# Southern Africa Labour and Development Research Unit

# Cross-Sectional Features of Wealth Inequality in South Africa: Evidence from The National Income Dynamics Study

*by*
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SALDRU Working Paper
Number 185

N.i.D.S.
NATIONAL INCOME DYNAMICS STUDY

NIDS Discussion Paper
2016/12

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Acknowledgements:
Funding for this research from the Department of Planning, Monitoring and Evaluation is gratefully acknowledged.

Recommended citation

Mbewe, S., Woolard, I. (2016). Cross-Sectional Features of Wealth Inequality in South Africa: Evidence from The National Income Dynamics Study. Cape Town: SALDRU, University of Cape Town. SALDRU Working Paper Number 185/ NIDS Discussion Paper 2016/12.

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ISBN: 978-1-928281-46-7



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University of Cape Town, August 2016

## Abstract

In this paper, we examine the cross-sectional distribution of wealth in South Africa by using survey data from the National Income Dynamics Study (NIDS) for 2010-2011 (wave 2) and 2014-2015 (wave 4). Our results show that wealth inequality is very high, with the bottom half of the population owning very little and the top decile holding about 85% of total wealth in 2010-2011 and 2014-2015. While the results also show that wealth inequality within-Race and between-Race are high, we find that wealth inequality within-Race is higher and particularly in the Black race, with a greater concentration of the Black population at the bottom end of the wealth distribution. Further, the results show that the racial wealth gap between the Black race and the White race is high, with a typical Black household holding relatively less than 5% of the wealth held by a typical White household. Finally, we find that wealth varies significantly over the age profile, suggesting support for the life cycle hypothesis.

**JEL Categories:** E01, E10, E21

**Keywords:** Wealth Distribution; South Africa; Cross-Section

# 1. Introduction

The emergence of evidence (Piketty & Zucman, 2013; Piketty, 2014; Cowell & Van Kerm, 2015) confirming that global wealth inequality is rising much faster than income inequality has triggered attention in the field of economic inequality. It has become a stylized fact that wealth inequality is persistently higher than income inequality (Piketty & Zucman, 2013; Toledano, 2015). This stylized fact is thought-provoking for a country such as South Africa which is ranked high in terms of income inequality by international standards, with an income Gini coefficient of about 0.67 (Finn & Leibbrandt, 2013). The question arises whether wealth is more unequally distributed than income in a developing country that not only has low levels of capital (Orthofer, 2015), but struggles to retain capital inflows in the presence of increased financial globalization and international capital mobility (Ndikumana, 2015).

From a methodological standpoint, research (IMF, 2013; Piketty, 2014) on wealth inequality has been driven by the emergence of data appropriate for examining the distribution of wealth. In the context of South Africa, one such dataset is the National Income Dynamics Study (NIDS) which is a panel survey covering 2008-2015 that includes a module on wealth holdings in alternate waves. A previous study by Daniels *et al*. (2014) makes use of data from Wave 2 (2010-2011) to describe wealth distribution in South Africa. Wealth data collected in Wave 4 (2014-2015) again provides an opportunity to investigate the features of wealth distribution in South Africa and to compare these results to data from Wave 2.

The goal of this paper is therefore to examine the cross-sectional wealth distribution in South Africa using survey data from Wave 2 (2010-2011) and Wave 4 (2014-2015) of the National Income Dynamics Study (NIDS). This paper fills the extant gap within the existing South African literature by examining wealth distribution across time using the first ever household-level wealth dataset in South Africa. It also provides the following three analyses: First, the paper determines how inequality indices are affected by the inclusion of household assets in Wave 4 – an asset type not included in Wave 2. Second, this paper estimates racial wealth gaps, wealth distribution by race group, and racial inequality indices. Third, this paper also estimates inequality and percentile wealth distributions within different age cohorts.

Several motivations attest to why we examine the cross-sectional distribution of wealth in South Africa. First, while existing evidence (Yu, 2010; Leibbrandt et al., 2010; Finn & Leibbrandt, 2013) on income inequality is alarming by international standards, a stylized fact proposing that wealth inequality is likely to be worse is worth noting. While issues such as attrition can also affect wealth survey data, this paper also provides support for the consistency of the data over the two waves. Additionally, for public policy, such analysis would provide an indication of how well prepared the population (and in particular, the working class) is to finance future expenditure upon retirement (Fries *et al*., 1998). Second, South Africa has a longstanding history of racial oppression from apartheid – a period in which the Black population was economically oppressed. If evidence suggests that income is still substantially unevenly distributed by race and age-group in the post-apartheid period, it is important to understand the intensity and drivers of this inequality. To the best of our knowledge, no other study examines racial wealth gaps, and race and age wealth inequality in South Africa.

This paper begins with a discussion of some conceptual and measurement issues associated with wealth. Section 3 describes the wealth data used, and changes between Wave 2 and Wave 4. Section 4 provides an aggregate and descriptive analysis of wealth inequality between the two waves, and assesses the effect of extreme values on wealth inequality indices. Section 5 analyses the racial wealth gap and race-wealth inequalities. Section 6 tests the *Life-Cycle Model* and examines inequality within various age cohorts. Section 7 offers some concluding remarks.

## 2. Conceptual and Measurement Issues

At its simplest, wealth is defined as the accumulation of marketable assets by households, either through savings or through the preservation of intergenerational transfers (Trotman-Dickenson, 1983). In contrast to income, which is a flow concept, wealth is considered a stock concept measured at a fixed point in time. Although wealth, in the standard literature, often takes the form of financial and non-financial assets, it also assumes the form of social, cultural, and human capital (Putnam, 2000). It is essential to note that how wealth is defined determines the nature of the wealth inequality under analysis (Cowell & Van Kerm, 2015). In this paper we restrict our definition of wealth to financial and non-financial wealth owned by households.

In common practice, net worth[1] is often a concept of wealth used for the empirical analysis of wealth distributions (Cowell & Van Kerm, 2015). By definition, net worth refers to the difference between gross wealth and gross liabilities of an individual or household, obtained through the following computation:

$$Net\ Wealth = \sum_{i=1}^{k} \varphi_i Asset_i - Liability_i$$

where $Asset_i \geq 0$ is the quantity held of asset type $i$, while $\varphi_i$ and $Liability_i$ is the price[2] of, and the liability associated with asset $i$, respectively. In certain cases, net worth tends to be negative — highlighting the fact that the link between gross assets and gross liabilities, as well as gross savings and credit requires careful consideration when making any analysis about wealth (Daniels *et al*., 2014). However, this is quite different from income, which is often assumed in the literature to be non-negative (Leibbrandt, *et al*., 2010).

Measuring net worth is a complex task and requires an understanding of what makes up assets and liabilities. On the one hand, gross assets are categorized into financial assets (shares, bank deposits, bonds, life insurance, and other financial assets), real assets (vehicles, real estate, immovable property, and other real assets) and annuities (immediate, deferred). On the other hand, gross liabilities include education loans, mortgage loans (with a focus on home-secured loans), vehicle loans, and other forms of financial loans, as well as informal debt.

Unlike an analysis of income distribution, an analysis of wealth distribution takes a peculiar form because of the presence of negative net worth and outliers in the data, as well as a skewed distribution with fat tails. Particularly with the presence of negative net worth in the data, measures of inequality (such as the Theil Coefficient) are insufficient to provide reliable estimates (OECD, 2013). However, measures such as the Gini coefficient and Half Squared of the Coefficient of Variation are often defined for zero and negative wealth (Cowell & Van Kerm, 2015).

## 3. Wealth Data: The National Income Dynamics Study

Based on our previous discussion on measuring wealth, it is evident that constructing a measure of wealth requires detailed micro-level information about the assets and liabilities of households and individuals. Such information is often collected through surveys, which allow interviewers to pose specific questions about the household and individual composition of assets and liabilities. If the goal

[1] Note that we synonymously use “Net Worth” and “Net Wealth”.

[2] The price of assets, whether imputed or at market value, has a huge impact on wealth inequality estimates. See Wolff (2012) for a detailed discussion .

is to carry out further analysis on the distribution of wealth by subgroups, the survey can incorporate more questions on demographic and socioeconomic characteristics of respondents.

One such survey in South Africa is the National Income Dynamics Study (NIDS) — a comprehensive household survey implemented by the Southern Africa Labour and Development Research Unit (SALDRU) at the University of Cape Town. NIDS is the first nationally representative panel study in South Africa and collected data on income and expenditure, as well as other socioeconomic and demographic characteristics of households and individuals (children and adults).

All four waves of the NIDS dataset are in the public domain[3] . Of these, only Wave 2 (conducted from 2010-2011)[4] and Wave 4 (conducted from 2014-2015)[5] contain data on wealth that are sufficient to construct a measure of wealth (and in this case, net worth). However, NIDS is not a W*ealth Survey*, but merely incorporates wealth related questions as a distinct theme in some waves.[6] A notable difference between the net worth variable in Wave 2 and Wave 4 is the inclusion of household assets in Wave 4.

### 3.1 Constructing a Measure of Net Wealth using NIDS

The NIDS dataset provides two ways of measuring wealth through household and individual questionnaires. The first is the "one-shot" wealth question, which asks the household respondent[7] (in the case of household wealth) and an individual to estimate whether his or her net worth is zero, negative or positive. One of the challenge of the one-shot wealth question is the element of recall bias, which can lead respondents o either underestimate or overestimate their net worth (Daniels *et al*., 2014).

The second measure is derived net worth arrived at by estimating the net worth of a household or individual by taking the difference between total assets and liabilities.[8] In this paper, our analysis is restricted to using the derived measure of net worth in the NIDS data. However, with the inclusion of household assets in derived net worth in Wave 4, we follow recommendations of Daniels and Augustine (2016) and subtract household assets in Wave 4 in order to make the estimates comparable between the two Waves.

### 3.2 Scale of Survey and Data Quality in NIDS

NIDS is a large-scale study with 9128 households and 34086 individuals surveyed in Wave 2 (SALDRU, 2015) while Wave 4 surveyed 11898 households and 42348 individuals (SALDRU, 2016). Based on the scale of the survey, we expect the estimates to be representative of the South African population. Daniels *et al*. (2014) note that assets and liabilities in Wave 2 were originally underestimated, but this has now been accounted for through imputations and appropriate weighting. Daniels and Augustine (2016) note that the Wave 4 data can only be used for analysis if the households are stable[9]. We acknowledge that not adjusting for household composition, stability, and size increases the likelihood of inducing wealth heterogeneity. However, doing so is beyond the scope of this paper.

[3] For more details on NIDS Wave 1 and 3 datasets, see: http://www.nids.uct.ac.za/nids-data/data-access
[4] For more details on NIDS Wave 2, see SALDRU (2015).
[5] For more details on NIDS Wave 4, see SALDRU (2016).
[66] NIDS plans to include the Wealth module in Wave 5.
[7] The household respondent is typically the oldest woman in the household, but can be any adult household member that is able to report on household-level questions.
[8] See Section 3 for a discussion on the types of assets and liabilities.
[9]Household stability requires accounting for the changes in household composition over time.

# 4. Wealth Distribution: An Overall Picture

This section provides a general discussion of wealth inequality and the sensitivity of inequality indices. Note that, where applicable, all our estimates make use of post-stratified weights to ensure that they are representative of the South African population. All financial assets are price-adjusted and expressed in 2014 Rands to ensure that estimates are comparable between the two waves. This is achieved by inflating Wave 2 data and deflating Wave 4 data to the modal month of the Wave 4 interview (November 2014) using Statistics South Africa's Consumer Price Index (Stats SA, 2016a; 2016b). We make use of households as our basic unit of analysis and therefore, it is beyond the scope of this study to account for economies of scale and equivalence scales[10].

## 4.1 Describing Wealth Variables: *A Set of Descriptive Statistics*

Our analysis begins with a summary of the cross-sectional distribution of wealth in South Africa in NIDS Wave 2 and Wave 4. Table 1 reports descriptive statistics of household wealth variables and, in particular, net worth, total assets, and total debt of households. Essentially, measures of central tendency, such as the mean and median, have the potential to provide a simple indicator of wealth inequality when analysed together. For instance, in Table 1, we note that the mean of total household assets exceeds the median of total household assets in both 2010-2011 (Wave 2) and 2014- 2015 (Wave 4) — implying that more households in South Africa have low levels of assets compared to the mean. In the case of total debt, the mean household total debt also exceeds the median household total debt. This implies that very few people hold debt in the economy, which can be motivated by the lack of access to collateral security for the majority of the population.

In the case of net worth, we note that the mean of household net worth is greater than median household net worth in both 2010-2011 and 2014-2015. This suggests that more households in South Africa have low levels of wealth, compared to the mean, while only a few households have net worth above the mean in both periods. Further, about 9.5% and 7.6% of households have negative net worth in 2010-2011 and 2014-2015, respectively. The results also show that 7.8% and 13.1% of the population had zero wealth in 2010-2011 and 2014-2015, respectively.

The mean and median provide some useful information about how much wealth the median person holds, but such analysis can sometimes be misleading in the presence of outliers — which also induce fat tails in the wealth distribution. In Table 1, the presence of outliers can partly be identified through the large deviations between the smallest and the largest values of net worth. The appended Boxplot in Figure A.1 shows the presence of extreme values. A common property of wealth distributions is the presence of fat long tails. We also provide evidence of the fat tails of the wealth distribution through the appended Adaptive Kernel Density in Figure A.2.

[10] For a discussion on equivalence scales, see Bover (2010) and OECD (2013).

**Table 1: Wealth in South Africa: Descriptive Statistics, 2010-2011 and 2014-2015**

| | Wave 2 (2010-11) | Wave 4 (2014-15) |
|---|---|---|
| **Total Assets** | **Thousand Rands** | **Thousand Rands** |
| Mean | 700 | 508 |
| Median | 30 | 45 |
| Difference | 670 | 463 |
| **Total Debt** | **Thousand Rands** | **Thousand Rands** |
| Mean | 142 | 119 |
| Median | 10 | 5 |
| Difference | 132 | 114 |
| **Net-Wealth** | **Thousand Rands** | **Thousand Rands** |
| Mean | 579 | 447 |
| Median | 18 | 38 |
| Difference | 561 | 409 |
| | **Percentage** | **Percentage** |
| *(%) of Net-Wealth < 0* | 9.5 | 7.6 |
| *(%) of Net-Wealth = 0* | 7.8 | 13.1 |
| *(%) of Net-Wealth > 0* | 82.7 | 79.3 |
| | **Thousand Rands** | **Thousand Rands** |
| *Four Smallest Values* | -22000 | -6816 |
| | -3386 | -3185 |
| | -1254 | -2543 |
| | -1072 | -2237 |
| *Four Largest Values* | 189000 | 35500 |
| | 189000 | 45700 |
| | 381000 | 48200 |
| | 391000 | 501000 |

Source: Authors calculations from NIDS data from SALDRU (2015; 2016).
Note: Values expressed in "2014 Rands".

The Adaptive Kernel Density also shows that the distribution of wealth is skewed to the right in both periods and exhibits a spike at zero (which is generally a common feature of most wealth distributions) in both periods. The spike at zero also informs us that the majority of the population have no wealth, and if they do, it is insufficient to finance consumption in times of economic shocks or post-retirement. To obtain an understanding of wealth distribution by different percentiles in the population, Table 2 provides the deciles of net worth, total assets, and total debt. Evidently, above 80% of net worth and total assets are concentrated in the top 10% of the population in both periods. This highlights the fact that the bottom half of the population own virtually nothing. Although total debt is held by only 20% of the population, the composition changed between 2010-2011 and 2014-2015 – with 2014-2015 showing a greater concentration in the top 10% of the population.

**Table 2: Deciles of Net-Worth, Total Assets, and Total Debt, 2010-2011 and 2014-2015**

| Deciles | Net-Worth | | Total Assets | | Total Debt | |
|---|---|---|---|---|---|---|
| | Wave 2 | Wave 4 | Wave 2 | Wave 4 | Wave 2 | Wave 4 |
| **0 – 10** | -0.0091 | -0.0185 | 0.0000 | 0.0000 | 0.0003 | 0.0002 |
| **10 – 20** | 0.0000 | 0.0000 | 0.0001 | 0.0001 | 0.0011 | 0.0006 |
| **20 – 30** | 0.0001 | 0.0005 | 0.0003 | 0.0009 | 0.0023 | 0.0012 |
| **30 – 40** | 0.0003 | 0.0023 | 0.0008 | 0.0030 | 0.0038 | 0.0020 |
| **40 – 50** | 0.0013 | 0.0060 | 0.0024 | 0.0065 | 0.0066 | 0.0036 |
| **50 – 60** | 0.0042 | 0.0111 | 0.0060 | 0.0111 | 0.0115 | 0.0065 |
| **60 – 70** | 0.0104 | 0.0187 | 0.0119 | 0.0187 | 0.0219 | 0.0123 |
| **70 – 80** | 0.0236 | 0.0377 | 0.0297 | 0.0389 | 0.0471 | 0.0295 |
| **80 – 90** | 0.0965 | 0.0925 | 0.1173 | 0.0968 | 0.2139 | 0.0917 |
| **90 – 100** | 0.8727 | 0.8498 | 0.8315 | 0.8239 | 0.6915 | 0.8525 |

Source: Authors own calculations using NIDS data from SALDRU (2015; 2016).
Note: Wave 2 (2010-2011) and Wave 4 (2014-2015).

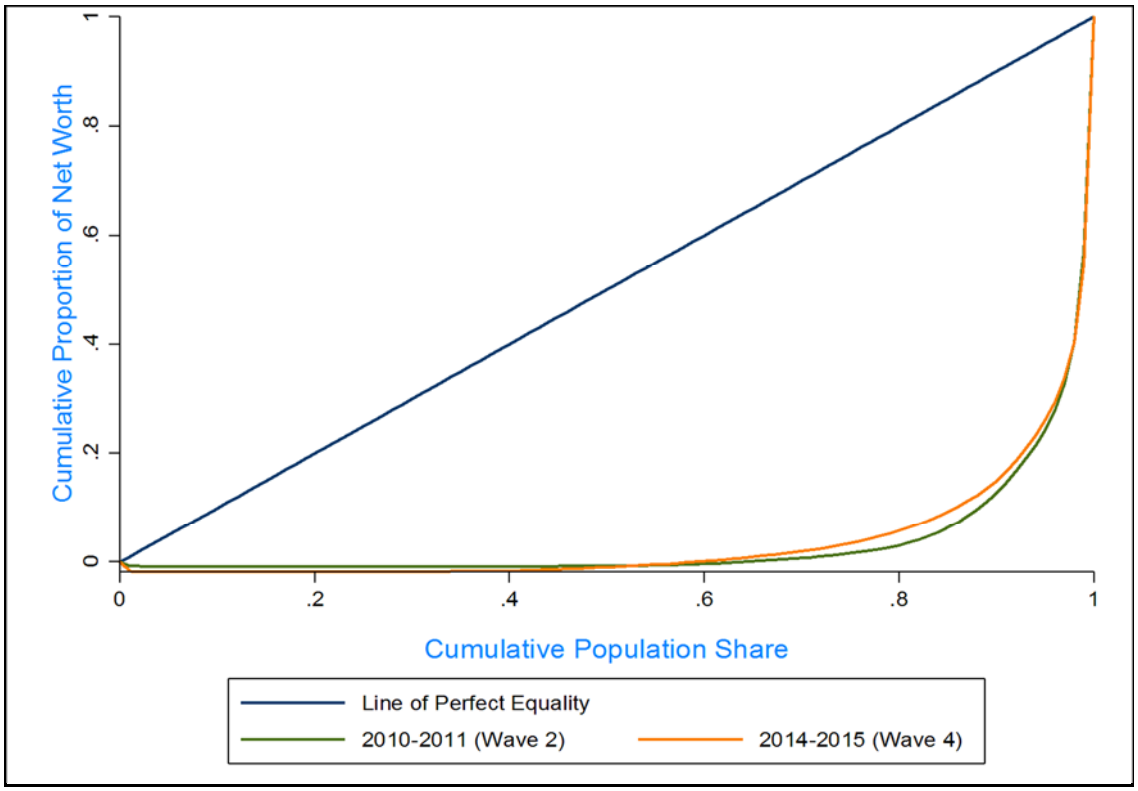
## 4.2 Lorenz Curves of Wealth and Inequality Indices

A further piece of evidence describing the overall distribution of household wealth in South Africa are the Lorenz curves for net worth reported in Figure 1 below. It is clear that wealth is highly unequal shown by the large distance between the Lorenz curves and the line of perfect equality. This comes as no surprise, as also shown previously by the decile shares of net worth.

The bottom part of the Lorenz curves lying below the horizontal axis also show that a small percentage of households have negative wealth. The presence of negative values results in a negative slope of the distribution at that particular point and this has implications. Firstly, negative values imply that a household may be in a dismal position or secondly, the household could be at point in the life cycle[11] where their liabilities increase while they anticipate accumulating wealth in the future (OECD, 2013). In both periods, the largest component of household debt is shown to be debt from real estate.

[11] For a detailed discussion, see *Life-Cycle Hypothesis* in Section 6.

**Figure 1: Lorenz Curves for Household Net Worth, 2010-2011 and 2014-2015**




Source: Authors own calculations using NIDS data from SALDRU (2015; 2016).

Figure 1 also shows that household wealth was more unequally distributed in 2010-2011 than in 2014-2015. The wealth inequality indices reported in Table 3 below also confirm this, with net worth Gini coefficients of 0.94 in 2010-2011 and 0.93 in 2014-2015. The reduction in wealth inequality could be caused by several factors, such as high attrition rates of respondents at the upper end of the wealth distribution that might require adjusting for. Daniels and Augustine (2016) acknowledge this in their analysis of the quality of the wealth data in NIDS Wave 4.

**Table 3: Wealth Inequality Indices in South Africa, 2010-2011 and 2014-2015**

| Inequality Indices | Net-Worth | | Total Assets | | Total Debt | |
|---|---|---|---|---|---|---|
| | Wave 2 | Wave 4 | Wave 2 | Wave 4 | Wave 2 | Wave 4 |
| **Gini** | 0.94 | 0.93 | 0.90 | 0.89 | 0.84 | 0.90 |
| $\frac{1}{2}CV^2$ | 10.81 | 10.28 | 10.11 | 9.25 | 8.14 | 6.14 |

Source: Authors own calculations using NIDs data from SALDRU (2015; 2016).
Note: Wave 2 (2010-2011) and Wave 4 (2014-2015).

In addition to the challenge of identifying the source of the decrease in inequality, it is evident that wealth inequality is significantly high in both periods and in fact, much higher than income inequality

(with a Gini of 0.67)[12]. These inequality indices are worth noting especially in a country known to be one of the most unequal countries in the world by income standards.

## 4.3 Sensitivity of Wealth Inequality Indices

A feature of wealth data is often the presence of extreme data points in the form of either the wealthiest households on the upper end of the distribution or the none wealthy households (with either zero or negative wealth) on the lower end of the distribution. While the presence of extreme values has the potential to affect inequality indices, we test the sensitivity of different treatment of outliers on wealth inequality indices.

Further, and as previously mentioned, a distinctive factor between measures of wealth (i.e. derived household net worth and household total assets) in Wave 2 and Wave 4 is the inclusion of household assets" as a component of durable assets in Wave 4. However, our analysis in this paper subtracts household assets in net worth to allow for a cross-wave comparison. Based on the data in Wave 4, household assets seem to contribute to wealth significantly (SALDRU, 2016). Though not part of our analysis of wealth inequality, we test the sensitivity of wealth inequality indices when household assets" are accounted for in the determination of net worth. This may have implications for defining net worth appropriately. Durable goods may also be a policy pathway to partly reduce wealth inequalities.

### 4.3.1 Different Treatment of Outliers: *Impact on Wealth Inequality Indices*

As reported in Table 4 below, we re-estimate wealth inequality indices by either shaving the top percentile, or the top and bottom percentiles, or dropping the richest household in the data.

**Table 4: Wealth Inequality Indices and Different Treatment of Outliers, 2010-2011 and 2014-2015**

| | **Inequality Indices** | |
|---|---|---|
| | $\frac{1}{2}CV^2$ | Gini |
| **Initial Inequality Indices** | | |
| Wave 2 | 10.81 | 0.94 |
| Wave 4 | 10.28 | 0.93 |
| **Shave Top 1%** | | |
| Wave 2 | 3.11 | 0.90 |
| Wave 4 | 3.17 | 0.89 |
| **Shave Top and Bottom 1%** | | |
| Wave 2 | 3.03 | 0.87 |
| Wave 4 | 2.56 | 0.83 |
| **Dropping Richest Household** | | |
| Wave 2 | 7.24 | 0.93 |
| Wave 4 | 4.80 | 0.92 |

Source: Authors own calculations using NIDS data from SALDRU (2015; 2016).
Note: Wave 2 (2010-2011) and Wave 4 (2014-2015).

Shaving the top percentile has an effect on wealth inequality indices and the associated wealth inequality within and between Wave 2 and Wave 4. There is a greater reduction in wealth inequality

[12] See Finn and Leibbrandt (2013) for a detailed discussion and estimates of income inequality.

within Wave 2 (0.94 to 0.90) and Wave 4 (0.93 to 0.89) than a reduction (0.90 to 0.89) between the two waves. Where we shave both the top and bottom percentile (mostly those with negative wealth), the reduction is much greater within Wave 2 (0.94 to 0.87) and Wave 4 (0.93 to 0.83) than the reduction between the two waves (0.87 and 0.83). We note that the high concentration of zero wealth in the wealth distribution[13] in Wave 4 results in a much greater reduction in wealth inequality within the wave. Although the effect of dropping the richest household reduces wealth inequality within Waves 2 (0.94 to 0.93) and Wave 4 (0.93 to 0.92), the effect is minimal within and between the two waves when compared to results of previous two methods of re-estimating wealth inequality.

### 4.3.2 Effect of Including Household Assets on Inequality

In Table 5, we estimate wealth inequality in Wave 4 by including household possessions in the derivation of household net worth. We notice that the inequality reduces by approximately 5.7% for the Gini Coefficient and 14.8% for the Coefficient of Variation. This shows that the lack of a variable for household assets in Wave 2 has a significant impact on our inequality index and has the potential to lead to over or under estimating wealth inequality.

**Table 5: Net-Wealth Gini Coefficient after exclusion of Household Assets, 2014-2015**

| | Inequality Indices | |
|---|---|---|
| | $\frac{1}{2}CV^2$ | Gini |
| Without Household Assets | 10.28 | 0.93 |
| With Household Assets | 8.76 | 0.88 |
| (%) Change | 14.8 | 5.7 |

Source: Authors own calculations using NIDS data from SALDRU (2016).

## 5. Racial Wealth Gap and Race-Wealth Inequality

This section estimates the racial wealth gap in both 2010-2011 and 2014-2015, and further provides measures of wealth inequality between different racial groups. The literature on economic inequality offers some guidance on the relationship between race and economic inequality. However, South Africa, and its history of racial oppression against the Black population during the Apartheid period presents a special case. During this period, Black South Africans were deprived of equal economic opportunity and this perpetuated a cycle of unequal distribution of income and wealth not only between the Black and White South Africans, but also among Black South Africans. Evidence (Leibbrandt *et al*., 2010; Finn & Leibbrandt, 2013) suggests that this trend persists in the post-apartheid era, and the bulk of Black households still hold little or no wealth or income when compared to their White counterparts.

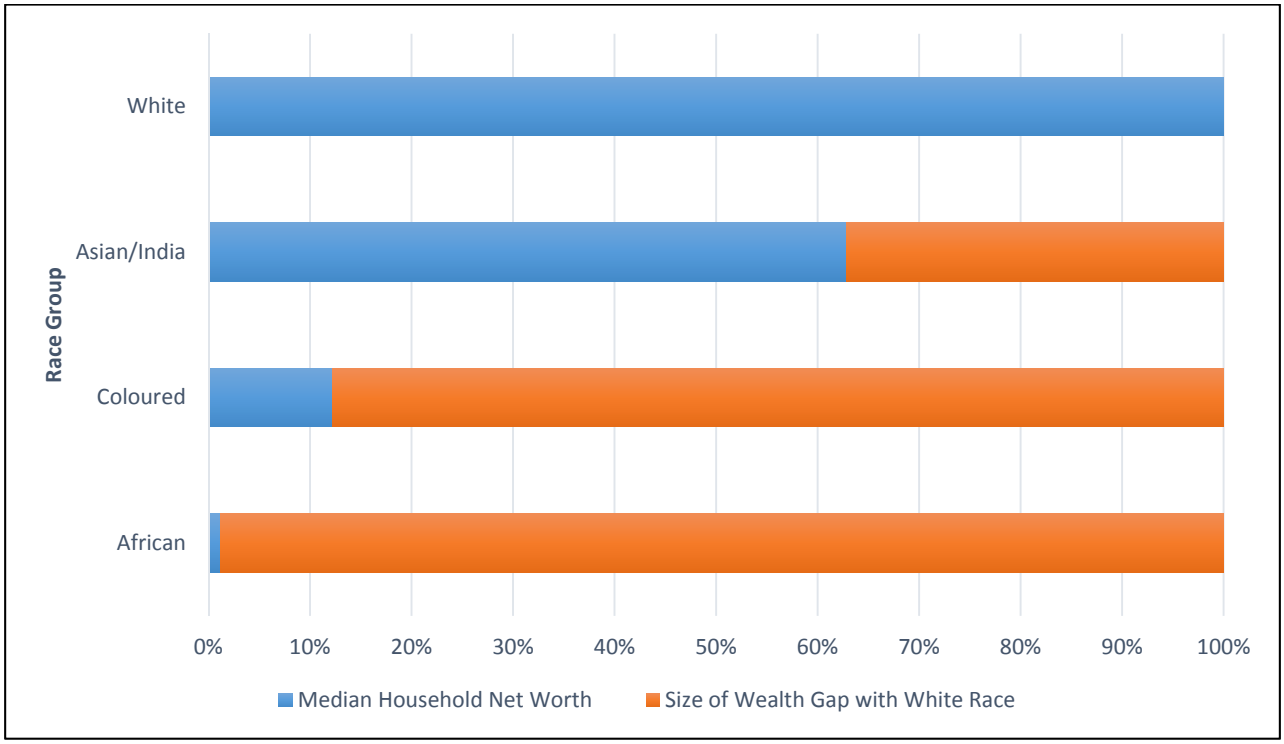
In Figures 2 and 3, we estimate the racial wealth gap in 2010-2011 and 2014-2015. By definition, the racial wealth gap is the absolute difference between the median households' wealth amongst populations based on racial groupings (Sullivan & Tatjana, 2015). Note that our analysis of the racial wealth gap is made with reference to White households and that we do not adjust for household

[13] See Adaptive Kernel Density for Net-Wealth in Figure A.2 in the Appendix.

composition and size. Although beyond the scope of this paper, we acknowledge that adjusting for household size and composition has the potential to explain part of the racial wealth gap changes.

Figures 2 and 3 show that White households hold much greater wealth than Black, Coloured, and Asian/Indian[14] households do. Table A.1 in the Appendix also confirms this by reporting the mean and median household wealth of all races. In period 2010-2011, we find that in relative terms, Black households only hold about 1 % of the wealth held by White households, which adds up to a racial gap of (R 1 063 230). In Coloured and Asian/Indian households, they hold 12% and 63% of wealth held by White households, with wealth gaps of (R 944 672) and (R 400 119), respectively[15]. Further, estimates of household median wealth appended in Table A.2 suggest that for every R1 held by a typical Black, Coloured or Asian/Indian household, a typical White household will hold R84.80, 8.20 and R1.59.

**Figure 2: Size of Racial Wealth Gap, 2010-2011**

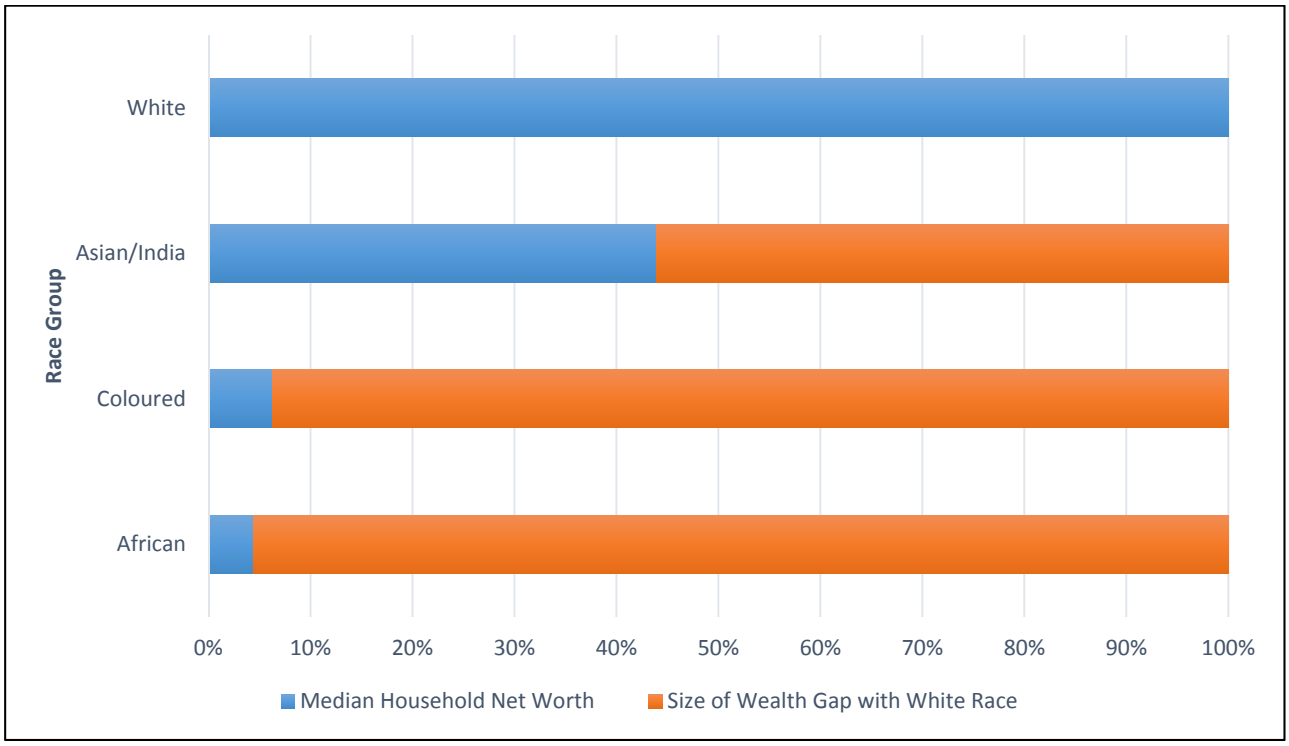



Source: Authors own calculations using NIDS data from SALDRU (2015).

[14] Note that the Asian/Indian sample size in the NIDS data is very small and not fully representative of the population.

[15] See Table A.2 in the Appendix for rand values of the racial wealth gap.

**Figure 3: Size of Racial Wealth Gap, 2014-2015**




Source: Authors own calculations using NIDS data from SALDRU (2016).

In the case of 2014-2015, the average Black household holds about 4 % the wealth of the average white household, with a racial gap of R 622 446. Coloured households hold 6% of white household wealth, with wealth gaps of R 610 406. Another way to express this is shown in Table A.2 of the Appendix, which shows that for every R1 held by typical Black, and Coloured households, a typical White household will hold R22.84 and R16.0, respectively.

In both periods under analysis, the wealth gap, in relation to White households shows a reduction for Blacks, and an increase for Coloureds by more than half. One explanation for this is the reduction in inequality among Black households, and rising wealth inequality among Coloured households, as shown in Table 6. Further, Figures 4 (2010-2011) and 5 (2014-2015) also show that the composition of wealth in the top deciles is dominated by White households. Figures A.3 (2010-2011) and A.4 (2014-2015) in the appendix provide further evidence of the unequal wealth distribution among Black households, when compared to White households.

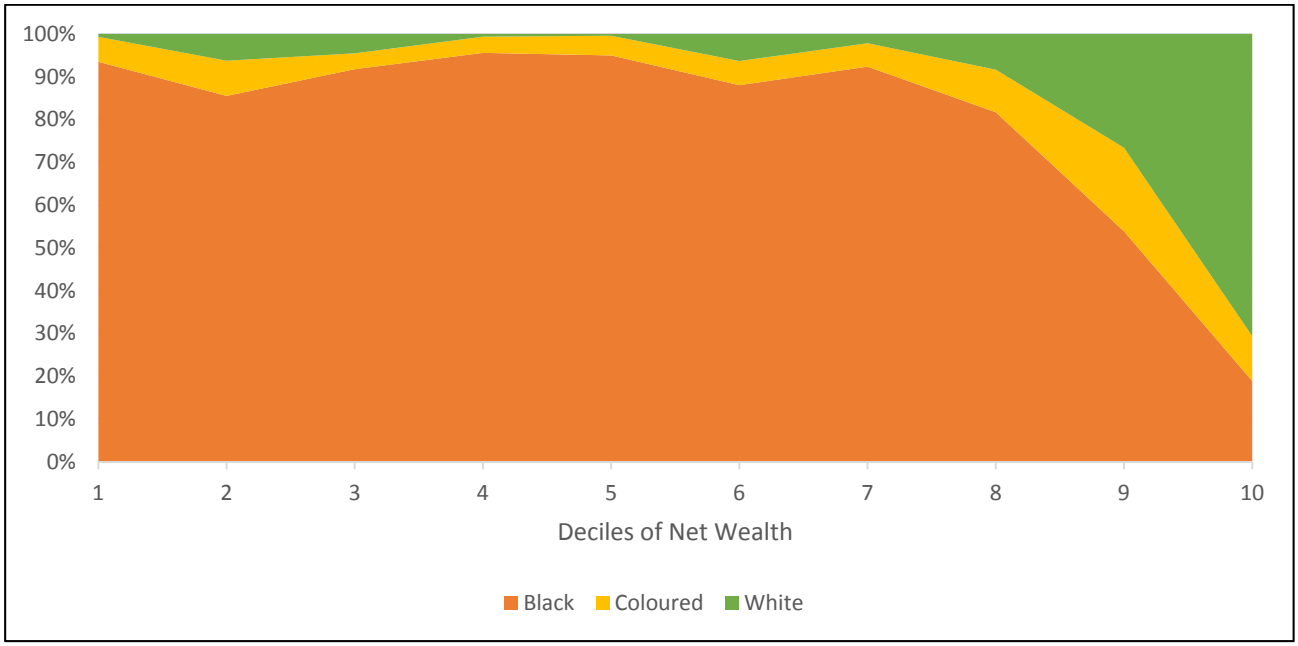
**Table 6: Wealth Inequality Indices in South Africa by Race Group, 2010-2011 and 2014-2015**

| Inequality Indices | Race | Net-Worth | | Total Assets | | Total Debt | |
|---|---|---|---|---|---|---|---|
| | | Wave 2 | Wave 4 | Wave 2 | Wave 4 | Wave 2 | Wave 4 |
| **Gini** | Black | 0.98 | 0.90 | 0.88 | 0.86 | 0.87 | 0.85 |
| | Coloured | 0.81 | 0.90 | 0.77 | 0.79 | 0.73 | 0.83 |
| | Asian/Indian | 0.91 | 0.83 | 0.86 | 0.85 | 0.52 | 0.89 |
| | White | 0.74 | 0.79 | 0.70 | 0.74 | 0.71 | 0.82 |
| $\frac{1}{2}CV^2$ | Black | 8.11 | 22.72 | 6.75 | 20.65 | 7.18 | 3.90 |
| | Coloured | 3 | 4.07 | 2.47 | 3.31 | 1.60 | 3.08 |
| | Asian/Indian | 5.06 | 2.96 | 4.45 | 3.32 | 0.95 | 3.52 |
| | White | 5.55 | 0.23 | 5.54 | 2.07 | 6.72 | 2.94 |

Source: Authors own computations; Data from SALDRU (2015; 2016).

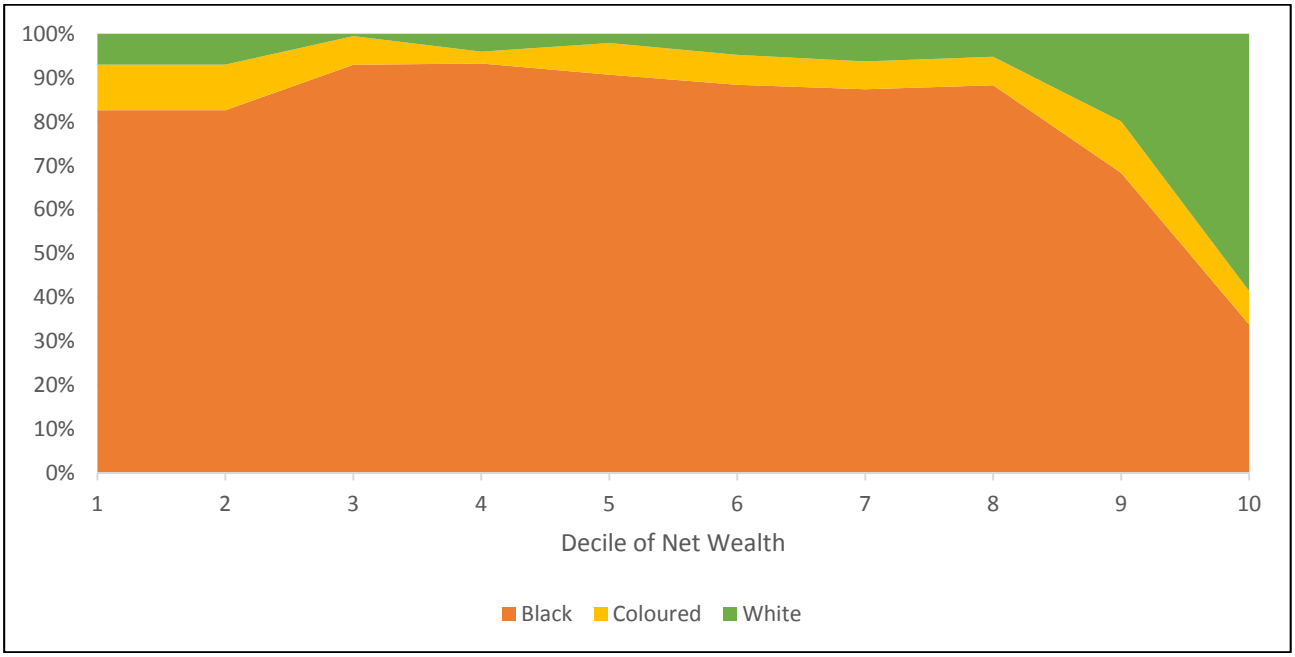
The huge racial wealth gap and high race-wealth inequality noted above have implications. First, Black households with no wealth will not have sufficient wealth to sustain consumption in the event of shocks. Second, Black households will not have wealth to pass on to future generations – a future source of inheritance inequality. Persistence of such trends creates a breeding ground for what Piketty (2014) refers to as *Patrimonial Capitalism,* in which the wealthy become wealthier, while the non-wealthy remain poor, or even become worse off.

**Figure 4: Race Composition of Net Worth by Decile, 2010-2011**




Source: Authors own calculations based on NIDS data from SALDRU (2015).
Note: We exclude the Asian/Indian race due to small sample size and thus, underrepresentation.

**Figure 5: Race Composition of Net Worth by Decile, 2014-2015**




Source: Authors own calculations using NIDs data from SALDRU (2016).
Note: We exclude the Asian/Indian race due to small sample size and thus, underrepresentation.

## 6. Life Cycle Hypothesis and Age-Wealth Inequality

In this section, our analysis moves towards understanding the life-cycle of the growth of household wealth in South Africa by employing the *Life-Cycle Model* of Modigliani (1986), as well as determining the wealth distribution and its associated inequalities by age cohort. This model builds on the expectation that young people will have low or negative wealth in the initial stages of their careers, but accumulate wealth (through savings) as they grow older. They reach their maximum wealth accumulation as they approach retirement age, and eventually start de-accumulating wealth in the post-retirement period, in order to maintain a certain level of consumption.

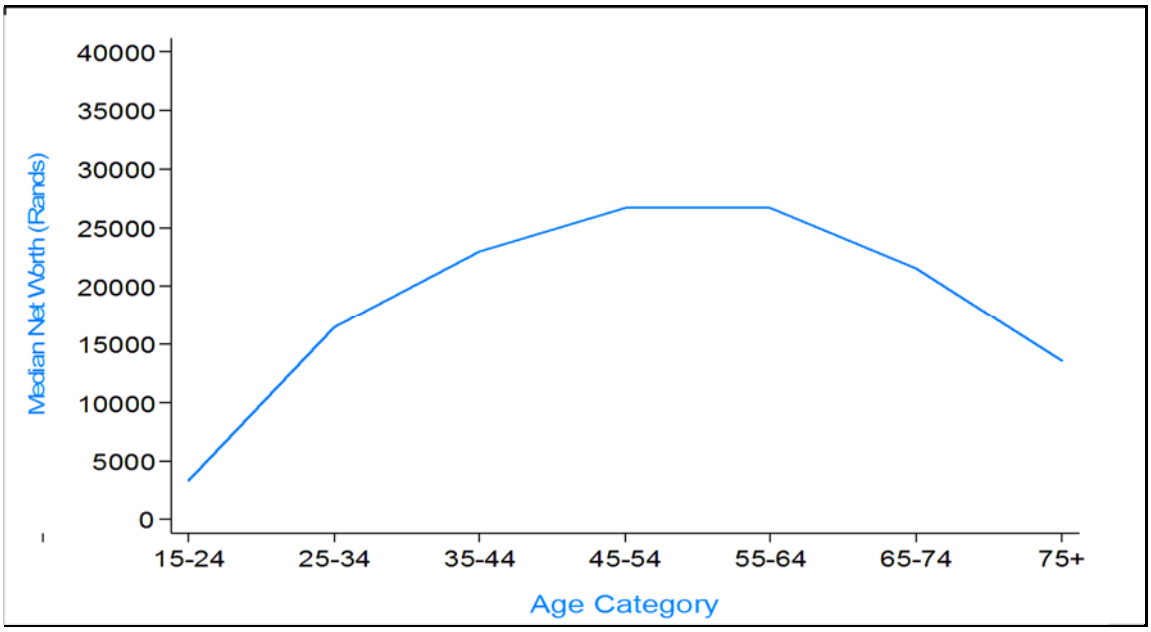
Using data from Wave 2 (2010-2011) and Wave 4 (2014-2015) of NIDS, we provide insight into the life-cycle hypothesis, as presented in Figures 6 and 7, respectively. Note that we proxy for household behaviour using the age of the household head. We do not account for household composition and size. Although we acknowledge that this is a potential cause of wealth heterogeneity, it is beyond the scope of this paper. We exclude ages below 15 and create 7 cohorts for ages 15 and above. As shown in Figures 6 and 7, we make use of Lowess smoothing to provide a better fit and depiction of the of the wealth life-cycle.

The hump-shaped curves exhibited in figures 6 and 7 confirm that the life-cycle hypothesis holds in Waves 2 and 4 of the NIDS data. It is also evident in both figures that the middle-aged group accumulates more wealth. The peaks in the cohort (55 – 64) signify the official retirement cohort in South Africa – when retiring workers receive their pension, based on their previous retirement fund contributions. Interestingly, the graphs show greater wealth accumulation by the youth (15-34) in 2014-2015 than in 2010-2011. To obtain an understanding of this phenomenon we further analyse the distribution of wealth by age cohort.

Figures 8 and 9 show the weighted decomposition of net worth by age cohort for South Africa in 2010-2011 and 2014-2015, respectively. Three subgroups of wealth holders are identified in each cohort.

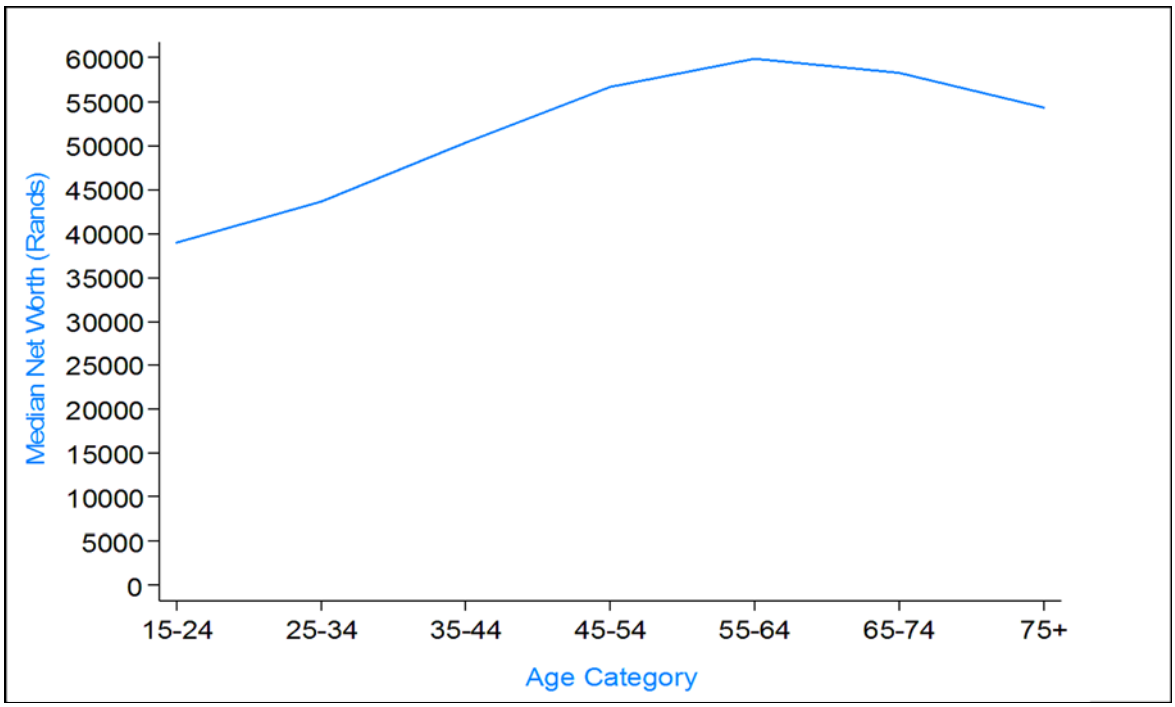
These are first, the bottom 50%; second, the mid 40%; and third, the top 10%. In both Figures, we note that the bottom 50% of each cohort either have negative wealth, or own very little wealth. The top 10% own more than 70% and 80% of the wealth in each cohort in in 2010-2011 and 2014-2015, respectively. This raises critical questions on the degree of inequality among the age cohorts.

**Figure 6: Cohort Adjusted Age Profile of Net Worth in South Africa, 2010-2011**



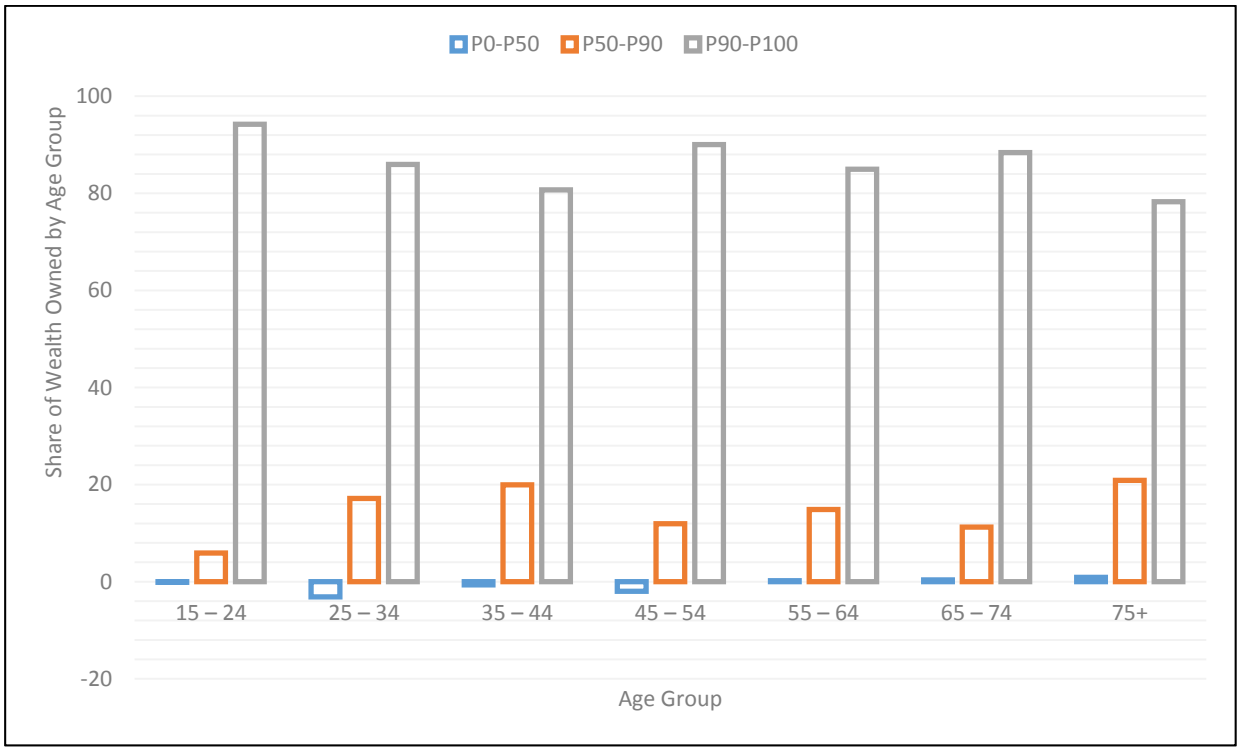

Source: Authors own calculations using NIDS data from SALDRU (2015).

**Figure 7: Cohort Adjusted Age Profile of Net Worth in South Africa, 2014-2015**



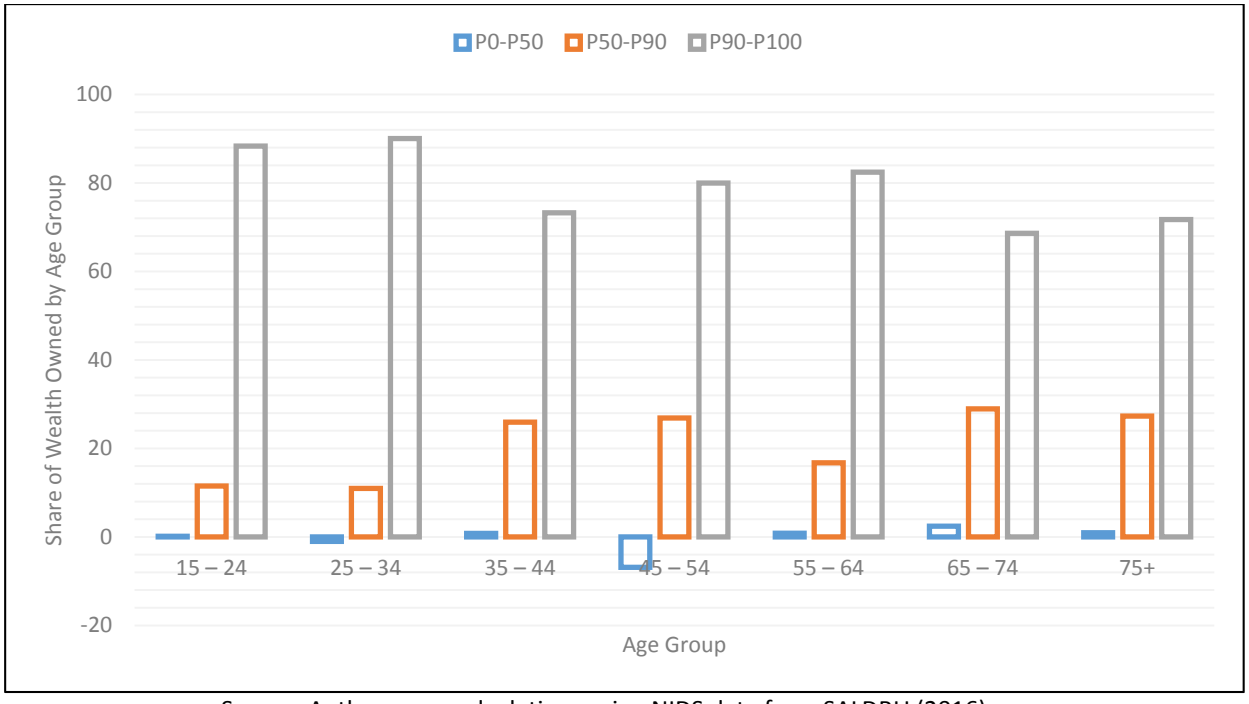

Source: Authors own calculations using NIDS data from SALDRU (2016).

**Figure 8: Wealth Distribution by Age Group, 2010-2011**




Source: Authors own calculations using NIDS data from SALDRU (2015).

**Figure 9: Wealth Distribution by Age Group, 2014-2015**




Source: Authors own calculations using NIDS data from SALDRU (2016).

We further analyse the degree of inequality within the cohorts and Table 7 reports the wealth inequality indices of 7 age cohorts. In line with previous results in Figure 8 and 9, we confirm that inequality within age cohorts is high in 2010-2011 and 2014-2015. Interestingly, inequality appears to be high in the age cohorts 15 – 24 and 25 – 34 in both periods. This could be explained by the high rate of youth unemployment in South Africa. Estimates show that 36% of the youth (aged 15 – 35) are unemployed, which is twice the rate of adult unemployment (The Presidency, 2015).

**Table 7: Wealth Inequality Indices in South Africa by Age Group, 2010-2011 and 2014-2015**

| | **Wave 2** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Age Category** | 15 – 24 | 25 – 34 | 35 – 44 | 45 – 54 | 55 – 64 | 65 – 74 | 75+ |
| **Gini** | 0.95 | 0.94 | 0.89 | 0.94 | 0.92 | 0.90 | 0.87 |
| $\frac{1}{2}\mathbf{CV^2}$ | 5.12 | 3.09 | 3.73 | 3.48 | 9.38 | 3.33 | 12.71 |
| | **Wave 4** | | | | | | |
| **Age Category** | 15 – 24 | 25 – 34 | 35 – 44 | 45 – 54 | 55 – 64 | 65 – 74 | 75+ |
| **Gini** | 0.92 | 0.95 | 0.85 | 0.99 | 0.90 | 0.81 | 0.82 |
| $\frac{1}{2}\mathbf{CV^2}$ | 5.66 | 5.74 | 3.89 | 3.44 | 12.50 | 4.35 | 2.34 |

Source: Authors own calculations using NIDS data from SALDRU (2015; 2016).

## 7. Conclusions

The literature confirms that wealth inequality is rising, much faster than income inequality. Data constraints have until recently limited empirical research in this field. However, the recent emergence of data appropriate for analysing wealth distribution has encouraged research in this area. In this paper, we have examined the cross-sectional distribution of wealth in South Africa using 2010-2011 (Wave 2) and 2014-2015 (Wave 4) data from the National Income Dynamics Study (NIDS).

We initially undertake a broad analysis of the wealth variables in the NIDS data. The results show that most wealth in South Africa is concentrated in the top 10% of the population, while the bottom half of the population own almost nothing, or have negative wealth. Based on our results, we conclude that wealth inequality in 2010-2011 and 2014-2015 was high, with Gini coefficients of 0.93 and 0.94 respectively.

Our results also confirm that the racial wealth gap in South Africa is large. A typical Black household held relatively less than 5 percent of the wealth held by a typical White household, in both 2010-2011 and 2014-2015. Our wealth inequality indices by race do not just confirm that inequality is high between Black and Coloured households compared to White households (in both periods), but also show that wealth inequality is higher within the Black race. Wealth at the top end of the distribution in South Africa is also largely held by White households while a significant fraction of the Black population is concentrated at the bottom end of the wealth distribution.

Further, the NIDS data shows that the life-cycle hypothesis holds, although wealth accumulation for the youth (15-34) happens much faster in 2014-2015 than in 2010-2011. Our inequality indices by age groups also confirm that wealth inequality is high within age groups. However, inequality appears to be much higher in the age cohorts 15 – 24 and 25 – 34, the age cohorts generally associated with high youth unemployment. Our decomposition of the distribution of wealth by age cohort also suggests that in each age group, wealth is concentrated in the top 10% of the population, while the bottom 50% own almost nothing.

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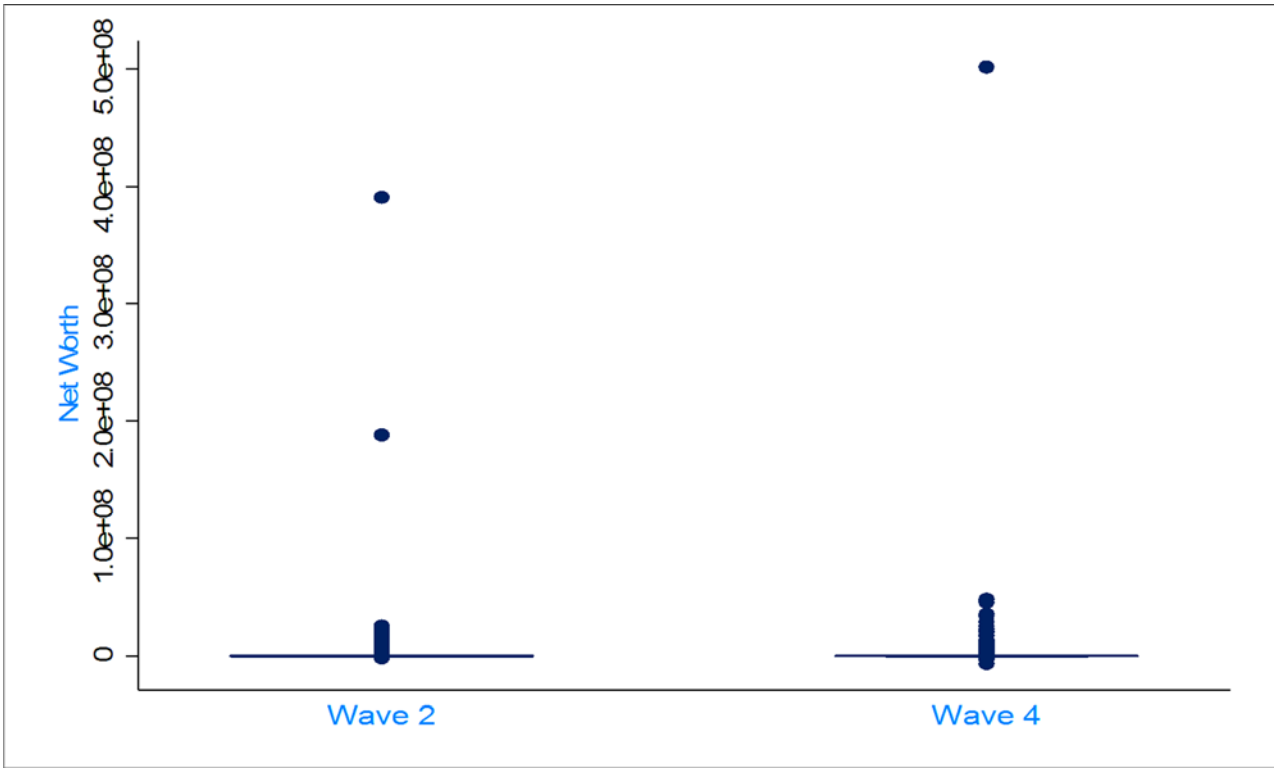
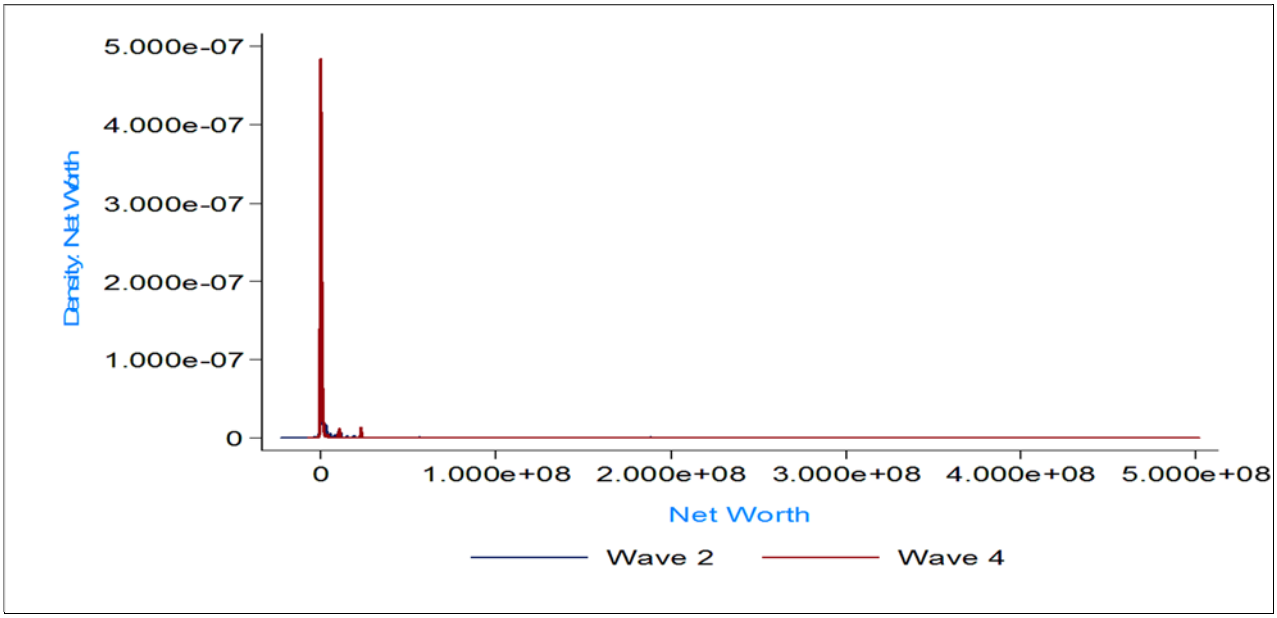
## Appendices

**Figure A.1: Boxplots for Net-Wealth in South Africa, 2010-2011 and 2014-2015**




Source: Authors own calculations, using NIDS data from SALDRU (2015; 2016)

**Figure A.2: Adaptive Kernel Density for Net-Wealth in South Africa, 2010-2011 and 2014-2015**




Source: Authors own calculations, using NIDS data from SALDRU (2015; 2016).
Note: Adaptive Kernel Density Estimator, Epanechnikov kernel, 1200 points.

**Table A.1: Mean and Medium Net Worth in South Africa by Race Group, 2010-2011 and 2014-2015**

| Wave | Race | Mean Net Worth | Median Net Worth | Difference |
|---|---|---|---|---|
| Wave 2 | Black | 104900 | 12687 | 92213 |
| | Coloured | 471017 | 131245 | 339772 |
| | Asian/India | 1540123 | 675798 | 864325 |
| | White | 2866971 | 1075917 | 1791054 |
| Wave 4 | Black | 265086 | 28500 | 236586 |
| | Coloured | 374319 | 40540 | 333779 |
| | Asian/India | 1969927 | 285758 | 1684169 |
| | White | 2422349 | 650946 | 1771403 |

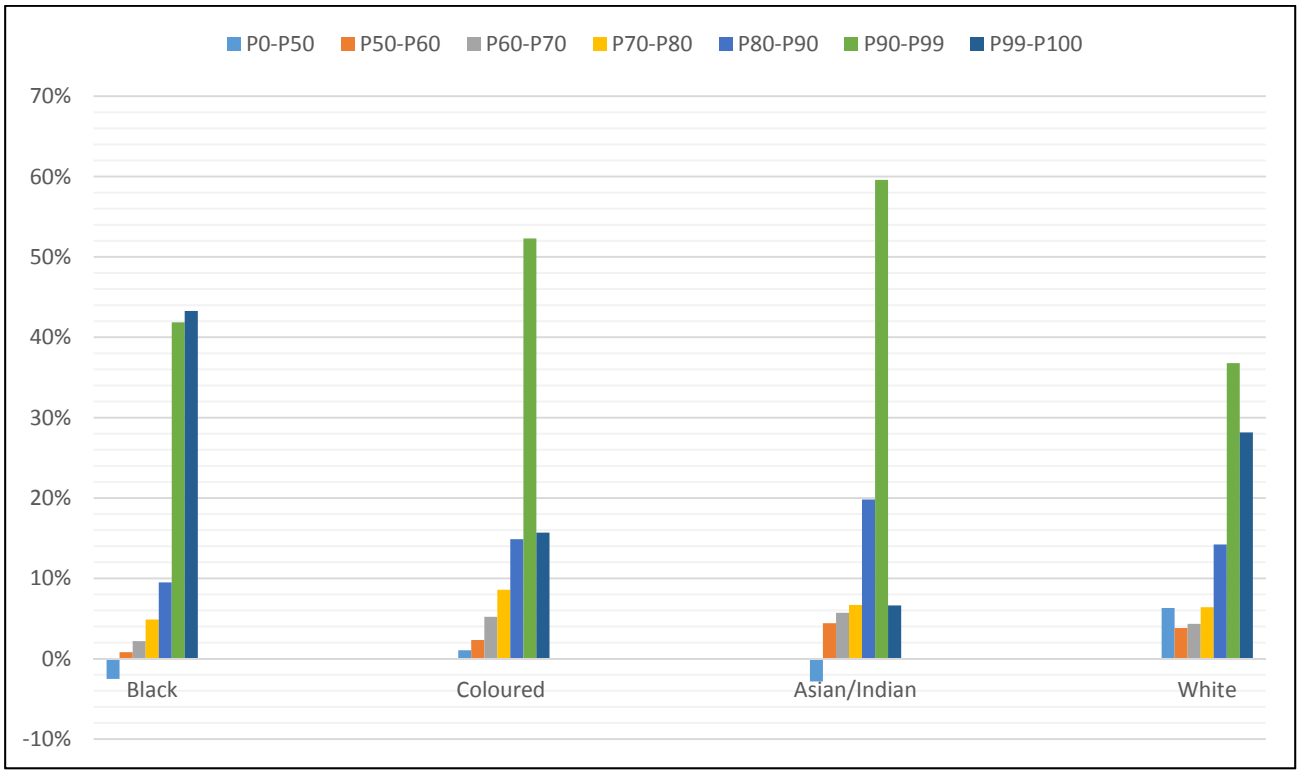
Source: Authors own calculations, using NIDS data from SALDRU (2015; 2016).

**Table A.2: Mean and Medium Net Worth in South Africa by Race Group, 2010-2011 and 2014-2015**

| Wave | Race Group | Median Household Net Worth | Size of Wealth Gap with White Race |
|---|---|---|---|
| Wave 2 | Black | 12687 | 1063230 |
| | Coloured | 131245 | 944672 |
| | Asian/India | 675798 | 400119 |
| | White | 1075917 | - |
| Wave 4 | Black | 28500 | 622446 |
| | Coloured | 40540 | 610406 |
| | Asian/India | 285758 | 365188 |
| | White | 650946 | - |

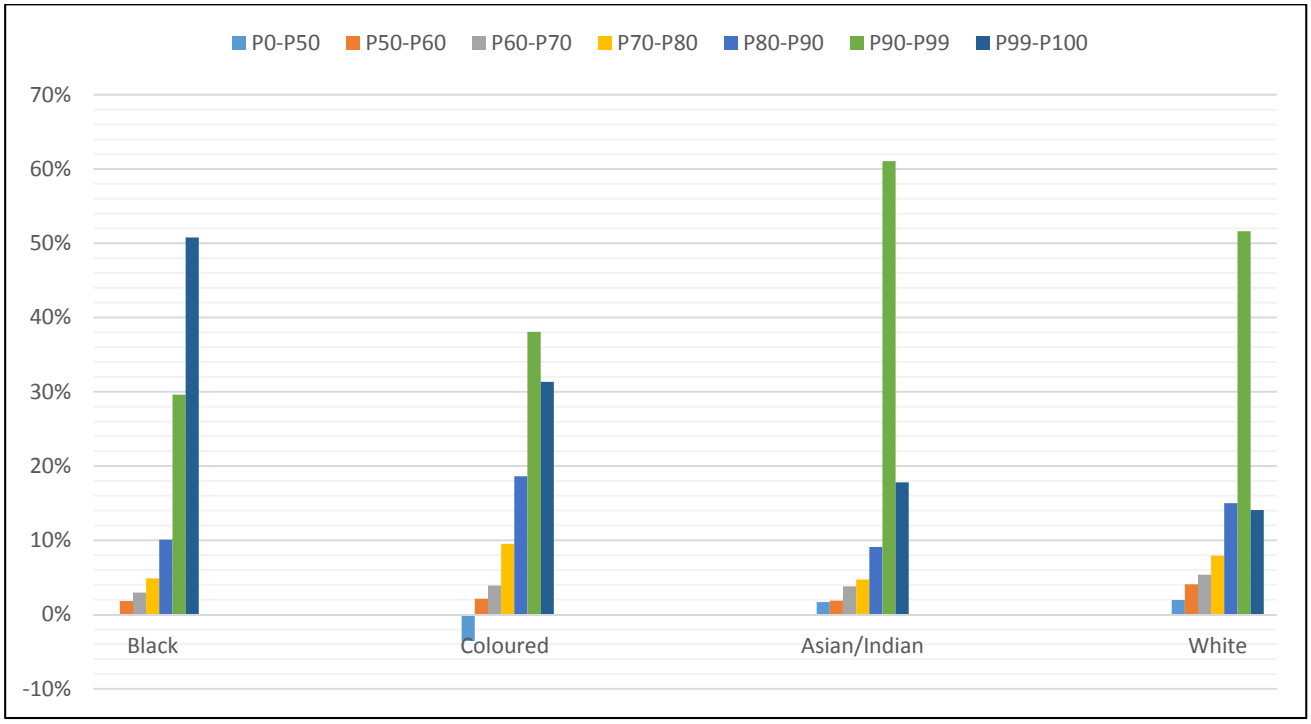
Source: Authors own calculations, using NIDS data from SALDRU (2015; 2016).

**Figure A.3: Wealth Distribution by Race Group, 2010-2011**




Source: Authors own calculations, using NIDS data from SALDRU (2015).

**Figure A.4: Wealth Distribution by Race Group, 2014-2015**




Source: Authors own calculations, using NIDS data from SALDRU (2016).

# southern africa labour and development research unit

The Southern Africa Labour and Development Research Unit (SALDRU) conducts research directed at improving the well-being of South Africa's poor. It was established in 1975. Over the next two decades the unit's research played a central role in documenting the human costs of apartheid. Key projects from this period included the Farm Labour Conference (1976), the Economics of Health Care Conference (1978), and the Second Carnegie Enquiry into Poverty and Development in South Africa (1983-86). At the urging of the African National Congress, from 1992-1994 SALDRU and the World Bank coordinated the Project for Statistics on Living Standards and Development (PSLSD). This project provide baseline data for the implementation of post-apartheid socio-economic policies through South Africa's first non-racial national sample survey.

In the post-apartheid period, SALDRU has continued to gather data and conduct research directed at informing and assessing anti-poverty policy. In line with its historical contribution, SALDRU's researchers continue to conduct research detailing changing patterns of well-being in South Africa and assessing the impact of government policy on the poor. Current research work falls into the following research themes: post-apartheid poverty; employment and migration dynamics; family support structures in an era of rapid social change; public works and public infrastructure programmes, financial strategies of the poor; common property resources and the poor. Key survey projects include the Langeberg Integrated Family Survey (1999), the Khayelitsha/Mitchell's Plain Survey (2000), the ongoing Cape Area Panel Study (2001-) and the Financial Diaries Project.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