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The impact of COVID-19 on poverty in South Africa

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Abstract - This paper analyses how the COVID-19 pandemic has impacted money-metric poverty in South Africa. Against a backdrop of already rising poverty-levels, the pandemic is expected to have a devastating impact on the most vulnerable population groups. Using the recently released 2020 and 2021 General Households Surveys, this thesis presents the first nationally representative estimates of poverty during the heart of the pandemic and as the country began economically recovering. The comparability of the General Household Surveys conducted telephonically during the pandemic is interrogated. The paper finds that an estimated 2.8 million people entered upper-bound poverty and an additional 1.5 million people were food poor in 2020. The increase in poverty would have been substantially worse without the additional COVID-19 grant *top-ups*. The 2021 poverty estimates report a dramatic poverty recovery by October 2021, with estimated poverty levels lower than they were in 2019. Even vulnerable groups, like female-headed or black-headed households, experience this fall in extreme poverty. The surprising result is explained by the continuation of the Social Relief of Distress grant in 2021 which provides the ‘working poor’, and large number of South Africans unemployed prior to the pandemic, grant support they were previously excluded from.

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1 Introduction

The coronavirus pandemic (COVID-19) is the largest social and economic event to occur within our lifetime. Although the economic impact of the pandemic in South Africa has not been quantified, initial evidence suggest its has been '*extremely severe*' and disproportionately felt by the most vulnerable members of the population (Bhorat et al., 2021, p.63). Even prior to the pandemic, poverty was extremely high in South Africa. Approximately 29% of the population had insufficient food in 2017 (Gumede, 2021). The pandemic has undoubtedly exacerbated poverty within the country. Yet, there is little known about the severity, distribution or duration of this poverty-shock. The objective of this study is to quantify the impact of the COVID-19 pandemic on poverty in South Africa.

The first case of coronavirus in South Africa was confirmed on 5 March 2020. To curb the spread of the virus, the government imposed a stringent 21-day initial lockdown, followed by a year and half of phased lockdown regulations that opened and closed various sectors of the economy (National Department of Health, 2020). While these regulations were necessary to contain the COVID-19 virus, they severely disrupted employment and income-generating activities within the country. The employment ramifications of COVID-19 are concentrated amongst already disadvantaged population groups: black people, women, the youth, the less-educated and those who live on the poverty line (Spaull et al., 2020a). In view of the severe economic hardships caused by the pandemic, the South African government also widened and deepened its social grants by introducing the Social Relief of Distress grant and increasing the value of all existing grants. COVID-19's poverty-impact is expected to be the net effect of these opposing forces.

This dissertation contributes to poverty literature by presenting the first nationally representative estimates of poverty during the heart of the pandemic and as the country began recovering. Specifically, it uses newly released data from the General Household Surveys (GHS) to measure money-metric poverty in 2020 and 2021. Considering the last estimate of South African poverty to date was created in 2017, the study also updates the literature by estimating poverty in the years leading up to the pandemic. Importantly, the GHS data provides the first glimpse on how effective South Africa's COVID-19 social assistance programs have been in alleviating poverty.

There are six parts to the dissertation. The topic is introduced in Section 1. Section 2 reviews theoretical debates on how best to define, measure and conceptualise poverty. Section 3 delineates the evolution of South African poverty in the last two decades, and describes initial studies on the impact of COVID-19 on poverty. Section 4 of the dissertation interrogates the data and states the assumptions. Next, Section 5

presents the estimated poverty levels in 2020 and 2021 using the GHS and compares these results to other poverty studies. Section 6 concludes.

2 Measuring Poverty

The debate on measuring and defining poverty continues. The World Bank (2000, p. 15) broadly defines poverty as a *‘pronounced deprivation in well-being’*. Still, well-being can have a number of different definitions (Haughton & Khandker, 2009). Depending on which definition of well-being is used, different individuals will be identified as poor and different policy solutions will be proposed (Laderchi et al., 2003). This makes defining well-being an important first step. There is general consensus on the three basic steps to be taken when measuring poverty (Woolard & Leibbrandt, 1999). They are set out by Ravallion (1992) as follows.

1. Define individual well-being or welfare.
2. Establish a minimum level of measured welfare that separates the poor from the non-poor (typically using a poverty-line).
3. Create a summary statistic that aggregates individual welfare indicators into a measure of poverty.

Despite this seemingly simple framework, *‘there is scope for debate at virtually every step’* of generating such poverty measures (Ravallion & Lokshin, 2001, p. 7). Researchers have debated on how to measure well-being, if monetary poverty should be measured by expenditure or income, which poverty threshold should be applied, how to account for missing data and measurement errors, what to include in income or expenditure measures and how to compare different household sizes and compositions (Haughton & Khandker, 2009; Posel & Rogan, 2016; Ravallion, 1992; Ravallion & Lokshin, 2001; Woolard & Leibbrandt, 1999). Key debates within the methodology are discussed in this chapter.

2.1 Defining welfare

Following Ravallion (1992)’s framework, measuring poverty requires some method of evaluating well-being. Different methods attach varying importance to the materialistic ideas of ‘standard of living’, compared to intangible ideas like ‘rights’ or ‘opportunities’ (Laderchi et al., 2003; Ravallion, 1992). While intangible ideas like ‘rights’ have gained popularity in developed countries, emphasis is placed on standard of living metrics in developing countries where people are deprived of specific goods or services (Ravallion, 1992). This study conforms to the global norm of using ‘standard of living’ or material well-being to measure welfare (Woolard & Leibbrandt, 1999).

The monetary approach to poverty has dominated the literature both in South Africa and globally. It

uses material well-being to assess a person's poverty status. Material well-being refers to an individual consumption of privately-supplied, market goods and services (Ravallion, 1992; Woolard & Leibbrandt, 1999). Income or expenditure data is used as a proxy for this consumption. The methodology treats 'utility' as synonymous to welfare (Klasen, 2000; Ravallion, 1992). As such, individuals decide on what goods and services they value (and to what degree) and their well-being is measured as a function of obtaining those items (Haughton & Khandker, 2009; Ravallion, 1992). The money-metric approach assesses a person's (or household's) income or expenditure against a decided upon poverty threshold to measure whether they have sufficient monetary resources to meet essential items of survival (Haughton & Khandker, 2009; Ravallion, 1992). As income allows individuals to obtain welfare-relevant goods, an income deficiency is defined as a welfare deficiency or poverty.

The critiques of the money-metric approach are well-recognised. First, people are inherently heterogeneous in both their ability to translate income into utility or welfare, and in their preferences for different goods (Klasen, 2000). Next, by limiting consumption to privately-supplied market goods, the monetary approach assumes complete markets and the absence of externalities or public goods (Klasen, 2000; Woolard & Leibbrandt, 1999). Since externalities and public goods are present in nearly every society, these assumptions are '*extremely stringent and highly unrealistic*' (Klasen, 2000, p.4). Even so, the challenges in valuing access to public goods like education, sanitation or healthcare are '*enormous*' (Woolard & Leibbrandt, 1999, p. 4). As such, researchers choose not to include these goods in well-being measurements as a matter of practicality. Lastly, the monetary approach is welfarist in nature, emphasizing utility information (Ravallion, 1992). High utility does not always indicate high welfare. For example, while it is commonly accepted that nutrition is an important determinant of well-being, some people might not assign a high utility to nutritious-food. This means that under the welfarist, monetary approach, increases in nutrition would not necessarily be reflected in a decrease in poverty.

In view of the challenges of the welfarist monetary approach, we discuss the non-welfarist alternative. A non-welfarist approach focuses on specific commodity deprivations regardless of the utility that individuals attach to the commodity (Haughton & Khandker, 2009; Ravallion, 1992). Here, individuals are defined as poor if they do not meet the specified minimum level of consumption for selected goods, like food, shelter and clothing (Ravallion, 1992). By focusing on well-being outcomes directly, as opposed to measuring an imperfect proxy for welfare like income which may or may not be used for welfare, the non-welfarist method bypasses many difficulties (Klasen, 2000). Still, out of respect for individual choices, economists have preferred to follow the welfarist 'income' approach instead (Woolard & Leibbrandt, 1999). A non-welfarist approach is not without its own flaws. Klasen (2000) notes the difficulties in selecting which goods

make up welfare, how much of each good needed, and how to weight them. As each of these the choices cannot be axiomatically decided, they are subjectively decided upon by researchers. (Klasen, 2000).

Although broader poverty measurements are appealing, financial welfare remains extremely relevant as a measure of poverty. Since an income shortfall is undoubtedly correlated with other dimensions of deprivation in education, sanitation and healthcare; measuring income or expenditure is a straight-forward way to capture those elements of deprivation. Budlender et al. (2015) explains that financial resources act as an instrument by which people can improve other forms of well-being. For example, ‘*health*’ is commonly recognised as an important determinant of well-being. Though some rich people might suffer from poor health and some poor people might be relatively healthy, financial resources enable richer individuals to improve their health in ways that poor people cannot afford (Budlender et al., 2015). Thus, in the context of South Africa, financial resources determine whether an individual receives adequate access to services and thereby, their quality of life. Money also dictates an individual’s access to goods in South Africa. Zizzamia et al. (2016, p.9) describe that South African communities have ‘*deep retail penetration and market integration*’ even in remote rural areas. Both rural and urban households increasingly rely on market-purchases at these retailers for their food supply (Baiphethi & Jacobs, 2009). As individuals require financial resources to purchase goods and food, monetary approaches are preferable as they emphasize this ability and the importance of labour income and grant income in determining a household’s economic position (Zizzamia et al., 2019; Zizzamia et al., 2016).

2.1.1 Measuring monetary welfare

After deciding to follow a money-metric approach, one must decide between income or expenditure data as a measure of consumption. There are several considerations in this decision. According to Milton Friedman’s (1957) permanent income hypothesis, individuals and households smooth consumption by saving or borrowing to offset fluctuations in their income over their **lifetime**. Thereby, current expenditure data is argued to be a better representation of household well-being, compared to current income data (Budlender et al., 2015; Haughton & Khandker, 2009; Woolard & Leibbrandt, 2006). However, there is no strong evidence to support Friedman’s hypothesis in developing countries. Instead, some households might smooth consumption between **seasons** when engaged in informal or agricultural work (Haughton & Khandker, 2009).

Practically, measuring expenditure has its own challenges. The theoretical challenge is how to value durable goods like clothing, vehicles or shelter. These goods are bought at one point of time but consumed for several years after (Deaton, 1997). The challenge is then how to only include the amount of that good consumed within that year (Ravallion, 1992). Clearly, calculating the yearly consumption and changing value of a

durable good would have a large margin of error due (Haughton & Khandker, 2009; Woolard & Leibbrandt, 2006). As a result, only the value of highly important assets (like owner-occupied dwellings) have been included in certain studies¹.

Expenditure data might also be prone to data quality issues. Haughton and Khandker (2009) describes that individuals are shown to under-report their consumption of luxury items or illicit substances like alcohol to avoid embarrassment. In fact, even when individual's intend to be honest, they are likely to understate consumption due to recall bias. Deaton (1997) describes that trade-off that exists between long expenditure questionnaires which avoid recall bias and the bias from respondent fatigue. Recall bias is exacerbated for poorer households where spending is irregular (Woolard & Leibbrandt, 2006). This makes obtaining expenditure data laborious and expensive as interviewers need to visit such households daily or weekly to collect an accurate measure. As such, expenditure data is sometimes collected for smaller sample sizes or infrequently.

Income data is often the most current data available, making it useful in measuring the immediate impacts of shocks to the economy. Still, several authors (Deaton, 1997; Haughton & Khandker, 2009; Woolard & Leibbrandt, 2006) note that income data possesses all the data quality difficulties present in expenditure data, and more. For this reason, income is almost always under-reported. The first difficulty is missing information. Evidence suggests that high income households are under-represented in income data. Wittenberg (2017) describes that high-income households are more likely to refuse to participate in surveys outright (unit non-response) and in the case where they do participate, they are more likely to refuse to answer questions about their earnings (item non-response). Though this often a problem in inequality studies, poverty studies focus on low-income households and so are not affected by this difficulty. The second difficulty is related to measurement errors in the reporting of income. People are expected to be reluctant to disclose the full extent of their income in case that information is shared with tax agencies, becomes known to the rest of their household or neighbours or was earned from illegal activities (Haughton & Khandker, 2009). Even in cases where individuals intend to be truthful, measurement can be inaccurate if they do not understand the nuances between 'gross income' (the measure collected in most surveys) and their 'take-home pay' (a measure that excludes tax, pension contributions and medical aid) (Wittenberg, 2017). This error is exacerbated by proxy respondents (Wittenberg, 2017). Calculating income when the individual is self-employed or engaged informal or agricultural work is even more cognitively demanding and error-prone (Deaton, 1997). In this case, Deaton (1997) describes that the only way to calculate an accurate measure of income is to painstakingly construct estimates by asking a range of specific accounting questions. This makes data collection both time-

¹See Woolard and Leibbrandt (2006).

consuming and expensive.

After noting the challenges of both income and expenditure data, it is necessary to compare this data in South Africa. Woolard and Leibbrandt (2006) compares income and expenditure data in surveys that collect information on both indicators: the 1993 Project for Statistics on Living Standards and Development (PSLSD), and the 1995 and 2000 Income and Expenditure Surveys (IES). The comparisons show considerable variation in the measured income and expenditure levels across the distribution of households. Monthly expenditure data is markedly bigger than monthly income in the poorest quintiles (Woolard & Leibbrandt, 2006). A notable result since poverty measures are concerned with the consumption ability of the poorest households within society. In contrast to these findings, Yu (2016) finds income to be greater than expenditure in all surveys (aside from the 2005 IES) capturing both variables. Total expenditure as reported by the GHS, OHS and LFS surveys between 2000 and 2010 is only 30-50% of that in the national accounts (Yu, 2016). This contradicts earlier claims that expenditure is more a representative measure of economic welfare in South Africa. Yu (2016)'s results also show substantial variation in the level of income or expenditure when the data is reported in bands or as an amount. Notably, data reported in bands is considerably lower than data reported as point estimates (Yu, 2016). Overall, the decision on whether to use income or expenditure data depends crucially on whether quality and comparable data exists (Woolard & Leibbrandt, 2006). In the absence of such data, researchers must resort to cruder measurements.

2.1.2 Adjusting for household size and structure

Poverty estimates operate at a per capita level. Since income or expenditure is often captured at a household level within surveys, researchers are required to make assumptions on the division of household resources. These assumptions are by no means simple. Children might require less food expenditure than an adult, females might require less food than males (Ravallion, 1992). There is also the possibility of economies of scale in housing and durable goods, costing less per person to shelter more people (Ravallion, 1992; Woolard & Leibbrandt, 2006). A vast literature exists on these 'equivalence scales' (see Woolard and Leibbrandt (2006)). Trying to account for these differences require a host of assumptions that would not neatly fit into the patterns of all households (Woolard & Leibbrandt, 2006). Resultingly, most of these phenomenon are cautiously ignored. In South Africa, equivalence scales appear to be unnecessary. Woolard and Leibbrandt (1999) extensively investigate the effect of varying equivalence scales on poverty estimates in the country. The poverty profile '*remains astonishingly unchanged*' even when large changes are made to the equivalence parameters (Woolard & Leibbrandt, 1999, p.15). A similar result is reported in Leibbrandt, Finn, et al.

(2010), where income poverty remains the same regardless of whether per capita income or equivalence scales are used. If the poverty profile is robust over a wide range of equivalence scales, assuming an equal division on household resources is of little consequence for the measurement of poverty.

2.2 Poverty thresholds

The second step of Ravallion (1992)'s framework is to establish a poverty line that separates the poor from non-poor within the population. Poverty lines are imperfect measures. To cite a now famous example by Woolard and Leibbrandt (2006), it hardly makes sense for someone earning R999 per month to be poor, while someone who earns R1000 is not. Still, a line must be drawn "*somewhere in order to go forward in understanding the nature of poverty*" (Woolard & Leibbrandt, 1999, p.8).

Money-metric poverty studies usually rely on an absolute poverty line. Absolute poverty lines are created by estimating the cost of a basket of goods that fulfills the individual's basic survival needs (as determined by the researcher) (Budlender et al., 2015; Woolard & Leibbrandt, 2006). As the researcher prescribes a poor person's needs, these normative prescriptions are often racialised and random in the context of South Africa (Budlender et al., 2015). To avoid this, many have preferred to instead use Ravallion (1994)'s *cost of basic needs* (CoBN) approach (Budlender et al., 2015; Hoogeveen & Özler, 2006; Statistics South Africa, 2019c; Woolard & Leibbrandt, 2006). Instead of prescribing basic needs, the approach prescribes the level of nutrition needed for 'good health' (Ravallion, 1992). Good health simply requires 2 100 calories per person, per day. The 'good health' prescription is also critiqued as the number of calories needed a day depends on the individual's metabolism and activity level. Poorer individuals are more likely to be engaged in manual labour, making activity levels 'endogenous' to one's socio-economic status (Ravallion, 1992). Adequate calories is also not the sole determinant of food consumption (Woolard & Leibbrandt, 1999). People have food preferences. The cheapest food basket that gives a person sufficient calories still might not be purchased if people prefer more expensive but less calorie-rich food (Ravallion, 1992; Woolard & Leibbrandt, 1999). One way the CoBN gets around this is to construct the poverty line based off existing information on the food consumption habits of the poor (Statistics South Africa, 2019c). The advantage is a poverty line that is line with the local tastes and prices facing the poor.

Poverty lines must also include expenditure on basic non-food necessities. Ravallion (1992) describes that as income increases, people are expected to fulfill their 'survival' food needs, followed by their basic non-food needs and then food wants. It is then necessary to create three poverty lines: the food poverty line

(FPL), lower-bound poverty line (LPL) and upper-bound poverty line (UPL) to represent this scale of poverty (Woolard & Leibbrandt, 1999). Multiple poverty lines also create a ‘*poverty critical range*’ which reduces the arbitrariness of a single poverty line (Woolard & Leibbrandt, 2006). The food poverty line is sometimes called the ‘extreme’ poverty line, referring to the minimum amount of money a person needs to meet their survival food needs. Of course, this purely survivalist approach is flawed in that many people do in fact survive below whatever absolute poverty line is chosen (Deaton, 1997). Still, the FPL is a tool to measure ‘good-health’. Notably, people still substitute their food consumption for basic non-food needs (such as clothing and shelter) when their nutritional requirements are not satisfied. The lower-bound poverty describes the point below which one must decide between survival food and *essential* non-food needs. The upper-bound poverty line represents people who are able to satisfy their basic non-food needs without making this sacrifice. Still, the distinction between these lines is misleading. Budlender et al. (2015) explains that all households below and above the lower -bound will have to forgo survival food for non-food items as long as they are below the upper bound.

2.2.1 South African poverty lines

Several poverty lines have been created in South Africa following the CoBN approach. Some of the notable lines are created by Hoozevee and Özler (2006), Özler (2007) and Budlender et al. (2015), which have been relied upon in other studies. Attempting to standardise money-metric poverty measurement across the country, Statistics South Africa established an official absolute poverty line in 2012. This measure generally followed Hoozevee and Özler (2006)’s methodology, making some significant changes which resulted in the line being approximately 33% to 48% lower than that of Hoozevee and Özler. As the cost of goods and services and household consumption patterns are known to change over time, the official poverty lines have been frequently updated. The most recent adjustment was performed in 2019, using the Consumer Price Index for food items and non-food items to adjust for changes in the costs of goods and services; and rebasing the poverty lines using consumption data from the 2010/2011 Income and Expenditure Survey (Statistics South Africa, 2019c). We use the 2019 StatsSA poverty lines in this study to increase comparability with other poverty studies conducted in this time.

A notable limitation in all existing poverty lines currently in use is the lack of a geographical component. Ravallion (1992) notes the danger in applying one CoBN poverty line across regions or sectors where purchasing power differs. Identical households with the same incomes facing different prices may be in different welfare positions if one of them pays higher prices than the other. Oosthuizen (2008) describes in South Africa

there are substantial spatial price differentials to the persistent inequalities imposed by spatial apartheid. However, as rural price indices are not published by Statistics South Africa, the creation of a rural poverty line is not possible.

2.3 Summary index

The final step in Ravallion (1992)'s framework is the creation of a summary index that aggregates individual welfare indicators into a single poverty measure. The following axioms set out the criteria of the ideal measure of poverty.

1. *Monotonicity*: As the income of a poor individual rises (falls), the poverty index must fall (rise), given other things.
2. *Transfer*: A poor individual transferring income to anyone who is richer than them must increase poverty.
3. *Population Symmetry*: The index must remain the same when two or more identical populations are pooled together.
4. *Proportion of Poor*: The index must rise (fall) when the proportion of the population that is poor increases (decreases).

The three Foster-Greer Thorbecke (FGT) ratios are the most common tools: the first showing the extent of poverty, the second its depth and the third its severity. The first (headcount) ratio (P_0) reports the proportion of the population with income below the specified poverty line. Though easy to interpret, the headcount ratio violates both the *monotonicity* and *transfer* axioms, remaining insensitive to changes in the depth or distribution of poverty (Ardington et al., 2005; Ravallion, 1992). Using this index, policy-makers may be tempted to achieve radical 'gains' in poverty by marginally increasing the incomes of those right below the poverty line to make them theoretically non-poor (Ardington et al., 2005). Clearly, there is need for an indicator that reflects the depth of poverty as well: the poverty gap ratio (P_1). This ratio measures the average income needed by a poor person to exit poverty. While the poverty gap ratio satisfies the *monotonicity* axiom, it still fails to comply with the transfer axiom (Ardington et al., 2005). Changes in the distribution of income would have no effect on the value of the poverty gap, meaning that the poorest individuals and those just under the poverty line are treated with equal concern (Meth, 2011). Most people would agree that reducing the severity of poverty for the poorest individuals in society should be emphasized.

The squared poverty ratio (P_2) fulfills that function. It prioritizes the poverty gap of the poorest individuals in the population to satisfy the transfer axiom.

The FGT ratios take the form below. Using the equation, we obtain the headcount index (P_0), poverty gap (P_1) and squared poverty gap (P_2) by setting α equal to 0, 1 or 2, respectively.

$$P_\alpha = \frac{1}{n} \sum_{i=1}^q \left(\frac{z-y_i}{z} \right)^\alpha$$

where:

z is the poverty line,

y_i is the welfare indicator of the i th household or individual,

α is the *aversion to poverty* measure,

n is the population size,

q is the number of ‘poor’ individuals or households.

Aside from their attractive technical properties, the FGT ratios are appealing because they reduce broad dimensions of poverty into three straightforward indicators. However, Meth (2011) warns of the danger in only presenting poverty results in these ratio forms. The author explains that the audience of poverty studies consists of government workers and policy-makers with both a deficient understanding of the meaning of these ratios and a vested interest in selectively positive poverty studies. To prevent these ratios from presenting misleading results, Meth (2011) suggests that FGT ratios are augmented by figures that disclose the absolute numbers of people in poverty at different income levels at different times and other descriptive statistics so that everyone can understand the implications of the above poverty ratios. As such, this study will present changes in the FGT ratios and in the absolute headcount numbers.

This section has introduced the theoretical framework used to measure poverty and described key debates within the poverty literature. We now outline studies which have applied this poverty framework to measure changes in poverty in the two and half decades of South African democracy.

3 The evolution of South African poverty

There is a plethora of studies on money-metric poverty in democratic South Africa. The general consensus is that significant progress has been made in reducing the extent and severity of poverty in the country (Bhorat et al., 2007; Gumede, 2021; Leibbrandt, Finn, et al., 2010). The progress is largely attributed to the introduction of government social grants. However, studies have also shown that progress in reducing poverty has been slow and inconsistent, with poverty levels remaining stubbornly high (Meth & Dias, 2004; Statistics South Africa, 2017). Initial evidence indicates that the COVID-19 pandemic and its accompanying economic shocks have deepened and widened poverty within the country. This chapter maps the evolution of poverty in South Africa from the start of its democracy until present-day.

3.1 Post-apartheid poverty trends

3.1.1 1995 - 2000

Several studies investigate the poverty gains achieved after the 1994 elections. Hoogeveen and Özler (2006) estimate that approximately 58% of South Africans, and 67% of the black population were poor in 1995. Faced with this extremely high poverty rate and a vast number of other socio-economic inequalities, the newly-elected South African government faced a dual task of lifting communities out of poverty, while simultaneously pulling the economy out of its recessionary slump (Özler, 2007; Van der Berg et al., 2006). Poverty trends in the first five-years of democracy are contentious. Two studies, Özler (2007) and Leibbrandt et al. (2005), used the 1995 and 2000 Income and Expenditure Surveys (IES), combined with the 1995 October Household Survey (OHS) and 2000 Labour Force Survey (LFS), to show that poverty rose over the period. Özler (2007) found that while the level of poverty remained constant (at 58%), the severity of poverty worsened over the period. Leibbrandt et al. (2005) corroborated this finding, estimating a fall in real income of roughly 40%. Yet, several authors (Van der Berg et al., 2006; Van der Berg, Louw, et al., 2004), including Statistics South Africa (StatsSA) themselves, have found the 1995 and 2000 IES datasets to be largely incomparable due severe problems in the 2000 IES dataset. The remainder of the paper ignores studies that use this dataset.

Even in studies that do not employ the 2000 IES, poverty is shown to slightly increase after the 1994 election. For example, Meth and Dias (2004) find that 3 million people entered poverty between 1999 and 2002. The authors use expenditure data from 1999 October Household Survey and 2002 Labour Force Survey. Since

total household expenditure is recorded in brackets within these datasets, the authors create a distribution of expenditure in each bracket by assumption (Meth & Dias, 2004). Their results show that between 1999 and 2002, the bottom expenditure classes of R0 - 399 and R400-R799 per household per month increased by 31 percent and 11 percent, respectively (Meth & Dias, 2004). Notably, since the surveys used only ask one question on the household's total monthly expenditure and capture expenditure in intervals, the data likely suffers from under-reporting due to recall-bias (Vermaak (2005) as cited in Van der Berg et al. (2006)). As such, the study likely over-estimates poverty.

3.1.2 2000 - 2008

Headcount poverty rates in the post-2000's show considerable variation between studies, even when analysing the same data (Posel & Rogan, 2016). The variation reflects differences in the type of data used; the poverty lines selected; and the how the studies have adjusted for under-reporting, missing data and size economies within households (Bhorat & Kanbur, 2006; Posel & Rogan, 2016). Table 1 (below) describes the key studies conducted in this period for easy comparison.

Van der Berg et al. (2006) use income data from the All Media and Products Survey (AMPS) series, adjusted so that the average income of each race group matches the national accounts, to measure poverty. The authors finds headcount poverty to have remained roughly constant between 1993 and 2000 but to have decreased dramatically (by 19.6%) between 2000 and 2004, to roughly 15.4 million people (Van der Berg et al., 2006). The methodology, and thereby the findings, of this study have been heavily criticised by Meth (2006, 2007). Undertaking their own analysis using the 2004 General Household Survey and Labour Force Survey, Meth (2006) estimates that there were still between 18 -20 million individuals in living in poverty in 2004, under the same poverty line. These drastically different results highlight how poverty estimates can vary depending on methodology.

Other studies (Bhorat & van der Westhuizen, 2008; Leibbrandt, Finn, et al., 2010) confirm a post-2000s decline in poverty. Bhorat and van der Westhuizen (2008) estimate that between 1995 and 2005 extreme poverty decreased by 8 percentage points (to 23% of the population) and upper-bound poverty decreased by 5 percentage points (to 48% of the population). The decline in poverty was even greater for the black population, whose headcount poverty declined from 63% to 56% (Bhorat & van der Westhuizen, 2008). Leibbrandt, Finn, et al. (2010) find a much smaller change in money-metric poverty between 1993 and 2008. Using a lower bound poverty line of R515/month per capita, the authors find poverty to have only decreased by 2 percentage points (to 54% of the population) in the first 15 years of democracy (Leibbrandt, Finn,

et al., 2010). A more pronounced improvement is observed when looking at the extent and severity of the poverty through the poverty gap and squared poverty gap ratios. Overall, the authors argues that *"aggregate money-metric poverty has unambiguously decreased"* over the period, especially for the poorest populations (Leibbrandt, Finn, et al., 2010, p.26).

Table 1: Summary table on the key post-apartheid empirical studies

Study	Dataset	Welfare Measure	Poverty Line	Adjustments	Headcount Ratio
Hoogeveen & Ozler (2006)	1995 & 2000 IES	per capita household expenditure	LPL: R174	Rental values for housing were imputed.	1995: 0.32
			UPL: R322 in 2000s prices		2000: 0.34
Bhorat & van der Westhuizen (2008, 2010)	1995 & 2005 IES	per capita household expenditure	LPL: R174	None.	1995: 0.58
			UPL: R322 in 2000s prices		2000: 0.58
Leibbrandt, Finn et al. (2010)	1993 PSLSD 2008 NIDS	per capita household income	LPL: R515	Excludes certain income items to make datasets comparable.	1995: 0.31
			UPL: R949 in 2008 prices		2005: 0.23
Posel & Rogan (2009)	1997 & 1999 OHS 2004 & 2006 GHS	individual income & per capita household income	LPL: R322 in 2000 prices	Uses household expenditure to augment 'zero-income' household observations.	1995: 0.53
					2005: 0.48
Gumede (2021)	2008-2017 NIDS	per capita household income	FPL: R515 in 2017 prices	Poverty line is deflated by CPI of each wave to account for inflation,	1993: 0.56
					2008: 0.54
van der Berg et al. (2006)	1993, 2000 & 2004 AMPS	individual income data	LPL: R250	Augments zero-income observations & adjusts household income to national accounts.	2004: 0.49
			UPL: R281 in 2000 prices		1997: 0.49
Meth (2006)	2003 & 2004 GHS 2003 & 2004 LFS	per capita household expenditure	LPL: R250 in 2000 prices	Households with income \gg expenditure are relocated to the appropriate expenditure band.	1999: 0.51
					2004: 0.43
Statistics South Africa (2017)	2005 & 2010 IES 2008 & 2015 LCS	per capita household expenditure	FPL: R441	None	2008: 0.34
			LPL: R647		2010: 0.21
			UPL: R992 in 2015 prices		2015: 0.25
					2005: 0.28
					2008: 0.34
					2010: 0.21
					2015: 0.25
					2005: 0.51
					2008: 0.48
					2010: 0.36
					2015: 0.40
					2005: 0.67
					2008: 0.62
					2010: 0.53
					2015: 0.56

Table compiled by author. Poverty lines are expressed in the real prices specified. Headcount ratios should be interpreted as the percentage of the population considered poor at the specified poverty level.

The review has focused on money-metric poverty so far, failing to capture other dimensions of poverty. Social wages encompass the free provision of health care, education, social protection, RDP housing and basic services like water, electricity and sanitation delivered to households (Statistics South Africa, 2019c). Bhorat et al. (2007) incorporate the progress achieved in this dimension of well-being between 1993 and 2005 by creating a Comprehensive Welfare Index comprised of a household's access to services, personal assets and income. The results shows that headcount poverty measured by the index halved between 1993 and 2005, the majority of the decline occurring in the first six years (Bhorat et al., 2007). Other studies (Finn et al., 2013; Fransman & Yu, 2019) use a Multi-Dimensional Poverty Index (MPI). Fransman and Yu (2019) find a continuous and significant decline in MPI poverty between 2001 and 2016. The proportion of the population that is both income poor and MPI poor has also decreased continuously across the period, showing that service delivery has improved for the most vulnerable populations (Fransman & Yu, 2019). The severity of multi-dimensional poverty has also fallen. In 1993, approximately 20% of MPI poor were deprived in more than 60% of the dimensions of poverty, this figure dropped to only 2.5% of the MPI poor by 2010 (Finn et al., 2013). Overall, broader studies of poverty report a noteworthy improvement in 'social wages'.

So far, we have shown that poverty has decreased in the post-apartheid period but we have not discussed why. A logical guess would be economic or employment growth decreased poverty. Access to the labour market is the primary determinant of a household's poverty status (Leibbrandt et al., 2005). Leibbrandt, Woolard, et al. (2010) estimate that 81% of households with no workers are poor. Approximately 30% of South Africans lived in such households in 2008 (Leibbrandt, Woolard, et al., 2010). Though labour income can lift households out of poverty, employment growth is not responsible for the decline in poverty. Labour force growth was indisputably higher than employment growth post-1994, creating a downward pressure on wages (Özler, 2007). This was accompanied by an increase in skill-biased labour demand (Leibbrandt et al., 2005; Özler, 2007). Combined, these labour market changes positively affected the earnings of skilled-labourers on the upper-end of the income-distribution but exacerbated the unemployment crisis facing unskilled workers (Özler, 2007). The black population and the youth were disproportionately affected (Leibbrandt et al., 2005; Leibbrandt, Woolard, et al., 2010). A lack of demand for unskilled labour has kept poverty levels stubbornly high.

Instead, it was the introduction of social grants, rather than employment, that alleviated poverty in the first decade of South Africa's democracy. The term refers to non-contributory and means-tested cash transfers to vulnerable population groups like the disabled, elderly and children in impoverished households (Leibbrandt, Woolard, et al., 2010). There was a rapid expansion in welfare and social assistance expenditure in the first 15 years of democracy, with spending on welfare increasing to approximately R101 billion (4.4% of GDP)

by 2008 (Bhorat & Van der Westhuizen, 2010; Leibbrandt, Woolard, et al., 2010). In April 2009, 13.4 million people benefited from social grants, the largest group being the 9.1 million children receiving the Child Support Grant (CSG) (Leibbrandt, Woolard, et al., 2010). The expansion is attributed to an increase in public awareness on the CSG grant and the grant expanding to include children under 15 years of age (Bhorat & Van der Westhuizen, 2010). Though the grant is a much lower monetary value than the Old Age Grant or Disability grant, nearly one half of households received it in 2007 (Leibbrandt, Woolard, et al., 2010). Due to the large value of the Old Age Grant, access to the grant was sufficient to lift all by the largest households out of the bottom 20% of the income distribution (Leibbrandt, Woolard, et al., 2010). Combined, these transfers explain the decrease in poverty. Bhorat and van der Westhuizen (2008) describe that in 2005 social grants constituted nearly 90% of total monthly income for the bottom 20% of the income distribution. For the bottom half of income distribution, the value of the social grants received exceeded that of their labour income. In 2008, Leibbrandt, Finn, et al. (2010) finds that grant income formed 73% of total income for the bottom decile. Despite the differences in magnitudes found in the studies, the trend clearly shows how poorer households have become increasingly reliant on government grant income.

To formally study how and why people enter and exit poverty, researchers have used South Africa's first nationally representative panel dataset the National Income Dynamic Study (NIDS). Finn and Leibbrandt (2017) use data from the first four waves of the NIDS (from 2008 to 2015) to differentiate between chronic and transient poverty. The authors find that 86.5% of the poor population in wave 1 are chronically poor ² (Finn & Leibbrandt, 2017). Chronic poverty increased steadily to 92.6% in wave 4. High levels of chronic poverty illustrate the structural barriers to exiting poverty facing the poor. Understanding who transitions into and out of poverty and why can help explain the changes in poverty experienced during the COVID-19 pandemic. Finn and Leibbrandt (2017) show that a household demographics change was the main trigger for 56% of the individuals who entered poverty between 2008 and 2015. Demographic changes are people entering or leaving the household, or other compositional or headship changes. Confirming the importance of social grants discussed above, an increase in grant income was the main trigger for exit from poverty for 23% of the participants between 2008 and 2015 (Finn & Leibbrandt, 2017). Though the labour market was not the driver of poverty reduction between 2008 and 2015, the regression analysis showed that the household having at least one employed member was the most important variable in determining the probability of the household entering or exiting poverty (Finn & Leibbrandt, 2017). Overall, changes to the household's composition, social grant income or number of employed members are the main triggers for entry and exit into poverty.

²Chronic poverty is defined having an average real income per capita across all four waves less than R1283. The authors apply Budlender et al. (2015)'s CoBN poverty line of R1283 (adjusted to its real January 2015 equivalent).

3.1.3 2008 - 2015

In the last decade and a half, there is a paucity of poverty estimates in South Africa. The latest official poverty estimates come from Statistics South Africa (2017) which use the 2005 and 2010 Income and Expenditure Survey, and 2008 and 2015 Living Conditions Survey (LCS) to measure poverty. Using these datasets, StatsSA outline changes in poverty over this time period. The first notable change occurred after the 2008 Global Financial Crisis. The event had a severe impact on South Africa's economy, triggering a recession and significant job-losses (Rena & Msoni, 2014). Low-skilled and labour-intensive jobs bore the brunt of it, accounting for 61% of the job-losses (Rena & Msoni, 2014). Extreme poverty estimates between 2006 and 2009 reflect this, increasing by 18% between these years with one out of three people being classified as food poor at the peak in 2009 (Statistics South Africa, 2017).

The economy recovers between 2009 and 2011, decreasing by 14.3% (to 27.3 million people) and 23.5% (18.7 million people) in the upper-bound and lower-bound poverty rates, respectively (Statistics South Africa, 2017). Food poverty was also lowest in 2011, decreasing by 36% over the period until only one in five people were food-poor (Statistics South Africa, 2017). Notably, the years 2011 to 2015 were a *"rough economic roller-coaster"* for the South African economy (Statistics South Africa, 2017, p.16). This was due to a combination of low economic growth, lower investment levels, rising unemployment levels, high consumer prices and overall policy uncertainty (Statistics South Africa, 2017). Together, these factors caused an increase in poverty over the period, as households buckled under the economic pressures. Between 2011 and 2015, upper-bound poverty increased by 2.3 percentage points (4.3%), lower-bound poverty by 3.5 percentage points (9.9%) and food poverty by 3.8 percentage points (17.7%) (Statistics South Africa, 2017). Clearly, the economic pressures were most felt by the poorest households. This is reiterated by the increasing poverty gap measurement over the period, suggesting that the extent and severity of poverty increased over the period (Statistics South Africa, 2017).

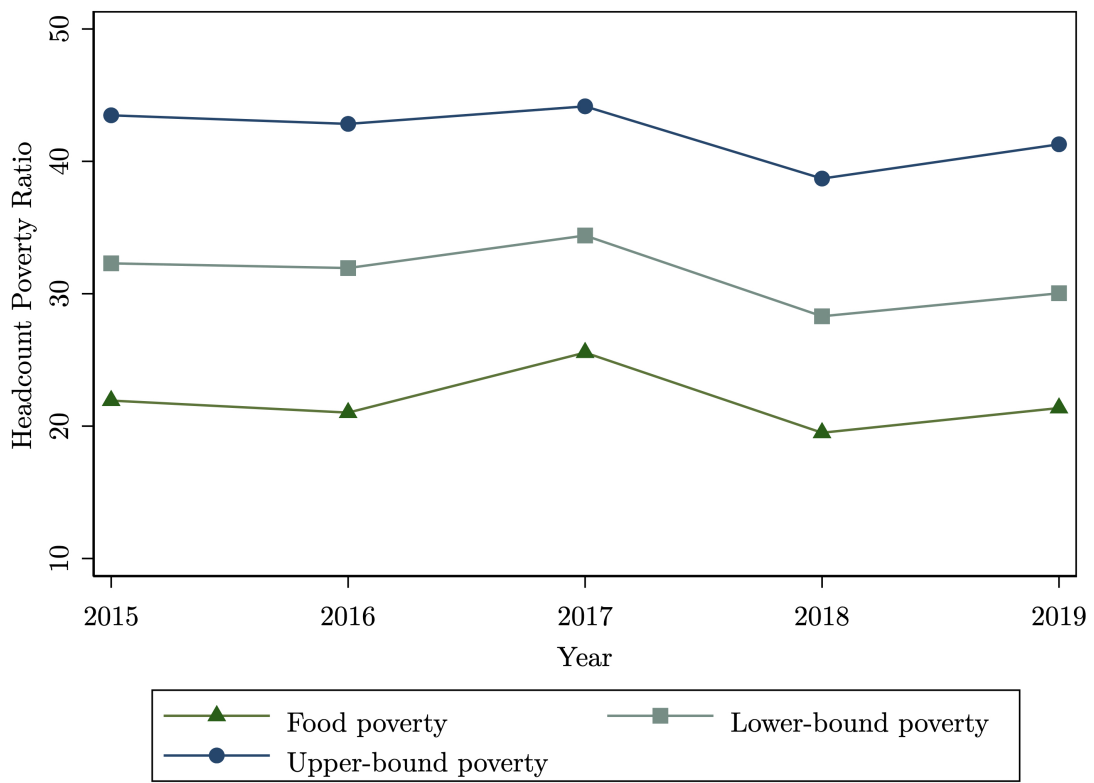
3.1.4 2015 - 2019

To our knowledge, the last official estimate of poverty was created using the 2015 LCS, estimating 25.2% of the population living in extreme poverty, 40% in lower-bound poverty and 55.5% in upper-bound poverty (Statistics South Africa, 2017). The most recent poverty estimate using survey data was estimated by Gumede (2021) using the 2017 NIDS. Here, 29% of the population is estimated to live in food poverty (Gumede, 2021). Lower-bound and upper-bound poverty are not estimated. Assuming that poverty estimates

created using the LCS and NIDS are comparable, the result implies a rise in food poverty between 2015 and 2017.

In light of the lack of poverty estimates for recent years, we estimate poverty between 2015 and 2019 using the annual GHS data. Figure 3 plots food, lower-bound and upper-bound poverty using the official Statistics South Africa poverty lines. Between 2015 and 2017, poverty increased along all three poverty lines. Food poverty shows the greatest increase over the period. Comparing our 2015 and 2017 food poverty estimates to Statistics South Africa (2017)'s and Gumede (2021)'s poverty estimates, our estimates are much lower. We estimate 2015 food poverty to be 21.93% compared to the 25.2% observed in the LCS and 2017 food poverty to be 25.56% compared to the 29% observed in the NIDS. Poverty decreased dramatically in 2018, with food poverty falling 6.06 percentage points, lower-bound poverty by 6.14 percentage points and upper-bound by 5.46 percentage points. As there are no other estimates for 2018 poverty (to our knowledge and to date), we cannot confirm if the decline is real or due to sampling errors in the GHS. The substantial decline in poverty is perhaps attributed to high level of economic growth experienced in 2017, exceeding projections and growing by 1.3% in the last quarter (Statistics South Africa, 2018). Poverty appears to be increasing between 2018 and 2019. South Africa was in an economic recession in 2018, the economy shrinking by 2.7% in the first quarter and by another 0.5% in the second (Statistics South Africa, 2019a). It is against this declining economic climate that we look at the effects of the COVID-19 pandemic on South African poverty.

Figure 1: Poverty between 2015 and 2019 according the annual General Household Survey.



Source: Diagram based on own calculations from the GHS (2015, 2016, 2017, 2018 & 2019). Sampling weights are applied to each year. The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita in October 2019 prices.

4 The preliminary impact of COVID-19 on poverty

Though the economic impact of COVID-19 in South Africa has not been quantified, initial evidence indicates that it is likely *“extremely severe”* (Bhorat et al., 2021, p.63). Much of its impact is attributed to the stringent initial lockdown between 27 March and 1 May 2020. During this period, severe restrictions were imposed on all movements outside of one’s household and economic activity was limited to ‘essential’ services (National Department of Health, 2020). Only those employed in these services or able to work remotely were allowed to continue operations. Kerr and Thornton (2020) estimate that this amounts to a mere 40% of the employed population. People living under or on the poverty line are predicted to be the very same people who were unable to work during this time, many engaging in informal, low-wage or casual labour (Jain et al., 2020a). Government COVID-19 social assistance policies were designed to alleviate the employment consequences of the pandemic. These policies widened and deepened South Africa’s existing social protection institutions and shaped the pandemic’s poverty impact. COVID-19’s impact on poverty is the net effect of the drastic employment loss experienced and substantial increase in social grants. This section reviews initial studies on both of these effects.

Although the adverse economic effects of COVID-19 are global, they are expected to be disproportionately felt in developing countries which are characterised by insufficient resources and capacity, as well as less-protected labour markets (Jain et al., 2020a; Köhler & Bhorat, 2020). In a global context of already sluggish economic growth, increasing inequalities and policy uncertainty, the pandemic is expected to trigger *“the worst recession since the Great Depression”* (Valensisi, 2020, p.1536). Lakner et al. (2020) project that the pandemic will push 71 million people globally into extreme poverty in 2020 (measured at a poverty line of \$1.90/day). Sub-Saharan Africa is expected to be the worst-affected region with an estimated 2.7 percentage point increase in extreme headcount poverty, amounting to an additional 31 million people under this same poverty line (Valensisi, 2020). Against this backdrop, the socio-economic consequences of the pandemic cannot be overstated.

4.1 March - April 2020

The drastic projected increase in poverty is driven by the nature of employment in developing countries like South Africa where a large proportion of the labour force cannot feasibly work from home (Köhler & Bhorat, 2020). Using occupational data from the Quarterly Labour Force Survey, Kerr and Thornton (2020) determine which groups of workers could or could not work during the April lockdown to identify

workers vulnerable to job loss. The authors estimate that 26.7% of the employed population (4.5 million workers) were classified as essential workers and 13.8% of the employed (2 million workers) could feasibly work from home (Kerr & Thornton, 2020). Importantly, the 63% of workers (10.5 million people) who fall into neither category, are predominantly employed in low-skilled occupations (Kerr & Thornton, 2020). People employed in the informal economy or acting as casual labour were acutely impacted by the lockdown. As the informal economy consists of small, unregistered businesses operating from homes, street-pavements and other informal arrangements, these businesses were unable to operate and largely unable to access business relief institutions (Cloete et al., 2021). For many South Africans, these activities generate their primary source of income (Cloete et al., 2021). Kerr and Thornton (2020) describe that in the bottom half of the income distribution, less than a third of workers (28%) could continue working during the lockdown period. In contrast, 61% of workers in the top decile of income distribution could do so. As such, predominantly low-income and informal earners were unable to work during the lockdown.

The National Income Dynamics Study: Coronavirus Rapid Mobile Survey (NIDS-CRAM) provides the first opportunity to directly observe which groups were affected by COVID-19 job-loss. Using computer-assisted telephone interviews to survey a sub-sample of approximately 7000 South African adults from the fifth wave (2017) of the existing National Income Dynamic Study (NIDS), the survey tracked the effects of the pandemic over five waves (Spaull et al., 2020a). The first wave asked the respondents to recall their employment and income levels in February and April 2020 (during the harshest period of lockdown) (Spaull et al., 2020a). The subsequent waves took place between June 2020 and May 2021. As the NIDS-CRAM is sampled from the NIDS (2017), the dataset is representative of the adult population in that original dataset. The NIDS was designed to be nationally representative of South Africa in its first wave in 2008, but there has been selective migration/attrition since then. Ranchhod and Daniels (2020) illustrates that wave 1 of the NIDS (2008) compares well to the QLFS/PALM surveys of that same year but that by wave 3 (2012) the estimates diverged from their QLFS/PALMS equivalents. By 2017, the NIDS estimated a substantially higher employment rate (55%) compared to the QLFS 2017 (48%). Despite these challenges, no alternative or comparable data source existed in 2020 by which researchers could examine the effects of the pandemic. As such this dataset was a invaluable tool for preliminary analysis.

Several studies (Jain et al., 2020a; Köhler & Bhorat, 2020; Ranchhod & Daniels, 2020; Spaull et al., 2020a) have used the first wave of the NIDS-CRAM data (conducted in April 2020) to investigate the employment ramifications of COVID-19. Measuring this employment effect is a complex task as traditional definitions of employment do not account for the large proportion of furloughed workers and temporary layoffs that occurred during the period. Ranchhod and Daniels (2020) illustrate that although traditional employment

only decreased by nine percentage points, this figure decreased by 19 percentage points (from 57% of adults to 38%) when the authors classified furloughed workers as unemployed. Ranchhod and Daniels (2020, p.1) conclude that *'almost 1 in 3 employed adults in February in [their] sample lost their job, either permanently or temporarily by April'*. Similarly, Jain et al. (2020a) estimate a 21 percentage point (or 40%) **net** decrease in active employment in the working age population. Worryingly, half of the 3 million jobs lost were permanent (Spaull et al., 2020b). Jain et al. (2020a) explains that a movement into the 'not employed' category indicates a severed relationship with the employer or permanent job loss. Vulnerable groups were more likely to face these permanent job-losses. Over half of the 57% net decrease in employment amongst people in the bottom half of the income distribution was permanent (Jain et al., 2020a). As such, COVID-19 is expected to have a long-run impact on the country's labour market, particularly for poor individuals.

The employment ramifications are concentrated among already disadvantaged population groups: black people, women, youths, the less-educated and those who live on the poverty line (Spaull et al., 2020a). Employment loss for individuals living in poorest 20% of households is responsible for 35% of the total employment loss, illustrating that the poorest households are disproportionately affected. A similar trend is observed according to education level, whereby the likelihood of losing your job is highest for those without a matric qualification (45%), followed by those with only a matric qualification (42.8%), and lastly by those with tertiary education (28.7%) (Ranchhod & Daniels, 2020). Job-loss was also acutely experienced by women who accounted for two-thirds of the net job losses that occurred during the hard-lockdown (Casale & Posel, 2020). This amounted to a 49% decline in active employment amongst women between February and April, over half of this job loss being permanent (compared to one third for men) (Jain et al., 2020a). Women who kept their jobs also report a greater decline (35%) in average working hours than their male counterparts (26%) (Casale & Posel, 2020). As expected, people with a written employment contract fared better than those with verbal contracts, showing how vulnerable informal workers are (Jain et al., 2020a). Black people are more likely to be in low-paying and informal jobs due to South Africa's racialised labour market. Employed black adults had a net decline of 36% in employment, compared to white adults who had a net decline of 2% (Ranchhod & Daniels, 2020). Thereby, the employment losses that arose from COVID-19 deepened the existing inequalities within South Africa.

As employment is a fundamental determinant of a household's poverty status, it is unsurprising that COVID-19 saw an increase in poverty and household hunger. In April 2020, two of every five adults surveyed report that their household lost their primary source of income during the hard lock-down (Wills et al., 2020). Household hunger increased by 123% in this time (Spaull et al., 2020a; Wills et al., 2020). Jain et al. (2020a) quantified the poverty impact of COVID-19 in April 2020. As wave 1 of the NIDS-CRAM only reports

household income in April 2020 (post-shock), and not February (pre-shock), the effect of COVID-19-related job-loss on poverty is not *directly observable*. While one could compare the income of those who retained their jobs and those who did not, these groups are expected to be systematically different since low-income workers are more likely to lose their jobs (Jain et al., 2020a). To address this selection issue, they construct a fictitious ‘no job loss’ income distribution for job-losers by re-weighting those who retained their job (Jain et al., 2020a). The re-weighting is performed by a logit LASSO regression which creates a job-loss propensity score from the individual characteristics reported in the most recent wave of the NIDS (Jain et al., 2020a). The results from this method show that 20% or 33% of job-losers fell into poverty under the R435/month or R1265/month poverty lines, respectively (Jain et al., 2020a). This amounts to approximately 1 to 1.7 million job-losers who entered poverty as a result of COVID-19 job-loss (Jain et al., 2020a). Notably, the total number of individuals who fell into poverty due to job-loss is higher since workers have multiple dependents in the South African context. Since the NIDS-CRAM did not record household data, the exact number of dependents in job-loser households is unknown. To approximate the figure, the authors use the average number of dependents supported by job-losers in the 2017 NIDS (Jain et al., 2020a). Using this average, they speculate that roughly 3- 5.5 million individuals fell into poverty as a result of COVID-19 job loss, depending on the poverty line used (Jain et al., 2020a).

Jain et al. (2020a)’s estimate that between 3 and 5.5 million fell into poverty in April 2020 relies on the assumption that household composition in 2020 is the same as it was in 2017. This is a flawed assumption. Studies (Carlitz & Makhura, 2021; Eyal, 2021; Posel & Casale, 2020) describe substantial movements and changes to household composition in the first few months of COVID-19. Migration and fluid living arrangements are the norm within low-income South African households as a legacy of apartheid (Eyal, 2021). The first few months of COVID-19 saw several notable re-locations and changes to household compositions. Between 5-6 million adults are shown to have moved into different households in the initial months of lock-down in the NIDS-CRAM dataset (Posel & Casale, 2020). This relocation predominantly (70%) occurred between the announcement (22 March) and enforcement (27 March) of the initial hard lockdown (Carlitz & Makhura, 2021; Eyal, 2021). More than half of these moves were interprovincial. The majority of this movement is attributed to students moving when tertiary institutions closed and adults who had lost their income during the hard-lockdown (Posel & Casale, 2020). Yet, Posel and Casale (2020) finds that those who moved after this period, in April or May, appear to be the most destitute. These movers are characterised to have lost their employment over the lock-down period and had to move into another household receiving grant or labour income (Posel & Casale, 2020). Approximately 60% of these movers moved into households that ran out of food in April and 36% moved into households experiencing hunger (Posel & Casale, 2020).

Carlitz and Makhura (2021) report that 36.8% of individuals report relying on their extended family and friends for financial or in-kind support in the first half of 2020. Approximately 40% of households report an increase in household size between April and June 2020 (Eyal, 2021). Posel and Casale (2020) finds that 38% of households accommodating an additional household member that was not a regular resident for at least four nights a week, were already poor in 2017 according to a poverty line of R1 138 per capita monthly. As expected, simulations report an increase in poverty within these households of 11 percentage points if they were required to absorb an additional household member without an accompanying increase in income (Posel & Casale, 2020). Thus, households and family networks will absorb the newly unemployed at the risk of being pushed deeper into poverty.

4.2 May - June 2020

Attempting to minimize the calamitous effects of the lockdown, the government widened and deepened its social assistance policies in May 2020. An additional R50 billion was allocated towards social grants in 2020 (Bhorat et al., 2021). This amount was later reduced to R40 billion in the Minister of Finance's Supplementary Budget in June 2020. Utilising the existing grant architecture was believed to be the most efficient way to reach vulnerable populations. Specifically, Bassier et al. (2020) argued that a boost to the CSG grant would cushion the impact of lockdown on the most economically vulnerable households. The CSG has the largest number of beneficiaries, making up 71% of total grant recipients in 2019/2020 (Köhler & Bhorat, 2020). Two-thirds of CSG recipients live in the poorest half of all households, making the grant highly progressive. While simply increasing the CSG would be the most effective way to reduce extreme poverty, COVID-19 social policy had a different priority: to mitigate the income shock to the most negatively affected *workers*. Many COVID-19 job-losers do not reside in the poorest households but in the middle of the income distribution (Bhorat et al., 2021; Spaull et al., 2020a). Jain et al. (2020a) estimate that roughly 30% of those laid-off during the hard-lockdown have no grant protection at all. Too poor to have adequate safety nets but too rich to qualify for government grants, the 'working' poor are at risk of sliding into poverty. Thereby, the government opted to increase all existing social grants and introduced the new COVID-19 Social Relief of Distress (SRD) grant to assist those without previous support (Bhorat et al., 2021). Individuals who were unemployed and received no other social grant or UIF support were eligible for the SRD. The additional COVID-19 grant support was implemented in May 2020. Combined, the social grants appear to have provided widespread relief, theoretically reaching 36 million individuals or approximately 63% of the population (Bhorat et al., 2021). The amounts of the grant increases are shown in Table 2 below.

Jain et al. (2020b) reports the first evidence on the effectiveness of social protections in reducing poverty. Comparing poverty levels in April (when no additional social assistance was available) to June (after the top-ups were introduced), the authors find poverty to have decreased by 3 or 6 percentage points, depending on whether the upper bound or lower bound poverty lines of R1265/month or R435/month is used (Jain et al., 2020b). Lower-bound poverty fell by 13% and upper-bound poverty fell by 4%, implying the poverty decrease has been pro-poor. It is worth remembering that the NIDS-CRAM sample fails to capture the impact of dependents like children and the elderly. Social assistance rather than social insurance has alleviated poverty. Only 7% of COVID-19 job-losers are covered by the UIF (Jain et al., 2020b). As expected, this coverage is almost exclusively amongst workers employed in the formal sector and the upper income quartiles (Jain et al., 2020b). Conversely, social assistance receipt was more widespread and targeted lower-income individuals. By the end of June 2020, 3.2 million individuals were approved to receive the SRD and 2.5 million people had received it (Bhorat et al., 2021). Jain et al. (2020b) find SRD coverage to be higher among men (38%) compared to women (28%). Despite this, the grant was progressively targeted. Receipt was 20 percentage points higher in the bottom half of the income distribution compared to the top half (Jain et al., 2020b). Coverage was also 15 percentage points higher in the informal economy than formal economy and 10 percentage points higher in rural areas compared to urban areas (Jain et al., 2020b). Overall, the reduction in poverty is attributed to the progressive dispersion of the SRD and additional grant *top-ups*. Importantly, as February (pre-pandemic) income is not reported, the authors are unable to reliably determine if the additional grant support successfully brought June 2020 poverty to the pre-pandemic levels.

4.3 October 2020

Wave 3 of the NIDS-CRAM reports a significant ‘bounce-back’ in the economy by October 2020. As these estimates are in the same time-frame as the 2020 General Household Survey, it is of particular interest to this study. Bassier et al. (2021) find that by October 2020, employment returned to approximately 98% of its February 2020 (pre-pandemic) level, marking substantial economic recovery. Employment was estimated at 55% of the population (Bassier et al., 2021). Evidence also points to considerable ‘*churning*’ within the labour-market (Spaull et al., 2021). Only 50% of April job-losers were re-employed by October, while 33% of those unemployed prior to the pandemic (in February 2020) had found employment in October (Spaull et al., 2020c). October 2020 also reflects a ‘peak’ of social assistance (Spaull et al., 2020c). By this time,

roughly two-thirds of SRD grant applications has been approved, dispersing more than 18.5 million SRD grants (Baskaran et al., 2020). As such, 70% of adults lived in households receiving a government grant, two-thirds receiving the CSG or SRD, or both (Bassier et al., 2021). Grant receipt is also highly progressive as 90% of adults living in the bottom half of the income distribution received a grant (Spaull et al., 2020c). Despite widespread grant support and employment recovery, the number of households who report someone has gone hungry in the last week increased by 2 percentage points (or 12.5%) to 18% of households between June and October 2020 (Spaull et al., 2020c). Child hunger also increased over the period and was at its highest estimate (16%) in October 2020. Thereby, extreme poverty was not affected by the stabilising employment level or widespread grant support. As October is the last month of the additional COVID-19 ‘top-ups’, hunger is expected to increase for vulnerable groups in the following months.

4.4 April 2021

April 2021 marks a year after the pandemic started. At this point, wave 5 of the NIDS-CRAM estimates employment had returned to 99.8% of its pre-pandemic level (February 2020) (Daniels et al., 2022). A near total employment recovery. By this time, the Quarterly Labour Survey had been released allowing for the broad comparison of the surveys estimates. Daniels et al. (2022) use both the NIDS-CRAM and QLFS to provide a full labour force picture between 2020 and 2021. Notably, the results of the QLFS do not show the same employment recovery as the NIDS-CRAM in the last quarter of the 2020 or first quarter of 2021. Instead, population-level employment is still 10% below its pre-pandemic level by in the first quarter of 2021 (Daniels et al., 2022). Simkins (2021) also notes this discrepancy describing that the QLFS employment estimates are on par with Statistics South Africa’s Quarterly Employment Statistics (QES), while the NIDS-CRAM estimates agree with national accounts. The substantial variation in employment between surveys leaves the question of whether South Africa’s economy had recovered from COVID-19 unanswered.

At the time of writing, Bassier et al. (2022) conducts the only other study into the impact of the pandemic on poverty in South Africa in 2020 and 2021. The methodology they employed is relatively more complicated than the method used in this study. The authors use households income data from the 2015 LCS and 2017 NIDS and ‘update’ that data using the labour data from the 2020 and 2021 QLFS (Bassier et al., 2022). The basic approach is to change individual employment statuses from the LCS and NIDS to match the employment level observed in the QLFS and then apply the changes in income. Such a method requires several assumptions and comes with uncertainty. Since the level of employment (and thereby poverty) varies depending on which data source is used, Bassier et al. (2022) presents poverty estimates using three methods.

The first and second method change the employment level reported in the NIDS (2017) and LCS (2015) by the percentage change in employment shown in QLFS during the pandemic (Bassier et al., 2022). The third poverty estimate treats the QLFS as the most accurate data source and forces the NIDS (2017) employment level to match the QLFS (Bassier et al., 2022). The change in poverty between Q1 2020 and Q4 2021 varies substantially depending on which of the methods is used. The first method predicts the biggest increase in upper-bound poverty (3.4 percentage points to 43.8 % of the population) and the third method predicts the smallest increase (1.1 percentage points to 46.6% of the population) (Bassier et al., 2022). An estimated 0.7 million to 2 million individuals entered poverty due to the pandemic, depending on which method is used (Bassier et al., 2022). As reflected by the 0.2 to 1.5 percentage point increase in the poverty gap, the poor got poorer on account of COVID-19 (Bassier et al., 2022).

This section has described previous studies on the economic impact of COVID-19 on South Africa. Poverty studies conducted this far have been *predictions* of the impact of the pandemic, owing to the lack of nationally representative household income data before and after the pandemic. Using the recently released General Household Survey, we contribute to the literature by investigating the *observed* changes in household income and expenditure over the last two years of the pandemic and estimate how the pandemic has impacted poverty.

5 Describing the Data

The previous chapter detailed initial studies into the impact of COVID-19 on South African poverty. The study employs data from the 2019, 2020 and 2021 General Household Surveys (GHS) to extend this research using more reliable and recent data. The data used for rest of the study is examined in this chapter.

5.1 Data Description

The GHS is an annual cross-sectional household survey collected by Statistics South Africa (Stats SA). It has been used since 2002 to track the progress in development within the country. The survey collects detailed information in a variety of areas to measure households' quality of life at the household level.

The 2019 GHS surveys approximately 33 000 dwelling units based on 3 080 primary sampling units drawn from the 2013 Master sample used in all Stats SA household surveys. The data is collected using a two-stage, stratified sample design using probability proportional size principles. Primary stratification is performed at the metropolitan/non-metropolitan level and secondary stratification is performed by household size, education, occupancy status, gender, industry and income. The 2019 survey is nationally representative of private households from all nine provinces in the country.

Though the datasets were not primarily designed to measure the impact of COVID-19, the 2020 and 2021 GHS datasets provide the first 'nationally representative' household data on the effects of the pandemic. Importantly, the 2020 and 2021 survey differs from its predecessors in two key ways. First, as a result of the restrictions imposed during the COVID-19 pandemic, the surveys were conducted using computer-assisted telephone interviews, rather than the face-to-face interviews used prior. Secondly, the interviewers drew the 2020 and 2021 sample from households who provided usable telephone numbers in the 2019 GHS sample. Thus, the 2020 sample consists of the 8 896 households (45% of the 2019 sample) who were able to be re-interviewed during the pandemic. To increase the number of households that could be interviewed in 2021, fieldworkers physically visited households that did not provide useable telephone numbers to obtain updated contact details. Doing so increased the 2021 sample 9 629 dwelling units. The 2019, 2020 and 2021 samples are unstable. Differences in sampling might affect how nationally representative the 2020 and 2021 GHS datasets are. Though the GHS samples are unstable, the dataset is still the most recent available. As such, we cautiously use this data to estimate poverty as best we can.

In light of the sampling differences, special attention is paid to the sample and design weights used in

within the study to correct for the differences between the 2019 and 2020/2021 samples. The 2019 sample weights are constructed to correct for the design weights, excluded populations from the sampling frame and non-response. Post-stratification weights ensure that the data represents the civilian population of South Africa. Calculating the 2020 and 2021 weights required an additional step. Telephone sampling is rife with difficulties, the main one being inherent differences in households that were contactable again in 2020 and those who were not. To account for these potential differences, Stats SA computed bias-adjustment weights. Bias adjustment weights are the ratio between values of variables for the full 2019 sample and for households re-interviewed in 2020/2021. These bias-adjusted weights are post-stratified to be consistent with known population totals. While these bias-adjusted weights are the best we can do to create nationally representative estimates, they are created on the basis of modelling assumptions and therefore are subject to error.

5.1.1 Who is included in the 2020 and 2021 GHS samples?

In view of the marked differences in sampling within the 2019, 2020 and 2021 GHS datasets, we closely examine the samples. The high level of attrition between the 2019 and 2020 sample requires us to compare the households that were able to be re-interviewed in 2020 and those who were not. Table 3 compares the 2019 mean values of household characteristics for both samples. Households re-interviewed in 2020 are on average larger than those who are not (3.8 members vs. 3 members), the difference is statistically significant. Re-interviewed households also receive statistically significantly greater levels of grant income (R1 126 vs. R902) and earn less labour income (R6870 vs. R7 533). A greater proportion of re-interviewed households reside in traditional areas and have a female or black household head. Most importantly, households re-interviewed in 2020 have statistically significantly lower total monthly household income than their counterparts. Overall, Table 3 illustrates that the sample of households re-interviewed in the 2020 is poorer than the full 2019 sample. The demographic characteristics accord with what we have come to expect - black, female, rural and bigger households experience more poverty (Jansen et al., 2015).

Table 3: Descriptive Statistics Table

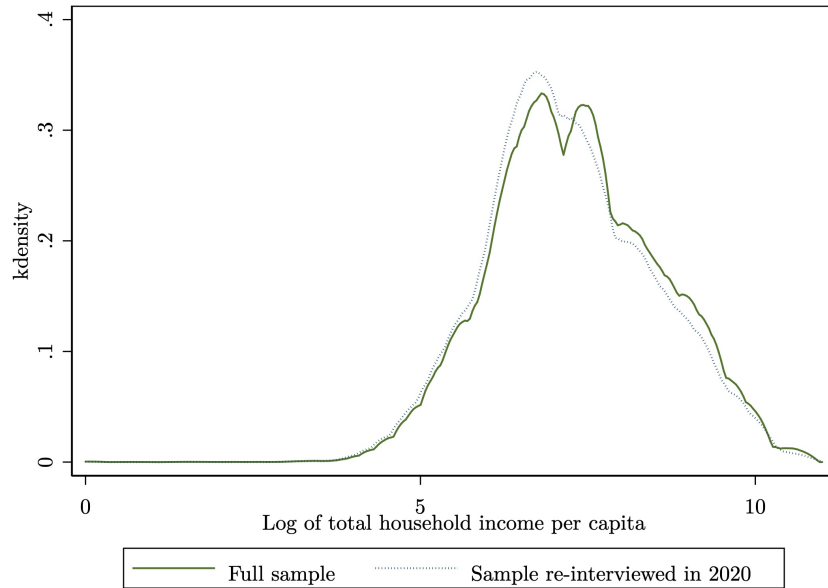
Variable	Full Sample	Not re-interviewed in 2020	Re-interviewed in 2020	
	(1)	(2)	(3)	
Demographics				
Black Household Head	0.82	0.79	0.88	***
Female Household Head	0.43	0.40	0.45	***
Household Size	3.51	3.3	3.8	***
Number of Children	1.25	1.1	1.4	***
Number of Elderly	0.36	0.34	0.38	***
Location				
Urban	0.65	0.70	0.59	***
Traditional	0.32	0.26	0.38	***
Income				
Total Monthly Income	7 516.18	7 605.35	7 407.32	*
Total Labour Income	7 234.04	7 532.89	6 870.44	**
Total Grant Income	1 002.87	902.11	1 125.88	***
Sample Sizes	19 649	10 801	8 848	

Source: own calculations using the GHS (2019, 2020). The table reports the mean values of household characteristics for those re-interviewed in the 2020 sample and those not, and tests for significant differences. *Black Household Head*, *Female Household Head*, *Urban* and *Traditional* are binary variables. Significant differences are reported with stars. * implies a p value < 0.10, ** implies a p value < 0.05, *** implies a p value < 0.01.

Figure 2 below reiterates that the sample re-interviewed in 2020 is poorer than the full 2019 sample. The density figure plots the logarithm of per capita household income in 2019 and 2020 for both samples. The overall distribution of per capita household income is very similar but clearly shows a greater concentration of lower-income households in the re-interviewed sample. Since low-income households make up a greater proportion of the 2020 GHS sample, Stats SA’s bias-adjusted weights are especially important as they correct for the oversampling so that nationally representative poverty estimates can still be produced.

The 2021 sample also faces noteworthy attrition. Approximately one third of 2020 respondents were unreachable via telephone in 2021. The 2020 characteristics of the households who remained in the 2021 sample and those who did not are examined in Table 12 (in the appendix). The households that were unreachable in 2021 are shown to be on average richer than their counterparts in 2020, the difference is statistically signifi-

Figure 2: Overlaid kernel densities of household income per capita in 2019 in different samples



Source: Diagram based on own calculations from the GHS (2019).

cant. The households are also on average smaller, less likely to have a black or female head and more likely to live in an urban area. To increase the sample size, StatsSA fieldworkers visited households in the 2019 sample who did not provide telephone numbers to obtain updated contact information for 2021. The result was to re-include 3 459 households who were in the original 2019 sample in the 2021 sample. The households that were re-included were richer than the rest of the sample. Overall, there are 5 857 households who were interviewed in all three years of interest.

5.2 Variables of interest

The thesis relies on two key variables: total monthly household income and total monthly household expenditure. Total monthly household income is calculated by Stats SA based on the household’s labour income, grant income, remittances and pensions received within the household. Monthly household expenditure is self-reported by the household head using 10 expenditure bands ranging from *R0 per month* to *R10 000 or more*. As expenditure data is reported in brackets, the following section discusses how point estimates were generated. When comparing 2019, 2020 and 2021 values, both household income and expenditure are deflated to their October 2019 equivalent values using the consumer price index.

5.2.1 Data quality considerations

There are two challenges within the variables of interest used from the 2019, 2020 and 2021 GHS datasets. First, like in all poverty studies, households reporting zero monthly household income present a challenge (Ardington et al., 2005). As discussed, income data is a sensitive topic for many households. While poverty estimates would not be affected by omissions made by high-income households fearing tax repercussions, missing data at the bottom of the income distribution greatly affects the reliability of poverty estimates. The 2019 GHS experiences a higher proportion of zero-income households (8.82%) than seen in previous years. Yet more than 75% of these zero-income households have one or more employed individual³. Zero monthly income then seems highly implausible. As such, all households reporting zero income with more than one employed resident were removed from the sample in all years of the GHS considered. This decision is supported by previous poverty studies (see Ardington et al. (2005)). Similarly, households reporting implausibly high levels of monthly household income were also removed from the sample. This was especially necessary for the 2020 GHS dataset, where 71 households reporting below average levels of household income in 2019 reported monthly income of above R10 million rand the following year.

The second data quality issue is the nature of the expenditure data collected in the GHS surveys. Expenditure is captured through a one-shot question asking which of 10 monthly expenditure categories the household falls into, answered by the household head. There are several concerns with such a question. First, Yu (2016) shows that responses to a one-shot question like this suffers from higher levels of recall-bias than more detailed questions, potentially making the expenditure variable less reliable. In the context of this study, the more pressing challenge is that expenditure is collected in bands. The poverty estimation methods used in this thesis require continuous data. As such, the GHS expenditure variable must be translated into continuous values. Various approaches to this problem exist, the predominant one being the mid-point pareto method (Ardington et al., 2005). The method straightforwardly assigns each observation the value of the midpoint of interval they report being in (Yu, 2016). The lowest band is zero expenditure and is therefore already a value. Since the highest interval has no upper bound value, the method assigns observations a value 10% higher than lower bound value (Yu, 2016). A variation of the method calculates the pareto mid-point of the highest interval. The pareto mid-point method fits a pareto function to the data by regressing the logarithm of the number of households in the highest interval against the logarithm of the lower bound of the interval (Yu, 2016). Using the pareto coefficient from this regression, the method calculates the pareto mean for the upper-bound value.

³Within this study, an employed individual is defined as someone who is working for a wage, self-employed or returning to a job within a week.

Despite its simplicity, there is no theoretical basis for the mid-point method. We consider an alternative method of generating continuous data for robustness. To generate continuous data, we need a specified distribution within each expenditure interval. Meth and Dias (2004) created a distribution of expenditure in each interval within the 1999 GHS by assumption. Ideally the assumed intra-interval distribution would be similar to the true population expenditure distribution. As such, Ardington et al. (2005) applied the *empirical* distribution of individual income in the 2000 IES to interval-income data collected by the 2001 Census. We follow Ardington et al. (2005)'s method. Specifically, we use continuous expenditure data collected in the most recent Income and Expenditure Survey (2010/2011) to obtain the empirical intra-interval distribution of expenditure for each interval used in the GHS. We simulate expenditure values in the GHS based on random-draws from the within interval distribution as observed in the corresponding intervals in the IES, after adjusting the intervals for inflation.

6 Poverty during the COVID-19 pandemic

Chapters 3 and 4 describe the methodology and data used within this thesis. This chapter presents the first poverty estimates after the COVID-19 pandemic following that methodology. The focus is the Foster-Greer-Thorbecke poverty headcount ratios. We estimate poverty in 2020 when the pandemic was most pronounced and again in 2021 when the South African economy had partially recovered.

6.1 Poverty in 2020

Table 4: Income Poverty with absolute headcounts

	2019	2020	<i>Difference</i>
	(1)	(2)	(3)
	Full Sample	Full Sample	
Food-Poor (%)	21.37	23.60	+ 2.23% points
Absolute Headcount	12 569 222	14 070 874	+ 1 501 653
Lower-bound Poor (%)	30.04	33.17	+ 3.13% points
Absolute Headcount	17 656 017	19 776 734	+ 2 120 717
Upper-bound Poor (%)	41.29	45.44	+ 4.15% points
Absolute Headcount	24 268 207	27 092 396	+2 824 189

Source: Own calculations using the GHS (2019, 2020). Table shows the percentage of the population in each type of poverty. The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita per month in October 2019 prices. Absolute headcount values were calculated assuming population totals were 58.78 million and 59.62 million in 2019 and 2020 (Statistics South Africa, 2019b, 2020). Sample weights from the 2019 and 2020 GHS are used.

Table 4 presents the first nationally representative estimates of poverty in South Africa after the COVID-19 pandemic. The estimates are based on the food, lower-bound and upper-bound poverty lines (R570, R822 and R1 246 per capita per month in October 2019 prices) proposed by Statistics South Africa (2017). We use several poverty lines to create a critical poverty range. Per capita household income is calculated by dividing total monthly household income by the household size. This assumes an equal division of household resources amongst all members. The assumption is justified in light of previous literature (Woolard & Leibbrandt, 2006; Woolard & Leibbrandt, 1999) showing that the South African poverty profile is largely unaffected by

assumptions on household resource division.

Column 1 and 2 report the headcount ratios (P_0 in the FGT methodology) and the number of ‘poor’ people in 2019 and 2020. Across all three poverty lines, the COVID-19 pandemic has increased poverty. Specifically, in 2020 approximately 1.5 million more people were unable to afford enough food to satisfy their survival food needs of 1 200 calories per day, compared to 2019. Lower-bound and upper-bound poverty showed even greater increases of 3.13 percentage points (10.4%) and 4.15 percentage points (10.5%) between the years. Practically, the increase in upper-bound poverty means approximately 2.8 million more people had to decide between purchasing food for adequate nutrition or purchasing essential non-food goods like clothing or shelter in 2020 compared to 2019. The large rise in upper-bound poverty implies that COVID-19 has brought households just escaping poverty back under the poverty line. An important caveat is the 2020 poverty estimates shown here are for October 2020, when all additional COVID-19 social grant support except the SRD grant had been terminated. We estimate how the COVID-19 grants impacted poverty later on in section 6.1.2.

As described by Budlender et al. (2015), the lower bound poverty line is not easily interpreted. Instead, including a variety of poverty lines helps provide a critical range of poverty which highlights changes in how ‘poor’ the poor are, or the depth of poverty. The increases in both food and lower-bound poverty illustrates that the poor are poorer in 2020 compared to 2019. Other tools to examine depth and severity of poverty are the poverty gap (P_1) and squared poverty gap (P_2) in the FGT methodology. These ratios are presented in Table 5. To the non-specialist reader, the poverty gap (P_1) is notoriously difficult to interpret (Meth, 2011). The poverty gap ratio is calculated as the average difference between a poor person’s income and the poverty line, divided by the value of the poverty line (Haughton & Khandker, 2009; Ravallion, 1992). The ratio tell us the fraction of the poverty line that a poor person needs, on average, in order to escape poverty (Meth, 2011). Between 2019 and 2020 the poverty gap ratio has increased on all poverty lines, suggesting that the depth of poverty worsened due to COVID-19. The poverty gap also has another useful interpretation. If normalised to the population size of the country, it can estimate the total amount of money needed to eradicate poverty or the poverty ‘shortfall’ (Meth, 2011). Practically, the amount of money needed to pull people out of food, lower-bound and upper-bound poverty also increased between 2019 and 2020. As the country’s population increased by only 1.4% between the years, the shortfall increase is driven by more extreme poverty. The squared poverty ratio is also presented. As explained, this ratio gives greater weight in the index to the poorest individuals in the sample, reminding us that there are varying degrees of poverty amongst the ‘poor’ population (Meth, 2011). A rise in the index, as seen between 2019 and 2020, implies that the poorest individuals in the population have been pushed into deeper poverty. Thereby, there

is greater inequality within the ‘poor’ population.

Table 5: Poverty gaps

	2019	2020
	(1)	(2)
	Full Sample	Full Sample
<i>Average Poverty Gap</i>		
Food Poor	0.11	0.12
Shortfall	R3.72 billion	R4.15 billion
Lower-bound Poor	0.17	0.18
Shortfall	R8.02 billion	R9.04 billion
Upper-bound Poor	0.25	0.27
Shortfall	R18.44 billion	R20.86 billion
<i>Average Squared Poverty Gap</i>		
Food Poor	0.07	0.08
Lower-bound Poor	0.11	0.12
Upper-bound Poor	0.17	0.18

Source: Own calculations using the GHS (2019, 2020). The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita per month in October 2019 prices. Absolute headcount values were calculated assuming population totals were 58.78 million and 59.62 million in 2019 and 2020 (Statistics South Africa, 2019b, 2020). Sample weights from the 2019 and 2020 GHS are used,

We compare the above results to the only other estimates of poverty produced in this period: Jain et al. (2020b). Since Jain et al. (2020b) use the NIDS-CRAM dataset which excludes dependents like children and pensioners, our results are inherently different. Still, the October 2020 poverty level estimated in Table 4 is considerably lower than Jain et al. (2020b)’s estimated June level. In June 2020, Jain et al. (2020b) estimate that approximately 38% of the adult population lived under the lower-bound poverty line of R436 per capita per month. Performing our own calculations using the GHS, only 19% of the population lived under this poverty line in October 2020. This amounts to a 50% decrease in poverty between June and October 2020. While there was a significant economic ‘bounce-back’ between in the third quarter of 2020 (Spaull et al., 2020c), a decline in poverty of this magnitude seems highly implausible. Instead, the dramatic difference in Jain et al. (2020b)’s estimates and ours is likely owing to differences between the NIDS-CRAM and GHS samples. Since the NIDS-CRAM maybe not be nationally representative, the GHS estimates are more reliable.

The depressing rise in poverty seen in 2020 is predominantly owing to the dramatic decrease in employment that year. A pronounced employment loss was reported in Jain et al. (2020a). Though their follow-up study showed a partial recovery in the labour market by June 2020, the authors predicted that a large proportion of job-loss was permanent (Jain et al., 2020b). In spite of that prediction, Spaul et al. (2020c) found that employment in the NIDS-CRAM had ‘bounced-back’ by October 2020, its estimated level being only 2 percentage points lower than its pre-pandemic level. Though the focus of this study is poverty rather than employment, the rudimentary employment trends we analysed in the GHS do not reflect a full employment recovery. According to the GHS (2020), the average number of employed individuals within a household decreased from one person to less than one person (0.91 of a person) between 2019 and October 2020. Thus, the pandemic has had longer-lasting employment ramifications than previously estimated.

Labour income within a household remains the primary determinant of whether its members are poor or not (Finn & Leibbrandt, 2017; Leibbrandt, Finn, et al., 2010). ‘*No employment*’ households are the most likely to be in - or enter - poverty. These households made up 52.9% of the poor population in 2019, the figure increasing to 60% in 2020. ‘*No employment*’ households are concentrated in more vulnerable population groups. In 2019, 86.7% of households with no employment were black and 56.8% were female-headed. By 2020, 88% of no employment households were black-headed and 57.6% were female-headed. The figures are hardly surprising considering that employed black people experienced a 36% decrease in employment and women experienced two-thirds of job-losses in the initial months of the pandemic (Casale & Posel, 2020; Ranchhod & Daniels, 2020). As such, the calamitous COVID-19-related loss of employment increased poverty and deepened existing inequalities.

Next, the pronounced shift in living arrangements accompanying COVID-19 job-loss has increased poverty. As described earlier, COVID-19 job-loss caused many job-losers to relocate to the household’s of family members or neighbours still receiving grant or labour income (Carlitz & Makhura, 2021; Eyal, 2021). Since these households were already close to poverty, an additional member could push them over the poverty ‘line’ (Carlitz & Makhura, 2021). A change to the household’s demographics is a main trigger for entry into poverty (Finn & Leibbrandt, 2017). The GHS data corroborates this finding. The average household size in 2019 and 2020 increased from 3.3 members to 3.5 members. We use the sub-sample of households who were interviewed in both the 2019 and 2020 GHS as panel data to directly measure how demographic changes affected poverty. Roughly 25% of households in the panel dataset gained additional members between 2019 and 2020. As expected, it is poor households who are likely to gain additional members. Approximately 55.6% of the households who gained an additional member in 2020 were already poor in 2019. Households who gained an additional member between 2019 and 2020 experienced a 2.2% increase in extreme poverty in

those years. Of course, it must be noted that the sample of households interviewed in both 2019 and 2020 is biased towards those at the lower-end of the income distribution. Thus, this result is not intended to present a national trend but simply illustrate that for poorer sub-sample included in both the 2019 and 2020 GHS, the additional financial pressure of an extra member increased the severity of their poverty.

6.1.1 How do the expenditure poverty estimates compare?

Table 6: Comparison on income and expenditure headcount poverty estimates

	2019			2020		
	(1)	(2)	(3)	(4)	(5)	(6)
	Income	Expenditure		Income	Expenditure	
		Midpoint Method	With IES (2010) distribution		Midpoint Method	With IES (2010) distribution
Food Poor	21.37	24.21	24.82	23.60	30.69	29.05
Lower-bound Poor	30.04	36.38	36.86	33.17	42.42	41.22
Upper-bound Poor	41.29	47.00	50.9	45.44	57.71	55.31

Source: Own calculations using the GHS (2019, 2020). Table shows the percentage of the population in each type of poverty. The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita per month, respectively. Table uses October 2019 prices.

Income poverty has undoubtedly risen in 2020. For robust poverty results, we investigate whether expenditure poverty follows the same pattern. To overcome the bracketed nature of the GHS expenditure variable, we use the mid-point pareto method to generate continuous expenditure values for both years. The continuous expenditure values are then evaluated against the same three poverty lines used to generate income poverty estimates. Due to theoretical shortcomings of the mid-point method, we also simulate continuous expenditure values based on the empirical distribution of expenditure in the 2010/2011 IES. Poverty estimates using the income method and two expenditure methods are compared in Table 6. Incidentally, the expenditure poverty estimates produced using the two different methods are remarkably similar for all but the upper-bound poverty level. Thus, despite its limitations, the midpoint method performs well.

Unsurprisingly, estimated expenditure poverty is considerably higher than income poverty using both meth-

ods. A one-shot and bracketed question on expenditure seriously underestimates total expenditure (Yu, 2016). Previously, Yu (2016, p.153) established that total expenditure is ‘*seriously under captured*’ in Stats SA surveys like the OHS, LFS and GHS, only amounting to 30-50% of the national accounts of income. Hence, the poverty headcount ratios produced from the flawed expenditure variable are expectedly much higher when compared to the more reliable income poverty estimates. Nonetheless, the pattern in income and expenditure poverty follow the same broad trend: poverty has increased across all poverty lines with upper-bound poverty experiencing the greatest increase. Upper-bound poverty rose between 8 % and 22% in 2020, depending on which indicator or method we rely on.

6.1.2 How did social grants alleviate poverty during COVID-19?

Across the South African poverty literature, social grants are shown to alleviate poverty. As a theoretical exercise, Table 7 predicts what poverty levels would have been if social grants were not implemented in South Africa, holding all else constant. As expected, poverty is profoundly higher in 2019 and 2020 in a world without any social grants. In 2019, government social grants decreased food poverty by 14.83 percentage points (41%), lower-bound poverty by 12.4 percentage points (29%) and upper-bound poverty by 8.67 percentage points (17.3%). A similar pattern is apparent in 2020 where social grants reduced food poverty, lower-bound poverty and upper-bound poverty by 38%, 26% and 13.25%, respectively. Social grants have the greatest impact on extreme poverty (food poverty). This is to be expected on account of the progressive targeting of existing social grants towards assisting the poorest members of society.

To measure the impact of the additional COVID-19 grant assistance on poverty, we must pay special attention to the timing of data collection due to the changing grant policies. The 2020 GHS was collected between September and December 2020. Many changes to COVID-19 social policy occurred in these four months. Most notably, all COVID-19 grant top-ups were terminated in October 2020, aside from the SRD. Since the 2020 GHS was finalised in December 2020, it records social grant income without the additional grant top-ups but including the SRD grant. We assume that people have exactly the same income in October/December 2020 as they did in September, aside from the top-up grants. With this assumption, we can estimate poverty levels in September 2020 (when the *top-ups* were in place) by adding the known top-up values to the income of people who reported receiving a grant in the 2020 GHS. In light of the fast-evolving regulations on which sectors of economy were open at each lockdown level, this is a strong assumption as individuals might have returned to work between September and December, making this an imperfect estimate.

Column 5 (Table 7) predicts what poverty levels were when the additional COVID-19 *top-ups* were in place. Remarkably, the *top-ups* not only cushioned the COVID-19 poverty increase but rather decreased extreme poverty to below the pre-pandemic (2019) levels. Food poverty in September 2020 was 4% (0.86 percentage points) lower than it was in October 2019, owing to the additional grant support. Borhat et al. (2021) reminds us that the objective of COVID-19 social policy was to assist workers adversely effected by COVID-19 related job-loss, not simply reduce poverty. Whether or not it was the intention of the policy to do so, extreme poverty was reduced by the COVID-19 *top-ups*. Still, the additional grant support did fulfil its objective to assist COVID-19 job-losers by partially mitigating the increase in upper-bound poverty. COVID-19 job-losers are characterised as individuals on the brink of poverty and were predicted to fall into upper-bound poverty as a result of the pandemic. Upper-bound poverty only increased by 4.7% when the additional grant support was in place, instead of the full 10.5% increase in upper-bound that occurred when the *top-ups* were terminated. The result is to be expected since high-levels of COVID-19 job-losers resided in households receiving the CSG or other forms of grants (Borhat et al., 2021). The result suggests that it was the additional COVID-19 *top-ups* in combination with the SRD grants, as opposed to the SRD grant alone, that drove down poverty in September 2020. None of the figures produced from this arithmetic exercise is able to account for any behavioural responses that might have occurred from having a social grant or additional COVID-19 grant support.

Table 7: Social grant policy counterfactual

	2019		2020		
	(1) October 2019	(2) Counterfactual: No social grants	(3) October 2020	(4) Counterfactual: No social grants	(5) <i>September 2020: With COVID-19 top-ups</i>
Food Poverty	21.37	36.2	23.60	38.17	<i>20.51</i>
Lower-Bound Poverty	30.04	42.44	33.17	44.64	<i>30.01</i>
Upper-Bound Poverty	41.26	49.93	45.44	52.38	<i>43.23</i>

Source: Own calculations using the GHS (2019, 2020). Table shows the percentage of the population in each type of poverty. The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita per month. Columns 1 and 3 record poverty as it is in the 2019 and 2020 GHS samples. Columns 2 and 4 estimate poverty in a situation without any government social grants. Column 5 predicts what poverty levels were during the period of additional COVID-19 grant support.

6.1.3 How do the sampling weights affect the poverty estimates?

Since 2020 GHS sample consists of households poorer on average than the 2019 sample, we investigate how sampling weights affect our poverty estimates in Table 8. Doing so checks the robustness of our results. As expected, 2019 income headcount poverty was higher within the re-interviewed sub-sample (column 2) than in the full 2019 sample (column 1). This is hardly surprising considering that the re-interviewed sample has significantly lower levels of income. Comparing columns 2 and 3 shows how the same individuals sampled in 2019 fared in 2020. For the same individuals, food poverty rose by 4.5%, lower-bound poverty by 6.6% and upper-bound poverty by 6.4% between the years. Since the re-interviewed sample is poorer than then full sample, the more pronounced increase in poverty they experienced shows that poorer individuals were less able to cushion the adverse effects of COVID-19. As the 2020 sample disproportionately measured poorer households, applying the 2020 bias-adjusted weights correctly lowers the estimated poverty level to obtain the nationally-representative poverty level. Table 13 in the appendix repeats the above weighting exercise using expenditure poverty estimates. The results follow the same pattern. Namely, expenditure poverty is higher in the re-interviewed 2019 sample than the full sample and the re-interviewed sample experience a relatively more pronounced increase in poverty than the full sample in 2020.

Table 8: Income Poverty with different weights

	2019		2020	
	(1) Full sample (2019 weights)	(2) Re-interviewed sample (2019 weights)	(3) Re-interviewed sample ⁴ (2019 weights)	(4) Re-interviewed sample (2020 weights)
Food-Poor	21.37	23.67	24.73	23.60
Lower-bound Poor	30.04	33.8	36.03	33.17
Upper-bound Poor	41.29	46.31	49.26	45.44

Source: Own calculations using the GHS (2019, 2020). Table shows the percentage of the population in each type of poverty. The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita per month in October 2019 prices. Households reporting zero monthly income with one or more employed persons are removed from the sample. Similarly, households reporting a monthly income of R10 million or more were treated as outliers and removed from the sample.

⁴ The 're-interviewed' 2019 sample is the **full** 2020 sample.

6.2 Poverty in 2021

We investigate the longer-term poverty impact of COVID-19 using the recently released 2021 GHS. Table 9 shows the percentage of the population that is poor and estimates the number of poor people in 2019, 2020 and 2021 using each year’s mid-year populations estimates (Statistics South Africa, 2021). Remarkably, by 2021 the COVID-19 income poverty increase appears to have stabilised. By 2021, food poverty had decreased by 7.8% (or 1.67 percentage points) to below the pre-pandemic level of poverty observed in 2019. Approximately 721 055 fewer individuals lived in extreme poverty after the COVID-19 pandemic than before the pandemic started. Nonetheless, the net change is relatively small when compared to the size of South Africa’s population. Lower-bound and upper-bound poverty are also shown to have roughly returned to their pre-pandemic level by 2021, both differing from their 2019 level by less than one percentage point. Still, with the population growth experienced between 2019 and 2021, a less than one percentage point increase in upper-bound poverty equates to nearly one million more individuals in poverty. Table 14 (in the appendix) also reports a decrease in the depth of poverty between 2020 and 2021, as shown by the decrease in poverty gap ratios. This reflects a post-pandemic recovery by October 2021. As indicated by the falling squared poverty ratio, these poverty gains were pro-poor and benefited the poorest within the poor population.

Table 9: Income poverty with absolute headcounts in 2021

	2019	2020	2021	<i>Change between 2019 and 2021</i>
	(1)	(2)	(3)	(4)
Food Poor (%)	21.37	23.60	19.70	<i>-1.67% points</i>
Absolute Headcount	12 569 222	14 070 874	11 848 167	<i>- 721 055</i>
Lower-bound Poor (%)	30.04	33.17	29.40	<i>-0.64% points</i>
Absolute Headcount	17 656 017	19 776 734	17 682 036	<i>+ 26 019</i>
Upper-bound Poor (%)	41.29	45.44	41.96	<i>+ 0.67% points</i>
Absolute Headcount	24 268 207	27 092 396	25 235 994	<i>+ 967 787</i>

Source: Own calculations using the GHS (2019, 2020). Table shows the percentage of the population in each type of poverty. The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita per month in October 2019 prices. Absolute headcount values were calculated assuming population totals were 58.78 million, 59.62 million and 60.14 million in 2019, 2020 and 2021 (Statistics South Africa, 2019b, 2020, 2021). Sample weights from the 2019, 2020 and 2021 GHS are employed.

Since the 2021 GHS is collected in October, its poverty estimates are directly comparable to Bassier et al.

(2022) who predicted poverty in last quarter of 2021 using the QLFS. Using the same poverty lines, Bassier et al. (2022) estimated food poverty to be between 15.6 - 21.5% and upper-bound poverty to be between 40.4 - 44.5% in the first quarter of 2020 (taken to be the pre-pandemic level), depending on which method they use. It must be commented that Bassier et al. (2022)'s five percentage point poverty range, in both food and upper-bound poverty, is considerably wide when we consider that the biggest yearly poverty increase we observe in this paper is only 4.15 percentage points. Regardless, our 2019 pre-pandemic poverty estimates fall within their range. Since Bassier et al. (2022) simulate poverty rather than directly observe it, they use several methods to estimate the change in poverty as previously discussed. Their estimated change in food poverty over the pandemic period is inconclusive, increasing using one method and decreasing using another (Bassier et al., 2022). Our 2021 food poverty estimate still falls with the range of their estimates. Upper-bound poverty shows a consistent increase over the pandemic period across all of the methods that they use, increasing by between 1.1 to 3.4 percentage points to 43.8-46.6% of the population (Bassier et al., 2022). Although our upper-bound poverty estimates also show a rise in upper-bound poverty between 2019 and 2021, the increase in poverty is less than a percentage point. Overall, the 2021 GHS estimates upper-bound poverty to be considerably lower than that predicted from the QLFS data.

Comparing our the 2021 GHS data to wave 5 of the NIDS-CRAM, our results are less optimistic. Spaul et al. (2021) report that by March 2021 the employment level had returned to its pre-pandemic level. A less pronounced recovery in employment is observed in the October 2021 GHS. The average number of employed individuals within a household did increase between 2020 and 2021 (from 0.9 individuals to 0.93 individuals), but still remained less than the 2019 level (1.1 employed individuals per households). The GHS also reports higher levels of food poverty than those which are obtained from NIDS-CRAM. The NIDS-CRAM measures hunger or food poverty by asking households if anyone in the households went hungry because there was not enough food in the household. Nationally, 10.6 million individuals were estimated to be hungry in March 2021 using this blunt measure (Spaul et al., 2021). Using the more precise food poverty line, 11.8 million individuals were hungry in the October 2021 GHS. Since the ways of measuring hunger are so vastly different in the different surveys, it is not possible to comment on whether the differing levels are due to the method of measuring hunger, survey methodology or a time difference. Overall, the 2021 GHS reports employment and poverty recovery somewhere in between the estimates observed in the fifth wave of the NIDS-CRAM and the QLFS.

The 2021 GHS also shows a return to 'normal' in household size. As previously discussed, the pandemic changed living arrangements since COVID-19 job-losers moved into the households of family members or neighbours still receiving income. The phenomenon led to an increase in average household size from 3.3

members in 2019 to 3.5 members in 2020. Surprisingly, average household size returned to its pre-pandemic level of 3.3 members a household by 2021. Since the households which gained an additional member were in or close to poverty, fewer mouths to feed might explain the decrease in poverty seen in 2021.

We perform two robustness checks to confirm the post-COVID-19 poverty recovery. First, we check whether the same recovery is observed in expenditure poverty. The 2021 poverty estimates fail this robustness check. Expenditure poverty estimates for 2021 do not display the same post-COVID-19 recovery as the income poverty estimates. As seen in Table 15 (in the appendix), food poverty is static at its higher 2020 level. Similarly, lower-bound and upper-bound expenditure decreased by only 2 percentage points using the mid-point method and remain above the pre-pandemic poverty level. There is no clear downward trend amongst estimates generated using IES empirical expenditure distribution. In light of the earlier discussion on the flaws of the GHS expenditure data, we do not place too much weight on the expenditure poverty trends.

Table 10: Income poverty amongst households interviewed in all three GHS datasets

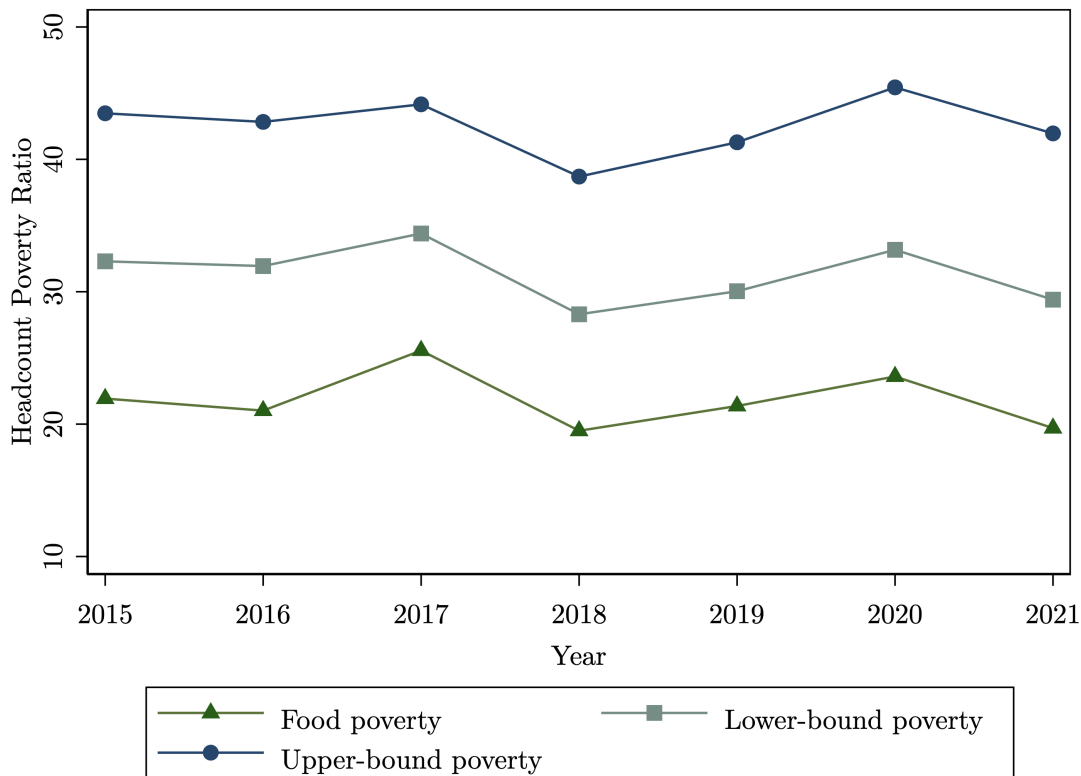
	2019	2020	2021
	(1)	(2)	(3)
Food Poor	26.26	26.29	22.42
Lower-bound Poor	37.87	38.54	34.96
Upper-bound Poor	52.05	53.68	50.66

Source: Own calculations using the GHS (2019, 2020, 2021). The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita per month in October 2019 prices. Only households interviewed the 2019, 2020 and 2021 GHS are included. The 2019 sampling weights are applied to all three years to make them comparable.

The second robustness check investigates whether a poverty-recovery is observed in the sub-sample of panel data interviewed in the 2019, 2020 and 2021 GHS datasets. As the samples are unstable, we look at the trends in the panel data which are not affected by the different sampling weights used in each year. A sub-sample of 5 857 households were interviewed in all three samples, thus forming a balanced panel. The households in all three samples are likely to be poorest households since the poorer households in 2019 were successfully re-interviewed in 2020 and the poor households in 2020 were successfully re-interviewed in 2021. This is shown to be true in Table 10 (in the appendix) where the poverty level for households in the panel data is higher than the nationally representative poverty level in 2019, 2020 and 2021. Interestingly, this

poorer sample experienced much smaller increase in poverty due to COVID-19 than the national increase in poverty. Poverty along all three poverty lines increased by less than a percentage point between 2019 and 2020. Perhaps, the poorest households were not as affected by COVID-19 job-loss since they are found to have lower levels of employment than the national estimates even prior to the pandemic. The post-COVID-19 recovery for this sub-sample of poorer individuals is more extreme than seen in the national estimates. Food poverty fell by 3.8 percentage points (14.6%) and lower-bound poverty by 2.9 percentage points (7.6%) between 2019 and 2021. This result, combined with the fall in the squared poverty gap ratio (observed in Table 14 in the Appendix), suggests that the post-COVID-19 recovery and fall in poverty has been pro-poor.

Figure 3: Income poverty between 2015 and 2021 according the annual General Household Survey.



Source: Diagram based on own calculations from the GHS (2015, 2016, 2017, 2018, 2019, 2020 and 2020). The same methodology is used to create the income headcount poverty estimates for all years. Sampling weights are applied to each year. The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita in October 2019 prices. Households reporting zero monthly income with one or more employed persons are removed from the sample.

Figure 3 adds the estimated 2020 and 2021 income poverty results to our previous poverty trend graph. As shown, the 2021 GHS reports a fall in the level and depth of poverty that brings poverty to below its pre-pandemic level in 2019. Food and lower-bound poverty show the biggest decline. To explain this unexpected result, we consider the difference in social grant support between and 2019 and 2021. The SRD grant was intended to assist COVID-19 job-losers who were too ‘rich’ to qualify for grant support prior

to the pandemic but had inadequate safety nets (Bhorat et al., 2021). Although the SRD was originally intended to be a temporary measure, it was extended until April 2021, stopped between May and June 2021, reinstated in August 2021 and is still in operation today (Ramaphosa, 2022). Eligible applicants need only be older than 18, unemployed and not receiving income from the Unemployment Insurance Fund or a pension (Ramaphosa, 2022). As of August 2021, people receiving other grants were also eligible (Bassier et al., 2022). Approximately 21.5 million individuals are eligible for the grant but only 10.5 million individuals have been approved and 9.7 millions individuals have received the grant (SASSA (2020) as cited in Bassier et al. (2022)). As such, a substantial number of previously excluded South Africans were now eligible to receive grant support, regardless of whether or not they were unemployed prior to the pandemic (Bassier et al., 2022). Since people receiving other government grants were also eligible, households often have more than one person receiving the grant (Bassier et al., 2022). As such, poverty recovery and decrease observed in October 2021, might reflect the effect of the SRD on poverty. Poverty levels might be lower in 2021 than in 2019 because the ‘working poor’, and the large number of South Africans unemployed prior to the pandemic, are now receiving grant support. The SRD is valued at half of the food poverty line. As such, the grant is able to pull a large number of South Africans out of extreme and lower-bound poverty but has less of an effect on the upper-bound poverty level. The grant, coupled with the employment recovery that observed in 2021, might explain the optimistic poverty decline seen in 2021. To see whether this poverty recovery is indeed attributed to the SRD grant and whether decline in poverty is sustained, special attention must be paid to future GHS publications.

6.2.1 How did poverty affect vulnerable groups?

COVID-19 disproportionately affected vulnerable groups and exacerbated existing inequalities. To crudely measure how households from these vulnerable groups fared during the pandemic, we measure poverty in female or black-headed households in Table 11. As expected, there is a higher level of poverty amongst individuals living in black- or female-households than the estimated national poverty levels. Even prior to the pandemic starting, extreme poverty was 30% higher amongst individuals living in female-headed households than the national poverty level. Females were found to be particularly burdened by the pandemic, experiencing more job-loss and taking longer to recover to pre-pandemic levels (Casale & Posel, 2020; Spaull et al., 2021). The estimated 2020 poverty level reflects this and is between 7-12 percentage points (or 25-29%) higher than the national level, depending on which poverty line is used. The poverty ramifications were more severe for female-headed households. Poverty still recovered in these households by 2021, following the national trend and falling to below the pre-pandemic level. The result contradicts Spaull et al. (2021)’s

finding that females were experiencing delayed economic-recovery after the pandemic. The observed decline in food and lower-bound poverty is in line with the hypothesis that SRD-receipt is driving down poverty.

Table 11: Poverty levels within black- or female-headed households

	2019	2020	2021
	(1)	(2)	(3)
Black-headed households			
Food poor	24.34	26.99	22.18
Lower-bound poor	34.25	38.13	33.52
Upper-bound poor	46.95	51.92	48.51
Female-headed households			
Food poor	27.6	30.17	25.48
Lower-bound poor	39.69	42.59	38.89
Upper-bound poor	53.73	57.03	54.53

Source: Own calculations using the GHS (2019, 2020, 2021). The table shows the proportion of poor people within female or black-headed households. The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita monthly in October 2019 prices. Samplings weights from the 2019, 2020 and 2021 GHS are applied.

Before the COVID-19 pandemic, individuals living in black-headed households also experienced poverty that was 14% higher than the national level. Food, lower-bound and upper-bound poverty increased by roughly 11% on account of COVID-19 for these households. Surprisingly, the increase is on par with the nationally representative increase in poverty of roughly 10% between 2019 and 2020, despite the black population experiencing a net decline of 36% in employment during the initial months of the pandemic (Ranchhod & Daniels, 2020). Thus, black headed households did not experience a higher than average rise in poverty during the pandemic. The 2021 post-pandemic poverty recovery within this sub-sample mirrors the national trend. Of course, with intersectionality, households run by black females are acutely vulnerable. Prior to the pandemic, nearly 60% of households run by black females were in poverty, half of these households (30%) being extremely poor. Upper-bound poverty increased to 63% during the pandemic, extreme poverty increasing by 4.6 percentage points to 34.6%. Like the other vulnerable groups, both food and lower-bound poverty returned to its pre-pandemic level by 2021 but upper-bound poverty was more static.

7 Conclusion

The coronavirus pandemic caused an expectedly severe but surprisingly temporary rise in poverty in South Africa. As shown, South African poverty has been extensively researched and debated. Yet, there have been no estimates of poverty in the country after 2017 to date. Using the best practice methods discussed in the first chapter of this dissertation, we have shown that even prior to the pandemic, poverty was increasing using all three poverty lines. We attribute the increase to the economic recession experienced in 2018 (Statistics South Africa, 2019a). Against this declining economic backdrop, the coronavirus pandemic had devastating effects on South Africa's economy.

The pandemic's impact was harshest in 2020. The extreme employment losses experienced in 2020 are reflected in a 2.23, 3.13 or 4.15 percentage point rise in food, lower-bound and upper-bound poverty respectively. This amounts to an additional 2.8 million poor people in 2020. An increase in the depth of poverty is also observed, as seen by the increasing poverty gaps and additional 1.5 million individuals in extreme poverty.

The increase in poverty would have been substantially worse without the additional COVID-19 grant support. Our simulation shows with the COVID-19 grant '*top-ups*' upper-bound poverty only increased by 4.7% as opposed to the full 10.5% increase that occurs when they were terminated. When in place, the additional '*top-ups*' also decreased poverty to below the pre-pandemic level. The result illustrates the effectiveness of these grants in targeting groups worst affected by the pandemic and the power a R350 increase in all grant income has in reducing poverty in South Africa.

The results from this dissertation are encouraging in that they suggest that impact of the pandemic on poverty were temporary in nature. The 2021 poverty estimates report a dramatic poverty recovery by October 2021, with estimated poverty levels lower than they were in 2019. Even vulnerable groups, like female-headed or black-headed households, experience this fall in extreme poverty. The depth of poverty has also been reduced, even for the poorest populations who were unemployed prior to the pandemic. We hypothesize that the surprising result is explained by the continuation of the SRD grant in 2021. The grant provides the 'working poor' and large number of South Africans unemployed prior to the pandemic additional income that has reduced poverty by providing grant support to people previously excluded. Future research must investigate whether the observed decline in poverty is sustained after the SRD is terminated.

8 Appendix

Table 12: Descriptive statistics table comparing the 2020 characteristics of households included or not included in the 2021 GHS sample.

Variable	Re-interviewed in 2021	Not re-interviewed in 2021	
	(1)	(2)	
Demographics			
Black Household Head	0.89	0.85	***
Female Household Head	0.48	0.42	***
Household Size	4	3.7	***
Number of Children	0.43	0.39	
Number of Elderly	0.43	0.35	***
Location			
Urban	0.55	0.68	***
Traditional	0.43	0.3.	***
Income			
Total Monthly Income	8 204.03	9 462.82	***
Total Labour Income	6 298.78	7 746.02	***
Total Grant Income	1 342.55	1 066.04	***
Sample Sizes	6170	2721	

Source: own calculations using the GHS (2020, 2021). The table reports the 2020 mean values of household characteristics for those re-interviewed in the 2021 sample and those not, and tests for significant differences. *Black Household Head*, *Female Household Head*, *Urban* and *Traditional* are binary variables. Significant differences are reported with stars. * implies a p value < 0.10, ** implies a p value < 0.05, *** implies a p value < 0.01.

Table 13: Expenditure poverty with different weights

	2019		2020	
	(1) Full sample (2019 weights)	(2) Re-interviewed sample (2019 weights)	(3) Full sample (2019 weights)	(4) Full sample (2020 weights)
Food-Poor	24.21	27.49	33.09	30.69
Lower-bound Poor	36.38	40.4	45.81	42.42
Upper-bound Poor	47.00	51.75	62.03	57.71

Source: Own calculations using the GHS (2019, 2020). Table shows the percentage of the population in each type of poverty. The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita per month, respectively. Table uses October 2019 prices.

Table 14: Average poverty gap and squared poverty gap across the years

	2019	2020	2021
	(1) Full Sample	(2) Full Sample	(3) Full Sample
<i>Average Poverty Gap</i>			
Food Poor	0.11	0.12	0.09
Shortfall	R3.72 billion	R4.15 billion	R3.42 billion
Lower-bound Poor	0.17	0.18	0.15
Shortfall	R8.02 billion	R9.04 billion	R 7.76 billion
Upper-bound Poor	0.25	0.27	0.23
Shortfall	R18.44 billion	R20.86 billion	R18.64 billion
<i>Average Squared Poverty Gap</i>			
Food Poor	0.07	0.08	0.06
Lower-bound Poor	0.11	0.12	0.09
Upper-bound Poor	0.17	0.18	0.14

Source: Own calculations using the GHS (2019, 2020). The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita per month in October 2019 prices. Absolute headcount values were calculated assuming population totals were 58.78 million, 59.62 million and 60.14 million in 2019, 2020 and 2021 (Statistics South Africa, 2019b, 2020, 2021). Sample weights from the 2019, 2020 and 2021 GHS are employed.

Table 15: Expenditure poverty estimates for 2019, 2020 and 2021

	2019		2020		2021	
	(1) Mid-point method	(2) IES (2010) distribution	(3) Mid-point method	(4) IES (2010) distribution	(5) Mid-point method	(6) IES (2010) distribution
Food poor	24.21	24.82	30.69	29.05	31.43	30.84
Lower-bound poor	36.38	36.86	42.42	41.22	40.54	39.35
Upper-bound poor	47.00	50.9	57.71	55.31	55.77	55.67

Source: Own calculations using the GHS (2019, 2020, 2021). Table shows the percentage of the population in each type of poverty. The food, lower-bound and upper-bound poverty lines used were R570, R822 and R1 246 per capita per month in October 2019 prices.

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