	26.7582***	-97.5023***	-97.5023***
	(0.8523)	(1.8681)	(0.5443)	(0.7020)	(0.7533)	(0.7532)
Marital status: Widowed/divorced	46.7593***	72.4969***	54.5887***	47.1949***	-101.3480***	-101.3480***
	(1.2073)	(2.7053)	(0.7711)	(0.9950)	(1.0670)	(1.0670)
Labour market status: Unemployed	189.6014***	493.2406***	-37.5316***	-53.9797***	-152.0698***	-152.0698***
	(0.9664)	(2.2247)	(0.6172)	(0.7996)	(0.8541)	(0.8541)
Labour market status: Employed	327.1206***	750.0246***	-114.6588***	-140.3273***	-212.4618***	-212.4618***
	(0.5890)	(1.5793)	(0.3762)	(0.4959)	(0.5206)	(0.5206)
Household size	0.1134	5.9632***	-17.6434***	-17.9136***	17.5300***	17.5300***
	(0.2564)	(0.5815)	(0.1638)	(0.2135)	(0.2266)	(0.2266)
Number of children 0-17 years	36.2562***	59.6224***	1.5346***	-0.3354	-37.7908***	-37.7908***
	(0.2942)	(0.6139)	(0.1879)	(0.2466)	(0.2600)	(0.2600)
Constant	-120.6096***	-707.5454***	-44.1693***	-93.1503***	1604.7789***	1604.7789***
	(3.8214)	(8.6143)	(2.4406)	(3.1062)	(3.3774)	(3.3774)
Weighted sample size	768 888	768 888	768 888	768 888	768 888	768 888
R^2 or Pseudo R^2	0.492	0.1054	0.378	0.0486	0.565	0.0597

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

N/A: the explanatory variable was dropped due to multicollinearity issues

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Table A12: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time for the Coloured population, 2010

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	1.1357***	5.2169***	11.6078***	14.3772***	-12.7436***	-12.7436***
	(0.0348)	(0.0858)	(0.0250)	(0.0313)	(0.0356)	(0.0356)
Age squared	-0.0192***	-0.0835***	-0.1220***	-0.1515***	0.1412***	0.1412***
	(0.0004)	(0.0011)	(0.0003)	(0.0004)	(0.0004)	(0.0004)
Gender: Male	31.2078***	62.6845***	-102.1644***	-133.6680***	70.9566***	70.9566***
	(0.2065)	(0.4307)	(0.1483)	(0.1850)	(0.2113)	(0.2113)
Province: Western Cape	-2.5989***	35.6253***	-11.1719***	-13.2273***	13.7708***	13.7708***
	(0.3281)	(0.7020)	(0.2356)	(0.2912)	(0.3357)	(0.3357)
Province: Northern Cape	-5.7893***	-1.7402*	-16.6770***	-21.8579***	22.4662***	22.4662***
	(0.4364)	(0.9587)	(0.3134)	(0.3895)	(0.4465)	(0.4465)
Province: Free State	-4.8076***	10.7462***	0.2022	18.3282***	4.6054***	4.6054***
	(0.8939)	(1.8202)	(0.6421)	(0.7795)	(0.9147)	(0.9147)
Province: KwaZulu-Natal	23.0079***	91.0226***	-9.3237***	-11.7225***	-13.6842***	-13.6842***
	(0.7386)	(1.5092)	(0.5305)	(0.6523)	(0.7557)	(0.7557)
Province: North West	-39.4795***	-54.7342***	-20.8828***	-21.8385***	60.3623***	60.3623***
	(0.9184)	(1.9783)	(0.6597)	(0.8177)	(0.9397)	(0.9397)
Province: Gauteng	-43.9566***	-88.1461***	-18.2109***	-23.8018***	62.1675***	62.1675***
	(0.4590)	(1.0018)	(0.3297)	(0.4085)	(0.4696)	(0.4696)
Province: Mpumalanga	80.1994***	154.1079***	-37.2629***	-38.1413***	-42.9365***	-42.9365***
	(1.1319)	(2.2079)	(0.8130)	(1.0134)	(1.1582)	(1.1582)
Province: Limpopo	-46.7869***	-25.9110***	-9.8341***	6.7354***	56.6210***	56.6210***
	(1.2464)	(2.4245)	(0.8953)	(1.0900)	(1.2754)	(1.2754)
Education: Incomplete primary	25.4093***	174.4753***	-24.6166***	-29.9991***	-0.7927	-0.7927
	(0.6678)	(1.7921)	(0.4797)	(0.5964)	(0.6833)	(0.6833)
Education: Incomplete secondary	28.3841***	145.0978***	1.7871***	10.4525***	-30.1712***	-30.1712***
	(0.6517)	(1.7490)	(0.4681)	(0.5799)	(0.6668)	(0.6668)
Education: Matric	25.8739***	128.6712***	-2.3720***	9.7187***	-23.5019***	-23.5019***
	(0.6906)	(1.7976)	(0.4960)	(0.6141)	(0.7066)	(0.7066)
Education: Post-Matric	-13.0685***	101.2502***	-13.5414***	2.4820***	26.6100***	26.6100***
	(0.7498)	(1.8746)	(0.5386)	(0.6649)	(0.7672)	(0.7672)
Education: Other/unspecified	25.1219***	28.2235***	-12.0353***	-20.7663***	-13.0867***	-13.0867***
	(2.4321)	(6.1455)	(1.7469)	(2.2455)	(2.4885)	(2.4885)
Marital status: Married/live together	3.8292***	-0.2623	13.0916***	12.6649***	-16.9208***	-16.9208***
	(0.3112)	(0.6251)	(0.2235)	(0.2739)	(0.3184)	(0.3184)
Marital status: Widowed/divorced	17.1859***	54.6114***	4.6449***	8.4045***	-21.8307***	-21.8307***
	(0.4661)	(0.9752)	(0.3348)	(0.4075)	(0.4770)	(0.4770)
Labour market status: Unemployed	18.7884***	69.9510***	6.7743***	15.5612***	-25.5627***	-25.5627***
	(0.4236)	(1.0233)	(0.3043)	(0.3696)	(0.4335)	(0.4335)
Labour market status: Employed	377.9584***	703.8098***	-118.0825***	-134.9970***	-259.8759***	-259.8759***
	(0.2574)	(0.6092)	(0.1849)	(0.2281)	(0.2634)	(0.2634)
Household size	-8.9205***	-14.6150***	-9.0705***	-14.2089***	17.9910***	17.9910***
	(0.0992)	(0.2069)	(0.0713)	(0.0881)	(0.1015)	(0.1015)
Number of children 0-17 years	3.3352***	0.1868	23.4871***	25.5465***	-26.8223***	-26.8223***
	(0.1262)	(0.2560)	(0.0907)	(0.1111)	(0.1292)	(0.1292)
Constant	1.4177	-551.6606***	56.2033***	10.6097***	1382.3790***	1382.3790***
	(0.9468)	(2.3798)	(0.6801)	(0.8485)	(0.9688)	(0.9688)
Weighted sample size	3 626 613	3 626 613	3 626 613	3 626 613	3 626 613	3 626 613
R^2 or Pseudo R^2	0.5040	0.0877	0.3110	0.0347	0.4670	0.0449

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A13: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time for the White population, 2000

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	9.5377***	22.8584***	5.7917***	7.1060***	-15.3295***	-15.3295***
	(0.0446)	(0.0912)	(0.0306)	(0.0384)	(0.0418)	(0.0418)
Age squared	-0.1027***	-0.2458***	-0.0541***	-0.0656***	0.1568***	0.1568***
	(0.0005)	(0.0010)	(0.0003)	(0.0004)	(0.0004)	(0.0004)
Gender: Male	55.2449***	68.1431***	-100.2537***	-131.2012***	45.0088***	45.0088***
	(0.2478)	(0.4655)	(0.1701)	(0.2181)	(0.2323)	(0.2323)
Province: Western Cape	0.5457	9.9470***	-6.1156***	3.9820***	5.5699***	5.5699***
	(0.5316)	(1.0320)	(0.3650)	(0.4611)	(0.4983)	(0.4983)
Province: Northern Cape	32.1863***	77.1807***	-8.2364***	-14.0770***	-23.9498***	-23.9498***
	(0.8556)	(1.6936)	(0.5875)	(0.7610)	(0.8021)	(0.8021)
Province: Free State	35.8817***	81.3852***	-64.3683***	-58.3030***	28.4866***	28.4866***
	(0.6307)	(1.1926)	(0.4331)	(0.5467)	(0.5912)	(0.5912)
Province: KwaZulu-Natal	36.4533***	65.3715***	-38.3433***	-35.0942***	1.8900***	1.8900***
	(0.5614)	(1.0761)	(0.3855)	(0.4897)	(0.5263)	(0.5263)
Province: North West	49.2171***	140.3685***	-49.6436***	-54.2519***	0.4265	0.4265
	(0.6858)	(1.3018)	(0.4709)	(0.6039)	(0.6429)	(0.6429)
Province: Gauteng	32.9208***	72.4833***	-29.5123***	-29.2920***	-3.4085***	-3.4085***
	(0.4969)	(0.9550)	(0.3412)	(0.4331)	(0.4658)	(0.4658)
Province: Mpumalanga	-29.9999***	-39.7835***	-23.6955***	-26.2227***	53.6954***	53.6954***
	(0.6673)	(1.2903)	(0.4582)	(0.5885)	(0.6255)	(0.6255)
Province: Limpopo	-10.9779***	22.0496***	-42.2935***	-37.0521***	53.2714***	53.2714***
	(0.8573)	(1.5910)	(0.5887)	(0.7473)	(0.8037)	(0.8037)
Education: Incomplete primary	343.4908***	2094.4159	-312.0218***	-389.3066***	-31.4690***	-31.4690***
	(6.9642)	(2.21e+04)	(4.7820)	(5.8341)	(6.5285)	(6.5285)
Education: Incomplete secondary	341.4735***	2185.5209	-275.4726***	-287.3026***	-66.0009***	-66.0009***
	(6.9391)	(2.21e+04)	(4.7648)	(5.8070)	(6.5050)	(6.5049)
Education: Matric	373.8756***	2265.5332	-292.1427***	-315.1191***	-81.7329***	-81.7329***
	(6.9390)	(2.21e+04)	(4.7647)	(5.8069)	(6.5049)	(6.5049)
Education: Post-Matric	406.5215***	2319.1681	-282.5736***	-292.8042***	-123.9480***	-123.9480***
	(6.9371)	(2.21e+04)	(4.7634)	(5.8051)	(6.5031)	(6.5031)
Education: Other/unspecified	509.8279***	2457.5341	-282.1453***	-348.8427***	-227.6826***	-227.6826***
	(7.0874)	(2.21e+04)	(4.8666)	(5.9659)	(6.6440)	(6.6440)
Marital status: Married/live together	-16.6619***	-23.7807***	66.5792***	71.5001***	-49.9173***	-49.9173***
	(0.4197)	(0.7401)	(0.2882)	(0.3648)	(0.3935)	(0.3935)
Marital status: Widowed/divorced	8.8084***	7.4937***	15.0070***	15.3588***	-23.8153***	-23.8153***
	(0.6001)	(1.0763)	(0.4120)	(0.5168)	(0.5625)	(0.5625)
Labour market status: Unemployed	-51.0898***	-161.6577***	207.8821***	227.5868***	-156.7923***	-156.7923***
	(0.7211)	(1.8105)	(0.4951)	(0.6096)	(0.6760)	(0.6760)
Labour market status: Employed	258.5993***	546.5380***	-68.7502***	-73.6034***	-189.8491***	-189.8491***
	(0.3146)	(0.6781)	(0.2161)	(0.2736)	(0.2950)	(0.2950)
Household size	5.9091***	10.8372***	-9.0210***	-15.0706***	3.1119***	3.1119***
	(0.1390)	(0.2568)	(0.0954)	(0.1216)	(0.1303)	(0.1303)
Number of children 0-17 years	11.2195***	2.8759***	16.7698***	20.2472***	-27.9893***	-27.9893***
	(0.1669)	(0.2912)	(0.1146)	(0.1447)	(0.1564)	(0.1564)
Constant	-549.3163***	-3.09e+03	394.6971***	378.8024***	1594.6192***	1594.6192***
	(7.0181)	(2.21e+04)	(4.8191)	(5.8791)	(6.5791)	(6.5791)
Weighted sample size	3 020 763	3 020 763	3 020 763	3 020 763	3 020 763	3 020 763
R^2 or Pseudo R^2	0.4090	0.0745	0.3400	0.0383	0.4710	0.0455

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A14: OLS and Tobit regressions on SNA production, non-SNA production and non-productive time for the White population, 2010

	SNA production		Non-SNA production		Non-productive	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	1.5753***	2.8648***	7.7335***	9.4841***	-9.3088***	-9.3088***
	(0.0354)	(0.0757)	(0.0236)	(0.0294)	(0.0350)	(0.0350)
Age squared	-0.0147***	-0.0182***	-0.0745***	-0.0917***	0.0892***	0.0892***
	(0.0004)	(0.0008)	(0.0002)	(0.0003)	(0.0004)	(0.0004)
Gender: Male	53.0086***	82.0409***	-81.6834***	-108.2408***	28.6749***	28.6749***
	(0.2069)	(0.4100)	(0.1379)	(0.1736)	(0.2046)	(0.2046)
Province: Western Cape	7.5694***	33.7548***	13.6798***	15.3021***	-21.2492***	-21.2492***
	(0.4123)	(0.8322)	(0.2748)	(0.3442)	(0.4076)	(0.4076)
Province: Northern Cape	18.7991***	65.0230***	0.1549	-7.4077***	-18.9540***	-18.9540***
	(0.7632)	(1.5067)	(0.5087)	(0.6449)	(0.7546)	(0.7546)
Province: Free State	-22.6512***	-5.3056***	3.1500***	13.8933***	19.5012***	19.5012***
	(0.5433)	(1.0938)	(0.3621)	(0.4495)	(0.5371)	(0.5371)
Province: KwaZulu-Natal	44.2824***	98.6964***	-37.3260***	-54.5131***	-6.9564***	-6.9564***
	(0.4560)	(0.9058)	(0.3039)	(0.3847)	(0.4508)	(0.4508)
Province: North West	13.2651***	64.8605***	-21.9894***	-39.9410***	8.7243***	8.7243***
	(0.5874)	(1.1412)	(0.3915)	(0.4980)	(0.5808)	(0.5808)
Province: Gauteng	-21.7224***	-38.6187***	0.7699***	-0.4904	20.9525***	20.9525***
	(0.3817)	(0.7818)	(0.2544)	(0.3184)	(0.3774)	(0.3774)
Province: Mpumalanga	41.6715***	93.1285***	0.1366	-1.1759**	-41.8082***	-41.8082***
	(0.5516)	(1.0692)	(0.3676)	(0.4597)	(0.5453)	(0.5453)
Province: Limpopo	-34.9508***	-18.2279***	2.3678***	-0.5902	32.5830***	32.5830***
	(0.8617)	(1.6158)	(0.5743)	(0.7187)	(0.8519)	(0.8519)
Education: Incomplete primary	46.5967***	-265.0889***	104.7986***	1006.1027	-151.3953***	-151.3953***
	(4.4523)	(7.4176)	(2.9675)	(1.76e+04)	(4.4017)	(4.4017)
Education: Incomplete secondary	30.8949***	-347.7006***	150.8147***	1078.5806	-181.7095***	-181.7095***
	(4.4221)	(7.3318)	(2.9474)	(1.76e+04)	(4.3719)	(4.3719)
Education: Matric	10.7378**	-377.6119***	144.4648***	1072.8382	-155.2026***	-155.2026***
	(4.4227)	(7.3356)	(2.9478)	(1.76e+04)	(4.3725)	(4.3725)
Education: Post-Matric	16.9999***	-367.9662***	146.5122***	1074.6139	-163.5121***	-163.5121***
	(4.4256)	(7.3404)	(2.9497)	(1.76e+04)	(4.3753)	(4.3753)
Education: Other/unspecified	121.5862***	-245.2827***	32.1062***	846.2993	-153.6923***	-153.6923***
	(4.5260)	(7.5191)	(3.0167)	(1.76e+04)	(4.4746)	(4.4746)
Marital status: Married/live together	3.9523***	-4.8252***	52.8784***	61.4021***	-56.8307***	-56.8307***
	(0.3786)	(0.7057)	(0.2524)	(0.3169)	(0.3743)	(0.3743)
Marital status: Widowed/divorced	20.5759***	62.4342***	-13.3922***	-11.4819***	-7.1836***	-7.1836***
	(0.4881)	(0.9401)	(0.3254)	(0.4053)	(0.4826)	(0.4826)
Labour market status: Unemployed	9.1953***	-3.4657*	115.3623***	132.8369***	-124.5576***	-124.5576***
	(0.7320)	(1.9795)	(0.4879)	(0.5933)	(0.7237)	(0.7237)
Labour market status: Employed	388.0729***	757.4941***	-112.2004***	-130.5083***	-275.8724***	-275.8724***
	(0.2687)	(0.6361)	(0.1791)	(0.2225)	(0.2656)	(0.2656)
Household size	-2.2606***	-7.0167***	-14.1427***	-19.1192***	16.4032***	16.4032***
	(0.1081)	(0.2073)	(0.0721)	(0.0905)	(0.1069)	(0.1069)
Number of children 0-17 years	3.1328***	10.0189***	16.2397***	20.6926***	-19.3725***	-19.3725***
	(0.1504)	(0.2759)	(0.1002)	(0.1250)	(0.1487)	(0.1487)
Constant	-61.4652***	-151.5173***	-61.8997***	-1.02e+03	1563.3649***	1563.3649***
	(4.5464)	(7.6347)	(3.0303)	(1.76e+04)	(4.4948)	(4.4948)
Weighted sample size	4 047 774	4 047 774	4 047 774	4 047 774	4 047 774	4 047 774
R^2 or Pseudo R^2	0.5060	0.0884	0.3050	0.0346	0.4530	0.0430

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A15: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the male population, 2000

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	6.6329***	17.1817***	5.9104***	7.1986***	-0.4569***	-0.6600***	0.5613***	0.5613***
	(0.0172)	(0.0419)	(0.0124)	(0.0144)	(0.0193)	(0.0200)	(0.0151)	(0.0151)
Age squared	-0.0745***	-0.1901***	-0.0606***	-0.0753***	0.0039***	0.0049***	0.0261***	0.0261***
	(0.0002)	(0.0005)	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Race: Coloured	21.1616***	17.2905***	-6.1026***	-16.7099***	-8.1040***	-3.9871***	-17.6101***	-17.6101***
	(0.3092)	(0.7185)	(0.2217)	(0.2568)	(0.3466)	(0.3583)	(0.2702)	(0.2702)
Race: Indian/Asian	1.4415***	-34.5430***	-44.8489***	-56.3363***	32.1915***	34.9936***	23.1882***	23.1882***
	(0.2347)	(0.5486)	(0.1683)	(0.1946)	(0.2631)	(0.2723)	(0.2051)	(0.2051)
Race: White	13.6890***	10.5941***	-23.3910***	-33.7174***	19.6342***	22.2418***	-25.6476***	-25.6476***
	(0.1848)	(0.4157)	(0.1325)	(0.1539)	(0.2071)	(0.2143)	(0.1615)	(0.1615)
Province: Western Cape	16.0181***	-55.5029***	20.3751***	20.1508***	4.3374***	3.5849***	-19.5984***	-19.5984***
	(0.2421)	(0.5587)	(0.1735)	(0.1999)	(0.2713)	(0.2810)	(0.2115)	(0.2115)
Province: Northern Cape	48.6123***	0.7733	9.8976***	11.9283***	-18.7570***	-20.8084***	-35.7434***	-35.7434***
	(0.3937)	(0.9149)	(0.2823)	(0.3264)	(0.4413)	(0.4576)	(0.3441)	(0.3441)
Province: Free State	19.0219***	-58.5237***	-19.5137***	-19.2930***	60.8212***	63.6391***	-39.8037***	-39.8037***
	(0.2393)	(0.5583)	(0.1716)	(0.1973)	(0.2682)	(0.2775)	(0.2091)	(0.2091)
Province: KwaZulu-Natal	20.1412***	-30.6218***	4.1964***	9.6488***	-31.9282***	-34.0997***	19.5543***	19.5543***
	(0.1810)	(0.4152)	(0.1297)	(0.1489)	(0.2028)	(0.2103)	(0.1581)	(0.1581)
Province: North West	-4.3660***	-106.3856***	12.5182***	14.2528***	-1.1523***	-0.4637*	-6.6908***	-6.6908***
	(0.2207)	(0.5167)	(0.1582)	(0.1816)	(0.2473)	(0.2563)	(0.1928)	(0.1928)
Province: Gauteng	5.3922***	-99.1412***	-7.1285***	-11.4551***	12.9342***	13.0977***	-1.2065***	-1.2065***
	(0.1816)	(0.4196)	(0.1302)	(0.1501)	(0.2036)	(0.2109)	(0.1587)	(0.1587)
Province: Mpumalanga	-3.0788***	-74.2345***	13.6094***	16.1683***	47.8095***	50.1290***	-51.8987***	-51.8987***
	(0.2405)	(0.5556)	(0.1725)	(0.1979)	(0.2696)	(0.2790)	(0.2102)	(0.2102)
Province: Limpopo	2.0075***	-51.8831***	-13.6321***	-20.3784***	-1.1941***	0.3516	-6.2621***	-6.2621***
	(0.2052)	(0.4777)	(0.1471)	(0.1705)	(0.2300)	(0.2380)	(0.1793)	(0.1793)

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Table A15: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	2.7261***	10.5210***	18.6866***	26.2324***	9.0663***	10.5842***	-36.5419***	-36.5419***
	(0.2401)	(0.5360)	(0.1721)	(0.1989)	(0.2691)	(0.2797)	(0.2098)	(0.2098)
Education: Incomplete secondary	-9.1309***	-45.1731***	21.2998***	31.0973***	32.4356***	35.3883***	-78.0388***	-78.0388***
	(0.2365)	(0.5263)	(0.1696)	(0.1957)	(0.2651)	(0.2754)	(0.2067)	(0.2067)
Education: Matric	11.0416***	3.5584***	14.0405***	22.3214***	85.3048***	90.2316***	-105.5583***	-105.5583***
	(0.2841)	(0.6284)	(0.2037)	(0.2345)	(0.3184)	(0.3304)	(0.2483)	(0.2483)
Education: Post-Matric	30.9036***	37.3432***	27.6189***	43.5785***	62.1625***	69.1548***	-136.4833***	-136.4833***
	(0.2836)	(0.6161)	(0.2033)	(0.2339)	(0.3178)	(0.3297)	(0.2478)	(0.2478)
Education: Other/unspecified	36.0709***	42.1258***	16.9421***	35.3523***	58.5784***	62.7559***	-84.7265***	-84.7265***
	(0.8459)	(2.0342)	(0.6065)	(0.6944)	(0.9482)	(0.9801)	(0.7393)	(0.7393)
Marital status: Married/live together	19.5092***	44.4891***	-8.6282***	-10.0506***	-0.5682***	1.2557***	-5.0692***	-5.0692***
	(0.1803)	(0.3839)	(0.1292)	(0.1477)	(0.2021)	(0.2096)	(0.1575)	(0.1575)
Marital status: Widowed/divorced	-48.3604***	-99.1001***	11.6227***	12.3093***	-6.4428***	-3.5601***	30.5940***	30.5940***
	(0.3214)	(0.7292)	(0.2304)	(0.2632)	(0.3602)	(0.3736)	(0.2809)	(0.2809)
Labour market status: Unemployed	-48.1452***	-143.3353***	78.1115***	84.8874***	62.9966***	63.6627***	17.5419***	17.5419***
	(0.2254)	(0.6732)	(0.1616)	(0.1848)	(0.2526)	(0.2614)	(0.1970)	(0.1970)
Labour market status: Employed	172.4840***	421.5104***	12.2046***	21.3888***	-60.0250***	-62.5404***	-47.1483***	-47.1483***
	(0.1335)	(0.3335)	(0.0957)	(0.1103)	(0.1496)	(0.1549)	(0.1166)	(0.1166)
Household size	-15.1377***	-24.7475***	-8.0125***	-9.2728***	13.9003***	15.1733***	1.4608***	1.4608***
	(0.0475)	(0.1079)	(0.0341)	(0.0390)	(0.0533)	(0.0553)	(0.0416)	(0.0416)
Number of children 0-17 years	21.3416***	30.9934***	1.8398***	0.9233***	-12.8323***	-12.4759***	-10.8589***	-10.8589***
	(0.0658)	(0.1378)	(0.0472)	(0.0540)	(0.0738)	(0.0765)	(0.0575)	(0.0575)
Constant	-24.5201***	-460.8506***	30.5473***	-9.9203***	281.7673***	275.2585***	779.7521***	779.7521***
	(0.4265)	(1.0014)	(0.3058)	(0.3540)	(0.4780)	(0.4959)	(0.3727)	(0.3727)
Weighted sample size	11 985 715	11 985 715	11 985 715	11 985 715	11 985 715	11 985 715	11 985 715	11 985 715
R^2 or Pseudo R^2	0.3590	0.0674	0.1090	0.0112	0.0730	0.0059	0.1820	0.0153

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A16: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the male population, 2010

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	1.7291***	4.6992***	6.6221***	7.7220***	0.4154***	0.2142***	3.8506***	3.8563***
	(0.0130)	(0.0299)	(0.0099)	(0.0112)	(0.0148)	(0.0156)	(0.0122)	(0.0122)
Age squared	-0.0187***	-0.0419***	-0.0685***	-0.0817***	-0.0098***	-0.0085***	-0.0140***	-0.0141***
	(0.0002)	(0.0004)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Race: Coloured	-17.3897***	-63.8722***	-28.6772***	-36.5982***	42.2018***	46.0161***	-2.9270***	-2.9073***
	(0.1644)	(0.3531)	(0.1249)	(0.1410)	(0.1875)	(0.1966)	(0.1548)	(0.1548)
Race: Indian/Asian	0.2475	-42.2894***	-29.5561***	-39.8065***	30.4144***	35.0292***	-0.6297***	-0.6351***
	(0.2363)	(0.4918)	(0.1795)	(0.2031)	(0.2695)	(0.2822)	(0.2225)	(0.2225)
Race: White	8.0170***	-16.8510***	-20.6898***	-25.5049***	23.9547***	26.7558***	-22.1848***	-22.2164***
	(0.1431)	(0.2972)	(0.1087)	(0.1223)	(0.1632)	(0.1711)	(0.1347)	(0.1347)
Province: Western Cape	-17.0700***	-89.0256***	14.8873***	13.4783***	42.5013***	41.7537***	-36.8902***	-36.9380***
	(0.1773)	(0.3712)	(0.1347)	(0.1511)	(0.2021)	(0.2123)	(0.1669)	(0.1669)
Province: Northern Cape	1.8685***	-62.2139***	-22.5705***	-29.8501***	11.9378***	10.9529***	-15.1440***	-15.1483***
	(0.2758)	(0.5985)	(0.2095)	(0.2374)	(0.3144)	(0.3303)	(0.2596)	(0.2596)
Province: Free State	-17.5446***	-99.7828***	-18.6260***	-21.3804***	36.9187***	37.0724***	-12.3037***	-12.3003***
	(0.1929)	(0.4140)	(0.1466)	(0.1643)	(0.2200)	(0.2312)	(0.1816)	(0.1816)
Province: KwaZulu-Natal	6.9908***	-29.7446***	-4.5116***	-4.0548***	-13.1228***	-13.9191***	-23.8112***	-23.8074***
	(0.1362)	(0.2826)	(0.1034)	(0.1157)	(0.1552)	(0.1631)	(0.1282)	(0.1282)
Province: North West	-29.9968***	-130.6404***	-24.1818***	-32.5290***	68.2287***	68.6760***	-14.6858***	-14.6809***
	(0.1826)	(0.3957)	(0.1387)	(0.1564)	(0.2082)	(0.2188)	(0.1719)	(0.1719)
Province: Gauteng	-32.3263***	-134.4713***	-4.1155***	-7.7387***	48.8762***	50.7358***	-24.5779***	-24.5626***
	(0.1326)	(0.2805)	(0.1008)	(0.1129)	(0.1512)	(0.1588)	(0.1248)	(0.1249)
Province: Mpumalanga	-4.9944***	-71.6062***	-0.4365***	-0.5035***	21.6701***	24.3895***	-42.5905***	-42.5825***
	(0.1754)	(0.3700)	(0.1333)	(0.1490)	(0.2000)	(0.2099)	(0.1651)	(0.1651)
Province: Limpopo	-27.8979***	-105.8853***	-14.8816***	-18.2081***	84.8433***	85.7308***	-19.2304***	-19.2251***
	(0.1581)	(0.3419)	(0.1201)	(0.1349)	(0.1803)	(0.1893)	(0.1489)	(0.1489)

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Table A16: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	-20.5711***	-45.2259***	3.9641***	4.9546***	55.6048***	62.8460***	-58.9174***	-58.8951***
	(0.2235)	(0.4651)	(0.1698)	(0.1924)	(0.2548)	(0.2695)	(0.2104)	(0.2104)
Education: Incomplete secondary	-24.5996***	-63.4756***	29.3387***	37.7208***	69.0547***	77.3410***	-93.8243***	-93.8137***
	(0.2164)	(0.4479)	(0.1644)	(0.1862)	(0.2467)	(0.2610)	(0.2037)	(0.2037)
Education: Matric	-17.9431***	-56.5338***	34.3481***	42.7702***	102.6167***	113.7120***	-113.8873***	-113.8735***
	(0.2309)	(0.4762)	(0.1754)	(0.1982)	(0.2633)	(0.2783)	(0.2173)	(0.2174)
Education: Post-Matric	-41.5514***	-82.8595***	16.6999***	24.3998***	124.7096***	138.0756***	-118.7464***	-118.7289***
	(0.2541)	(0.5156)	(0.1930)	(0.2177)	(0.2897)	(0.3057)	(0.2392)	(0.2392)
Education: Other/unspecified	23.1069***	13.0332***	46.4387***	56.4480***	68.8398***	79.6194***	-149.2793***	-150.3022***
	(0.6197)	(1.2143)	(0.4707)	(0.5259)	(0.7065)	(0.7422)	(0.5833)	(0.5838)
Marital status: Married/live together	18.7754***	34.4923***	-12.4371***	-14.3679***	-9.3836***	-6.4594***	-17.0960***	-17.0754***
	(0.1242)	(0.2445)	(0.0943)	(0.1053)	(0.1416)	(0.1491)	(0.1169)	(0.1169)
Marital status: Widowed/divorced	-2.5922***	-5.1796***	-9.4454***	-8.5416***	0.5763**	2.4312***	-1.4119***	-1.4115***
	(0.2221)	(0.4667)	(0.1687)	(0.1889)	(0.2532)	(0.2666)	(0.2090)	(0.2091)
Labour market status: Unemployed	-7.1282***	-43.2025***	55.9559***	60.4556***	31.2615***	32.3480***	-19.9835***	-20.0037***
	(0.1616)	(0.4303)	(0.1228)	(0.1368)	(0.1843)	(0.1928)	(0.1521)	(0.1521)
Labour market status: Employed	333.2915***	612.7248***	-16.8233***	-12.1713***	-155.2242***	-163.2465***	-108.8357***	-108.8638***
	(0.1054)	(0.2452)	(0.0801)	(0.0896)	(0.1202)	(0.1263)	(0.0992)	(0.0992)
Household size	2.5030***	9.8907***	-13.6312***	-14.9643***	11.5622***	12.5260***	-2.5138***	-2.5112***
	(0.0331)	(0.0693)	(0.0252)	(0.0281)	(0.0378)	(0.0398)	(0.0312)	(0.0312)
Number of children 0-17 years	-5.2597***	-8.3237***	2.6919***	2.1191***	-0.6342***	-0.1010*	2.3248***	2.2987***
	(0.0490)	(0.0971)	(0.0372)	(0.0416)	(0.0558)	(0.0587)	(0.0461)	(0.0461)
Constant	21.4256***	-277.6763***	61.0335***	33.3405***	223.0166***	211.4712***	818.9011***	818.7926***
	(0.3355)	(0.7269)	(0.2548)	(0.2882)	(0.3825)	(0.4031)	(0.3158)	(0.3158)
Weighted sample size	19 245 055	19 245 055	19 245 055	19 245 055	19 245 055	19 245 055	19 245 055	19 245 055
R^2 or Pseudo R^2	0.5120	0.0893	0.1070	0.0105	0.1740	0.0147	0.1790	0.0150

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A17: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the female population, 2000

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	4.2862***	19.4619***	9.9212***	11.3163***	-1.5142***	-1.7653***	-1.2740***	-1.2740***
	(0.0116)	(0.0460)	(0.0134)	(0.0145)	(0.0148)	(0.0156)	(0.0124)	(0.0124)
Age squared	-0.0465***	-0.1883***	-0.1064***	-0.1231***	0.0187***	0.0208***	0.0416***	0.0416***
	(0.0001)	(0.0005)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Race: Coloured	24.5266***	58.7491***	-84.1304***	-92.5003***	38.4874***	42.8408***	-9.0465***	-9.0465***
	(0.2306)	(0.7948)	(0.2658)	(0.2827)	(0.2936)	(0.3075)	(0.2463)	(0.2463)
Race: Indian/Asian	18.2263***	29.3817***	-54.6245***	-57.9488***	48.0122***	50.5002***	-16.3101***	-16.3101***
	(0.1616)	(0.5693)	(0.1862)	(0.1972)	(0.2057)	(0.2157)	(0.1726)	(0.1726)
Race: White	14.4623***	50.9850***	-45.3331***	-54.5018***	37.0334***	40.4456***	-39.0096***	-39.0096***
	(0.1403)	(0.4553)	(0.1617)	(0.1724)	(0.1786)	(0.1870)	(0.1498)	(0.1498)
Province: Western Cape	1.4740***	-20.1279***	-21.9700***	-28.4596***	40.8498***	43.3906***	0.2617	0.2617
	(0.1707)	(0.5976)	(0.1967)	(0.2084)	(0.2173)	(0.2280)	(0.1823)	(0.1823)
Province: Northern Cape	15.1194***	30.6448***	6.6922***	3.7395***	-5.6507***	-2.2156***	-0.0564	-0.0564
	(0.2842)	(1.0248)	(0.3275)	(0.3469)	(0.3617)	(0.3792)	(0.3035)	(0.3035)
Province: Free State	-4.3903***	-45.0054***	-49.9696***	-52.6962***	77.3514***	82.4361***	-17.9440***	-17.9440***
	(0.1738)	(0.6306)	(0.2002)	(0.2117)	(0.2212)	(0.2320)	(0.1855)	(0.1855)
Province: KwaZulu-Natal	6.9054***	7.1680***	8.0670***	6.8940***	-36.8952***	-36.9666***	26.6305***	26.6305***
	(0.1273)	(0.4605)	(0.1467)	(0.1549)	(0.1620)	(0.1706)	(0.1359)	(0.1359)
Province: North West	-5.6304***	-46.6808***	-9.2392***	-10.0339***	28.7318***	30.5608***	9.9072***	9.9072***
	(0.1617)	(0.6104)	(0.1863)	(0.1966)	(0.2058)	(0.2164)	(0.1727)	(0.1727)
Province: Gauteng	2.0973***	-35.0835***	-21.0176***	-25.2038***	23.1023***	25.7337***	-11.9254***	-11.9254***
	(0.1318)	(0.4594)	(0.1519)	(0.1605)	(0.1678)	(0.1763)	(0.1408)	(0.1408)
Province: Mpumalanga	-5.9300***	1.1796**	-11.7829***	-14.4626***	78.1761***	84.0899***	-62.2526***	-62.2526***
	(0.1731)	(0.6014)	(0.1995)	(0.2109)	(0.2204)	(0.2312)	(0.1849)	(0.1849)
Province: Limpopo	6.8387***	17.6740***	-19.7002***	-22.5641***	-3.1617***	0.6490***	-15.6473***	-15.6473***
	(0.1451)	(0.5350)	(0.1672)	(0.1768)	(0.1847)	(0.1941)	(0.1549)	(0.1549)

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Table A17: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	11.8336***	17.1619***	-2.1959***	0.5326***	20.1918***	24.7974***	-47.1149***	-47.1149***
	(0.1517)	(0.5132)	(0.1748)	(0.1853)	(0.1931)	(0.2039)	(0.1620)	(0.1620)
Education: Incomplete secondary	7.2908***	-8.0401***	26.9139***	32.6315***	19.4855***	25.0964***	-79.5748***	-79.5748***
	(0.1469)	(0.4981)	(0.1692)	(0.1790)	(0.1869)	(0.1974)	(0.1568)	(0.1568)
Education: Matric	36.9786***	81.1952***	23.5543***	30.8416***	37.9853***	44.4136***	-81.5337***	-81.5337***
	(0.1856)	(0.6093)	(0.2139)	(0.2261)	(0.2363)	(0.2488)	(0.1982)	(0.1982)
Education: Post-Matric	57.2825***	103.6670***	3.2128***	11.1114***	48.7283***	57.5493***	-100.9092***	-100.9092***
	(0.1895)	(0.5990)	(0.2183)	(0.2306)	(0.2412)	(0.2538)	(0.2023)	(0.2023)
Education: Other/unspecified	38.3255***	91.7292***	-22.8033***	-23.6665***	44.5675***	48.9320***	-22.4246***	-22.4246***
	(0.5932)	(2.0330)	(0.6835)	(0.7330)	(0.7551)	(0.7938)	(0.6334)	(0.6334)
Marital status: Married/live together	5.4425***	31.5713***	29.1841***	30.7811***	7.2459***	9.5413***	-22.4988***	-22.4988***
	(0.1145)	(0.3702)	(0.1320)	(0.1390)	(0.1458)	(0.1533)	(0.1223)	(0.1223)
Marital status: Widowed/divorced	18.3876***	36.0885***	-18.5621***	-20.6561***	7.7285***	8.5844***	6.2369***	6.2369***
	(0.1576)	(0.4837)	(0.1816)	(0.1916)	(0.2006)	(0.2110)	(0.1683)	(0.1683)
Labour market status: Unemployed	-21.9968***	-46.7274***	81.3724***	81.7601***	25.9927***	26.2639***	-4.6785***	-4.6785***
	(0.1513)	(0.6779)	(0.1744)	(0.1835)	(0.1926)	(0.2020)	(0.1616)	(0.1616)
Labour market status: Employed	164.8163***	515.9550***	-24.0026***	-23.5769***	-51.6144***	-53.5917***	-45.5082***	-45.5082***
	(0.0915)	(0.3603)	(0.1054)	(0.1113)	(0.1164)	(0.1223)	(0.0977)	(0.0977)
Household size	-3.2658***	-13.2435***	-13.5354***	-14.5382***	8.6534***	9.4233***	-3.3936***	-3.3936***
	(0.0341)	(0.1171)	(0.0393)	(0.0415)	(0.0434)	(0.0456)	(0.0364)	(0.0364)
Number of children 0-17 years	-5.2984***	-4.6911***	34.2228***	33.7298***	-11.8664***	-12.1822***	-0.9331***	-0.9331***
	(0.0413)	(0.1334)	(0.0476)	(0.0503)	(0.0526)	(0.0554)	(0.0441)	(0.0441)
Constant	-62.9887***	-850.7549***	106.7834***	81.6348***	245.9923***	236.0114***	830.4900***	830.4900***
	(0.2902)	(1.1326)	(0.3344)	(0.3563)	(0.3694)	(0.3888)	(0.3099)	(0.3099)
Weighted sample size	13 618 863	13 618 863	13 618 863	13 618 863	13 618 863	13 618 863	13 618 863	13 618 863
R^2 or Pseudo R^2	0.3440	0.0934	0.2540	0.0236	0.0870	0.0072	0.1850	0.0158

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A18: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the female population, 2010

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	1.4557***	7.5204***	12.1272***	13.3868***	-2.0319***	-2.2210***	-0.3366***	-0.3366***
	(0.0092)	(0.0285)	(0.0108)	(0.0115)	(0.0116)	(0.0124)	(0.0103)	(0.0103)
Age squared	-0.0129***	-0.0622***	-0.1345***	-0.1495***	0.0232***	0.0253***	0.0286***	0.0286***
	(0.0001)	(0.0003)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Race: Coloured	7.4043***	-3.9948***	-41.0252***	-45.2827***	35.2754***	39.0570***	-14.5117***	-14.5117***
	(0.1312)	(0.3730)	(0.1532)	(0.1606)	(0.1654)	(0.1760)	(0.1462)	(0.1462)
Race: Indian/Asian	4.2852***	-39.0315***	-49.8716***	-59.2777***	29.5676***	33.6052***	-2.4085***	-2.4085***
	(0.1885)	(0.5358)	(0.2200)	(0.2324)	(0.2375)	(0.2527)	(0.2099)	(0.2099)
Race: White	2.8056***	-2.8522***	-58.1432***	-64.9563***	41.3205***	43.8461***	-15.6950***	-15.6950***
	(0.1134)	(0.3152)	(0.1323)	(0.1395)	(0.1428)	(0.1520)	(0.1262)	(0.1262)
Province: Western Cape	-9.4285***	-27.2484***	-20.3226***	-21.3706***	74.4260***	79.4967***	-31.3514***	-31.3514***
	(0.1380)	(0.3952)	(0.1611)	(0.1686)	(0.1739)	(0.1854)	(0.1537)	(0.1537)
Province: Northern Cape	1.1784***	-26.4518***	-37.4014***	-39.2693***	28.5336***	33.5279***	-8.4453***	-8.4453***
	(0.2168)	(0.6626)	(0.2531)	(0.2656)	(0.2732)	(0.2910)	(0.2415)	(0.2415)
Province: Free State	-10.0367***	-50.8044***	-38.3043***	-40.7174***	41.8564***	47.3030***	-2.2783***	-2.2783***
	(0.1447)	(0.4460)	(0.1689)	(0.1768)	(0.1823)	(0.1945)	(0.1611)	(0.1611)
Province: KwaZulu-Natal	28.6274***	75.2689***	-25.3815***	-26.9025***	3.5954***	6.0623***	-25.5639***	-25.5639***
	(0.1045)	(0.3031)	(0.1220)	(0.1276)	(0.1317)	(0.1410)	(0.1164)	(0.1164)
Province: North West	-11.3292***	-51.5375***	-49.5702***	-53.0447***	66.5700***	70.0886***	-4.2339***	-4.2339***
	(0.1434)	(0.4421)	(0.1674)	(0.1755)	(0.1807)	(0.1931)	(0.1597)	(0.1597)
Province: Gauteng	-7.5434***	-45.6859***	-42.8162***	-45.8106***	69.1065***	75.8870***	-27.4708***	-27.4708***
	(0.1033)	(0.3078)	(0.1206)	(0.1262)	(0.1302)	(0.1391)	(0.1151)	(0.1151)
Province: Mpumalanga	5.5350***	7.3144***	-23.8091***	-25.4480***	52.1598***	60.3507***	-53.3372***	-53.3372***
	(0.1366)	(0.4049)	(0.1595)	(0.1669)	(0.1722)	(0.1835)	(0.1522)	(0.1522)
Province: Limpopo	-0.0942	10.7653***	-28.7416***	-29.8043***	77.4486***	82.4271***	-31.7770***	-31.7770***
	(0.1208)	(0.3605)	(0.1410)	(0.1475)	(0.1522)	(0.1626)	(0.1345)	(0.1345)

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Table A18: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	-9.8572***	-43.7168***	-10.0604***	-9.8513***	46.2910***	52.8224***	-45.1918***	-45.1918***
	(0.1522)	(0.4243)	(0.1777)	(0.1867)	(0.1918)	(0.2057)	(0.1695)	(0.1695)
Education: Incomplete secondary	-10.6442***	-61.2145***	35.0085***	39.0684***	34.5124***	41.2173***	-61.9379***	-61.9379***
	(0.1466)	(0.4068)	(0.1712)	(0.1797)	(0.1848)	(0.1982)	(0.1633)	(0.1633)
Education: Matric	2.2377***	-29.0197***	47.5280***	52.5091***	51.3663***	60.1232***	-70.7797***	-70.7797***
	(0.1609)	(0.4458)	(0.1878)	(0.1970)	(0.2028)	(0.2173)	(0.1792)	(0.1792)
Education: Post-Matric	-11.2329***	-51.0369***	32.5412***	38.4504***	68.2591***	77.5459***	-78.8144***	-78.8144***
	(0.1793)	(0.4820)	(0.2093)	(0.2194)	(0.2260)	(0.2419)	(0.1997)	(0.1997)
Education: Other/unspecified	11.2090***	-14.7261***	42.1217***	43.9078***	28.2305***	25.3289***	-61.1528***	-61.1528***
	(0.5832)	(1.7159)	(0.6808)	(0.7150)	(0.7349)	(0.7905)	(0.6495)	(0.6495)
Marital status: Married/live together	-8.4741***	-11.1042***	42.8053***	43.6263***	-11.6037***	-11.5559***	-14.2963***	-14.2963***
	(0.0839)	(0.2294)	(0.0980)	(0.1023)	(0.1058)	(0.1129)	(0.0935)	(0.0935)
Marital status: Widowed/divorced	-6.5442***	2.6178***	8.2936***	8.5016***	-0.8440***	-1.3786***	3.5720***	3.5720***
	(0.1248)	(0.3339)	(0.1456)	(0.1523)	(0.1572)	(0.1680)	(0.1389)	(0.1389)
Labour market status: Unemployed	-2.7023***	-21.8770***	20.1603***	20.1925***	28.0370***	30.3489***	0.3000**	0.3000**
	(0.1217)	(0.4354)	(0.1420)	(0.1482)	(0.1533)	(0.1628)	(0.1355)	(0.1355)
Labour market status: Employed	279.8632***	580.7526***	-88.4562***	-89.7160***	-87.2927***	-92.7235***	-84.3951***	-84.3951***
	(0.0784)	(0.2377)	(0.0915)	(0.0957)	(0.0988)	(0.1056)	(0.0873)	(0.0873)
Household size	0.2443***	2.8138***	-15.2460***	-16.0702***	12.1943***	13.3331***	-2.5570***	-2.5570***
	(0.0267)	(0.0757)	(0.0312)	(0.0326)	(0.0337)	(0.0360)	(0.0298)	(0.0298)
Number of children 0-17 years	-1.5137***	-1.2482***	29.9934***	29.6733***	-11.8073***	-12.1977***	-5.5060***	-5.5060***
	(0.0329)	(0.0916)	(0.0384)	(0.0402)	(0.0415)	(0.0443)	(0.0366)	(0.0366)
Constant	-6.2424***	-462.2862***	99.2385***	76.5927***	195.5747***	178.9236***	853.2329***	853.2329***
	(0.2408)	(0.7251)	(0.2810)	(0.2960)	(0.3034)	(0.3246)	(0.2681)	(0.2681)
Weighted sample size	20 632 534	20 632 534	20 632 534	20 632 534	20 632 534	20 632 534	20 632 534	20 632 534
R^2 or Pseudo R^2	0.4890	0.0989	0.2460	0.0226	0.1220	0.0103	0.1690	0.0142

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A19: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the African population, 2000

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	5.1183***	17.8935***	8.6545***	10.2371***	-0.8482***	-1.1498***	-0.2978***	-0.2978***
	(0.0110)	(0.0352)	(0.0107)	(0.0119)	(0.0135)	(0.0142)	(0.0109)	(0.0109)
Age squared	-0.0522***	-0.1784***	-0.0967***	-0.1169***	0.0084***	0.0106***	0.0356***	0.0356***
	(0.0001)	(0.0004)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Gender: Male	40.7458***	155.5632***	-117.3046***	-127.7574***	61.9349***	63.9490***	4.3943***	4.3943***
	(0.0722)	(0.2237)	(0.0702)	(0.0764)	(0.0888)	(0.0933)	(0.0719)	(0.0719)
Province: Western Cape	24.9184***	-33.4978***	2.6007***	1.3232***	4.4219***	4.8266***	-0.4592**	-0.4592**
	(0.2195)	(0.6629)	(0.2135)	(0.2313)	(0.2700)	(0.2843)	(0.2187)	(0.2187)
Province: Northern Cape	24.4759***	-47.1717***	-12.9015***	-13.9978***	9.5746***	11.1406***	-10.7433***	-10.7433***
	(0.3759)	(1.1802)	(0.3657)	(0.3968)	(0.4624)	(0.4865)	(0.3745)	(0.3745)
Province: Free State	5.5463***	-72.0959***	-36.5012***	-38.8272***	80.0610***	84.9166***	-34.9908***	-34.9908***
	(0.1531)	(0.4655)	(0.1489)	(0.1619)	(0.1883)	(0.1978)	(0.1525)	(0.1525)
Province: KwaZulu-Natal	9.6467***	-32.4383***	8.8151***	9.7515***	-32.8807***	-34.0199***	22.5538***	22.5538***
	(0.1122)	(0.3344)	(0.1092)	(0.1185)	(0.1381)	(0.1455)	(0.1118)	(0.1118)
Province: North West	-9.6973***	-114.8999***	3.1242***	3.3191***	17.9693***	19.7060***	1.5355***	1.5355***
	(0.1380)	(0.4252)	(0.1342)	(0.1456)	(0.1697)	(0.1787)	(0.1375)	(0.1375)
Province: Gauteng	-1.7408***	-102.6217***	-17.0964***	-21.7511***	24.0403***	25.8721***	-0.6912***	-0.6912***
	(0.1193)	(0.3556)	(0.1161)	(0.1262)	(0.1468)	(0.1545)	(0.1189)	(0.1189)
Province: Mpumalanga	-1.3173***	-39.7377***	3.3936***	3.2519***	68.3351***	73.6491***	-65.8990***	-65.8990***
	(0.1505)	(0.4393)	(0.1464)	(0.1589)	(0.1852)	(0.1944)	(0.1500)	(0.1500)
Province: Limpopo	1.7426***	-40.1192***	-14.2692***	-19.3290***	0.6835***	3.6688***	-13.4795***	-13.4795***
	(0.1236)	(0.3715)	(0.1202)	(0.1311)	(0.1520)	(0.1598)	(0.1231)	(0.1231)
Education: Incomplete primary	14.3414***	30.8320***	-1.3294***	1.5474***	12.2629***	15.2419***	-36.7270***	-36.7270***
	(0.1386)	(0.3910)	(0.1349)	(0.1469)	(0.1705)	(0.1803)	(0.1381)	(0.1381)
Education: Incomplete secondary	6.8578***	-20.2960***	12.3037***	15.9364***	20.5262***	24.9061***	-71.2085***	-71.2085***
	(0.1371)	(0.3894)	(0.1334)	(0.1450)	(0.1687)	(0.1783)	(0.1366)	(0.1366)
Education: Matric	32.1902***	46.2009***	10.4556***	13.5218***	75.3506***	81.4000***	-89.7971***	-89.7971***
	(0.1830)	(0.5138)	(0.1780)	(0.1928)	(0.2251)	(0.2373)	(0.1823)	(0.1823)
Education: Post-Matric	45.5823***	68.3201***	-13.4906***	-10.8751***	65.0807***	74.4448***	-108.3248***	-108.3248***
	(0.1883)	(0.5044)	(0.1832)	(0.1984)	(0.2316)	(0.2439)	(0.1876)	(0.1876)

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Table A19: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Other/unspecified	18.0231***	1.6165	-41.9588***	-38.6803***	91.4566***	96.5644***	-17.1179***	-17.1179***
	(0.5910)	(1.9116)	(0.5750)	(0.6295)	(0.7271)	(0.7645)	(0.5889)	(0.5889)
Marital status: Married/live together	17.2438***	44.4039***	-4.2065***	-5.7058***	6.8628***	9.0627***	-12.7084***	-12.7084***
	(0.1116)	(0.3073)	(0.1086)	(0.1174)	(0.1373)	(0.1448)	(0.1112)	(0.1112)
Marital status: Widowed/divorced	-0.8182***	18.1422***	-23.7241***	-26.4564***	12.5038***	13.4608***	11.2656***	11.2656***
	(0.1660)	(0.4564)	(0.1615)	(0.1751)	(0.2043)	(0.2155)	(0.1654)	(0.1654)
Labour market status: Unemployed	-38.2056***	-108.4320***	69.8750***	71.3861***	44.9621***	46.0328***	14.5172***	14.5172***
	(0.1398)	(0.5232)	(0.1360)	(0.1471)	(0.1719)	(0.1806)	(0.1393)	(0.1393)
Labour market status: Employed	153.5105***	428.0960***	-8.4291***	-5.4106***	-45.9213***	-48.0830***	-47.3897***	-47.3897***
	(0.0863)	(0.2751)	(0.0840)	(0.0912)	(0.1062)	(0.1117)	(0.0860)	(0.0860)
Household size	-11.0976***	-23.2972***	-11.5488***	-12.7118***	13.1225***	14.2693***	-0.5291***	-0.5291***
	(0.0307)	(0.0890)	(0.0299)	(0.0324)	(0.0378)	(0.0398)	(0.0306)	(0.0306)
Number of children 0-17 years	3.8310***	9.5648***	22.8935***	21.9359***	-12.1318***	-12.1847***	-4.5416***	-4.5416***
	(0.0399)	(0.1090)	(0.0388)	(0.0421)	(0.0490)	(0.0517)	(0.0397)	(0.0397)
Constant	-54.9608***	-686.0055***	142.2147***	117.9405***	217.2071***	208.1669***	790.9031***	790.9031***
	(0.2694)	(0.8483)	(0.2620)	(0.2872)	(0.3314)	(0.3492)	(0.2684)	(0.2684)
Weighted sample size	19 457 575	19 457 575	19 457 575	19 457 575	19 457 575	19 457 575	19 457 575	19 457 575
R^2 or Pseudo R^2	0.3250	0.0774	0.2730	0.0259	0.0910	0.0075	0.1760	0.0148

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A20: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the African population, 2010

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	1.7494***	7.0192***	10.7140***	11.9821***	-0.9604***	-1.1651***	1.3889***	1.3889***
	(0.0087)	(0.0230)	(0.0087)	(0.0095)	(0.0106)	(0.0113)	(0.0091)	(0.0091)
Age squared	-0.0155***	-0.0581***	-0.1250***	-0.1412***	0.0080***	0.0097***	0.0162***	0.0162***
	(0.0001)	(0.0003)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Gender: Male	28.5791***	81.8620***	-109.0459***	-116.6325***	64.1592***	66.9109***	10.7053***	10.7053***
	(0.0544)	(0.1386)	(0.0546)	(0.0585)	(0.0664)	(0.0708)	(0.0570)	(0.0570)
Province: Western Cape	-27.8356***	-100.0667***	-5.0938***	-6.1588***	64.4381***	67.7575***	-11.6996***	-11.6996***
	(0.1587)	(0.3981)	(0.1593)	(0.1698)	(0.1938)	(0.2067)	(0.1662)	(0.1662)
Province: Northern Cape	4.2761***	-49.4096***	-42.4414***	-47.5585***	53.3570***	57.7023***	-40.1781***	-40.1781***
	(0.2320)	(0.6009)	(0.2329)	(0.2502)	(0.2833)	(0.3016)	(0.2430)	(0.2430)
Province: Free State	-11.3591***	-84.9728***	-33.7045***	-36.9900***	45.0242***	49.1466***	-11.5367***	-11.5367***
	(0.1241)	(0.3255)	(0.1246)	(0.1333)	(0.1516)	(0.1616)	(0.1300)	(0.1300)
Province: KwaZulu-Natal	17.9837***	15.0943***	-17.3633***	-17.6429***	-1.8126***	-0.2752**	-28.8839***	-28.8839***
	(0.0886)	(0.2187)	(0.0889)	(0.0950)	(0.1082)	(0.1156)	(0.0928)	(0.0928)
Province: North West	-20.4417***	-106.0168***	-42.1156***	-48.5283***	70.8966***	73.8748***	-8.4080***	-8.4080***
	(0.1191)	(0.3127)	(0.1196)	(0.1284)	(0.1454)	(0.1551)	(0.1247)	(0.1247)
Province: Gauteng	-14.7578***	-91.8090***	-32.5707***	-36.0397***	71.0457***	77.4274***	-37.4630***	-37.4630***
	(0.0896)	(0.2271)	(0.0899)	(0.0961)	(0.1094)	(0.1166)	(0.0938)	(0.0938)
Province: Mpumalanga	-0.6936***	-47.1316***	-18.3329***	-19.5390***	46.6023***	53.2849***	-53.2935***	-53.2935***
	(0.1139)	(0.2893)	(0.1143)	(0.1221)	(0.1390)	(0.1480)	(0.1192)	(0.1192)
Province: Limpopo	-12.8386***	-58.2809***	-24.4331***	-27.1988***	87.4656***	91.4139***	-31.8251***	-31.8251***
	(0.0997)	(0.2554)	(0.1001)	(0.1071)	(0.1218)	(0.1298)	(0.1044)	(0.1044)
Education: Incomplete primary	-15.1721***	-45.2279***	-14.6153***	-16.0098***	46.2827***	53.3223***	-36.3243***	-36.3243***
	(0.1344)	(0.3239)	(0.1349)	(0.1450)	(0.1641)	(0.1759)	(0.1407)	(0.1407)
Education: Incomplete secondary	-15.8982***	-62.3592***	18.3367***	22.1396***	44.0179***	51.4688***	-59.8154***	-59.8154***
	(0.1318)	(0.3163)	(0.1323)	(0.1420)	(0.1609)	(0.1725)	(0.1380)	(0.1380)
Education: Matric	-1.6864***	-39.0174***	30.9841***	34.4345***	60.8881***	70.1988***	-73.3504***	-73.3504***
	(0.1454)	(0.3481)	(0.1460)	(0.1564)	(0.1775)	(0.1902)	(0.1523)	(0.1523)
Education: Post-Matric	-38.4111***	-89.3567***	-0.9506***	0.6914***	107.1191***	119.9829***	-80.0705***	-80.0705***
	(0.1704)	(0.3944)	(0.1711)	(0.1830)	(0.2081)	(0.2224)	(0.1785)	(0.1785)

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Table A20: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Other/unspecified	7.9093***	-17.6786***	71.9023***	74.4660***	26.4428***	27.0424***	-105.9007***	-105.9007***
	(0.5242)	(1.2917)	(0.5262)	(0.5622)	(0.6401)	(0.6866)	(0.5490)	(0.5490)
Marital status: Married/live together	8.6479***	17.6868***	13.1966***	11.6838***	-11.7284***	-10.2395***	-14.5356***	-14.5356***
	(0.0773)	(0.1837)	(0.0776)	(0.0827)	(0.0944)	(0.1008)	(0.0810)	(0.0810)
Marital status: Widowed/divorced	-7.6250***	-4.6346***	5.3809***	6.2570***	0.0870	0.4643***	-1.7856***	-1.7856***
	(0.1272)	(0.3044)	(0.1277)	(0.1365)	(0.1553)	(0.1661)	(0.1332)	(0.1332)
Labour market status: Unemployed	-9.2010***	-42.6354***	31.2296***	32.5390***	33.9043***	35.7579***	-6.6639***	-6.6639***
	(0.1043)	(0.3209)	(0.1047)	(0.1115)	(0.1274)	(0.1351)	(0.1093)	(0.1093)
Labour market status: Employed	300.8544***	569.0929***	-61.5639***	-60.5435***	-111.9092***	-119.0387***	-97.1023***	-97.1023***
	(0.0714)	(0.1879)	(0.0716)	(0.0764)	(0.0871)	(0.0930)	(0.0747)	(0.0747)
Household size	1.7887***	8.3414***	-16.3664***	-17.4933***	13.9492***	15.2907***	-3.5279***	-3.5279***
	(0.0228)	(0.0563)	(0.0229)	(0.0244)	(0.0278)	(0.0297)	(0.0239)	(0.0239)
Number of children 0-17 years	-3.6390***	-6.9370***	19.2548***	18.7393***	-7.8476***	-7.8631***	-2.7883***	-2.7883***
	(0.0304)	(0.0732)	(0.0305)	(0.0326)	(0.0371)	(0.0396)	(0.0318)	(0.0318)
Constant	-12.1880***	-412.8863***	151.8613***	133.3902***	169.1611***	151.7059***	821.4538***	821.4538***
	(0.2159)	(0.5594)	(0.2167)	(0.2334)	(0.2636)	(0.2818)	(0.2261)	(0.2261)
Weighted sample size	31 089 630	31 089 630	31 089 630	31 089 630	31 089 630	31 089 630	31 089 630	31 089 630
R^2 or Pseudo R^2	0.5050	0.0936	0.2710	0.0254	0.1580	0.0134	0.1720	0.0144

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A21: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the Coloured population, 2000

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	-2.9687***	3.1892***	13.6034***	17.2009***	5.8252***	6.0821***	-0.1391**	-0.1391**
	(0.0796)	(0.2308)	(0.0695)	(0.0777)	(0.0743)	(0.0753)	(0.0663)	(0.0663)
Age squared	0.0274***	-0.0412***	-0.1553***	-0.1907***	-0.0618***	-0.0648***	0.0271***	0.0271***
	(0.0010)	(0.0028)	(0.0009)	(0.0010)	(0.0009)	(0.0009)	(0.0008)	(0.0008)
Gender: Male	31.0306***	71.9724***	-48.3825***	-56.5273***	50.9234***	51.8991***	-18.3014***	-18.3014***
	(0.3812)	(1.0177)	(0.3330)	(0.3723)	(0.3561)	(0.3607)	(0.3176)	(0.3176)
Province: Western Cape	146.0101***	126.2026***	-38.5267***	-50.4097***	42.1640***	44.2573***	-164.4914***	-164.4914***
	(2.4993)	(5.3633)	(2.1834)	(2.3945)	(2.3343)	(2.3626)	(2.0821)	(2.0821)
Province: Northern Cape	115.1727***	-957.9177	1.4106	-779.9666	-119.0284***	-117.6119***	-151.0115***	-151.0115***
	(4.9188)	(2.00e+04)	(4.2970)	(1.33e+04)	(4.5940)	(4.6489)	(4.0977)	(4.0977)
Province: Free State	183.4959***	46.8447***	-69.1362***	-58.1704***	-119.6557***	-115.9505***	-58.1027***	-58.1027***
	(5.3688)	(11.0341)	(4.6901)	(5.1221)	(5.0143)	(5.0744)	(4.4726)	(4.4726)
Province: KwaZulu-Natal	97.8944***	-20.7703***	30.8226***	38.1769***	-37.9243***	-37.1113***	-107.4035***	-107.4035***
	(2.3488)	(4.8069)	(2.0519)	(2.2440)	(2.1937)	(2.2201)	(1.9567)	(1.9567)
Province: North West	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
Province: Gauteng	63.3291***	-132.8639***	56.8586***	47.7793***	-36.1784***	-35.1480***	-174.0516***	-174.0516***
	(2.3828)	(4.9594)	(2.0816)	(2.2797)	(2.2255)	(2.2524)	(1.9851)	(1.9851)
Province: Mpumalanga	106.1793***	-57.1665***	38.6334***	37.7278***	54.6188***	56.0948***	-270.4825***	-270.4825***
	(3.6701)	(8.6410)	(3.2062)	(3.5403)	(3.4278)	(3.4689)	(3.0575)	(3.0574)
Province: Limpopo	-1.8520	-138.6669***	69.8788***	88.4198***	85.6423***	89.2258***	-138.1110***	-138.1110***
	(8.6357)	(18.1860)	(7.5440)	(8.2379)	(8.0655)	(8.1617)	(7.1942)	(7.1941)
Education: Incomplete primary	-24.5732***	-210.6581***	58.9179***	49.6545***	-151.4747***	-151.2315***	27.7716***	27.7716***
	(1.2490)	(4.5382)	(1.0911)	(1.2107)	(1.1665)	(1.1804)	(1.0405)	(1.0405)
Education: Incomplete secondary	-13.4720***	-77.3802***	64.9403***	68.3954***	-118.9774***	-119.8948***	-27.0387***	-27.0387***
	(1.1655)	(3.9325)	(1.0182)	(1.1238)	(1.0886)	(1.1016)	(0.9710)	(0.9710)
Education: Matric	25.5036***	35.5907***	94.5445***	107.3131***	-138.1183***	-138.3969***	-48.8951***	-48.8951***
	(1.2100)	(3.9922)	(1.0570)	(1.1651)	(1.1301)	(1.1436)	(1.0080)	(1.0080)
Education: Post-Matric	54.0221***	79.5493***	77.0984***	87.1421***	-146.9488***	-148.7924***	-29.8294***	-29.8294***
	(1.2620)	(4.0244)	(1.1025)	(1.2158)	(1.1787)	(1.1931)	(1.0513)	(1.0513)

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Table A21: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Other/unspecified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	(N/A)	(N/A)	(N/A)	(N/A)	(N/A	(N/A)	(N/A)	(N/A)
Marital status: Married/live together	69.1630***	141.4321***	28.3393***	22.2410***	-37.6051***	-40.8800***	3.9315***	3.9315***
	(0.6665)	(1.6476)	(0.5822)	(0.6399)	(0.6225)	(0.6309)	(0.5552)	(0.5552)
Marital status: Widowed/divorced	75.8189***	142.4550***	25.5291***	14.6557***	-13.7626***	-14.8769***	9.1867***	9.1867***
	(0.9441)	(2.3549)	(0.8248)	(0.9127)	(0.8818)	(0.8929)	(0.7865)	(0.7865)
Labour market status: Unemployed	17.5910***	163.7838***	134.4787***	143.9548***	18.8864***	18.2125***	-23.2502***	-23.2502***
	(0.7557)	(2.3710)	(0.6602)	(0.7242)	(0.7058)	(0.7144)	(0.6295)	(0.6295)
Labour market status: Employed	275.0286***	693.7819***	-62.5668***	-60.2506***	-74.2278***	-75.4421***	-52.4674***	-52.4674***
	(0.4606)	(1.5136)	(0.4024)	(0.4494)	(0.4302)	(0.4358)	(0.3837)	(0.3837)
Household size	4.8372***	16.9125***	-22.3671***	-22.0508***	10.6957***	10.7748***	9.4638***	9.4638***
	(0.2005)	(0.5174)	(0.1752)	(0.1941)	(0.1873)	(0.1895)	(0.1670)	(0.1670)
Number of children 0-17 years	-1.1878***	-9.4696***	38.9786***	38.8979***	-15.9384***	-15.1260***	-24.2478***	-24.2478***
	(0.2301)	(0.5659)	(0.2010)	(0.2212)	(0.2149)	(0.2177)	(0.1917)	(0.1917)
Constant	-85.4459***	-631.1757***	-79.3330***	-166.6358***	340.4296***	335.9038***	854.1688***	854.1688***
	(2.9883)	(7.4915)	(2.6106)	(2.8812)	(2.7910)	(2.8249)	(2.4895)	(2.4895)
Weighted sample size	768 888	768 888	768 888	768 888	768 888	768 888	768 888	768 888
R^2 or Pseudo R^2	0.5070	0.12090	0.4390	0.0512	0.1290	0.0109	0.2270	0.0202

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

N/A: the explanatory variable was dropped due to multicollinearity issues

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Table A22: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the Coloured population, 2010

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	0.5589***	7.3929***	12.1847***	14.2929***	1.1659***	1.1037***	-2.2646***	-2.2641***
	(0.0288)	(0.0867)	(0.0250)	(0.0284)	(0.0328)	(0.0339)	(0.0276)	(0.0276)
Age squared	-0.0096***	-0.0894***	-0.1316***	-0.1550***	-0.0172***	-0.0162***	0.0566***	0.0566***
	(0.0003)	(0.0011)	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0003)
Gender: Male	21.9510***	45.3650***	-92.9076***	-106.0117***	54.4129***	55.2052***	12.5031***	12.4956***
	(0.1705)	(0.4179)	(0.1481)	(0.1663)	(0.1943)	(0.2009)	(0.1636)	(0.1636)
Province: Western Cape	-14.1822***	-8.7201***	0.4114*	1.0961***	33.6300***	33.0935***	-12.9242***	-12.9320***
	(0.2709)	(0.6661)	(0.2353)	(0.2632)	(0.3087)	(0.3189)	(0.2599)	(0.2599)
Province: Northern Cape	-7.0019***	-5.0338***	-15.4644***	-17.9926***	-19.6260***	-21.5664***	30.4434***	30.4416***
	(0.3603)	(0.9248)	(0.3130)	(0.3518)	(0.4106)	(0.4245)	(0.3457)	(0.3458)
Province: Free State	-2.8299***	28.1636***	-1.7755***	6.9242***	22.9277***	23.2467***	-4.5982***	-4.5971***
	(0.7380)	(1.6842)	(0.6412)	(0.7099)	(0.8410)	(0.8695)	(0.7082)	(0.7083)
Province: KwaZulu-Natal	15.2576***	70.5125***	-1.5734***	-0.9218	-35.5172***	-37.3081***	-12.7448***	-12.7480***
	(0.6098)	(1.4293)	(0.5298)	(0.5901)	(0.6949)	(0.7190)	(0.5852)	(0.5852)
Province: North West	-41.4675***	-69.3206***	-18.8949***	-20.3128***	57.5208***	55.3248***	19.8254***	19.8228***
	(0.7583)	(1.8885)	(0.6588)	(0.7393)	(0.8641)	(0.8946)	(0.7276)	(0.7277)
Province: Gauteng	-44.5014***	-86.8866***	-17.6661***	-21.1374***	56.6324***	58.1932***	0.3835	0.3826
	(0.3789)	(0.9476)	(0.3292)	(0.3688)	(0.4318)	(0.4457)	(0.3636)	(0.3637)
Province: Mpumalanga	54.3324***	116.1354***	-11.3960***	-10.3080***	-36.2451***	-34.6275***	-26.8365***	-26.8357***
	(0.9345)	(2.0794)	(0.8119)	(0.9096)	(1.0650)	(1.0987)	(0.8968)	(0.8969)
Province: Limpopo	-33.1300***	-7.9766***	-23.4910***	-16.7371***	156.7996***	158.1292***	-53.1534***	-53.1501***
	(1.0291)	(2.2184)	(0.8941)	(0.9893)	(1.1727)	(1.2108)	(0.9875)	(0.9876)
Education: Incomplete primary	19.8741***	135.9215***	-19.0814***	-20.8400***	49.0987***	53.1864***	-88.5300***	-88.5240***
	(0.5514)	(1.7664)	(0.4790)	(0.5421)	(0.6283)	(0.6524)	(0.5291)	(0.5291)
Education: Incomplete secondary	21.4494***	135.3567***	8.7218***	15.8812***	57.9797***	63.5202***	-108.9242***	-108.9259***
	(0.5380)	(1.7162)	(0.4674)	(0.5273)	(0.6131)	(0.6368)	(0.5163)	(0.5164)
Education: Matric	18.4437***	123.4528***	5.0582***	13.7266***	106.6852***	113.2448***	-129.9492***	-129.9377***
	(0.5702)	(1.7583)	(0.4954)	(0.5574)	(0.6498)	(0.6748)	(0.5471)	(0.5472)
Education: Post-Matric	-8.8694***	103.2126***	-17.7405***	-11.1946***	131.1464***	139.8517***	-127.3653***	-127.3512***
	(0.6191)	(1.8226)	(0.5379)	(0.6036)	(0.7055)	(0.7319)	(0.5941)	(0.5941)

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Table A22: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Other/unspecified	21.4633***	94.7548***	-8.3766***	-0.2653	95.8966***	102.8131***	-54.9950***	-54.9875***
	(2.0079)	(5.8885)	(1.7445)	(1.9581)	(2.2883)	(2.3594)	(1.9268)	(1.9271)
Marital status: Married/live together	4.6154***	-2.2693***	12.3053***	10.9204***	-6.9035***	-8.5846***	-27.5858***	-27.6095***
	(0.2569)	(0.5911)	(0.2232)	(0.2475)	(0.2928)	(0.3030)	(0.2465)	(0.2465)
Marital status: Widowed/divorced	3.5935***	17.4127***	18.2372***	19.3396***	11.3382***	10.9674***	-40.3859***	-40.4035***
	(0.3849)	(0.9380)	(0.3344)	(0.3714)	(0.4386)	(0.4538)	(0.3693)	(0.3694)
Labour market status: Unemployed	-2.2436***	-16.7707***	27.8063***	35.3272***	39.2064***	40.4572***	-4.8459***	-4.8471***
	(0.3498)	(1.1775)	(0.3039)	(0.3380)	(0.3986)	(0.4110)	(0.3356)	(0.3357)
Labour market status: Employed	314.6419***	682.7324***	-54.7659***	-49.1613***	-138.9668***	-142.8038***	-82.7837***	-82.7933***
	(0.2125)	(0.6246)	(0.1846)	(0.2055)	(0.2422)	(0.2505)	(0.2039)	(0.2039)
Household size	-7.3232***	-13.3225***	-10.6678***	-13.0152***	15.7720***	16.8579***	-0.3451***	-0.3400***
	(0.0819)	(0.1991)	(0.0712)	(0.0794)	(0.0933)	(0.0965)	(0.0786)	(0.0786)
Number of children 0-17 years	2.4457***	-0.0234	24.3766***	24.5775***	-22.6655***	-23.0130***	3.7737***	3.7817***
	(0.1042)	(0.2424)	(0.0905)	(0.1005)	(0.1188)	(0.1229)	(0.1000)	(0.1000)
Constant	13.0017***	-630.2667***	44.6193***	0.7022	197.5604***	188.2529***	888.6694***	888.6447***
	(0.7817)	(2.3802)	(0.6791)	(0.7693)	(0.8908)	(0.9227)	(0.7501)	(0.7502)
Weighted sample size	3 626 613	3 626 613	3 626 613	3 626 613	3 626 613	3 626 613	3 626 613	3 626 613
R^2 or Pseudo R^2	0.5090	0.1083	0.2860	0.0294	0.1830	0.0154	0.1910	0.0162

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A23: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the White population, 2000

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	8.0906***	21.3253***	7.2389***	8.4761***	-4.9911***	-5.0404***	-2.5894***	-2.5894***
	(0.0384)	(0.0839)	(0.0298)	(0.0332)	(0.0391)	(0.0396)	(0.0288)	(0.0288)
Age squared	-0.0853***	-0.2254***	-0.0715***	-0.0819***	0.0529***	0.0531***	0.0449***	0.0449***
	(0.0004)	(0.0009)	(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0003)
Gender: Male	43.5718***	56.0144***	-88.5806***	-99.4741***	41.9768***	41.4305***	-3.1424***	-3.1424***
	(0.2130)	(0.4251)	(0.1654)	(0.1867)	(0.2174)	(0.2196)	(0.1598)	(0.1598)
Province: Western Cape	-9.8931***	-14.5909***	4.3232***	12.7656***	31.8268***	32.0507***	7.5161***	7.5161***
	(0.4571)	(0.9370)	(0.3549)	(0.3992)	(0.4663)	(0.4713)	(0.3428)	(0.3428)
Province: Northern Cape	22.0098***	45.7200***	1.9400***	0.9990	-20.2621***	-21.2245***	4.5983***	4.5983***
	(0.7357)	(1.5617)	(0.5713)	(0.6548)	(0.7506)	(0.7591)	(0.5517)	(0.5517)
Province: Free State	24.2145***	60.0730***	-52.7011***	-45.8559***	31.0992***	31.9013***	8.4669***	8.4669***
	(0.5423)	(1.0792)	(0.4211)	(0.4728)	(0.5533)	(0.5589)	(0.4067)	(0.4067)
Province: KwaZulu-Natal	22.3324***	49.6428***	-24.2225***	-15.1924***	-30.0089***	-29.7196***	49.7022***	49.7022***
	(0.4827)	(0.9729)	(0.3748)	(0.4218)	(0.4925)	(0.4977)	(0.3620)	(0.3620)
Province: North West	38.0339***	110.0206***	-38.4604***	-34.6183***	-12.5545***	-13.8205***	38.8284***	38.8284***
	(0.5897)	(1.1906)	(0.4579)	(0.5180)	(0.6017)	(0.6084)	(0.4423)	(0.4423)
Province: Gauteng	26.4757***	57.3856***	-23.0672***	-16.9040***	4.5628***	4.7414***	1.3076***	1.3076***
	(0.4273)	(0.8655)	(0.3318)	(0.3740)	(0.4360)	(0.4406)	(0.3204)	(0.3204)
Province: Mpumalanga	-45.5378***	-74.1319***	-8.1576***	-4.0533***	26.9975***	24.1480***	31.8725***	31.8725***
	(0.5738)	(1.1849)	(0.4455)	(0.5048)	(0.5854)	(0.5923)	(0.4303)	(0.4303)
Province: Limpopo	-20.0381***	-2.6193*	-33.2334***	-30.2087***	20.7809***	21.2178***	41.2315***	41.2315***
	(0.7372)	(1.4462)	(0.5724)	(0.6472)	(0.7521)	(0.7596)	(0.5528)	(0.5528)
Education: Incomplete primary	297.6180***	1874.6184	-266.1490***	-320.5482***	-94.7143***	-95.6532***	79.8018***	79.8018***
	(5.9884)	(3.69e+04)	(4.6501)	(5.1167)	(6.1097)	(6.1691)	(4.4908)	(4.4907)
Education: Incomplete secondary	293.1822***	2005.7586	-227.1814***	-222.8521***	-72.5852***	-75.0637***	40.7294***	40.7294***
	(5.9667)	(3.69e+04)	(4.6333)	(5.0938)	(6.0876)	(6.1469)	(4.4746)	(4.4745)
Education: Matric	326.1436***	2088.6696	-244.4107***	-240.7586***	-57.6465***	-59.2888***	26.6519***	26.6519***
	(5.9667)	(3.69e+04)	(4.6332)	(5.0937)	(6.0876)	(6.1468)	(4.4745)	(4.4745)
Education: Post-Matric	353.5482***	2128.2162	-229.6003***	-221.2227***	-53.3775***	-54.3619***	-14.1140***	-14.1140***
	(5.9650)	(3.69e+04)	(4.6319)	(5.0922)	(6.0859)	(6.1451)	(4.4733)	(4.4732)

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Table A23: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Other/unspecified	401.9186***	2209.8750	-174.2360***	-179.4845***	-96.2185***	-98.1151***	-62.1377***	-62.1377***
	(6.0943)	(3.69e+04)	(4.7323)	(5.2093)	(6.2178)	(6.2786)	(4.5702)	(4.5702)
Marital status: Married/live together	-19.6074***	-27.8146***	69.5247***	70.6477***	6.1372***	8.0733***	-1.2536***	-1.2536***
	(0.3609)	(0.6709)	(0.2802)	(0.3104)	(0.3682)	(0.3724)	(0.2706)	(0.2706)
Marital status: Widowed/divorced	-1.0053*	-9.8870***	24.8206***	20.6692***	6.2828***	7.6716***	12.8918***	12.8918***
	(0.5160)	(0.9765)	(0.4007)	(0.4439)	(0.5264)	(0.5322)	(0.3869)	(0.3869)
Labour market status: Unemployed	-68.7856***	-303.2613***	225.5779***	236.5838***	-25.7519***	-25.8789***	-62.0088***	-62.0088***
	(0.6200)	(2.1571)	(0.4815)	(0.5327)	(0.6326)	(0.6388)	(0.4650)	(0.4650)
Labour market status: Employed	214.5662***	478.8701***	-24.7171***	-13.9428***	-83.7199***	-84.5195***	-30.7567***	-30.7567***
	(0.2706)	(0.6262)	(0.2101)	(0.2363)	(0.2760)	(0.2788)	(0.2029)	(0.2029)
Household size	5.8174***	7.3107***	-8.9293***	-11.6175***	9.5350***	9.9708***	-17.6257***	-17.6257***
	(0.1195)	(0.2338)	(0.0928)	(0.1042)	(0.1219)	(0.1232)	(0.0896)	(0.0896)
Number of children 0-17 years	12.5937***	9.1721***	15.3956***	17.5950***	-20.8407***	-20.8238***	-3.3191***	-3.3191***
	(0.1435)	(0.2636)	(0.1114)	(0.1231)	(0.1464)	(0.1479)	(0.1076)	(0.1076)
Constant	-467.1129***	-2.84e+03	312.4936***	266.3227***	492.2227***	492.8297***	734.5007***	734.5007***
	(6.0347)	(3.69e+04)	(4.6861)	(5.1546)	(6.1570)	(6.2169)	(4.5255)	(4.5255)
Weighted sample size	3 020 763	3 020 763	3 020 763	3 020 763	3 020 763	3 020 763	3 020 763	3 020 763
R^2 or Pseudo R^2	0.4010	0.0780	0.3500	0.0393	0.1040	0.0081	0.1620	0.0138

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A24: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the White population, 2010

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	0.6755***	1.2401***	8.5934***	10.3404***	-0.4448***	-0.5612***	-1.3622***	-1.3470***
	(0.0285)	(0.0682)	(0.0215)	(0.0242)	(0.0298)	(0.0308)	(0.0244)	(0.0244)
Age squared	-0.0038***	0.0094***	-0.0851***	-0.1029***	0.0030***	0.0040***	0.0288***	0.0287***
	(0.0003)	(0.0007)	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Gender: Male	43.9693***	64.9610***	-73.4962***	-79.7861***	42.9498***	45.3393***	-11.1075***	-11.1299***
	(0.1791)	(0.3788)	(0.1356)	(0.1514)	(0.1875)	(0.1945)	(0.1533)	(0.1534)
Province: Western Cape	2.9066***	11.9846***	17.7691***	16.0483***	22.9187***	20.3416***	-32.4623***	-32.5212***
	(0.3574)	(0.7673)	(0.2706)	(0.3017)	(0.3741)	(0.3873)	(0.3060)	(0.3061)
Province: Northern Cape	20.5940***	58.4528***	-0.8668*	-2.6660***	-81.2372***	-81.9660***	29.8751***	29.9062***
	(0.6622)	(1.3966)	(0.5013)	(0.5607)	(0.6932)	(0.7173)	(0.5669)	(0.5671)
Province: Free State	-19.5932***	-8.6848***	2.5887***	4.1862***	-18.9902***	-21.9949***	34.9856***	34.9885***
	(0.4701)	(1.0045)	(0.3559)	(0.3959)	(0.4922)	(0.5099)	(0.4025)	(0.4027)
Province: KwaZulu-Natal	29.9559***	61.1671***	-23.4626***	-26.0824***	11.1450***	9.5320***	-1.3257***	-1.3232***
	(0.3945)	(0.8346)	(0.2987)	(0.3331)	(0.4130)	(0.4275)	(0.3377)	(0.3379)
Province: North West	-2.5649***	13.3719***	-6.9771***	-12.3597***	39.9183***	38.0643***	-38.5188***	-38.5163***
	(0.5096)	(1.0610)	(0.3858)	(0.4313)	(0.5335)	(0.5525)	(0.4363)	(0.4365)
Province: Gauteng	-28.4826***	-58.9634***	7.8597***	6.0643***	-10.9136***	-14.8559***	40.1229***	40.1448***
	(0.3295)	(0.7174)	(0.2494)	(0.2779)	(0.3449)	(0.3570)	(0.2821)	(0.2822)
Province: Mpumalanga	24.1035***	67.6916***	16.8558***	18.8707***	-40.6660***	-40.4672***	7.2886***	7.3042***
	(0.4785)	(0.9788)	(0.3623)	(0.4017)	(0.5009)	(0.5183)	(0.4097)	(0.4099)
Province: Limpopo	-35.3792***	-28.2540***	2.1575***	4.9152***	-13.3306***	-12.2340***	80.2663***	80.2698***
	(0.7470)	(1.4671)	(0.5655)	(0.6244)	(0.7819)	(0.8089)	(0.6395)	(0.6398)
Education: Incomplete primary	Education variables dropped due to correlation issues							
Education: Incomplete secondary								
Education: Matric								
Education: Post-Matric								

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Table A24: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Other/unspecified	Education variables dropped due to correlation issues							
Marital status: Married/live together	-1.4283***	-2.5799***	59.8569***	63.5633***	-34.8680***	-35.9873***	-1.3251***	-1.2192***
	(0.3262)	(0.6455)	(0.2469)	(0.2736)	(0.3414)	(0.3539)	(0.2792)	(0.2794)
Marital status: Widowed/divorced	12.2197***	52.6027***	-2.0412***	-0.7430**	14.0884***	13.1678***	-2.8619***	-2.7656***
	(0.4216)	(0.8628)	(0.3192)	(0.3536)	(0.4413)	(0.4576)	(0.3609)	(0.3611)
Labour market status: Unemployed	-4.7316***	-169.9301***	130.2406***	142.3568***	-31.4515***	-29.5270***	-33.7690***	-33.8293***
	(0.6347)	(2.8785)	(0.4805)	(0.5300)	(0.6644)	(0.6868)	(0.5434)	(0.5436)
Labour market status: Employed	326.2378***	710.5351***	-53.8703***	-49.4406***	-130.2610***	-135.1594***	-95.4847***	-95.5601***
	(0.2233)	(0.5989)	(0.1690)	(0.1878)	(0.2337)	(0.2422)	(0.1911)	(0.1912)
Household size	0.1799*	-4.9806***	-15.2143***	-18.2413***	9.3907***	8.3190***	-2.5786***	-2.5770***
	(0.0919)	(0.1874)	(0.0696)	(0.0775)	(0.0962)	(0.1000)	(0.0787)	(0.0787)
Number of children 0-17 years	2.7815***	9.6968***	15.6704***	16.5089***	-2.7394***	-2.0072***	-6.9715***	-7.1166***
	(0.1290)	(0.2490)	(0.0977)	(0.1083)	(0.1351)	(0.1401)	(0.1104)	(0.1105)
Constant	-21.7015***	-496.6839***	61.4410***	23.8205***	356.2311***	362.9382***	776.6979***	776.4596***
	(0.6343)	(1.5002)	(0.4802)	(0.5406)	(0.6640)	(0.6884)	(0.5430)	(0.5433)
Weighted sample size	4 047 774	4 047 774	4 047 774	4 047 774	4 047 774	4 047 774	4 047 774	4 047 774
R^2 or Pseudo R^2	0.4890	0.0963	0.2620	0.0259	0.1560	0.0129	0.1870	0.0159

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

N/A: the explanatory variable was dropped due to multicollinearity issues.

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Table A25: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the employed population, 2000

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	12.5710***	21.3988***	2.4120***	2.9473***	-2.9199***	-3.4361***	0.1802***	0.1802***
	(0.0245)	(0.0412)	(0.0158)	(0.0168)	(0.0204)	(0.0216)	(0.0165)	(0.0165)
Age squared	-0.1280***	-0.2155***	-0.0304***	-0.0366***	0.0286***	0.0336***	0.0080***	0.0080***
	(0.0003)	(0.0005)	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0002)	(0.0002)
Gender: Male	63.0282***	101.1817***	-115.5217***	-120.5481***	48.4327***	49.9261***	1.2474***	1.2474***
	(0.1390)	(0.2265)	(0.0900)	(0.0947)	(0.1161)	(0.1223)	(0.0936)	(0.0936)
Race: Coloured	49.3757***	75.0905***	-40.7896***	-41.8540***	7.5285***	12.8515***	-7.1401***	-7.1401***
	(0.4125)	(0.6482)	(0.2672)	(0.2810)	(0.3447)	(0.3623)	(0.2779)	(0.2779)
Race: Indian/Asian	19.4618***	26.1014***	-38.5168***	-40.4790***	32.0086***	35.8591***	-3.8037***	-3.8037***
	(0.2889)	(0.4626)	(0.1871)	(0.1970)	(0.2414)	(0.2540)	(0.1947)	(0.1947)
Race: White	23.6726***	34.8088***	-34.1777***	-36.8960***	17.7365***	21.4079***	-14.4030***	-14.4030***
	(0.2196)	(0.3508)	(0.1423)	(0.1500)	(0.1835)	(0.1928)	(0.1480)	(0.1480)
Province: Western Cape	32.6729***	39.8253***	12.4067***	17.0357***	-9.1763***	-9.6067***	-21.3178***	-21.3178***
	(0.3054)	(0.4910)	(0.1979)	(0.2084)	(0.2552)	(0.2688)	(0.2058)	(0.2058)
Province: Northern Cape	91.9173***	126.6067***	9.8501***	16.6017***	-54.9738***	-56.2397***	-29.4236***	-29.4236***
	(0.5415)	(0.8496)	(0.3508)	(0.3681)	(0.4525)	(0.4772)	(0.3649)	(0.3649)
Province: Free State	25.0912***	29.8600***	-38.8427***	-35.5335***	51.6281***	56.6545***	-34.5793***	-34.5793***
	(0.3168)	(0.5100)	(0.2052)	(0.2160)	(0.2647)	(0.2783)	(0.2134)	(0.2134)
Province: KwaZulu-Natal	38.0428***	54.0348***	6.1849***	10.7187***	-50.4789***	-53.0283***	12.0867***	12.0867***
	(0.2418)	(0.3929)	(0.1566)	(0.1650)	(0.2021)	(0.2134)	(0.1629)	(0.1629)
Province: North West	5.7948***	-9.8439***	-1.8495***	1.5961***	12.7644***	14.2839***	-11.4080***	-11.4080***
	(0.2943)	(0.4838)	(0.1907)	(0.2008)	(0.2460)	(0.2593)	(0.1983)	(0.1983)
Province: Gauteng	21.5049***	7.3962***	-9.9459***	-7.7846***	-0.4418**	0.7374***	-9.6883***	-9.6883***
	(0.2264)	(0.3705)	(0.1467)	(0.1547)	(0.1892)	(0.1994)	(0.1526)	(0.1526)
Province: Mpumalanga	-5.5819***	-16.4032***	3.6592***	6.3310***	52.7578***	56.7073***	-54.0093***	-54.0093***
	(0.3026)	(0.4985)	(0.1960)	(0.2065)	(0.2529)	(0.2661)	(0.2039)	(0.2039)
Province: Limpopo	-0.3519	-6.7213***	-17.7437***	-16.0587***	8.5605***	10.9766***	-7.9946***	-7.9946***
	(0.2864)	(0.4694)	(0.1855)	(0.1957)	(0.2393)	(0.2521)	(0.1930)	(0.1930)

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Table A25: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	9.8457***	17.0531***	1.1789***	2.0460***	17.1098***	20.0686***	-36.8482***	-36.8482***
	(0.2877)	(0.4668)	(0.1864)	(0.1962)	(0.2404)	(0.2546)	(0.1938)	(0.1938)
Education: Incomplete secondary	20.8135***	21.8850***	9.4645***	10.7941***	32.4996***	37.6941***	-81.4819***	-81.4819***
	(0.2748)	(0.4453)	(0.1780)	(0.1873)	(0.2296)	(0.2431)	(0.1851)	(0.1851)
Education: Matric	57.8915***	87.5678***	-9.7998***	-9.2907***	61.8619***	68.0925***	-99.4905***	-99.4905***
	(0.3244)	(0.5228)	(0.2101)	(0.2212)	(0.2711)	(0.2865)	(0.2186)	(0.2186)
Education: Post-Matric	62.4642***	94.2191***	-0.4144**	3.9174***	55.4732***	64.5153***	-124.1792***	-124.1792***
	(0.3135)	(0.5041)	(0.2031)	(0.2136)	(0.2620)	(0.2768)	(0.2112)	(0.2112)
Education: Other/unspecified	117.1378***	145.4647***	-28.6976***	-29.6847***	19.3873***	23.8577***	-105.3321***	-106.3504***
	(0.9690)	(1.2631)	(0.5369)	(0.5597)	(0.7358)	(0.8067)	(0.6337)	(0.6342)
Marital status: Married/live together	5.1730***	6.7506***	3.9753***	4.0338***	-5.6394***	-4.2046***	-3.6537***	-3.6422***
	(0.1558)	(0.2054)	(0.0864)	(0.0897)	(0.1183)	(0.1292)	(0.1019)	(0.1019)
Marital status: Widowed/divorced	-17.4304***	-21.8458***	6.6509***	7.4240***	7.0717***	7.8216***	4.7365***	4.7353***
	(0.2779)	(0.3689)	(0.1540)	(0.1598)	(0.2110)	(0.2306)	(0.1818)	(0.1818)
Household size	0.4003***	1.5604***	-9.8288***	-10.4691***	12.1918***	14.0071***	-3.9255***	-3.9229***
	(0.0524)	(0.0690)	(0.0290)	(0.0301)	(0.0398)	(0.0435)	(0.0342)	(0.0343)
Number of children 0-17 years	-9.8219***	-12.6893***	8.5529***	8.4017***	-0.2520***	0.3990***	0.4774***	0.4552***
	(0.0653)	(0.0863)	(0.0362)	(0.0376)	(0.0496)	(0.0541)	(0.0427)	(0.0427)
Constant	-69.2537***	-359.6949***	255.0677***	242.3056***	228.0893***	220.3406***	767.9222***	767.9222***
	(0.5915)	(0.9888)	(0.3832)	(0.4049)	(0.4943)	(0.5209)	(0.3985)	(0.3985)
Weighted sample size	11 074 386	11 074 386	11 074 386	11 074 386	11 074 386	11 074 386	11 074 386	11 074 386
R^2 or Pseudo R^2	0.1190	0.0130	0.1760	0.0153	0.0690	0.0057	0.0910	0.0074

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A26: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the employed population, 2010

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	3.7863***	4.8234***	1.6429***	1.7679***	-2.6485***	-3.1163***	-0.1906***	-0.1751***
	(0.0345)	(0.0457)	(0.0191)	(0.0199)	(0.0262)	(0.0286)	(0.0226)	(0.0226)
Age squared	-0.0522***	-0.0650***	-0.0199***	-0.0219***	0.0362***	0.0424***	0.0081***	0.0080***
	(0.0004)	(0.0006)	(0.0002)	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Gender: Male	60.9994***	74.6288***	-95.5081***	-98.7480***	34.2046***	36.6227***	2.5403***	2.5318***
	(0.1276)	(0.1686)	(0.0707)	(0.0734)	(0.0969)	(0.1057)	(0.0834)	(0.0835)
Race: Coloured	4.5403***	5.6274***	-30.0190***	-30.8828***	31.1836***	36.1971***	-5.9718***	-5.9616***
	(0.2432)	(0.3217)	(0.1348)	(0.1401)	(0.1847)	(0.2010)	(0.1591)	(0.1591)
Race: Indian/Asian	26.8781***	33.9164***	-29.5459***	-30.3243***	-6.9979***	-1.4632***	13.9411***	13.9359***
	(0.3521)	(0.4589)	(0.1951)	(0.2028)	(0.2674)	(0.2904)	(0.2303)	(0.2304)
Race: White	16.6976***	19.5370***	-27.0468***	-28.1245***	15.8991***	18.3600***	-7.2173***	-7.2437***
	(0.2009)	(0.2649)	(0.1113)	(0.1158)	(0.1525)	(0.1659)	(0.1314)	(0.1314)
Province: Western Cape	6.7320***	1.6207***	23.7216***	23.7968***	15.4579***	14.8101***	-45.6684***	-45.7036***
	(0.2727)	(0.3604)	(0.1511)	(0.1569)	(0.2071)	(0.2259)	(0.1784)	(0.1784)
Province: Northern Cape	59.7142***	66.0403***	-25.0396***	-26.2708***	-17.7054***	-19.5058***	-16.6261***	-16.6237***
	(0.4755)	(0.6246)	(0.2635)	(0.2742)	(0.3611)	(0.3944)	(0.3110)	(0.3111)
Province: Free State	14.7722***	12.2286***	-9.7364***	-9.4511***	3.5863***	2.8393***	-11.8433***	-11.8411***
	(0.3285)	(0.4340)	(0.1820)	(0.1889)	(0.2494)	(0.2726)	(0.2148)	(0.2149)
Province: KwaZulu-Natal	70.7464***	86.7260***	-5.7367***	-4.9977***	-29.4954***	-31.8778***	-33.9910***	-33.9884***
	(0.2453)	(0.3224)	(0.1359)	(0.1411)	(0.1863)	(0.2038)	(0.1605)	(0.1605)
Province: North West	-0.0291	-6.0405***	-14.5600***	-16.2607***	35.7248***	35.4554***	-20.8498***	-20.8475***
	(0.3174)	(0.4198)	(0.1759)	(0.1829)	(0.2410)	(0.2633)	(0.2076)	(0.2076)
Province: Gauteng	2.7862***	-2.9801***	2.1227***	0.9563***	10.0148***	11.7770***	-17.8371***	-17.8313***
	(0.2251)	(0.2974)	(0.1247)	(0.1295)	(0.1709)	(0.1865)	(0.1472)	(0.1472)
Province: Mpumalanga	42.2945***	50.8244***	13.7707***	14.2070***	-3.9913***	1.1148***	-55.7380***	-55.7322***
	(0.3061)	(0.4024)	(0.1696)	(0.1760)	(0.2324)	(0.2532)	(0.2002)	(0.2002)
Province: Limpopo	-29.0914***	-41.1836***	-0.4813***	-2.2352***	46.9926***	47.8828***	-22.6267***	-22.6185***
	(0.2979)	(0.3954)	(0.1651)	(0.1716)	(0.2262)	(0.2469)	(0.1948)	(0.1949)

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Table A26: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	13.4722***	16.2864***	4.5812***	4.0419***	15.5703***	21.7422***	-37.8153***	-37.8157***
	(0.4316)	(0.5719)	(0.2392)	(0.2486)	(0.3278)	(0.3610)	(0.2823)	(0.2824)
Education: Incomplete secondary	30.6374***	35.8091***	6.3779***	6.4231***	24.2759***	33.6702***	-62.7778***	-62.7736***
	(0.3990)	(0.5289)	(0.2211)	(0.2298)	(0.3030)	(0.3339)	(0.2610)	(0.2610)
Education: Matric	46.7072***	54.2899***	-0.4490**	-0.1999	41.3485***	53.8460***	-90.5199***	-90.5079***
	(0.4100)	(0.5432)	(0.2272)	(0.2360)	(0.3113)	(0.3429)	(0.2681)	(0.2682)
Education: Post-Matric	14.4840***	15.1460***	-7.0884***	-7.6304***	71.4637***	85.1543***	-88.0793***	-88.0728***
	(0.4203)	(0.5571)	(0.2329)	(0.2420)	(0.3192)	(0.3512)	(0.2749)	(0.2750)
Education: Other/unspecified	76.9259***	147.3642***	43.9828***	47.9759***	2.4377**	5.9285***	-107.5051***	-107.5051***
	(1.1651)	(1.8151)	(0.7547)	(0.7929)	(0.9736)	(1.0271)	(0.7850)	(0.7850)
Marital status: Married/live together	4.6665***	11.5442***	10.6840***	9.4083***	2.2868***	4.9621***	-10.5472***	-10.5472***
	(0.1878)	(0.3010)	(0.1217)	(0.1278)	(0.1570)	(0.1656)	(0.1266)	(0.1266)
Marital status: Widowed/divorced	-22.3905***	-27.5845***	7.6003***	6.0832***	7.0241***	8.7267***	6.1600***	6.1600***
	(0.2775)	(0.4477)	(0.1798)	(0.1889)	(0.2319)	(0.2447)	(0.1870)	(0.1870)
Household size	-15.8084***	-26.1589***	-11.4644***	-12.0335***	15.0277***	16.2617***	3.2615***	3.2615***
	(0.0584)	(0.0942)	(0.0378)	(0.0398)	(0.0488)	(0.0515)	(0.0393)	(0.0393)
Number of children 0-17 years	9.4500***	14.9556***	12.5737***	12.5404***	-13.3910***	-13.2006***	-6.8604***	-6.8604***
	(0.0684)	(0.1092)	(0.0443)	(0.0466)	(0.0571)	(0.0603)	(0.0461)	(0.0461)
Constant	193.0395***	119.0139***	244.9714***	245.2705***	153.7756***	132.3494***	795.1945***	794.8883***
	(0.7928)	(1.0507)	(0.4393)	(0.4571)	(0.6020)	(0.6585)	(0.5185)	(0.5186)
Weighted sample size	14 217 395	14 217 395	14 217 395	14 217 395	14 217 395	14 217 395	14 217 395	14 217 395
R^2 or Pseudo R^2	0.0440	0.0036	0.1430	0.0124	0.0450	0.0038	0.0350	0.0027

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A27: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the unemployed population, 2000

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	-1.6862***	-4.6650***	5.9347***	6.1014***	2.6339***	2.7692***	-0.5456***	-0.5456***
	(0.0289)	(0.2526)	(0.0731)	(0.0770)	(0.0750)	(0.0777)	(0.0627)	(0.0627)
Age squared	0.0207***	0.0673***	-0.0545***	-0.0547***	-0.0626***	-0.0664***	0.0288***	0.0288***
	(0.0004)	(0.0032)	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0008)	(0.0008)
Gender: Male	17.7752***	129.3143***	-152.6445***	-163.1345***	107.9060***	109.0532***	17.0924***	17.0924***
	(0.1102)	(1.0454)	(0.2789)	(0.2942)	(0.2863)	(0.2964)	(0.2393)	(0.2393)
Race: Coloured	25.2245***	184.8830***	59.1690***	62.7253***	-18.4299***	-15.2035***	-57.3543***	-57.3543***
	(0.3123)	(2.5392)	(0.7904)	(0.8286)	(0.8116)	(0.8381)	(0.6784)	(0.6784)
Race: Indian/Asian	-1.2649***	-7.2091***	-71.9974***	-70.3256***	70.2513***	68.2430***	-14.6067***	-14.6067***
	(0.2235)	(2.4211)	(0.5656)	(0.5965)	(0.5808)	(0.6033)	(0.4855)	(0.4855)
Race: White	-3.8118***	-29.7012***	115.8528***	113.9208***	-32.3394***	-33.1874***	-108.6546***	-108.6546***
	(0.2546)	(3.0032)	(0.6445)	(0.6783)	(0.6618)	(0.6835)	(0.5532)	(0.5532)
Province: Western Cape	-34.5883***	-427.9126***	10.3300***	5.7010***	44.4000***	42.6122***	-9.4400***	-9.4400***
	(0.2426)	(3.8978)	(0.6141)	(0.6493)	(0.6305)	(0.6527)	(0.5271)	(0.5271)
Province: Northern Cape	-21.0338***	-102.1978***	28.2729***	26.3720***	-1.1506	0.1879	15.4356***	15.4356***
	(0.3496)	(3.1518)	(0.8850)	(0.9344)	(0.9087)	(0.9400)	(0.7596)	(0.7596)
Province: Free State	-35.6019***	-178.1349***	40.0623***	40.9203***	58.1913***	56.6397***	-60.2568***	-60.2568***
	(0.2576)	(2.4175)	(0.6520)	(0.6878)	(0.6695)	(0.6929)	(0.5597)	(0.5597)
Province: KwaZulu-Natal	-20.7223***	-80.2636***	36.6542***	40.7585***	-55.7629***	-59.3343***	48.9230***	48.9230***
	(0.1915)	(1.6906)	(0.4847)	(0.5107)	(0.4977)	(0.5155)	(0.4161)	(0.4161)
Province: North West	-30.4712***	-153.4205***	69.8258***	76.6128***	-45.9161***	-52.3345***	15.9909***	15.9909***
	(0.2629)	(2.4519)	(0.6655)	(0.6994)	(0.6834)	(0.7101)	(0.5712)	(0.5712)
Province: Gauteng	-32.1250***	-262.3289***	41.5518***	43.4047***	-13.1960***	-14.6013***	-4.1898***	-4.1898***
	(0.1916)	(1.9241)	(0.4849)	(0.5114)	(0.4979)	(0.5150)	(0.4162)	(0.4162)
Province: Mpumalanga	-23.0124***	-18.8474***	26.5644***	31.7360***	43.3237***	45.5050***	-33.4987***	-33.4987***
	(0.2459)	(1.9583)	(0.6225)	(0.6550)	(0.6392)	(0.6605)	(0.5343)	(0.5343)
Province: Limpopo	10.2869***	49.8984***	-48.3795***	-47.7628***	9.8708***	11.2802***	36.7442***	36.7442***
	(0.2227)	(1.7459)	(0.5638)	(0.5956)	(0.5789)	(0.5988)	(0.4840)	(0.4839)

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Table A27: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	30.6385***	89.2709***	76.8017***	86.5093***	-61.6004***	-57.5370***	-40.5860***	-40.5860***
	(0.2607)	(1.8450)	(0.6598)	(0.6994)	(0.6775)	(0.7054)	(0.5663)	(0.5663)
Education: Incomplete secondary	-2.9042***	-132.2311***	73.3231***	82.5668***	-1.3935**	4.9427***	-65.2949***	-65.2949***
	(0.2506)	(1.9105)	(0.6344)	(0.6738)	(0.6514)	(0.6775)	(0.5445)	(0.5445)
Education: Matric	-5.0125***	-208.7156***	45.6183***	54.1183***	57.1774***	65.3618***	-89.3859***	-89.3859***
	(0.2747)	(2.4407)	(0.6954)	(0.7372)	(0.7141)	(0.7417)	(0.5969)	(0.5969)
Education: Post-Matric	2.2550***	-48.1200***	18.5568***	26.7287***	70.8739***	78.8762***	-99.5264***	-99.5264***
	(0.2930)	(2.3380)	(0.7417)	(0.7849)	(0.7616)	(0.7906)	(0.6366)	(0.6366)
Education: Other/unspecified	-29.8049***	-2.24e+03	-22.6578***	-4.4570	143.3064***	146.0328***	-41.7353***	-41.7353***
	(1.1175)	(1.86e+06)	(2.8288)	(2.9649)	(2.9046)	(2.9993)	(2.4280)	(2.4280)
Marital status: Married/live together	30.5245***	254.7493***	-9.1400***	-13.4052***	9.1659***	16.2041***	-29.1599***	-29.1599***
	(0.1450)	(1.3922)	(0.3671)	(0.3864)	(0.3769)	(0.3916)	(0.3151)	(0.3150)
Marital status: Widowed/divorced	35.9157***	169.0510***	-24.4378***	-23.8258***	-4.5692***	-1.2180	-7.0968***	-7.0968***
	(0.2948)	(2.5744)	(0.7461)	(0.7835)	(0.7661)	(0.7948)	(0.6404)	(0.6404)
Household size	4.7157***	37.3776***	-10.7435***	-11.1162***	9.6459***	10.7976***	-3.5738***	-3.5738***
	(0.0438)	(0.4268)	(0.1109)	(0.1167)	(0.1139)	(0.1181)	(0.0952)	(0.0952)
Number of children 0-17 years	-4.8757***	-21.5100***	32.5684***	33.1950***	-17.4342***	-20.5071***	-13.5588***	-13.5588***
	(0.0559)	(0.4762)	(0.1415)	(0.1490)	(0.1453)	(0.1512)	(0.1215)	(0.1215)
Constant	33.5376***	-517.7956***	176.8157***	162.7465***	271.2263***	258.9401***	822.2555***	822.2555***
	(0.5928)	(5.2693)	(1.5005)	(1.5816)	(1.5407)	(1.5979)	(1.2879)	(1.2879)
Weighted sample size	1 869 842	1 869 842	1 869 842	1 869 842	1 869 842	1 869 842	1 869 842	1 869 842
R^2 or Pseudo R^2	0.122	0.0719	0.282	0.0251	0.198	0.0167	0.132	0.0109

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A28: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the unemployed population, 2010

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	-0.6419***	-4.1175***	7.3500***	7.3285***	2.9841***	3.0514***	-0.3362***	-0.3362***
	(0.0182)	(0.1175)	(0.0507)	(0.0529)	(0.0514)	(0.0524)	(0.0450)	(0.0450)
Age squared	0.0158***	0.0851***	-0.0887***	-0.0893***	-0.0568***	-0.0576***	0.0260***	0.0260***
	(0.0002)	(0.0015)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0006)	(0.0006)
Gender: Male	6.7309***	48.9894***	-106.2756***	-111.3623***	99.5124***	100.6367***	-5.7559***	-5.7559***
	(0.0780)	(0.5337)	(0.2175)	(0.2270)	(0.2207)	(0.2249)	(0.1933)	(0.1933)
Race: Coloured	-6.0580***	-39.5737***	-26.7192***	-30.0151***	54.2919***	54.9999***	-15.3106***	-15.3106***
	(0.1607)	(1.1647)	(0.4482)	(0.4691)	(0.4548)	(0.4630)	(0.3983)	(0.3983)
Race: Indian/Asian	-28.3096***	-1.58e+03	-35.8286***	-36.2596***	72.7444***	74.2408***	10.9400***	10.9400***
	(0.5935)	(3.47e+05)	(1.6549)	(1.7266)	(1.6793)	(1.7093)	(1.4707)	(1.4707)
Race: White	-16.2684***	-209.1454***	75.5643***	77.2130***	-24.4694***	-23.7708***	-26.6948***	-26.6948***
	(0.2344)	(2.5787)	(0.6535)	(0.6815)	(0.6631)	(0.6750)	(0.5807)	(0.5807)
Province: Western Cape	-7.0238***	-45.1222***	-14.9124***	-16.3168***	23.6838***	24.1586***	-14.0689***	-14.0689***
	(0.1974)	(1.3631)	(0.5504)	(0.5744)	(0.5585)	(0.5687)	(0.4891)	(0.4891)
Province: Northern Cape	-13.0682***	-88.8686***	-10.4968***	-13.7000***	17.1413***	16.6469***	2.5164***	2.5164***
	(0.2226)	(1.6535)	(0.6206)	(0.6490)	(0.6297)	(0.6416)	(0.5515)	(0.5515)
Province: Free State	-14.2638***	-45.3192***	-17.7552***	-19.7892***	51.8720***	52.1924***	-22.9047***	-22.9047***
	(0.1716)	(1.1427)	(0.4786)	(0.4988)	(0.4856)	(0.4948)	(0.4253)	(0.4253)
Province: KwaZulu-Natal	6.8207***	63.3128***	18.1837***	18.3609***	-21.0676***	-22.1526***	-24.5806***	-24.5806***
	(0.1406)	(0.8577)	(0.3920)	(0.4085)	(0.3978)	(0.4055)	(0.3484)	(0.3484)
Province: North West	-22.0726***	-156.0212***	-25.7877***	-31.9120***	34.3349***	31.3356***	15.7514***	15.7514***
	(0.1772)	(1.4076)	(0.4942)	(0.5173)	(0.5015)	(0.5119)	(0.4392)	(0.4392)
Province: Gauteng	-14.2374***	-71.3890***	-15.0270***	-16.3348***	40.3435***	39.9455***	-20.4391***	-20.4391***
	(0.1296)	(0.8636)	(0.3614)	(0.3767)	(0.3667)	(0.3737)	(0.3212)	(0.3212)
Province: Mpumalanga	-15.0188***	-64.6015***	11.0610***	11.8488***	14.3023***	15.2310***	-18.5757***	-18.5757***
	(0.1688)	(1.1415)	(0.4707)	(0.4903)	(0.4776)	(0.4864)	(0.4183)	(0.4183)
Province: Limpopo	1.0306***	24.6809***	3.2153***	-1.1640**	37.2633***	36.2472***	-36.0548***	-36.0548***
	(0.1701)	(1.0461)	(0.4743)	(0.4957)	(0.4813)	(0.4905)	(0.4215)	(0.4215)

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Table A28: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	-15.8058***	-35.0436***	-8.7841***	-6.7441***	-2.8864***	-0.0434	2.3834***	2.3834***
	(0.2842)	(1.6041)	(0.7925)	(0.8313)	(0.8042)	(0.8224)	(0.7043)	(0.7042)
Education: Incomplete secondary	-28.7762***	-91.9267***	15.9978***	21.4184***	43.0272***	46.9606***	-30.8519***	-30.8519***
	(0.2700)	(1.5396)	(0.7529)	(0.7891)	(0.7641)	(0.7815)	(0.6691)	(0.6691)
Education: Matric	-28.5035***	-85.1899***	16.6507***	22.6298***	57.2631***	61.6200***	-46.6129***	-46.6129***
	(0.2781)	(1.6080)	(0.7755)	(0.8123)	(0.7870)	(0.8047)	(0.6892)	(0.6892)
Education: Post-Matric	-26.3098***	-108.0626***	-26.4352***	-20.8375***	119.1738***	124.5708***	-82.0981***	-82.0981***
	(0.3101)	(1.9553)	(0.8648)	(0.9054)	(0.8775)	(0.8966)	(0.7685)	(0.7685)
Education: Other/unspecified	2.2330***	-50.8205***	-22.3803***	-10.9336***	74.2345***	79.9055***	-23.3465***	-23.3465***
	(0.2601)	(2.3788)	(0.5768)	(0.6670)	(0.7732)	(0.8003)	(0.6211)	(0.6211)
Marital status: Married/live together	7.0263***	71.6691***	19.0306***	22.0095***	19.8976***	20.1866***	-10.1275***	-10.1275***
	(0.0721)	(0.5837)	(0.1599)	(0.1815)	(0.2144)	(0.2224)	(0.1722)	(0.1722)
Marital status: Widowed/divorced	8.9157***	85.4274***	-19.5168***	-22.0335***	24.8076***	25.2859***	11.9919***	11.9919***
	(0.1002)	(0.7793)	(0.2221)	(0.2531)	(0.2978)	(0.3091)	(0.2392)	(0.2392)
Household size	-0.0506***	1.2760***	-13.8742***	-16.6316***	8.2365***	8.8704***	-4.6250***	-4.6250***
	(0.0174)	(0.1438)	(0.0386)	(0.0441)	(0.0518)	(0.0537)	(0.0416)	(0.0416)
Number of children 0-17 years	-1.4054***	-10.6314***	41.4292***	39.5132***	-12.4081***	-12.3134***	-0.9494***	-0.9494***
	(0.0256)	(0.1967)	(0.0567)	(0.0644)	(0.0760)	(0.0789)	(0.0611)	(0.0611)
Constant	42.5483***	-209.4981***	240.6169***	240.4900***	124.6917***	116.6197***	843.3509***	843.3509***
	(0.4325)	(2.7258)	(1.2060)	(1.2627)	(1.2238)	(1.2489)	(1.0718)	(1.0718)
Weighted sample size	2 758 074	2 758 074	2 758 074	2 758 074	2 758 074	2 758 074	2 758 074	2 758 074
R^2 or Pseudo R^2	0.0590	0.0232	0.1920	0.0164	0.1700	0.0140	0.0480	0.0038

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A29: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the inactive population, 2000

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	1.7348***	14.6504***	10.1498***	12.0621***	0.5574***	0.4939***	-0.0844***	-0.0844***
	(0.0054)	(0.0458)	(0.0119)	(0.0139)	(0.0159)	(0.0165)	(0.0128)	(0.0128)
Age squared	-0.0194***	-0.1563***	-0.1085***	-0.1304***	-0.0076***	-0.0077***	0.0378***	0.0378***
	(0.0001)	(0.0005)	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Gender: Male	15.2625***	163.5854***	-92.5176***	-107.9563***	58.9957***	60.5424***	8.3965***	8.3965***
	(0.0367)	(0.3331)	(0.0814)	(0.0939)	(0.1091)	(0.1129)	(0.0876)	(0.0876)
Race: Coloured	-2.8313***	-113.5302***	-68.7174***	-91.6595***	26.5380***	30.3736***	-7.5568***	-7.5568***
	(0.1072)	(1.1523)	(0.2377)	(0.2795)	(0.3187)	(0.3293)	(0.2559)	(0.2559)
Race: Indian/Asian	-7.8154***	-143.5035***	-54.2052***	-68.7101***	54.4031***	56.6358***	7.7877***	7.7877***
	(0.0811)	(0.8646)	(0.1798)	(0.2075)	(0.2410)	(0.2493)	(0.1936)	(0.1936)
Race: White	-1.4133***	12.0323***	-49.7641***	-73.0439***	58.5573***	61.1851***	-46.3737***	-46.3737***
	(0.0724)	(0.6235)	(0.1605)	(0.1900)	(0.2151)	(0.2224)	(0.1728)	(0.1728)
Province: Western Cape	-7.8741***	-163.8632***	-14.5254***	-25.3022***	47.4429***	50.4988***	-5.5305***	-5.5305***
	(0.0838)	(0.7645)	(0.1858)	(0.2139)	(0.2491)	(0.2578)	(0.2001)	(0.2001)
Province: Northern Cape	-10.0902***	-164.7651***	13.0677***	7.4530***	14.2404***	17.0941***	-14.7641***	-14.7641***
	(0.1313)	(1.3127)	(0.2911)	(0.3369)	(0.3903)	(0.4037)	(0.3134)	(0.3134)
Province: Free State	-14.9632***	-179.6367***	-33.4672***	-38.7819***	92.0161***	96.2859***	-21.4963***	-21.4963***
	(0.0805)	(0.7090)	(0.1786)	(0.2044)	(0.2394)	(0.2478)	(0.1923)	(0.1923)
Province: KwaZulu-Natal	-10.2877***	-125.4397***	7.0849***	6.8261***	-15.2084***	-14.6481***	22.0822***	22.0822***
	(0.0591)	(0.4623)	(0.1310)	(0.1492)	(0.1756)	(0.1822)	(0.1410)	(0.1410)
Province: North West	-12.3955***	-165.5910***	-5.5445***	-9.0042***	26.3077***	28.4245***	6.7376***	6.7376***
	(0.0736)	(0.6259)	(0.1631)	(0.1859)	(0.2186)	(0.2267)	(0.1756)	(0.1756)
Province: Gauteng	-16.3820***	-220.0361***	-27.5591***	-40.4103***	49.0385***	51.3299***	-3.8281***	-3.8281***
	(0.0654)	(0.5939)	(0.1449)	(0.1666)	(0.1943)	(0.2013)	(0.1561)	(0.1560)
Province: Mpumalanga	-7.5545***	-76.1831***	1.0963***	-1.2594***	80.5689***	85.6619***	-71.2776***	-71.2776***
	(0.0846)	(0.6398)	(0.1876)	(0.2144)	(0.2515)	(0.2603)	(0.2020)	(0.2020)
Province: Limpopo	-6.9851***	-79.2709***	-8.4847***	-18.8698***	2.5894***	6.1110***	-17.8849***	-17.8849***
	(0.0649)	(0.4861)	(0.1438)	(0.1648)	(0.1928)	(0.1998)	(0.1548)	(0.1548)

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Table A29: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	-3.9586***	-0.3145	11.5951***	21.3972***	22.7746***	26.7930***	-31.8347***	-31.8347***
	(0.0755)	(0.5587)	(0.1674)	(0.1922)	(0.2244)	(0.2334)	(0.1802)	(0.1802)
Education: Incomplete secondary	-12.5586***	-96.9850***	28.8240***	42.9808***	20.0111***	24.2489***	-70.6829***	-70.6829***
	(0.0742)	(0.5689)	(0.1644)	(0.1883)	(0.2204)	(0.2293)	(0.1770)	(0.1770)
Education: Matric	-1.9668***	-23.9361***	45.6390***	59.7699***	49.5024***	55.1019***	-91.4931***	-91.4931***
	(0.1033)	(0.8163)	(0.2290)	(0.2619)	(0.3069)	(0.3184)	(0.2465)	(0.2465)
Education: Post-Matric	15.1821***	54.8667***	40.3737***	61.4928***	64.3577***	71.3312***	-122.6020***	-122.6020***
	(0.1173)	(0.8584)	(0.2601)	(0.2977)	(0.3487)	(0.3611)	(0.2801)	(0.2801)
Education: Other/unspecified	-28.9763***	-89.0198***	90.6816***	101.3497***	52.7590***	57.1281***	-89.0062***	-89.0062***
	(0.2722)	(1.6818)	(0.5971)	(0.6604)	(0.7282)	(0.7613)	(0.6154)	(0.6154)
Marital status: Married/live together	3.3355***	20.9588***	51.2103***	50.2474***	-19.2816***	-18.8449***	-29.7439***	-29.7439***
	(0.0512)	(0.2770)	(0.1124)	(0.1240)	(0.1371)	(0.1433)	(0.1158)	(0.1158)
Marital status: Widowed/divorced	0.6629***	28.3924***	17.8408***	17.8246***	0.1585	0.1242	-15.1069***	-15.1069***
	(0.0705)	(0.3581)	(0.1546)	(0.1712)	(0.1885)	(0.1973)	(0.1593)	(0.1593)
Household size	3.6171***	15.0237***	-17.0236***	-18.9796***	10.3556***	10.7477***	0.1434***	0.1434***
	(0.0133)	(0.0723)	(0.0292)	(0.0324)	(0.0356)	(0.0372)	(0.0301)	(0.0301)
Number of children 0-17 years	2.1565***	5.1670***	28.9494***	28.0507***	-13.5588***	-14.2915***	-2.5441***	-2.5441***
	(0.0189)	(0.0979)	(0.0415)	(0.0458)	(0.0506)	(0.0529)	(0.0427)	(0.0427)
Constant	-1.7221***	-554.8478***	91.2491***	63.5055***	200.1392***	189.0533***	794.0546***	794.0546***
	(0.1406)	(1.2088)	(0.3118)	(0.3594)	(0.4179)	(0.4341)	(0.3357)	(0.3357)
Weighted sample size	12 660 350	12 660 350	12 660 350	12 660 350	12 660 350	12 660 350	12 660 350	12 660 350
R^2 or Pseudo R^2	0.0470	0.0380	0.3570	0.0370	0.0880	0.0071	0.2290	0.0199

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A30: OLS and Tobit regressions on total paid work, total unpaid work, leisure and selfcare for the inactive population, 2010

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Age	1.6319***	7.5833***	9.6134***	11.1756***	-0.4401***	-0.5720***	2.3629***	2.3629***
	(0.0041)	(0.0214)	(0.0089)	(0.0100)	(0.0109)	(0.0114)	(0.0092)	(0.0092)
Age squared	-0.0131***	-0.0597***	-0.1099***	-0.1280***	0.0028***	0.0036***	0.0080***	0.0080***
	(0.0000)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Gender: Male	12.3382***	71.0039***	-101.5927***	-113.3472***	72.6675***	74.8621***	12.3890***	12.3890***
	(0.0294)	(0.1647)	(0.0646)	(0.0720)	(0.0787)	(0.0821)	(0.0665)	(0.0665)
Race: Coloured	-11.4202***	-93.0905***	-39.0366***	-52.2187***	38.6361***	41.3870***	-10.2473***	-10.2473***
	(0.0679)	(0.4259)	(0.1489)	(0.1672)	(0.1816)	(0.1891)	(0.1534)	(0.1534)
Race: Indian/Asian	-26.5405***	-202.6090***	-47.2205***	-67.5702***	58.2192***	61.2733***	-12.9574***	-12.9574***
	(0.0917)	(0.6922)	(0.2011)	(0.2280)	(0.2453)	(0.2556)	(0.2073)	(0.2073)
Race: White	-3.5885***	-35.5833***	-52.2721***	-65.3638***	47.2951***	49.4350***	-22.6202***	-22.6202***
	(0.0595)	(0.3655)	(0.1306)	(0.1471)	(0.1593)	(0.1659)	(0.1346)	(0.1346)
Province: Western Cape	-17.9789***	-91.6868***	-19.7703***	-21.8318***	86.4879***	90.6836***	-27.5877***	-27.5877***
	(0.0698)	(0.4063)	(0.1531)	(0.1707)	(0.1867)	(0.1947)	(0.1578)	(0.1578)
Province: Northern Cape	-22.3873***	-121.0458***	-33.3672***	-40.2538***	34.5931***	39.3734***	-11.9224***	-11.9224***
	(0.1042)	(0.6297)	(0.2286)	(0.2569)	(0.2788)	(0.2907)	(0.2356)	(0.2356)
Province: Free State	-24.0583***	-132.3277***	-36.8278***	-41.5848***	50.0217***	54.8615***	-0.3216**	-0.3216**
	(0.0689)	(0.3972)	(0.1510)	(0.1678)	(0.1842)	(0.1924)	(0.1557)	(0.1557)
Province: KwaZulu-Natal	-3.3258***	-24.4966***	-22.1105***	-23.0135***	7.4456***	10.1387***	-20.7769***	-20.7769***
	(0.0472)	(0.2317)	(0.1035)	(0.1147)	(0.1262)	(0.1322)	(0.1067)	(0.1067)
Province: North West	-25.2564***	-132.0895***	-48.1374***	-57.7547***	81.8209***	85.4337***	-4.5045***	-4.5045***
	(0.0662)	(0.3779)	(0.1453)	(0.1623)	(0.1772)	(0.1853)	(0.1498)	(0.1498)
Province: Gauteng	-25.1057***	-168.0367***	-38.0709***	-42.7976***	88.3355***	94.5655***	-33.0137***	-33.0137***
	(0.0495)	(0.2938)	(0.1085)	(0.1206)	(0.1323)	(0.1382)	(0.1118)	(0.1118)
Province: Mpumalanga	-14.8562***	-77.0383***	-28.6317***	-30.3702***	56.7548***	62.9820***	-46.4570***	-46.4570***
	(0.0631)	(0.3329)	(0.1385)	(0.1535)	(0.1689)	(0.1763)	(0.1427)	(0.1427)
Province: Limpopo	-8.2594***	-46.2752***	-31.8378***	-34.6979***	97.6060***	101.7944***	-25.7203***	-25.7203***
	(0.0535)	(0.2680)	(0.1173)	(0.1300)	(0.1431)	(0.1496)	(0.1209)	(0.1209)

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Table A30: Continued

	Total paid work		Total unpaid work		Leisure		Selfcare	
	OLS	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**	**OLS**	**Tobit**
Education: Incomplete primary	-13.5554***	-17.5512***	-1.2954***	0.9299***	55.4436***	61.9963***	-41.6138***	-41.6138***
	(0.0686)	(0.3205)	(0.1505)	(0.1682)	(0.1836)	(0.1928)	(0.1552)	(0.1552)
Education: Incomplete secondary	-21.0659***	-54.2620***	39.0476***	49.5365***	49.1616***	55.4721***	-71.1566***	-71.1566***
	(0.0669)	(0.3163)	(0.1468)	(0.1639)	(0.1790)	(0.1881)	(0.1513)	(0.1513)
Education: Matric	-27.1147***	-89.3043***	62.7681***	73.3404***	87.1276***	95.4031***	-80.0154***	-80.0154***
	(0.0768)	(0.3915)	(0.1684)	(0.1875)	(0.2054)	(0.2154)	(0.1736)	(0.1736)
Education: Post-Matric	-26.9500***	-59.3528***	52.0677***	65.9020***	84.6150***	93.8552***	-97.2670***	-97.2670***
	(0.1032)	(0.5550)	(0.2264)	(0.2516)	(0.2761)	(0.2885)	(0.2334)	(0.2334)
Education: Other/unspecified	-28.9763***	-89.0198***	90.6816***	101.3497***	52.7590***	57.1281***	-89.0062***	-89.0062***
	(0.2722)	(1.6818)	(0.5971)	(0.6604)	(0.7282)	(0.7613)	(0.6154)	(0.6154)
Marital status: Married/live together	3.3355***	20.9588***	51.2103***	50.2474***	-19.2816***	-18.8449***	-29.7439***	-29.7439***
	(0.0512)	(0.2770)	(0.1124)	(0.1240)	(0.1371)	(0.1433)	(0.1158)	(0.1158)
Marital status: Widowed/divorced	0.6629***	28.3924***	17.8408***	17.8246***	0.1585	0.1242	-15.1069***	-15.1069***
	(0.0705)	(0.3581)	(0.1546)	(0.1712)	(0.1885)	(0.1973)	(0.1593)	(0.1593)
Household size	3.6171***	15.0237***	-17.0236***	-18.9796***	10.3556***	10.7477***	0.1434***	0.1434***
	(0.0133)	(0.0723)	(0.0292)	(0.0324)	(0.0356)	(0.0372)	(0.0301)	(0.0301)
Number of children 0-17 years	2.1565***	5.1670***	28.9494***	28.0507***	-13.5588***	-14.2915***	-2.5441***	-2.5441***
	(0.0189)	(0.0979)	(0.0415)	(0.0458)	(0.0506)	(0.0529)	(0.0427)	(0.0427)
Constant	0.0119	-384.4386***	138.9313***	113.9846***	156.6467***	142.9287***	795.9326***	795.9326***
	(0.1125)	(0.6052)	(0.2467)	(0.2752)	(0.3008)	(0.3152)	(0.2543)	(0.2543)
Weighted sample size	22 902 120	22 902 120	22 902 120	22 902 120	22 902 120	22 902 120	22 902 120	22 902 120
R^2 or Pseudo R^2	0.0790	0.0309	0.3380	0.0336	0.1200	0.0099	0.1520	0.0126

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A31: Probit regressions on poverty likelihood under each approach, 2000, marginal effects

	[1]	[2]	[3]	[4a]	[4b]	[4c]	[5]
Age	0.0149***	0.0079***	-0.1049***	0.0313***	0.0091***	-0.0006	0.0133***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0005)	(0.0001)
Age squared	-0.0002***	-0.0001***	0.0009***	-0.0003***	-0.0002***	-0.0001***	-0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Gender: Male	-0.0364***	0.0668***	-0.1519***	-0.3118***	-0.1675***	0.1201***	0.2616***
	(0.0006)	(0.0006)	(0.0007)	(0.0006)	(0.0007)	(0.0024)	(0.0006)
Race: Coloured	-1.3049***	-1.9012***	0.1509***	-0.2412***	-0.0712***	-0.3237***	0.4265***
	(0.0019)	(0.0032)	(0.0020)	(0.0017)	(0.0022)	(0.0086)	(0.0017)
Race: Indian/Asian	-0.8150***	-1.0340***	-0.0858***	-0.2088***	-0.1836***	-0.4636***	0.0902***
	(0.0013)	(0.0014)	(0.0015)	(0.0013)	(0.0016)	(0.0051)	(0.0014)
Race: White	-2.2080***	-2.0765***	0.0000	-0.2100***	-0.1312***	-0.3029***	0.1873***
	(0.0022)	(0.0027)	(0.0013)	(0.0010)	(0.0013)	(0.0038)	(0.0011)
Province: Western Cape	-0.6397***	-0.7582***	0.2347***	-0.0342***	0.1826***	0.8416***	0.2335***
	(0.0015)	(0.0015)	(0.0016)	(0.0013)	(0.0016)	(0.0054)	(0.0014)
Province: Northern Cape	-0.0372***	-0.1835***	0.3850***	0.1629***	0.1835***	0.1573***	0.3981***
	(0.0023)	(0.0022)	(0.0025)	(0.0021)	(0.0027)	(0.0124)	(0.0023)
Province: Free State	-0.0866***	-0.6165***	-0.0625***	-0.3623***	-0.2442***	0.3991***	0.0796***
	(0.0014)	(0.0013)	(0.0016)	(0.0014)	(0.0018)	(0.0059)	(0.0015)
Province: KwaZulu-Natal	-0.0801***	-0.2474***	0.1788***	0.2832***	0.0680***	0.3185***	0.2626***
	(0.0011)	(0.0009)	(0.0012)	(0.0010)	(0.0013)	(0.0051)	(0.0011)
Province: North West	-0.0644***	-0.6721***	0.1569***	0.0462***	0.1176***	0.3433***	0.0174***
	(0.0013)	(0.0012)	(0.0014)	(0.0012)	(0.0015)	(0.0055)	(0.0014)
Province: Gauteng	-0.4688***	-0.8844***	0.2238***	0.0030***	0.0271***	0.4181***	0.1950***
	(0.0011)	(0.0010)	(0.0012)	(0.0010)	(0.0013)	(0.0048)	(0.0011)
Province: Mpumalanga	-0.4331***	-0.9276***	0.1451***	-0.4060***	-0.0092***	0.2487***	-0.0397***
	(0.0014)	(0.0013)	(0.0015)	(0.0014)	(0.0017)	(0.0062)	(0.0015)
Province: Limpopo	-0.3075***	-0.2992***	0.1931***	-0.0505***	-0.0797***	-0.5758***	0.2175***
	(0.0011)	(0.0011)	(0.0013)	(0.0011)	(0.0015)	(0.0122)	(0.0013)
Education: Incomplete primary	-0.1694***	-0.2759***	0.4239***	-0.1176***	0.0651***	0.2169***	0.1583***
	(0.0013)	(0.0012)	(0.0017)	(0.0011)	(0.0016)	(0.0059)	(0.0014)
Education: Incomplete secondary	-0.4429***	-0.6609***	-0.1384***	-0.3450***	0.0659***	-0.0022	0.0276***
	(0.0012)	(0.0011)	(0.0017)	(0.0011)	(0.0015)	(0.0059)	(0.0013)
Education: Matric	-0.8144***	-1.2296***	-0.2573***	-0.4744***	-0.0224***	0.1980***	0.0793***
	(0.0016)	(0.0015)	(0.0020)	(0.0014)	(0.0018)	(0.0064)	(0.0016)
Education: Post-Matric	-1.3839***	-1.6778***	-0.0583***	-0.4853***	0.1074***	0.2171***	0.2767***
	(0.0017)	(0.0017)	(0.0020)	(0.0014)	(0.0018)	(0.0063)	(0.0016)
Education: Other/unspecified	-0.0133***	-0.3108***	-0.0786***	-0.4230***	0.2263***	0.8751***	0.3713***
	(0.0050)	(0.0046)	(0.0055)	(0.0047)	(0.0057)	(0.0109)	(0.0052)
Marital status: Married/live together	-0.3806***	-0.0938***	0.2187***	-0.0002	0.1443***	-0.0555***	0.1288***
	(0.0010)	(0.0009)	(0.0012)	(0.0009)	(0.0011)	(0.0032)	(0.0009)
Marital status: Widowed/divorced	-0.0854***	-0.0516***	0.1025***	-0.0739***	0.0553***	-0.1067***	0.0145***
	(0.0015)	(0.0014)	(0.0019)	(0.0012)	(0.0016)	(0.0051)	(0.0014)
Labour market status: Unemployed	0.3580***	0.0408***	-0.6213***	-0.0161***	-0.1411***	0.0021	-0.0403***
	(0.0012)	(0.0012)	(0.0023)	(0.0012)	(0.0019)	(0.0081)	(0.0016)
Labour market status: Employed	-0.1231***	-0.0106***	0.4301***	0.5427***	0.7065***	0.7538***	1.1664***
	(0.0008)	(0.0007)	(0.0009)	(0.0007)	(0.0009)	(0.0040)	(0.0008)
Household size	0.4695***	-0.1593***	-0.0583***	-0.0969***	-0.0833***	-0.1456***	-0.0836***
	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0003)	(0.0010)	(0.0003)
Number of children 0-17 years	0.0627***	0.0361***	0.0878***	0.1045***	0.0980***	0.0289***	0.0949***
	(0.0004)	(0.0003)	(0.0004)	(0.0003)	(0.0004)	(0.0013)	(0.0003)
Constant	-0.7081***	1.5286***	0.7217***	-0.7535***	-1.5179***	-3.0547***	-1.8289***
	(0.0024)	(0.0023)	(0.0028)	(0.0022)	(0.0030)	(0.0108)	(0.0026)
Weighted sample size	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578	25 604 578
R^2 or Pseudo R^2	0.3622	0.2429	0.1879	0.1109	0.1040	0.1415	0.2254

Source: Own calculations using the 2000 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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Table A32: Probit regressions on poverty likelihood under each approach, 2010, marginal effects

	[1]	[2]	[3]	[4a]	[4b]	[4c]	[5]
Age	0.0351***	0.0166***	-0.1194***	0.0146***	-0.1301***	-0.2130***	-0.0022***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0010)	(0.0001)
Age squared	-0.0004***	-0.0003***	0.0011***	-0.0001***	0.0013***	0.0021***	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Gender: Male	0.0009*	0.0515***	-0.1284***	-0.2768***	-0.1899***	-0.1749***	0.2763***
	(0.0005)	(0.0005)	(0.0006)	(0.0005)	(0.0010)	(0.0035)	(0.0006)
Race: Coloured	-0.6231***	-0.9639***	-0.1446***	-0.2726***	-0.3286***	dropped	0.0489***
	(0.0011)	(0.0013)	(0.0012)	(0.0010)	(0.0025)	dropped	(0.0012)
Race: Indian/Asian	-1.4699***	-2.6379***	-0.1108***	-0.1656***	-0.3187***	dropped	0.1366***
	(0.0024)	(0.0071)	(0.0017)	(0.0014)	(0.0035)	dropped	(0.0017)
Race: White	-1.7215***	-1.9386***	-0.1054***	-0.2632***	-0.0282***	0.2142***	0.0509***
	(0.0023)	(0.0028)	(0.0011)	(0.0009)	(0.0020)	(0.0068)	(0.0010)
Province: Western Cape	-0.4048***	-0.8882***	0.2535***	-0.1872***	0.1419***	dropped	0.1369***
	(0.0012)	(0.0013)	(0.0013)	(0.0010)	(0.0024)	dropped	(0.0013)
Province: Northern Cape	-0.0594***	-0.5198***	0.2664***	-0.1000***	0.1780***	0.0595***	0.2247***
	(0.0017)	(0.0017)	(0.0020)	(0.0016)	(0.0036)	(0.0105)	(0.0022)
Province: Free State	-0.1353***	-0.9428***	0.1185***	-0.1523***	0.0418***	-0.3478***	0.0898***
	(0.0011)	(0.0012)	(0.0014)	(0.0011)	(0.0025)	(0.0083)	(0.0016)
Province: KwaZulu-Natal	-0.0075***	-0.2111***	0.3152***	0.0778***	0.2902***	-0.0001	0.4669***
	(0.0008)	(0.0008)	(0.0010)	(0.0008)	(0.0017)	(0.0044)	(0.0011)
Province: North West	-0.1937***	-0.6241***	0.0283***	-0.2081***	-0.1535***	-0.5039***	0.1144***
	(0.0011)	(0.0011)	(0.0014)	(0.0011)	(0.0027)	(0.0096)	(0.0015)
Province: Gauteng	-0.4837***	-0.9035***	0.2139***	-0.2797***	0.0858***	-0.6301***	0.2082***
	(0.0008)	(0.0008)	(0.0010)	(0.0008)	(0.0017)	(0.0069)	(0.0011)
Province: Mpumalanga	-0.1488***	-0.7108***	0.2641***	-0.2095***	0.0171***	-0.2125***	0.3553***
	(0.0010)	(0.0010)	(0.0013)	(0.0010)	(0.0023)	(0.0066)	(0.0014)
Province: Limpopo	0.1231***	-0.2009***	-0.1085***	-0.2746***	-0.2406***	-0.5610***	0.0118***
	(0.0009)	(0.0009)	(0.0012)	(0.0009)	(0.0022)	(0.0075)	(0.0014)
Education: Incomplete primary	-0.0903***	-0.4865***	0.6469***	-0.1982***	0.9992***	5.6890***	0.1185***
	(0.0012)	(0.0012)	(0.0020)	(0.0012)	(0.0084)	(0.0152)	(0.0019)
Education: Incomplete secondary	-0.2896***	-0.8117***	0.0211***	-0.3787***	0.7762***	6.2721***	-0.0284***
	(0.0012)	(0.0012)	(0.0020)	(0.0011)	(0.0084)	(0.0144)	(0.0018)
Education: Matric	-0.7035***	-1.2903***	0.0204***	-0.4303***	0.5868***	5.6476	0.0583***
	(0.0013)	(0.0013)	(0.0021)	(0.0012)	(0.0086)	dropped	(0.0019)
Education: Post-Matric	-1.2372***	-1.9730***	-0.0866***	-0.6852***	0.8176***	dropped	-0.0933***
	(0.0018)	(0.0018)	(0.0022)	(0.0014)	(0.0087)	dropped	(0.0019)
Education: Other/unspecified	-0.4878***	-1.2632***	0.1652***	0.0672***	1.1672***	dropped	0.3044***
	(0.0046)	(0.0052)	(0.0051)	(0.0038)	(0.0113)	dropped	(0.0049)
Marital status: Married/live together	-0.3500***	-0.0116***	0.2174***	0.0822***	0.1126***	0.2438***	0.0958***
	(0.0007)	(0.0007)	(0.0008)	(0.0006)	(0.0019)	(0.0110)	(0.0008)
Marital status: Widowed/divorced	-0.0718***	0.0216***	0.0147***	0.0278***	-0.5382***	dropped	-0.0286***
	(0.0011)	(0.0011)	(0.0016)	(0.0010)	(0.0057)	dropped	(0.0014)
Labour market status: Unemployed	0.2253***	0.0488***	-0.1871***	-0.0759***	-0.1294***	0.1740***	0.0584***
	(0.0009)	(0.0009)	(0.0018)	(0.0010)	(0.0034)	(0.0112)	(0.0018)
Labour market status: Employed	-0.4972***	-0.0872***	1.2335***	0.9359***	0.7328***	0.7129***	2.1818***
	(0.0006)	(0.0006)	(0.0009)	(0.0006)	(0.0018)	(0.0072)	(0.0009)
Household size	0.2828***	-0.2022***	-0.0359***	-0.0821***	0.0124***	-0.0819***	-0.0201***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0005)	(0.0018)	(0.0003)
Number of children 0-17 years	0.0818***	0.0567***	0.0337***	0.0639***	-0.0450***	-0.0471***	0.0881***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0008)	(0.0040)	(0.0003)
Constant	-1.0658***	1.5044***	0.4285***	-0.3962***	-0.8687***	-5.5252***	-2.3151***
	(0.0019)	(0.0019)	(0.0027)	(0.0019)	(0.0087)	(0.0227)	(0.0029)
Weighted sample size	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589	39 877 589
R^2 or Pseudo R^2	0.2445	0.2241	0.1867	0.1287	0.1970	0.2148	0.4184

Source: Own calculations using the 2010 TUS data.

*** Significant at 1% ** Significant at 5% * Significant at 10%

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