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EVALUATING THE IMPACT OF GOVERNMENT SOCIAL PROTECTION ON HOUSEHOLDS' WELFARE DURING THE COVID-19 PANDEMIC IN SOUTH AFRICA

Abstract:

This study evaluates the impact of government social protection interventions on households' welfare in South Africa. The study uses survey data comprising 393 observations and the multinomial logistic regression technique to analyse the effect of government interventions. For robustness purposes, a negative binomial regression model is also estimated, whose results corroborates the main results from the multinomial regression model. Our findings show that government economic interventions through social protection significantly reduced the likelihood of a reduction in household income. Covid-19 grant/social relief grant, unemployment insurance, tax relief and job protection & creation were all significant in sustaining household income and consumption during the pandemic. The findings support the use of government social protection in providing a safety net for low-income groups in South Africa.

Keywords:

Social protection, Government intervention, Households' welfare, Covid 19 pandemic, Multinomial logistic regression

JEL Classification: D10, D12, D60

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1.0 Introduction

Recent studies have shown an unprecedented negative impact of the Corona virus (Covid 19) pandemic induced recession on both households and firms (Kithiia et al., 2020) (Öztürk, Şişman, Uslu & Çitak, 2020; Shafi, Liu & Ren, 2020). This recession is said to be worse than the 2008/2009 Global financial crisis recession (Cantó, Figari, Fiorio, Kuypers, Marchal, Romaguera-De-La-Cruz, Tasseva & Verbist, 2021). Due to the worldwide movement restrictions imposed by governments to curb the spread of the virus, the global value chain incurred a heavy strain, which reduced supply of certain products and consequently resulted in increases in inflation around the globe. The major impact of this disruption was reduced business activity, which resulted in low profitability and in some cases losses for business enterprises (Fairlie, 2020). This coupled with the uncertainty around business continuity led to layoffs, increasing unemployment in the process. The majority of employees in the semi-skilled and unskilled categories were further reported to have received wage cuts as firms grappled with production stoppages. Consequently, household income was negatively impacted, poverty increased and the number of people requiring government social support increased (Krumer-Nevo & Refaeli, 2021). The response of the South African government was to increase social protection for vulnerable groups inclusive of households and labour through a range of economic interventions including a special Covid 19 grant, unemployment insurance fund imbursements, small business grants and even government guaranteed bank loans.

However, we find a dearth of studies focusing on evaluating the impact of these government economic interventions in literature. There is a clear distinction in the literature on studies that have focused on pharmaceutical interventions and those that have focused on non-pharmaceutical interventions. A large amount of work has however been done on non-pharmaceutical interventions (NCIs) focusing on methods used to curb the spread of the virus (Brauner et al., 2021, Haug et al., 2020). We distinguish between these interventions and specific economic interventions that were meant to protect consumers or stimulate economic activity and focus on the later. We find that fewer studies have undertaken to evaluate economic interventions used to either cushion household, employees, or businesses against the detrimental effects of such NCIs such as the lockdown restrictions. We fill this gap by evaluating government social protection policy interventions in South Africa. This study analyses and report on results from a survey undertaken in the King Cetshwayo District municipality. Specifically, we collect and analyse data on the perceived accessibility and relevance of the economic interventions from the government and their impact on households' welfare.

We hypothesize that government social protection interventions have had no effect on households' welfare as measured by both household income and consumption. Our findings show that government economic interventions through social protection significantly reduced the likelihood of a reduction in household income. Specifically, covid-19 grant/social relief grant, unemployment insurance, tax relief and job protection & creation were all significant in sustaining household income and consumption during the pandemic.

I this section, we have introduced the study. The rest of the paper is as follows: section 2 reviews recent literature on government social protection and section 3 outlines the methodology used in the study. In section 4, the results of the study are analysed and discussed. Lastly, section 5 concludes the study and provides policy recommendations.

2.0 Literature review

This section reviews literature on socio-economic interventions made by governments to ameliorate the negative effects of the Covid 19 pandemic. Direct government intervention to protect consumers is rooted in the traditional theory of welfare economics. In contrast to Adam Smith's proposition on free markets and no government intervention in the economy, (Ng, 1983) and (Esping-Andersen, 2001) demonstrate the need for government intervention in the modern economy. They raise important issues that show the inadequacy of free markets as an instrument for managing general societal welfare. Based on the contributions of (Pigou, 1929) and many others (Esping-Andersen, 2001, Hicks, 1939, Lomborg, 2020), welfare economists analyse the social costs and social benefits of decisions taken by different economic agents, argue for redistribution of wealth, optimal taxation regimes, and show the relationship/cooperation between different economic role players with the government. Pigouvian taxes and subsidies are seen as interventions meant to correct externalities arising from actions of economic agents. Furthermore, other social welfare issues that have been tackled in literature include unemployment benefits, housing, transfer payments and medical insurance (Lomborg, 2020, Edenhofer et al., 2021).

The Covid 19 pandemic raised questions on welfare around the world and in South Africa specifically (Cantillon et al., 2021, Mok et al., 2021, Ranchhod and Daniels, 2021). The pandemic has impacted the different segments of the society as demonstrated by studies that have focused on different sections of the society (Font and Bartholet, 2021, Kikuchi et al., 2021). Closure of schools had an impact of the schooling system and learner performance in many countries (Font and Bartholet, 2021). The pandemic necessitated a country-wide lock down, which brought some industries to a complete halt and impacted workers, producers, and consumers negatively. Many workers were laid off from work, which increased unemployment and further pushed up numbers for unemployment insurance recipients. Hunger and poverty increased, and governments were faced with a greater need to provide welfare services. However, apart from the need for socio-economic interventions, the pandemic had at its centre the need for medical resources. Therefore, governments had to provide health resources for members of the society who were unable to meet their own expenses. We review below literature focusing on government interventions to ameliorate the pandemic.

The need for social assistance in South Africa is corroborated by Ranchhod and Daniels (2021) who find a significant drop in unemployment during the first wave of the pandemic. On the backdrop of this, the study by Bhorat et al. (2021) show that the South African government responded to the crisis by implementing several interventions, which included increasing the current grants (normal grants) and also adding another Covid 19 specific grant. Their study uses the comprehensive National Income Dynamics Study (NIDS) data to assesses the social response mechanism by the South African government and find that the Covid 19 grant was an important part of the interventions to cater for people that were not initially part of the normal grant system.

A large segment of the literature has also focused on the hospitality industry, which suffered a huge shock due to travel restrictions and business closures (Duro et al., 2021, Rogerson and Rogerson, 2020). (Rogerson and Rogerson, 2020) analyse the impact of the pandemic induced lockdown on the tourism sector in South Africa and notes that the sector was negatively impacted by the pandemic. Moreso, their study shows that small and medium firms in this sector were affected the most. In turn this resulted in multiple business closures and increased unemployment, hurting the households further. To reduce the impact of these negative effects, the government of South Africa initiated specific relief targeted at the tourism sector – the Covid 19 Tourism Relief Fund. Such responses were not unique to South Africa as countries such as Malaysia and Spain also reported similar interventions (Foo et al., 2021, Duro et al., 2021).

Analysis of impact of Covid 19 on child welfare carried out in Haffejee and Levine (2020) show the vulnerability of children because of the pandemic, which raises the need for policy interventions targeted at children's welfare. In another cross-country study, Katz et al. (2021) analyse the responses to the pandemic targeted at lessening the effect of malnutrition in South Africa and other countries. The paper shows that whilst there was no increase in child malnutrition reports received during the pandemic, there were however reports on gender-based violence. However, data on child malnutrition might not have been available due to limited movement of people. They were no specific interventions

targeted at child malnutrition during the pandemic. In a similar study, Chineka and Kurevakwesu (2021) analyse the changes in the welfare of children brought by the Covid 19 related deaths and lockdown. They find children at the receiving end of the pandemic, requiring attention of both government and social partners. Interventions proffered includes home schooling, psychological support, cash transfer programmes and home schooling.

Escalante and Maisonnave (2021) use a computable general equilibrium model to analyse the impact of the pandemic on poverty and inequality in Bolivia. With specific reference to women, they find that female headed household to face the worst decrease in welfare due to the pandemic. Nechifor et al. (2021) analyse the impact of Covid 19 pandemic on food security in Kenya and evaluated government social security interventions. Similar to Escalante and Maisonnave (2021), the study employs a CGE model for Kenya. The CGE model is integrated with a Food Security and Nutrition (FS&N) microsimulation module, which allows for transmission of macro shocks to the food security measures. Their findings show that government interventions to support consumer incomes reduces the negative impact of both demand and supply shocks to the macro-economy on food security. Ideally, social protection actions by government were warranted to sustain markets and stimulate food demand. Compared to the Global Financial Crisis (GFC), O'Donoghue et al. (2021) evaluates the social policy responses to the Covid 19 pandemic in Ireland. They find stronger social policy responses during Covid 19 compared to the GFC.

3.0 Methodology

The study uses primary data obtained through a survey in the King Cetshwayo District municipality in KwaZulu natal, South Africa. Data was collected from all the five local municipalities including Nkandla, Mthonjaneni, Mfolozi, uMhlathuze and uMlalazi. The population of the study included 232 797 (DoCGTA, 2020) households in the district. A total of 393 households were included in the sample as primarily determined by Morgan and Kreijcie (1970) formula and a questionnaire was administered to collect the data. Random sampling was used to select the respondence. Table 1 below shows the main variables used in the study.

Table 1: Variable description

Variable	Description	Expected sign
Welfare (multinomial logit)	Decrease in income Decrease in consumption	Dependent variables
Covid-19 grant/Social relief grant	1=if the household is a beneficiary of government COVID-19 grant 0=otherwise	Negative
Tax relief	Whether any member of household received tax relief or not?	Negative
Unemployment insurance	Whether any member of household received unemployment insurance or not?	Negative
Job protection & creation	Whether any member of household benefited from government job saving interventions, including salary subsidies	Negative
Gender	1=female 0=male	Positive/ negative
Land ownership	Size of land owned by the household in hectares	Negative

Access to credit	1=household with access to credit 0=otherwise	Negative
Marital status	1=married 0=otherwise	Positive/negative
Income class	Income class of the household	Positive/negative
Number employed in household	Number of members in a household	Positive/negative
Remittances	1=households that received remittances received during the pandemic 0=otherwise	negative
Training and education	Level of Education of the household head	Positive/negative

The study uses Multinomial Logistic Regression to analyse the impact of the various forms of government intervention on households' welfare. Whilst there are a number of household welfare measures, the study employed consumption and income as measures of welfare. This implies that the different categories of consumption such as food, non-food (durable) goods and household expenditure (utilities) were separately measured and used in the dependent variable. On the other hand, income can be measured in different groups.

Multinomial logistic regression technique is an extension of the binomial logistic regression which is used when a nominal dependent variable has more than two categories. An advantage of this approach is that it does not assume normality, linearity and homoscedasticity. In a multinomial regression with a dependent variable with J categories $where\ (j = 1 \ldots \ldots J - 1)$, the jth logistic regression can be expressed as:

$$log\left[\frac{P(Y=j)}{P(Y=J)}\right] = \beta_{j0} + \sum_{k=1}^{K} \beta_{jk}X_{jk,} \qquad (1)$$

Where Y is the dependent variable, which takes the categories j; K is the total number of independent variables; and X is a vector of independent variables. Category J is the reference category, which allows for $J - 1$ logistic models to be estimated against this reference category. One advantage of the multinomial approach is that it allows for comparability between the reference category and other categories of the dependent variable. The model is estimated through maximum likelihood procedure and provides a battery of diagnostic tests that can be used to validate the estimated results. These include goodness of fit tests such as the Hosmer-Lemeshow test, Pearson Chi-squared test, Deviance Chi-squared test and McFadden R-squared. This method was to establish the impact that social grants distributed in response to the Covid 19 pandemic have had on societal welfare and also on performance and survival of small and medium enterprises.

4.0 Results analysis and Discussion

In this section, we provide the empirical results regarding the impact of government social protection on households' welfare during the Covid-19 pandemic. As a customary practice in survey literature, we set the stage by presenting a frequency analysis, reliability test, graphs on the proportions of government social support in the total sample and in each of the 8 geographical study areas complemented by a non-parametric characterisation of the beneficiaries of government social support by geographical location, race, level of education, social status and gender. Regression results are then subsequently presented and interpreted.

4.1 Summary Statistics

As an entry point, we provide a frequency table (Table 1), which reports the sample proportions by geographical location. Out of the total sample (393 households after data cleaning), Melmoth, Esikhawini and Nkandla accounted for 21.8 %, 19.8 % and 16 %, respectively. Empangeni and Richards Bay had the least contribution to the sample, 7.6 % and 4.5 %, respectively largely reflecting non-responses on key questions.

Table 1: Sample Proportions by Geography

Geography	Frequency	%	Cumulative
Esikhawini	78	19.85	19.85
Nkandla	63	16.03	35.88
Melmoth	86	21.88	57.76
Eshowe	38	9.67	67.43
Mtubatuba	39	9.92	77.35
Empangeni	30	7.63	84.99
Richards Bay	18	4.58	89.57
Dlangezwa	41	10.43	100.00
Total	393	100.00	

Cronbach alpha was applied on 20 Covid-19 related questions in order to test the reliability of the responses. The Cronbach's alpha (Cronbach, 1951) is essentially an estimate of reliability which pays particular focus on internal consistency of survey responses. The higher the alpha coefficient (typically above 0.75), the higher the consistency and reliability of survey responses. As Table 2 indicates, the alpha coefficient is 0.80 which diminishes concerns of unreliable and inconsistent responses from the respondents.

Table 2: Cronbach Alpha Reliability Test

Average interitem covariance:	0.2034078
Number of items in the scale:	20
Scale reliability coefficient:	0.8032

We proceed with plotting graphs on different types of government social support during the Covid-19 pandemic. As Figure 1 confirms for the total sample, normal social grants (child/old age etc) accounted for roughly 40 % followed by the R350 Covid-19 grant/social relief grant. Less than 10 % of the respondents were beneficiaries of government's tax relief package, unemployment insurance, job protection and bank credit guarantee scheme.
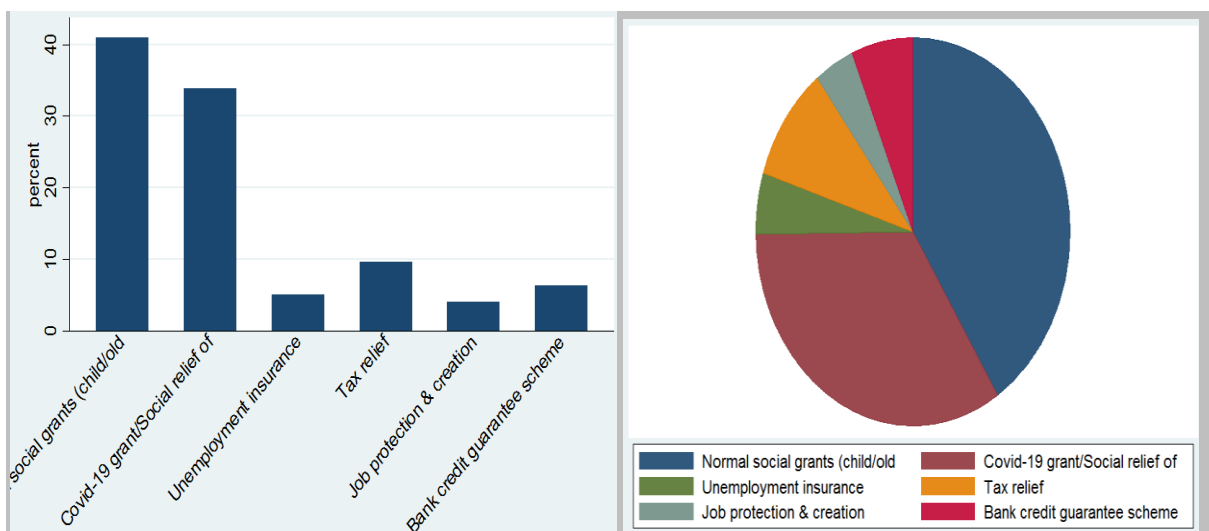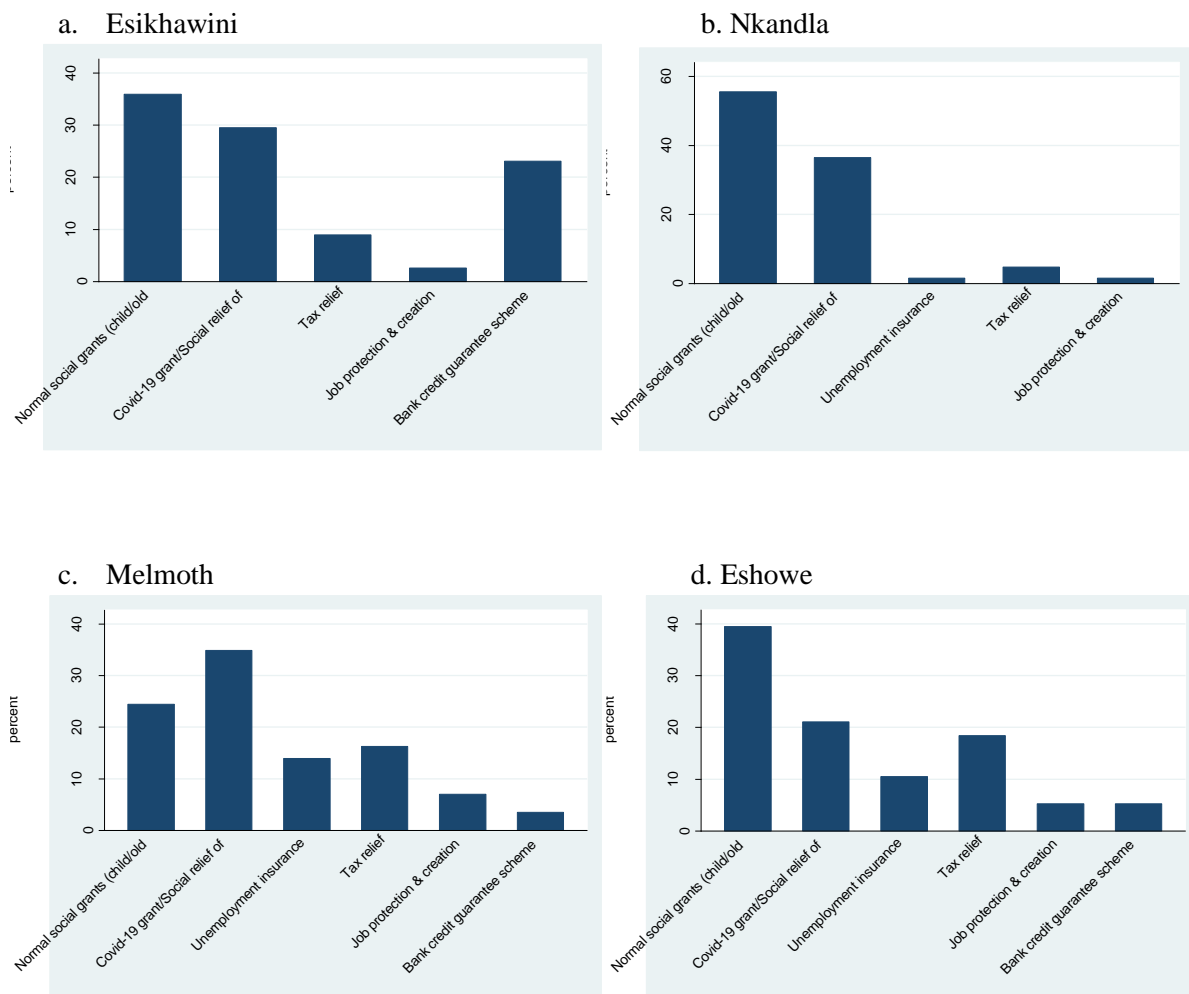

Figure 1: Government Interventions during the Pandemic
Source: Authors' Computation

Figure 2 provides the proportions of the same intervention packages by location. It emerges from this exercise that the dominance of normal social grants followed by the R350 Covid-19 grant is true in 6 of the 8 locations. The 2 exceptions are Melmoth and Richards Bay were the R350 COVID-19 accounted for the highest proportion of government interventions. Another way of looking at this observation is to look at their cumulative proportion which is more than 70 %. In other words, the visual evidence from both Figure 1 and 2 confirms that nearly three quarters of the total sample were beneficiaries of government social grants (both normal and COVID-19 grants) while the remaining quarter comprised other types of interventions.

Bank credit guarantee scheme beneficiaries accounted for a minute proportion (less than 5 %) in almost all the geographical locations except Esikhawini. This is particularly concerning in so far as it may implicitly and possibly reflect persistent financial exclusion from a package that is meant to increase credit allocation towards marginalised groups of the community. Another possibility which may not be ruled out is that the diminutive share of bank credit guarantee scheme beneficiaries might also reflect the reluctance of vulnerable households to approach banks for these allocations. The possibility of reluctance on the part of banks to extend credit to vulnerable communities on account of risk on the other hand is minimal but not inconceivable as the scheme, by nature, already involves a third-party credit risk mitigation element to banks through the absorption of a portion of the lender's losses on the loans in case of a default.

a. Esikhawini

b. Nkandla

c. Melmoth

d. Eshowe

e. Mtubatuba

f. Empangeni

g. Richards Bay

h. Dlangezwa
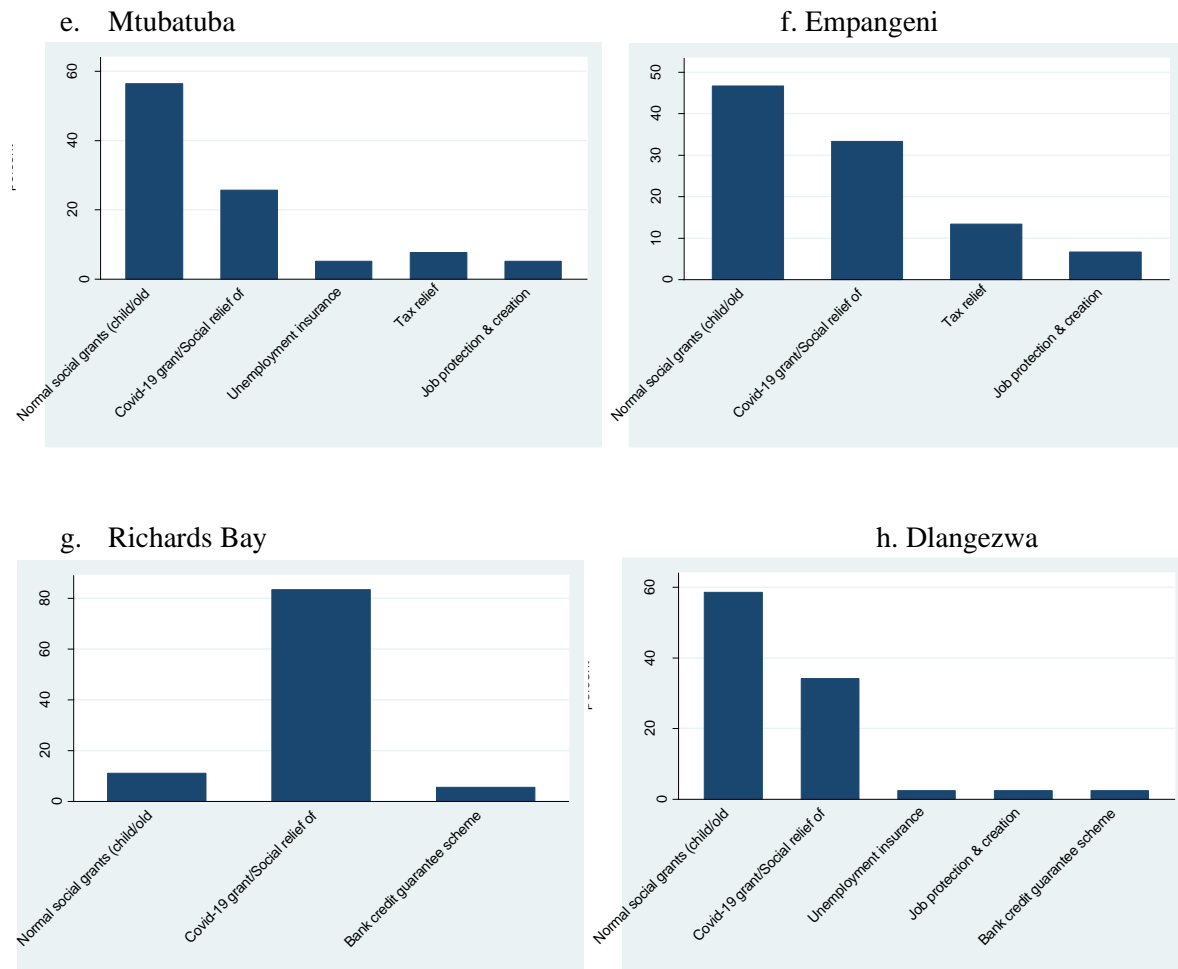
Figure 2: Government Interventions by Location
Source: Authors' Computations

Next we provide in Table 3 cross tabulations of the interventions and the geographical location reinforced by a chi-square non-parametric test. Part of the results are a corroboration of Figure 1 in which normal social grants and COVID-19 grants account for a greater proportion of the interventions (40.977% and 33.84%, respectively). Beneficiaries of bank credit guarantee schemes were a mere 6.36 % of the total sample. Of this observed small group of beneficiaries, majority of them were from Esikhawini (72%) followed by Melmoth (12%) and Eshowe (8%). None of the respondents from Empangeni, Richards Bay and Nkandla were beneficiaries of the credit guarantee scheme.

Table 3: Tabulation of Government Interventions and Location

GOV_INTER VENTIONS	Esikha wini	Nkan dla	Melm oth	Eshowe	Mtuba	Empan geni	R.Bay	Dlange zwa	Total
Normal social grants (child/old age)	28	35	21	15	22	14	2	24	161
	17.39	21.74	13.04	9.32	13.66	8.70	1.24	14.91	100.00
	35.90	55.56	24.42	39.47	56.41	46.67	11.11	58.54	40.97

Covid-19 grant/Social relief grant	23	23	30	8	10	10	15	14	133
	17.29	17.29	22.56	6.02	7.52	7.52	11.28	10.53	100.00
	29.49	36.51	34.88	21.05	25.64	33.33	83.33	34.15	33.84
Unemployment insurance	0	1	12	4	2	0	0	1	20
	0.00	5.00	60.00	20.00	10.00	0.00	0.00	5.00	100.00
	0.00	1.59	13.95	10.53	5.13	0.00	0.00	2.44	5.09
Tax relief	7	3	14	7	3	4	0	0	38
	18.42	7.89	36.84	18.42	7.89	10.53	0.00	0.00	100.00
	8.97	4.76	16.28	18.42	7.69	13.33	0.00	0.00	9.67
Job protection & creation	2	1	6	2	2	2	0	1	16
	12.50	6.25	37.50	12.50	12.50	12.50	0.00	6.25	100.00
	2.56	1.59	6.98	5.26	5.13	6.67	0.00	2.44	4.07
Bank credit guarantee scheme	18	0	3	2	0	0	1	1	25
	72.00	0.00	12.00	8.00	0.00	0.00	4.00	4.00	100.00
	23.08	0.00	3.49	5.26	0.00	0.00	5.56	2.44	6.36
Total	78	63	86	38	39	30	18	41	393
	19.85	16.03	21.88	9.67	9.92	7.63	4.58	10.43	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Pearson Chi^2 = 123.82 Prob = 0.0000

First row has *frequencies*; second row has *row %ages* and third row has *column %ages*

In Table 4, we tabulate government interventions by race. Unsurprisingly due to demographics in the study area, 92.62 % of the beneficiaries were Black Africans. Indian and Coloureds accounted for 3.05 % apiece while White people were the least, 1.27 %. As indicated, this observation is hardly surprising as the study areas are predominantly Black in terms of human settlement. Of the Black African beneficiaries, majority of them are particularly beneficiaries of normal social grants, 41.76 % and COVID-19 grants, 35.16 %. This reflects and reconfirms, albeit indirectly, government's continued efforts to prioritise pre-marginalised racial groups particularly Black Africans and Indians in its safety net programs.

Table 4: Tabulation of Government Interventions and Race

	Race				
GOV_INTERVENTIONS	African	Indian	Coloured	White	Total
Normal social grants (child/old age)	152	4	4	1	161
	94.41	2.48	2.48	0.62	100.00
	41.76	33.33	33.33	20.00	40.97

Covid-19 grant/Social relief of distress grant	128	3	1	1	133
	96.24	2.26	0.75	0.75	100.00
	35.16	25.00	8.33	20.00	33.84
Unemployment insurance	11	3	4	2	20
	55.00	15.00	20.00	10.00	100.00
	3.02	25.00	33.33	40.00	5.09
Tax relief	34	1	2	1	38
	89.47	2.63	5.26	2.63	100.00
	9.34	8.33	16.67	20.00	9.67
Job protection & creation	16	0	0	0	16
	100.00	0.00	0.00	0.00	100.00
	4.40	0.00	0.00	0.00	4.07
Bank credit guarantee scheme	23	1	1	0	25
	92.00	4.00	4.00	0.00	100.00
	6.32	8.33	8.33	0.00	6.36
Total	364	12	12	5	393
	92.62	3.05	3.05	1.27	100.00
	100.00	100.00	100.00	100.00	100.00

Pearson Chi2 = 50.14 Prob = 0.0000
First row has *frequencies*; second row has *row %ages* and third row has *column %ages*

In addition to the racial characterisation, it also emerges from Table 5 that majority of the beneficiaries were those with high school education and a certificate, diploma or a degree. These two groups accounted for a combined 74 % of total beneficiaries (52.42 % and 22.14 %, respectively). Interestingly, those with postgraduate qualifications accounted for a mere 6 % of total beneficiaries. A possible explanation for this observation is that postgraduate qualified household heads were likely to have been employed in high earning jobs and therefore less likely to have applied for government social support. In addition, this group of respondents may have been employed in jobs that were less affected by the pandemic in terms of retrenchments. A supportive view in Arndt et al. (2020) argues that workers with low education levels, typically high school qualifications, were much more strongly affected by the pandemic than workers with tertiary education and are therefore, based on this argument, more likely to apply for government social protection.

Table 5: Tabulation of Government Interventions and Education

GOV_INTERVENTIONS	Level_of_education						
	None	Some Primary	Completed Primary	Completed High School	Cert/ Diploma/ Degree	Postgraduate	Total
Normal social grants (child/old age)	19	11	14	87	25	5	161
	11.80	6.83	8.70	54.04	15.53	3.11	100.00
	61.29	57.89	53.85	42.23	28.74	20.83	40.97
Covid-19 grant/Social relief of distress grant	11	7	6	74	26	9	133
	8.27	5.26	4.51	55.64	19.55	6.77	100.00
	35.48	36.84	23.08	35.92	29.89	37.50	33.84
Unemployment insurance	0	0	1	10	9	0	20
	0.00	0.00	5.00	50.00	45.00	0.00	100.00
	0.00	0.00	3.85	4.85	10.34	0.00	5.09
Tax relief	0	0	0	14	16	8	38
	0.00	0.00	0.00	36.84	42.11	21.05	100.00
	0.00	0.00	0.00	6.80	18.39	33.33	9.67

Job protection & creation	1	1	3	8	2	1	16
	6.25	6.25	18.75	50.00	12.50	6.25	100.00
	3.23	5.26	11.54	3.88	2.30	4.17	4.07
Bank credit guarantee scheme	0	0	2	13	9	1	25
	0.00	0.00	8.00	52.00	36.00	4.00	100.00
	0.00	0.00	7.69	6.31	10.34	4.17	6.36
Total	31	19	26	206	87	24	393
	7.89	4.83	6.62	52.42	22.14	6.11	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Pearson Chi2 = 61.28 Prob = 0.0001
    First row has *frequencies*; second row has *row %ages* and third row has *column %ages*

In Table 6, we attempt to characterise the beneficiaries of government support programs by social class. Our measure of social class narrowly uses six income categories with an aggregate monthly income of R2000 below constituting the lowest social class (poor) and an aggregate monthly income of R20000 and above constituting the highest social class. This categorisation resonates with the study areas which primarily comprised low to moderate earning households.

Table 6: Tabulation of Government Interventions and Income Class

	Aggregate_Income						
GOV_INTERVENTIONS	R0-R2000	R2001-R3500	R3501-R5000	R5001-R10000	R10001-20000	20001 and above	Total
Normal social grants (child/old age)	50	35	22	31	18	5	161
	31.06	21.74	13.66	19.25	11.18	3.11	100.00
	44.64	46.67	43.14	46.97	33.33	14.29	40.97
Covid-19 grant/Social relief of distress grant	41	25	20	23	13	11	133
	30.83	18.80	15.04	17.29	9.77	8.27	100.00
	36.61	33.33	39.22	34.85	24.07	31.43	33.84
Unemployment insurance	2	7	3	3	3	2	20
	10.00	35.00	15.00	15.00	15.00	10.00	100.00
	1.79	9.33	5.88	4.55	5.56	5.71	5.09
Tax relief	13	3	0	4	9	9	38
	34.21	7.89	0.00	10.53	23.68	23.68	100.00
	11.61	4.00	0.00	6.06	16.67	25.71	9.67
Job protection & creation	5	2	2	3	3	1	16
	31.25	12.50	12.50	18.75	18.75	6.25	100.00
	4.46	2.67	3.92	4.55	5.56	2.86	4.07
Bank credit guarantee scheme	1	3	4	2	8	7	25
	4.00	12.00	16.00	8.00	32.00	28.00	100.00
	0.89	4.00	7.84	3.03	14.81	20.00	6.36
Total	112	75	51	66	54	35	393
	28.50	19.08	12.98	16.79	13.74	8.91	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Pearson Chi2 = 61.17 Prob = 0.0001
    First row has *frequencies*; second row has *row %ages* and third row has *column %ages*

In terms of gender, Table 7 indicates that households that benefited from government social support and headed by females accounted for 54 % of the beneficiaries while household headed by males constituted the remaining 46 %. This is consistent with the common narrative in empirical literature

that female headed households are more likely to be beneficiaries of government social support as women in general are in most cases vulnerable and marginalized. The corresponding probability value is statistically significant at 1 % level indicating a strong statistical association between being male or female and being a beneficiary of government social support.

Table 7: Tabulation of Government Interventions and Gender

GOV_INTERVENTIONS	Gender		
	Female	Male	Total
Normal social grants (child/old age)	99	62	161
	61.49	38.51	100.00
	46.70	34.25	40.97
Covid-19 grant/Social relief of distress grant	60	73	133
	45.11	54.89	100.00
	28.30	40.33	33.84
Unemployment insurance	10	10	20
	50.00	50.00	100.00
	4.72	5.52	5.09
Tax relief	21	17	38
	55.26	44.74	100.00
	9.91	9.39	9.67
Job protection & creation	13	3	16
	81.25	18.75	100.00
	6.13	1.66	4.07
Bank credit guarantee scheme	9	16	25
	36.00	64.00	100.00
	4.25	8.84	6.36
Total	212	181	393
	53.94	46.06	100.00
	100.00	100.00	100.00

Pearson Chi2 = 16.06; Prob = 0.0067

First row has *frequencies*; second row has *row %ages,* and third row has *column %ages*

The next section presents, interprets, and discusses the empirical results from regression results on government social protection and household welfare during the Covid-19 pandemic.

4.3 Government social protection and households' welfare during Covid-19

We proxied household welfare using two main proxies namely household consumption and household income. Use of these two proxies follows Arndt et al. (2020) and is based on the notion that welfare in developing countries generally improves with increases in income and consumption. From the questionnaires, these two primary proxies were categorical, and they sought to capture whether or not respondents agreed, strongly agreed, disagreed or strongly disagreed to a significant reduction in each of these two proxies during the Covid-19 pandemic. For each question, those that disagreed and strongly disagreed coupled with neutrals were treated as the baseline category while those that agreed and strongly agreed were used to represent a reduction (an affirmative position) and a strong reduction (a more affirmative position) in each of the two proxies, respectively.

Subsequent to this ad hoc measurement of welfare, we proceeded to apply a multinomial logistic model whose selection over the multinomial probit model was based on the SIC model selection criteria.[1] Using the maximum likelihood method, we estimated two regression variants for each welfare proxy. In other words, Table 8 presents two regression variants from a regression specification in which the

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[1] Results from the multinomial logit model produced a more negative SIC statistic relative to those from the multinomial probit model.

consumption categorical variable is the dependent variable in model (1) and the income categorical variable is the dependent variable in model (2). Both models, include as the main explanatory variables of interest, five types of government social protection namely beneficiaries of the Covid-19 grant/Social relief grant, unemployment insurance, tax relief, job protection & creation and the bank credit guarantee scheme.

Controlling for gender, remittances, highest education level of the household head, land ownership, social/income class and the number of people employed in each household. From Table 8 model (1) group (1), covid-19 grant/social relief grant, unemployment insurance, tax relief and job protection & creation enter negatively and significantly indicating that the beneficiaries of these social protection interventions were less likely to face a significant reduction in household income during the pandemic relative to non-beneficiaries of these specific interventions. Of these four types of social protection, tax relief and job protection appear to have had a highly significant effect on lessening the probability of an income reduction relative to the covid-19 grant/social relief grant and unemployment insurance which, despite bearing the expected sign, enter with marginal significance.

Notwithstanding the marginal significance of the latter forms of social protection, the overall encouraging result from model (1) group (1) is the evidence that receiving the covid-19 grant/social relief grant, unemployment insurance, tax relief and job protection & creation does reduce the probability of households facing an income reduction. This is consistent with Arndt et al. (2020) and the general notion that social safety nets are, to a certain degree, necessary to cushion and ameliorate the adverse economic effects of a pandemic on vulnerable households (see Hidrobo et al., 2018). Arndt et al. (2020) in particular document an important role of government social payments as a measure of insulating low income households from adverse economic developments. Their result confirmed, among other things, that incomes amongst low income households are, at least to some degree, protected by government safety nets as corroborated in Table 8 model (1) group (1).

In model (1) group (2), we observe at least two notable results. Firstly, the evidence suggests that although the Covid-19 grants reduce the probability of an income reduction in general, they do not particularly and statistically shield households from strong income reductions. A possible explanation could be that the Covid-19 grants were outweighed by the adverse economic developments (arising from the pandemic) which ultimately boils down to a case of whether the amount given to each household was sufficient enough to fully protect the households from the wrath of the pandemic. The second noteworthy result is that the unemployment insurance and tax relief enter negatively and highly significant. This suggests that these two types of social protection have a higher likelihood of reducing strong income reductions relative to Covid-19 grants and job protection. The bank credit guarantee scheme dummy on the other hand enters with a surprisingly insignificant effect across the two regression variants. This result needs to be interpreted with caution as it might simply reflect the fact that beneficiaries of these schemes were a very small proportion in the sample.

In model (2) where categorical consumption reduction and consumption strong reduction are the dependent variables, all social protection interventions except bank credit guarantee schemes are negatively related to a reduction in household consumption. This observation is reassuring, and it confirms the hypothesis that safety nets in general do help ameliorate a reduction in consumption for vulnerable households. Interestingly, a similar observation is true for variant (2) in terms of the sign and statistical significance apart from the Covid-19 grant intervention which enters with marginal significance. Tax relief and unemployment insurance have the highest statistical relevance (i.e., statistically significant at 1 % level) of the four.

Thousands of workers lost their jobs during the pandemic. Ranchhod and Daniels (2021) particularly show for South Africa that one out of every three employed people in their sample either lost their job or did not work and received no wages during the early stages of the pandemic. This consequently had extremely large implications for poverty and household welfare and the results in Table 8 are comforting in so far as they suggest that affected workers who received unemployment insurance were less likely to face significant reductions in both income and consumption.

Table 8: Social Protection and Household Welfare – Multinomial Logit Results

	Model (1)			Model (2)
	Income		Consumption	
	(Group 1) Reduction	(Group 2) Strong Reduction	(Group 1) Reduction	(Group 2) Strong Reduction
Covid-19 grant/Social relief grant	-0.223*	-0.163	-1.085**	-0.752*
	(0.1365)	(0.396)	(0.480)	(0.427)
Unemployment insurance	-1.809*	-1.869***	-0.0354***	-0.185***
	(0.995)	(0.583)	(0.017)	(0.029)
Tax relief	-1.521***	-1.002****	-0.0299***	-0.0266***
	(0.094)	(0.024)	(0.00944)	(0.00968)
Job protection & creation	-0.0394***	-1.066	-0.0654***	-0.0517**
	(0.008)	(1.072)	(0.0166)	(0.0202)
Bank credit guarantee scheme	0.00363	0.369	-0.184	-0.191
	(0.957)	(0.819)	(0.125)	(0.130)
Gender	0.489	0.527*	0.591	0.644**
	(0.409)	(0.317)	(0.409)	(0.311)
ln (1+hectares)	-0.0951***	-0.0438**	-0.183***	-0.0833***
	(0.0024)	(0.0213)	(0.0261)	(0.0033)
Remittances	-0.184***	-0.191	-0.366***	-0.395***
	(0.025)	(0.130)	(0.127)	(0.125)
Very low income class	-1.082	-0.328	0.990***	-0.262
	(0.695)	(0.498)	(0.084)	(0.494)
Low income class	-0.909	-0.217	-0.692	-0.00128
	(0.789)	(0.579)	(0.780)	(0.560)
Lower middle income class	-1.272**	-1.255***	-1.031	-0.997**
	(0.622)	(0.477)	(0.644)	(0.498)
Upper middle income class	-0.155***	-0.889***	-0.0940***	-0.735***
	(0.010)	(0.094)	(0.028)	(0.037)
High income class	-0.485***	-0.599***	0.394***	-0.475***
	(0.042)	(0.036)	(0.066)	(0.076)
Number of people employed	-0.348	-0.296	-0.219	-0.181
	(0.203)	(0.197)	(0.215)	(0.213)
Some Primary	-2.203	-1.020	-2.179	-0.980
	(1.481)	(1.005)	(1.436)	(1.009)
Completed Primary	-1.058	-0.632	-1.150	-0.647
	(1.208)	(1.023)	(1.175)	(0.994)
Completed High School	-0.963	-0.744	-1.177	-0.969
	(0.908)	(0.797)	(0.869)	(0.736)
Cert/Diploma/Degree	-1.352	-0.549	-1.775*	-0.980
	(1.001)	(0.862)	(0.941)	(0.782)
Postgraduate	-1.203***	-0.506***	-1.232***	-0.396***
	(0.261)	(0.075)	(0.185)	(0.004)
Constant	1.093	2.393***	1.200	2.591***
	(0.930)	(0.820)	(0.881)	(0.758)
Observations	393	393	393	393

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Majority of our control variables enter with expected signs. The remittances dummy coefficient for example is mostly negative and statistically significant suggesting that households who received remittances during the pandemic were less likely to face reduction in income and consumption. The

size of the land owned by the household head is negatively signed and statistically significant across all the estimated variants corroborating the importance of farm produce in cushioning out food insecurity and providing an alternative source of income and livelihood. The gender dummy in which male headed household heads where the control group is positive and significant in variants (2) of both models. This result is concerning as it suggests that female headed households were more likely to face significant income and consumption reductions. This result lends further empirical support to the general result floating in recent studies that the pandemic had disproportionate effects on men and women.

As expected, there are indications that upper middle income and high-income class households were less likely to face consumption and income reduction during the pandemic. Households categorised as very low-income class on the other hand were more likely to face income and consumption reduction relative to the baseline group although the evidence is quite limited as the coefficient is only significant in one variant. Regarding education, household heads with at least a certificate, diploma or a degree were less likely to face income and consumption reductions which is not surprising given the overwhelming confirmation of this result in empirical literature (see for example Raffo et al. 2007; Ladd, 2012 and more recently Arsani et al., 2020).

Table 4.8b presents three main post estimation diagnostic tests. The first diagnostic test is meant for model selection between the multinomial logit model and the multinomial probit model for both the consumption (model 1) and the income (model 2) models. As table 4.8b indicates, both the AIC and the BIC values are higher under the multinomial probit relative to the multinomial logit model which is evidence that the later model is preferred over the former. The LR test and its corresponding probability value is statistically significant at 1 % level suggesting that the two estimated models are jointly significant.

Table 8b: Diagnostic Test Results

		Model (1)	Model (2)
Multinomial Logistic Model	AIC	804.8555	865.0522
	BIC	852.5412	780.5293
Multinomial Probit Model	AIC	806.7181	885.3581
	BIC	866.9363	782.1662
LR chi2 (Prob > chi2)		142.90***	166.82***
McFadden R^2		0.6526	0.5042

The McFadden R-squared is one of the many measures of goodness of fit in binary regressions whose measurement involves calculating the mean of the predicted probabilities of each event for each of the given categories of the dependent variable and then computing the difference between the calculated means. As Table 8b indicates, both measures are fairly high (above 0.5) reflecting a reasonable fit.

For robustness purposes, we proceeded to use an alternative measure of household welfare from the questionnaire which is the number of meals per day during the pandemic. Since this dependent variable is essentially count data, we preferred a count data modelling framework and, given the overdispersion which the meals per day data exhibited, we were naturally led to a negative binomial regression model whose results are presented in Table 9. Unlike in Table 8, we estimated 6 regression variants in which control variables were added to each specification in a stepwise fashion. In other words, variant (1) is the most parsimonious specification as it only comprises our key dummy variables of interest. The stepwise approach is a standard practice in empirical literature which affords us the opportunity to gauge how sensitive the results on our key variables is to the inclusion of each control variable.

From the results, unemployment insurance, tax relief and job protection & creation all enter positively and significantly while Covid-19 grants are positive but only significant in two out of six variants. This is limited but encouraging evidence that Covid-19 grants can provide some degree of protection against food insecurity. Notwithstanding the limited statistical evidence on Covid-19 grants, the general result emerging from Table 9 is that being a recipient of unemployment insurance, tax relief and job protection & creation and Covid-19 grants facilitates a 0.0206-0.112-unit increase in the log difference of meals

per day. Exponentiation of these negative binomial regression coefficients yields incidence risk ratios of 1.021 and 1.112, respectively (i.e. $e^{0.0206}$ and $e^{0.112}$). This means that being a beneficiary of the grants (that are statistically significant) translates into an increase in the odds of having more meals per day by a factor of $1.021 - 1.112$ on impact controlling for gender, remittances, land size, highest education level of the household head, the number of employed people in each household and income class.

Table 9: Social Protection and Household Welfare – Negative Binomial Results

	(1) NB	(2) NB	(3) NB	(4) NB	(5) NB	(6) NB
Covid-19 grant/Social relief	0.0200**	0.0206**	0.00249	0.00585	0.00913	0.00934
	(0.0146)	(0.0168)	(0.0265)	(0.0268)	(0.0267)	(0.0267)
Unemployment insurance	0.0643*	0.0534	0.0442***	0.0257	0.0645***	0.08216**
	(0.0373)	(0.0434)	(0.0132)	(0.0237)	(0.0133)	(0.0437)
Tax relief	0.0629***	0.0615**	0.0556**	0.0646***	0.0484*	0.0457*
	(0.0230)	(0.0240)	(0.0239)	(0.0247)	(0.0251)	(0.0251)
Job protection & creation	0.0944***	0.112***	0.106***	0.118***	0.0853***	0.0383***
	(0.0191)	(0.0214)	(0.0230)	(0.0240)	(0.0277)	(0.0129)
B.Credit guarantee scheme	0.200	0.0553	0.0637	0.0717	0.0127	0.0147
	(0.164)	(0.198)	(0.199)	(0.198)	(0.182)	(0.180)
lnhectares		0.0238***	0.0230***	0.0241***	0.0243***	0.0247***
		(0.00519)	(0.00501)	(0.00520)	(0.00508)	(0.00499)
No. of people employed			0.0236**	0.0227**	0.0197**	0.0185**
			(0.00991)	(0.00957)	(0.00848)	(0.00788)
Remittances				0.0786**	0.0770**	0.0678**
				(0.0330)	(0.0335)	(0.0321)
Some primary					-0.00786	-0.00849
					(0.0558)	(0.0560)
Completed primary					0.00452	-0.00140
					(0.0540)	(0.0542)
Completed high school					0.0298	0.0224
					(0.0358)	(0.0359)
Certificate/Diploma/Degree					0.0652*	0.0560
					(0.0365)	(0.0365)
Postgraduate					0.112**	0.108**
					(0.0469)	(0.0471)
Gender						0.105*
						(0.0554)
Very low income class						0.990***
						(0.084)
Low income class						-0.692
						(0.780)
Lower middle income class						-1.031
						(0.644)
Upper middle income class						0.0940***
						(0.028)
High income class						0.394***
						(0.066)

Constant	1.004***	0.987***	0.957***	0.947***	0.919***	0.923***
	(0.0191)	(0.0214)	(0.0250)	(0.0258)	(0.0396)	(0.0393)
Observations	393	393	393	393	393	393

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Tables 9b and 9c provide results from the diagnostic tests. From Table 9b, we find evidence of right skewness necessitating use of count data models over linear regression. In addition, there is overdispersion as the variance of dependent variable (the number of meals per day) is twice (2.6) the mean (1.33). This crude and descriptive statistic justifies the use of the Negative Binomial regression over the Poisson model.

Table 9b: Diagnostic Test (Linear regression over Count data models)

Mean	Variance	Skewness	Kurtosis
1.3333	2.605442	8.342135	119.1905

In Table 9c, the goodness of fit test enters with a significant probability value across all the estimated 6 regression variants post estimation of the Poisson regression model. This is further evidence that the data are not Poisson distributed at 5 % level justifying use of the Negative Binomial model.

Table 9c: Diagnostic Test Results (Goodness of fit and specification)

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
GOF	0.0271	0.0183	0.0482	0.0337	0.0114	0.0382
hatsq	0.2481	0.8835	0.3182	0.6718	0.5283	0.2960
LR chi2 (Prob > chi2)	982.82***	125.63***	83.30***	95.17***	102.33***	98.27***
McFadden R^2	0.1162	0.205	0.572	0.579	0.604	0.658

The hat squared variable enters insignificantly (i.e. has no explanatory power) post estimation of the NB model confirming that the 6 estimated variants are correctly specified. The LR test on the other hand additionally enters significantly across all the variants indicating that the estimated models are jointly significant. Finally, the McFadden R-squared as expected is fairly high (above 0.6) particularly in the least parsimonious specification which is encouraging.

5.0 Conclusion and Policy Recommendations
The study concludes that social protection interventions are the foundation to enhance inclusive, equitable and sustainable development to ensure that marginalised groups realise their economic and social rights. This paper investigated the impact of South African social policy interventions used to ameliorate Covid 19 pandemic and the accompanying recession, on household income and consumption. The pandemic impacted households and labour negatively, and exposed vulnerable groups to hunger, poverty and other social problems. In responding to this, the government of South Africa established interventions to increase its social support to cushion vulnerable households from the effects of pandemic and both township and rural populations benefitted. This includes a special Covid 19 grant, increases in existing grants amounts, unemployment insurance fund and bank loan guarantees. The study confirms that comprehensive social protection provided by the government has improved lives of the vulnerable groups during the rainy days (pandemic) to helped them to sustain their livelihoods.

These findings reveal the need for social protection of vulnerable groups during economic slumps and confirms the potency of the instruments used by the South African government to ameliorate the Covid 19 pandemic and the accompanying recession. We recommend further inquiry into the economic

responses to consider the impact on small businesses and the education sector. Also noting that our study focused only on a single province, other studies may consider comparative studies using data from different provinces.

References

Bhorat, H., Oosthuizen, M. & Stanwix, B. 2021. Social assistance amidst the COVID-19 epidemic in South Africa: a policy assessment. *South African Journal of Economics,* 89**,** 63-81.

Brauner, J. M., Mindermann, S., Sharma, M., Johnston, D., Salvatier, J., Gavenčiak, T., Stephenson, A. B., Leech, G., Altman, G. & Mikulik, V. 2021. Inferring the effectiveness of government interventions against COVID-19. *Science,* 371**,** eabd9338.

Cantillon, B., Seeleib-Kaiser, M. & Van Der Veen, R. 2021. The COVID-19 crisis and policy responses by continental European welfare states. *Social Policy & Administration,* 55**,** 326-338.

Cantó, O., Figari, F., Fiorio, C.V., Kuypers, S., Marchal, S., Romaguera-De-La-Cruz, M., Tasseva, I.V. & Verbist, G. 2021. Welfare Resilience at the Onset of the COVID-19 Pandemic in a Selection of European Countries: Impact on Public Finance and Household Incomes. Review of Income and Wealth. https://doi.org/10.1111/roiw.12530

Chineka, T. S. & Kurevakwesu, W. 2021. Challenges for child welfare and development during the COVID-19 pandemic in Zimbabwe. *African Journal of Social Work,* 11**,** 209-215.

Docgta 2020. King Cetshwayo District: Profile and Analysis of District Development model. *In:* AFFAIRS, D. O. C. G. A. T. (ed.). Pretoria.

Edenhofer, O., Franks, M. & Kalkuhl, M. 2021. Pigou in the 21st Century: a tribute on the occasion of the 100th anniversary of the publication of The Economics of Welfare. *International Tax and Public Finance,* 28**,** 1090-1121.

Escalante, L. & Maisonnave, H. 2021. The impact of the COVID-19 pandemic on women's welfare and domestic burdens in Bolivia.

Esping-Andersen, G. 2001. A welfare state for the 21st century. *The global third way debate,* 134**,** 156.

Fairlie, R. 2020. The impact of COVID-19 on small business owners: Evidence from the first three months after widespread social-distancing restrictions. Journal of Economics & Management Strategy. **https://doi.org/10.1111/jems.12400**

Font, S. & Bartholet, E. 2021. *What lessons can the child welfare system take from the COVID-19 pandemic?*American Enterprise Institute. New York.

Haffejee, S. & Levine, D. T. 2020. 'When will I be free': Lessons from COVID-19 for Child Protection in South Africa. *Child abuse & neglect,* 110**,** 104715.

Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, A., Loreto, V., Pinior, B., Thurner, S. & Klimek, P. 2020. Ranking the effectiveness of worldwide COVID-19 government interventions. *Nature human behaviour,* 4**,** 1303-1312.

Hicks, J. R. 1939. The foundations of welfare economics. *The economic journal,* 49**,** 696-712.

Katz, I., Katz, C., Andresen, S., Bérubé, A., Collin-Vezina, D., Fallon, B., Fouché, A., Haffejee, S., Masrawa, N. & Muñoz, P. 2021. Child maltreatment reports and child protection service responses during covid-19: knowledge exchange among Australia, Brazil, Canada, Colombia, Germany, Israel, and South Africa. *Child Abuse & Neglect,* 116**,** 105078.

Kikuchi, S., Kitao, S. & Mikoshiba, M. 2021. Who suffers from the COVID-19 shocks? Labor market heterogeneity and welfare consequences in Japan. *Journal of the Japanese and International Economies,* 59**,** 101117.

Kithiia, J., Wanyonyi, I., Maina, J., Jefwa, T. & Gamoyo, M. 2020. The socio-economic impacts of Covid-19 restrictions: Data from the coastal city of Mombasa, Kenya. *Data in brief,* 33**,** 106317.

Krumer-Nevo, M. & Refaeli, T. 2021. COVID-19: A poverty-aware perspective. American Journal of Orthopsychiatry, 91(3), 423–431. https://doi.org/10.1037/ort0000566

Lomborg, B. 2020. Welfare in the 21st century: Increasing development, reducing inequality, the impact of climate change, and the cost of climate policies. *Technological Forecasting and Social Change,* 156**,** 119981.

Mok, K.H., Ku, Y.W. and Yuda, T.K., 2021. Managing the COVID-19 pandemic crisis and changing welfare regimes. *Journal of Asian Public Policy*, *14*(1), pp.1-12.

Nechifor, V., Ramos, M. P., Ferrari, E., Laichena, J., Kihiu, E., Omanyo, D., Musamali, R. & Kiriga, B. 2021. Food security and welfare changes under COVID-19 in Sub-Saharan Africa: Impacts and responses in Kenya. *Global food security,* 28**,** 100514.

Ng, Y.-K. 1983. *Welfare economics*, Springer.

O'donoghue, C., Sologon, D. M. & Kyzyma, I. 2021. *Novel welfare state responses in times of crises: COVID-19 Crisis vs. the Great Recession*, ECINEQ, Society for the Study of Economic Inequality.

Öztürk, Ö., Şişman, M.Y., Uslu, H. & Çitak. F. 2020. Effects of COVID-19 Outbreak on Turkish Stock Market: A Sectoral-Level Analysis. *Hitit Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 13(1):56-68

Pigou, A. 1929. Economics of Welfare, 3rd edn London. Macmillan.

Ranchhod, V. & Daniels, R. C. 2021. Labour market dynamics in South Africa at the onset of the COVID-19 pandemic. *South African Journal of Economics,* 89**,** 44-62.

Shafi, M., Liu, J. & Ren, W. 2020. Impact of COVID-19 pandemic on micro, small, and medium-sized Enterprises operating in Pakistan. *Research in Globalization*, 2. https://doi.org/10.1016/j.resglo.2020.100018

DURO, J. A., PEREZ-LABORDA, A., TURRION-PRATS, J. & FERNÁNDEZ-FERNÁNDEZ, M. 2021. Covid-19 and tourism vulnerability. Tourism Management Perspectives, 38, 100819.

FOO, L.-P., CHIN, M.-Y., TAN, K.-L. & PHUAH, K.-T. 2021. The impact of COVID-19 on tourism industry in Malaysia. Current Issues in Tourism, 24, 2735-2739.

ROGERSON, C. M. & ROGERSON, J. M. 2020. COVID-19 tourism impacts in South Africa: Government and industry responses. Geo Journal of Tourism and Geosites, 31, 1083-1091.