Social Protection Amid a Crisis: New Evidence from South Africa's Older Person's Grant*

Mo Alloush† Jeffrey R. Bloem‡ Jonathan G. Malacarne§

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Abstract

We study the effects of South Africa's Older Person's Grant program on economic and psychological well-being amid the COVID-19 pandemic. With household-level panel data collected before and during the pandemic we leverage the age-eligibility threshold of the grant to implement a local randomization regression discontinuity estimation approach. Prior to the pandemic, we find that grant receipt substantially improves economic well-being at the household level. During the early months of the pandemic, we find that the grant allowed recipient households to better manage the widespread adverse socio-economic consequences of the pandemic. Specifically, recipient households were less likely to report (i) running out of money for food, (ii) hunger among either adults or children, and (iii) psychological distress. These results, which are stronger for more vulnerable households, provide critical insight into the effectiveness of one of the world's most well-known cash transfer programs during a massive global health crisis.

Keywords: Cash transfers, Hunger, COVID-19, Food, and Psychological distress

JEL Codes: O21, O38, I15, and I38.

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†Hamilton College, Department of Economics, 198 College Hill Road, Clinton, NY 13323, USA. Corresponding author, Email: malloush@hamilton.edu.

‡Research Economist, United States Department of Agriculture, Economic Research Service, Washington, DC, 20024. Email: Jeffrey.Bloem@usda.gov.

§University of Maine, School of Economics, 5782 Winslow Hall, Orono, ME 04473, Email: jonathan.malacarne@maine.edu

1 Introduction

The SARS-CoV2 coronavirus (COVID-19) pandemic generates new motivation for understanding the design, reach, and effects of large-scale social protection and cash transfer programs. This is especially true in low- and middle-income countries where access to COVID-19 vaccinations remains limited. More than a year and a half into the pandemic, for example, only 1.2 percent of people in Sub-Saharan Africa had been fully vaccinated against the SARS-CoV-2 virus (Miguel and Mobarak, 2021). With low vaccination rates and the threat of new variants of the virus, the adverse social, economic, and psychological consequences of the pandemic may extend for years. Therefore, understanding the effectiveness of social protection programs in assisting households in their response to the adverse consequences of the pandemic is exceedingly important for informing effective policy responses.

In this paper we study how a large and wide-reaching cash transfer program allowed recipient households to manage the adverse socio-economic consequences of a major health crisis—the COVID-19 pandemic. We specifically show that households with a member receiving South Africa's Older Person's grant were able to shield themselves from hunger and psychological distress during the pandemic. The Older Person's Grant program (also known as the Old Age Pension) is one of the most well-established and well-known social protection programs in the world. It is a means-tested unconditional cash transfer program for the elderly where recipients who are at least 60 years old receive up to 1,800 South African Rand per month—a sum that is nearly 140 percent of the median per capita income in the country and almost double the income poverty line.[1]

Using data collected during the pandemic linked to a large ongoing panel study, we use a local randomization regression discontinuity approach that leverages the age-eligibility threshold of the Older Person's Grant to estimate the effect of grant receipt on households before and during the pandemic. Our data come from the National Income Dynamics Study (NIDS) of South Africa—a panel study following households from an initial sample in 2008 approximately every two years through 2017. We also use data from the Coronavirus Rapid Mobile (CRAM) survey, a phone-based survey administered to a random sub-set of individuals from the fifth wave of the NIDS. The CRAM survey was designed to study the consequences of the COVID-19 pandemic and includes five waves administered in 2020 and 2021.

To highlight the importance and reach of the program, we first update various stylized facts originally documented by Case and Deaton (1998) and show that the Older Person's

[1] This is equivalent to approximately 120 US dollars per month and about 15 percent of average household income per month in South Africa.

Grant remains well-targeted and has wide reach, especially to relatively poor households with children. We then leverage the discontinuity in grant receipt at age 60 to document the effect of the Older Person's Grant program in pre-pandemic waves of the NIDS data. We find that indicators of economic well-being measured at the household level (e.g., household income per capita, household food expenditures per capita, wealth, and hunger) substantially improve due to grant receipt.

Our core results examine the effectiveness of the Older Person's Grant program amid the COVID-19 pandemic. We document three main findings: First, the Older Person's grant led to a 20 percentage point reduction in the probability of an individual reporting that their household ran out of money for food in the prior month during the COVID-19 pandemic. Second, receipt of the grant led to a ten and seven percentage point reduction in the likelihood that respondents report the presence of adult and child hunger within their household respectively—effects that translate to a 35 and 50 percent reduction in reported hunger for adults and children. We find a similar reduction in reported "almost daily" hunger (e.g., extreme hunger) among grant recipients. Finally, respondents with household members who are receiving the grant report less psychological distress.

These findings are important for at least two reasons: First, specifically within South Africa, in the initial months of the COVID-19 pandemic the government closed schools and school lunch programs, shutdown informal food vendors, and stretched the food budgets of vulnerable households (Wills et al., 2020; Arndt et al., 2020). In particular, adult and child hunger were each reported in one out of every three households in our data at the peak of South Africa's COVID-19 pandemic lockdowns and, in other contexts, pandemic-related lockdowns led to psychological distress (Altindag, Erten and Keskin, 2022). Our results indicate that the socio-economic consequences of the COVID-19 pandemic could have been worse in the absence of the Older Person's Grant, particularly for vulnerable households. Second, and more generally, in response to the pandemic the number of social protection programs around the world more than doubled between 2020 and 2021, with cash transfers and social pension programs representing over 40 percent of these programs—reaching nearly 2 billion people (Gentilini et al., 2021). Despite the rapid expansion of social protection programs in response to the COVID-19 pandemic, it was not clear these programs would produce similar outcomes for recipients during the pandemic as they did prior to the pandemic. As discussed by Banerjee et al. (2020), hypothesized effects on outcomes like food security and hunger may be muted due to disruptions in agri-food supply chains or, and to the contrary, social protection may provide the most critical support for households experiencing pandemic-related income losses. Our results indicate that a large and wide-reaching social protection program helped households re-

duce potential additional adverse consequences of the COVID-19 pandemic, especially among the poor.

Our paper is closely related to Banerjee et al. (2020) who study the effects of a universal basic income program in two counties in Kenya and investigate its effects during the COVID-19 pandemic. Our work complements the findings of Banerjee et al. (2020) in several ways. While Banerjee et al. (2020) study the effects of a universal basic income cash transfer program among a sub-national population enrolled prior to the pandemic, we study the effects of a nation-wide cash-transfer program among recipients who recently became eligible. This allows us to explore heterogeneity among vulnerable households, defined in terms of pre-pandemic household wealth, within our nationally-representative sample. Our work is also similar to two other recent studies on the effect of social protection programs amid the COVID-19 pandemic. First, Londoño-Vélez and Querubin (2022) use a randomized controlled trial to study the effects of a new unconditional cash transfer program implemented by the Colombian government in response to the COVID-19 pandemic. Our work differs in that we study the effects of an existing program amid the pandemic, rather than a new cash transfer program. Second, Abay et al. (2021) study the extent to which Ethiopia's Productive Safety Net program mitigated the adverse consequences of the COVID-19 pandemic on the food security of households. Our work differs in that South Africa's Older Person's Grant program provides passive income to needy households, while Ethiopia's Productive Safety Net program provides participants with labor-intensive employment opportunities.

We make three main contributions in this paper: First, we contribute to the literature on social protection programs amid the COVID-19 pandemic (Abay et al., 2021; Gentilini et al., 2021; Gulesci, Puente-Beccar and Ubfal, 2021) by specifically investigating the effectiveness of one of the most well-established and well-known social protection programs in the world. More generally, these results speak to the role that large, reliable cash transfer programs can play in helping recipient households deal with the effects of large, unexpected shocks (Londoño-Vélez and Querubin, 2022; Banerjee et al., 2020). Second, we demonstrate important socio-economic effects of South Africa's Older Person's Grant program that persist despite documented behavior changes associated with grant receipt (Abel, 2019; Duflo, 2000; Ardington, Case and Hosegood, 2009; Bertrand, Mullainathan and Miller, 2003; Duflo, 2003; Edmonds, Mammen and Miller, 2004; Edmonds, 2006; Hamoudi and Thomas, 2014; Lovo, 2011; Jensen, 2004). We show that despite documented downstream changes in household composition and labor supply, households receiving the grant show substantial improvements in measures of economic well-being.[2] Finally, we update descriptive

[2]Previous research finds that recipient households include fewer prime-aged women and more children

findings about the reach of South Africa's Older Person's Grant program originally documented by Case and Deaton (1998). We find that the grant continues to predominantly reach poor households and, despite targeting elderly recipients, households where poor children live.

In the next section we briefly introduce the study context by discussing South Africa's COVID-19 crisis and the Older Person's Grant program. Section 3, describes the data we use in this paper and our empirical approach. Section 4 presents our empirical results, which demonstrate the role the Older Person's Grant plays both prior to and during the COVID-19 pandemic. Finally, Section 5 concludes.

2 Study Context

In the immediate aftermath of the onset of the COVID-19 pandemic, rapid analysis using the CRAM survey data revealed the severity of the crisis in South Africa. As reported by Wills et al. (2020), two out of every five adults responding to the CRAM survey reported that their household had lost its main source of income since the onset of the pandemic, 47 percent of respondents reported running out of money to buy food, 26 percent reported that someone in their household went hungry in the past week, and 15 percent reported that a child in their household went hungry in the past week. This rapid ex-post analysis is qualitatively consistent with the ex-ante analysis reported by Arndt et al. (2020). In addition, according to the Quarterly Labour Force Survey, the Quarterly Employment Survey (Gronbach, Seekings and Megannon, 2022), and analysis using the CRAM survey data (Spaull et al., 2021), employment fell by roughly 15 percent in the early months of the COVID-19 pandemic. The economy did recover, at least partially, but over a year after the onset of the pandemic employment figures remain below pre-pandemic levels (Gronbach, Seekings and Megannon, 2022), and it is clear that South Africa's lockdown in early 2020 resulted in a large increase in economic hardship and hunger (Van der Berg, Patel and Bridgman, 2021). Reporting by *The New York Times* in September 2020 (Goodman, Dahir and Singh, 2020) further illustrates this reality:

> "When the pandemic emerged in March, the government ordered the shutdown of informal food vendors and township shops, unleashing the military to detain merchants who violated orders. That forced residents to rely on supermarkets — suddenly farther away than ever, given the lockdown of already

(Edmonds, Mammen and Miller, 2004), more individuals with lower levels of human capital (Hamoudi and Thomas, 2014), and individuals who work fewer hours (Bertrand, Mullainathan and Miller, 2003; Abel, 2019). All of these effects likely attenuate our estimates of the effect of the Older Person's Grant on measures of well-being.

> woeful bus service.
>
> At the same time, South Africa closed its schools, eliminating school lunches — the only reliable meal for millions of students — just as breadwinners lost their means of getting to jobs. By the end of April, nearly half of all South African households had exhausted their funds to buy food, according to an academic study.[3] Social unrest eventually prompted a loosening of the country's restrictions."

In response to this crisis, the South African government implemented several expansions to existing social protection programs. As documented by Gentilini et al. (2021) and Gronbach, Seekings and Megannon (2022), from May through October 2020 South Africa's Child Support Grant expanded by 300 Rand per month, shifted school-feeding programs to take-home food rations, expanded unemployment benefits, and increased wage subsidies.[4] These expansions, in addition to being sorely needed at the time of their implementation, are directly relevant to the results presented in this study. Additional cash-based social protection programs, such as the Special COVID-19 Social Relief Distress (SRD) grant, provided funds to "unemployed adults aged between 18 and 59 years old who are not supported by any other social security scheme and not cared for in a state institution" (Gronbach, Seekings and Megannon, 2022). Therefore, by design, the expansion of other social protection programs support individuals who are not eligible for the Older Person's Grant. Given this policy environment, our estimates of the effect of the Older Person's Grant amid the COVID-19 pandemic may be attenuated because non-recipients are receiving special COVID-19 pandemic-specific social support. To the extent that these additional and expanded programs also influence household-level indicators of economic well-being and hunger, our results represent estimates of the lower bound of the true effect of the Older Person's Grant program amid the COVID-19 pandemic. Our empirical strategy allows us to estimate the reduced-form effect of the Older Person's Grant amid the COVID-19 pandemic in the presence of additional supplementary support for non-recipients.

[3] This study is Wills et al. (2020) who use the CRAM survey access to food and poverty in South Africa amid the early months of the COVID-19 pandemic.

[4] In particular, and as recorded by Gronbach, Seekings and Megannon (2022) the South African Government rolled out the following cash-based social protection policies in the early months of the COVID-19 pandemic: (i) the Special COVID-19 Social Relief of Distress (SRD) Grant in the amount of R350 to unemployed adults (age 18-59) not supported by any other social security scheme and not cared for in a state institution, (ii) top-up of the old-age pension grant, disability grant, foster care grant, care dependence grant, and the war veteran's grant of R250, (iii) a top-up of the child support grant of R300 and then an additional caregiver allowance of R500 within the child support grant, (iv) relief fund for artists and athletes of R20,000 for individuals in the sports and arts sector who have been affected by canceled events due to the lockdown, (v) relief fund for registered tourist guides R1,500, (vi) a sectoral minimum wage of up to R17,712 through the COVID-19 temporary employer/employee relief scheme for registered employees who experienced decreased pay or furthows due to the lockdown.

2.1 South Africa's Older Person's Grant

The South Africa Older Person's Grant is South Africa's largest social protection program. The program was greatly expanded after the end of Apartheid to target the county's most disadvantaged groups and achieve parity in both eligibility and benefits for all South Africans. (Van der Berg, 1997; Case and Deaton, 1998; Duflo, 2003). At its core, the Older Person's Grant is an unconditional cash-transfer program that every South African citizen or permanent resident can become eligible for when they turn 60 years old.[5] While age is the main criteria for eligibility, the program is also means tested based on individual (if single) or combined (if married) income and liquid assets—in practice, income is the main screening criteria.[6] The transfer amount is now approximately ZAR 1,800 a month or nearly 140 percent of the mean household income per capita. Most South Africans (nearly 80 percent) fall below the high means test threshold and take-up rates are high, especially among women. Nearly 25 percent of individuals under 60 years of age live with someone who receives this grant, making it an important and far-reaching social safety net in South Africa.

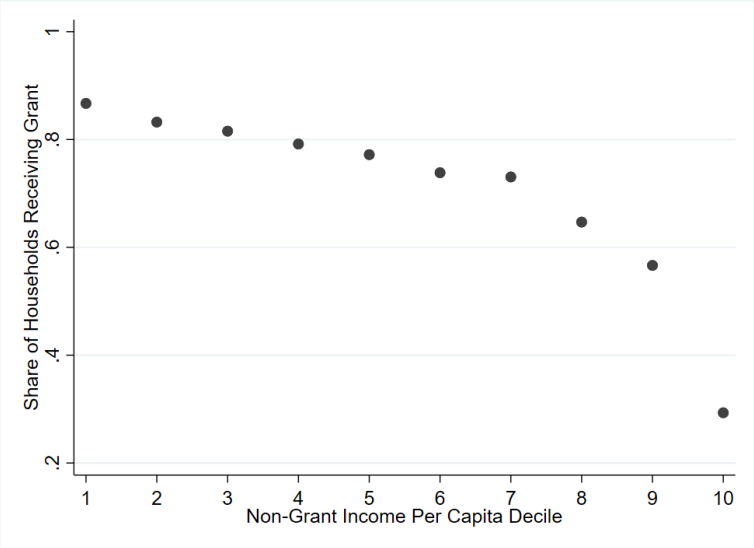
The seminal work by Case and Deaton (1998) describes the scale and scope of South Africa's Older Person's Grant program by presenting a number of stylized facts. One of the key descriptive findings reported by Case and Deaton (1998) is that the grant is an effective tool of redistribution as it reaches predominantly poor households. In addition, because many of the elderly in South Africa live with children, the grant is also effective in reaching households where children live and, more specifically, where poor children live.

We update these stylized facts using the pre-pandemic NIDS data. In Panel A of Figure 1 we show that more than 80 percent of households with a member over the age of 60 in the lowest decile of income per capita receive the Older Person's Grant and this share declines as non-grant income per capita rises.[7] Panel B of Figure 1 shows that, among all households, grant income as a share of total household income declines as non-grant income per capita increases. In particular, the grant represents over 30 percent of total household income for households in the lowest decile of non-grant income per capita.

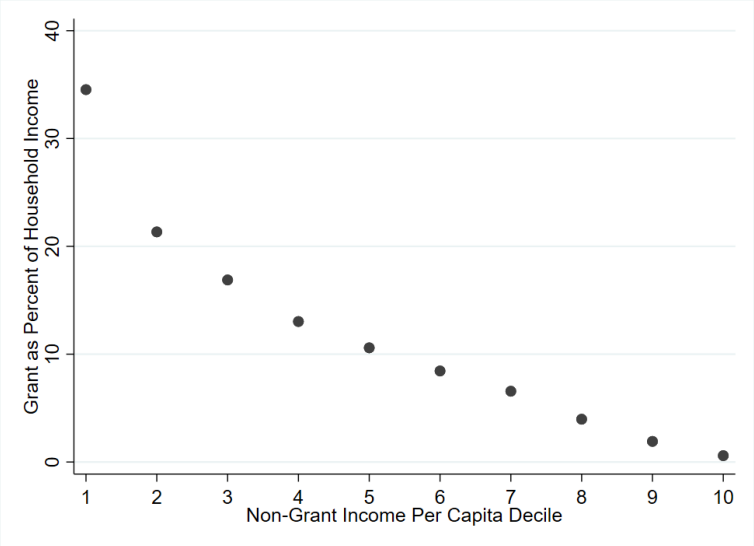
[5] Prior to 2010, females were eligible at age 60 while men became eligible at a later age of 65.

[6] To qualify an individual must (i) be a South African citizen, permanent resident, or refugee, (ii) live in South Africa, (iii) not receive any other social grant, (iv) not be cared for in a state institution, (v) not earn more than 86,280 South African Rand if single or 171,560 South African Rand if married, and (vi) not have assets worth more than 1,227,600 South African Rand if single or 2,455,200 South African Rand if married. Eligibility is not dependent on labor force status.

[7] Due to South Africa's relatively high levels of economic inequality, nearly 80 percent of the South African population fall below the means tested income-eligibility threshold for the Older Person's Grant. This detail, along with the fact that panel A uses household-level data to display information about a social-protection program that distributes funds at the individual-level, explain why the share of household receiving the grant exceed 20 percent even at the highest deciles in the household income distribution.



(A) Among households with a member over 60, the percent of household receiving the Older Person's Grant decreases with non-grant income suggesting effective targeting.



(B) Among all households, the share of total household income that comes from the grant is decreasing with non-grant income suggesting that among poor households, the Older Person's Grant makes up a large portion of their financial resources.

FIGURE 1: Targeting and Intensity of Treatment

Taken together, these findings demonstrate that South Africa's Older Person's Grant continues to reach predominantly poor households and grant income continues to represent an important source of income for poor households. In addition, Figure S.1 in the Supplemental Appendix shows that across all deciles of household wealth, households with

children are more likely than households without children to receive the Older Person's Grant. This is especially true among poorer households, where more than one in every three households with children receive the grant. This finding demonstrates that South Africa's Older Person's Grant, despite explicitly targeting older recipients, continues to reach households in which children live. In the Supplemental Appendix we update other stylized facts presented by Case and Deaton (1998), such as how recipient households spend pension income vs. non-pension income.

The behavioral effects of the Older Person's Grant have also been studied extensively. Building on the work of Case and Deaton (1998), subsequent research by Duflo (2000) shows improved child health due to the expansion of the Older Person's Grant program to Africans after Apartheid. In a follow-up paper, Duflo (2003) shows that the gender of the recipient matters in determining outcomes for female grandchildren. Additional studies document changes in household composition and labor supply. These effects are important to consider when interpreting our results. Recipient households tend to re-structure their household composition to include fewer prime working-age women, more children, and more childbearing age women (Edmonds, Mammen and Miller, 2004). In addition, recipient households tend to include more individuals with lower levels of human capital (Hamoudi and Thomas, 2014). Other studies find somewhat conflicting results on the relationship between the Older Person's Grant and labor supply in the household. Some find that receiving the Older Person's Grant can lead to an increase in employment of working-age adults (Ranchhod, 2006) while others observe a decline in hours worked among working-age adults (Abel, 2019; Bertrand, Mullainathan and Miller, 2003) or a null effect on labor supply (Jensen, 2004). In this paper, we are not able to disentangle these downstream changes in household composition and labor supply. Rather our results should be interpreted as reduced form estimates of the net effect of receiving the Older Person's Grant conditional on the documented behavioral effects within the household on household-level economic and psychological well-being.

3 Data and Empirical Framework

We use panel data from the National Income Dynamics Study (NIDS) of South Africa.[8] The first survey wave of this study was conducted in 2008 and households (and individuals) were interviewed again in 2010, 2012, 2014, and 2017. The 2008 sample of nearly 27,000

[8]This is a panel study conducted by the South Africa Labor and Development Research Unit at the University of Cape Town. The NIDS survey data are publicly available online: `http://www.nids.uct.ac.za/`.

individuals is nationally representative.[9] The NIDS collects data on many socio-economic variables including demographic information, income, consumer expenditure, labor market participation, information on self-employment and farming activity, fertility, health, migration, education, and anthropometric measures. We specifically use the detailed information on household income, assets, and food expenditures, as these variables most effectively motivate and relate to our analysis using data collected during the COVID-19 pandemic. We primarily use household food expenditure per capita throughout the analysis, but we also use total household income and a wealth index as alternative measures of economic well-being.

In early 2020, the South Africa Labor and Development Research unit developed the Coronavirus Rapid Mobile (CRAM) survey. The CRAM Survey is a follow-up phone survey of over 7,000 individuals randomly selected from the 2017 wave of the NIDS.[10] The CRAM survey asks a range of questions relating to income, employment, hunger, psychological distress, receipt of grants and social support, and knowledge and behavior relating to the COVID-19 pandemic. We use data from five waves of the CRAM survey, which provide insight into the experience of South African households amid the COVID-19 pandemic. We specifically use information on economic access to food, hunger, and psychological distress as reports about vulnerable South African households list these variables as key outcomes of concern during the COVID-19 pandemic.

Finally, as a supplementary source of pre-pandemic data, we also use information from the 2016 Demographic and Health Survey (DHS) from South Africa.[11] The DHS data provide rich information on a host of demographic and health related topics (DHS, 2019). We specifically use information on experienced hunger at the household level to supplement the NIDS data and to compare results from the CRAM survey to pre-pandemic, baseline

[9] 15,630 completing the adult individual questionnaire in 6,598 households. Each wave's sample is refreshed in order to deal with attrition and keep each wave nationally representative.

[10] The CRAM survey data are available online: `https://cramsurvey.org/about/`. Due to attrition between CRAM waves 1 and 2 (at roughly 19 percent), wave 3 included a "top up" of randomly selected individuals from the original 2017 wave of the NIDS. This "top up" added 1,084 individuals that agreed to respond to the survey. The CRAM wave 3 thus, included slightly over 6,000 individuals, wave 4 included over 5,600, and wave 5 included over 5,800. More information about the sample characteristics of the CRAM data is reported by Ingle, Brophy and Daniels (2021). Since our analysis is at the household level, while the sampling from the 2017 NIDS took place at the individual level, larger households are more likely to be represented in the data and can appear multiple times. As suggested by Wittenberg and Branson (2021), in our main analysis using CRAM data, we use sampling weights that are the inverse of the NIDS Wave 5 household size. Our results do not change significantly if we (i) do not weight, (ii) weight with the inverse of the number of adults in the households in wave 5, or (iii) restricting our analysis to a single observation per household.

[11] The 2016 DHS sample uses the 2011 South African Census as a sampling frame with enumeration areas from the Census serving as primary sampling units for the DHS sample. The DHS sample uses a two-stage sampling framework that first selects 750 primary sampling units and next randomly selects dwelling units (i.e., households) within primary sampling units.

levels of hunger—however, it is important to note that the samples, while nationally representative, are different and the questions on hunger in the DHS and CRAM survey data are not exactly the same.

3.1 Identification Strategy

Due to endogeneity in grant receipt, several studies of the Older Person's Grant limit their sample to a relatively narrow age range around the grant's age-eligibility threshold (Edmonds, 2006; Ardington, Case and Hosegood, 2009). We follow this approach but our extensive data allow us to use a very narrow age range around 60. We employ a fuzzy local randomization regression discontinuity approach and using age-eligibility to instrument for the receipt of Older Person's Grant. This estimation approach requires two conditions: a verifiable data requirement (i.e., the instrument must be relevant) and an assumption (i.e., the instrument must be excludable). The first condition requires that the probability of grant receipt must increase due to eligibility. Figure 2 shows that, at the individual level, there is a large jump in receipt of the grant at age 60, clearly highlighting the relevance of the instrument.[12] The second condition assumes that being eligible for the grant or having another eligible member in one's household should only affect our dependent variables of interest through the receipt of the grant (i.e., the instrument must be excludable). For the overall NIDS sample, this second condition is not plausible. Having a household member who is 60 years old or older likely changes household preferences and dynamics in many ways that can also affect economic and psychological well-being. We instead rely on the more narrow assumption that having a 59 year-old household member is similar to having a 61 year-old household member—the sole difference being that the member over 60 is eligible for and likely receiving the Older Person's Grant. For example, our main variables of interest are food expenditure per capita and hunger and we assume that preferences for food do not change at age 60.[13]

Restricting our sample to households with members who are around the age of 60 increases the likelihood that we satisfy our second assumption: that being 60 or older or having another household member who is age 60 or older only affects outcome variables of interest through the channel of grant receipt. We show results for samples that are restricted to five different age ranges, all centered on the age of 60. At its widest, we use a

[12] In order to identify the sample that would be eligible based on the means test, we use income information to exclude those with reported incomes that would make them ineligible. Through this, we exclude approximately 10% of our sample—among this excluded group, only 5% of individuals above 60 receive the grant whereas among those we keep in our sample more than 94% of individuals above 60 receive the grant.

[13] Figure S.2 in the Supplemental Online Material shows that the share of income spent on food does not change abruptly when the household head turns 60.

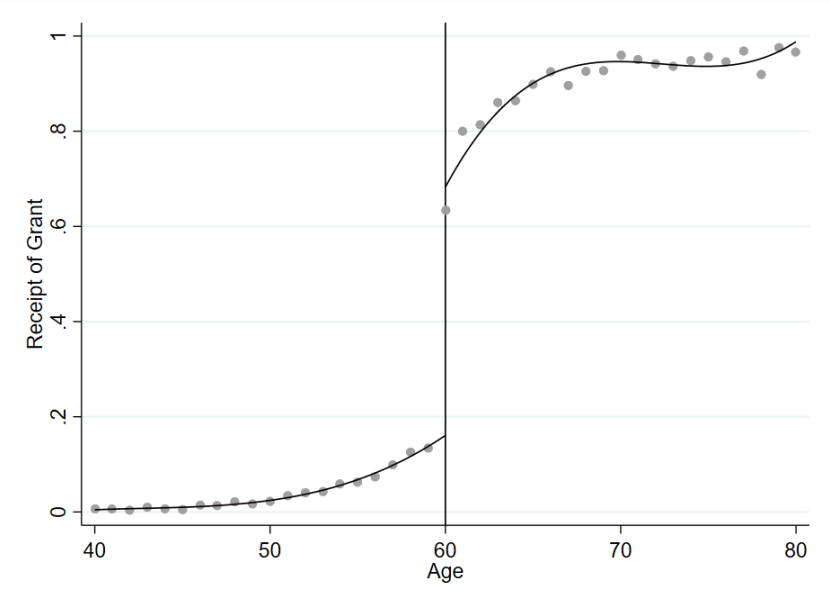


FIGURE 2: Individual-level receipt of the Older Person's Grant by age. There is a clear discontinuity of grant receipt around the age of eligibility of 60. Figure A.1 in the Appendix shows a similar discontinuity using the first and last waves of the CRAM data.

distance of five where we restrict the sample to individuals in households with a member between the age of 55 and 64 (inclusive).[14] The smallest range of ages is one, where we only keep individuals who are in households with a member who is either 59 or 60 years old.[15] This approach allows us to make comparisons between households who are eligible to receive the grant and report receiving the grant to households who have household members who are just below the age-eligibility threshold of the Older Person's Grant.

Table 1 shows summary statistics and balance tests for the restricted sample that support the assumption that households with members above and below the age-edibility threshold, and the individuals in them, are similar except for eligibility of a member (or members) for receiving the grant. Using data from the NIDS sample, Panel A in Table 1

[14]This gives us a bandwidth or *window*—as is it referred to in local randomization approaches in the regression discontinuity literature—of 5 around the age-eligibility cutoff: ages 55, 56, 57, 58, and 59 are in but not eligible for the grant, while 60, 61, 62, 63, and 64 are. Similarly for smaller windows, we successively remove one year from each end.

[15]See discussion in Cattaneo, Idrobo and Titiunik (forthcoming): with a small number of mass points around the cutoff, continuity-based regression discontinuity analysis is useful only as an exploratory device without strong parametric assumptions because extrapolation between the mass points becomes unavoidable. In practical terms, the sample size in continuity-based approaches is essentially the number of mass points, which in our case is very small. Cattaneo, Idrobo and Titiunik (forthcoming) suggest that the local randomization regression discontinuity approach is more appropriate for this type of data.

TABLE 1: Descriptive Statistics: Age Range 58-61

	Grant-Eligible Group		Non-Eligible Group		p-value
	Mean	SE	Mean	SE	of Δ
Panel A: NIDS Data					
Household Level					
Household Size	5.43	0.07	5.37	0.07	0.56
Average Age	35.60	0.28	33.21	0.28	0.00
Number of Children	1.86	0.04	1.82	0.04	0.46
Number of Elderly (66+)	0.25	0.01	0.21	0.01	0.00
Urban	0.43	0.01	0.42	0.01	0.59
Death in the past 2 years	0.11	0.01	0.11	0.01	0.96
Total non-grant income per capita (ZAR)	1,087	309	1,098	264	0.79
Old-Age Grant income per capita (ZAR)	376.4	11.94	108.1	7.93	0.00
Savings	0.36	0.01	0.33	0.01	0.05
Share poor	0.32	0.01	0.38	0.01	0.00
Individual Level (Members around threshold)					
Age	61.02	0.04	58.55	0.03	0.00
Male	0.24	0.02	0.25	0.01	0.62
Married	0.44	0.02	0.43	0.02	0.70
In the Labor force	0.00	0.00	0.00	0.00	
Secondary-Level Education	0.10	0.01	0.10	0.01	0.67
Health Issue in the last 30 days	0.70	0.02	0.73	0.01	0.20
Other Adult Household Members (Excluding members around threshold)					
Age	33.65	0.22	33.07	0.25	0.08
Male	0.48	0.01	0.48	0.01	0.56
Married	0.15	0.01	0.15	0.01	0.86
In the Labor force	0.49	0.01	0.47	0.01	0.17
Secondary-Level Education	0.51	0.01	0.52	0.01	0.70
Health Issue in the last 30 days	0.42	0.01	0.40	0.01	0.17
Panel B: CRAM Data					
Household Level					
Responded to CRAM	0.83	0.01	0.84	0.01	0.89
Household Size	6.20	0.14	6.37	0.15	0.43
Number of Children	2.36	0.09	2.42	0.10	0.66
Urban	0.64	0.02	0.64	0.02	0.94
Receiving Older Person's Grant	0.64	0.02	0.31	0.02	0.00
Receiving Other Government Benefit	0.71	0.02	0.73	0.02	0.42
Respondents (Excluding those around threshold)					
Age	29.47	0.46	29.54	0.48	0.91
Male	0.41	0.03	0.41	0.03	0.91
African	0.90	0.02	0.87	0.02	0.20
Employed Pre-Pandemic	0.36	0.02	0.39	0.02	0.35
Secondary-Level Education	0.52	0.03	0.51	0.03	0.69

Notes: This table shows balance for a Age Range 58-61—Balance is similar for other age ranges considered. This table suggests that households and household members with members just above and just below the Older Person's Grant threshold of age 60 are very similar in the NIDS and the CRAM samples. This table is similar to a balance table shown in (Alloush and Wu, forthcoming), however, the NIDS sample is less restricted here and we show important balance in the CRAM data.

shows strong balance at the household-level: we cannot statistically differentiate the two groups with respect to household size, number of children in the household, if the household is in an urban area, or if they have experienced a death in the last year. Even average non-grant income per capita does not differ between the two groups. We can however, see differences in household-level variables that we expect to change due to the grant, namely, the average grant income per capita, share who have savings, and share who are poor. At the individual level in our restricted sample, the members above and below the threshold are clearly of different ages. However, we cannot statistically differentiate between the two groups on the share who are male, married, have secondary-level education, or report a health issue in the last 30 days. Considering other members of the household (e.g., not including the recipient or potential recipient), their characteristics are similar across the two groups in terms of the age, sex, marital status, and even labor force participation. Similar findings hold for the restricted sample of the CRAM data. Panel B in Table 1 shows strong balance at the household level in response rates, household size, number of children, if the household is in an urban area, and receiving other non-grant government benefits. The only difference that is statistically significant at conventional levels is if the household received the Older Person's Grant. At the individual level, we again find strong balance for the CRAM survey respondents.

After restricting our sample to households with members around the age-eligibility threshold of 60, we discuss two estimation approaches. If receipt of the grant was universal beginning at age 60, we could estimate the simple regression in equation (1) using ordinary least squares:

$$Y_{hdt} = \beta_0 + \beta_1 G_{hdt} + \boldsymbol{X'_{hdt}}\boldsymbol{\gamma} + \theta_t + \tau_d + \epsilon_{hdt} \tag{1}$$

where Y_{hdt} represents a household-level outcome variable in district d at time t. This variable takes several forms throughout our analysis: (i) household income per capita, (ii) household food expenditures per capita, (iii) a wealth index, (iv) whether the household has run out of money for food, and (v) indicators for adults/child hunger, or (vi) psychological distress within the household. The variable G_{hdt} is an indicator of whether an individual within the household receives the Older Person's Grant and β_1 is our coefficient of interest, giving the relationship between grant receipt and our outcome variables. The vector $\boldsymbol{X_{hdt}}$ represents household-level control variables that include: household size, number of children, number of elderly, demographics of the household head, and other household level characteristics. Finally, θ_t and τ_d are time, and district fixed effects respec-

tively, and ϵ_{hdt} is the error term.[16]

The coefficient β_1 in equation (1) is potentially biased due to selection into grant receipt. In addition to the age-eligibility requirement, the Older Person's Grant is means tested such that individuals with earnings or asset holdings above a given threshold are not eligible for the program. Therefore, simply comparing households that receive the grant to those who do not receive the grant, as done in equation (1), would lead to biased estimates of the effects of the grant on indicators of economic and psychological well-being. Therefore, we leverage the age-eligibility threshold of the Older Person's Grant within an instrumental variable estimation approach. Specifically, we use a dummy variable for having household members who are at least 60 years old as an instrument for grant receipt and estimate the following set of equations:

$$G_{hdt} = \gamma_0 + \gamma_1 I_{hdt} + \boldsymbol{X}'_{hdt}\Lambda + \delta_t + \phi_d + \zeta_{hdt} \tag{2}$$

$$Y_{hdt} = \alpha_0 + \alpha_1 \hat{G}_{hdt} + \boldsymbol{X}'_{hdt}\Gamma + \kappa_t + \gamma_d + \mu_{hdt} \tag{3}$$

where I_{hdt} is a variable that indicates that a household has members who are at least 60 years. The outcome in equation (2), G_{hdt} is an indicator of whether an individual within the household received the Older Person's Grant. In equation (3) $\hat{G}_{hdt}$ is the predicted value from equation (2). Similar to equation (1), $\boldsymbol{X}_{hdt}$ is a vector of household level control variables. The equations (2) and (3) each also include time and district fixed effects. Finally, ζ_{hdt} and μ_{hdt} are error terms.

As discussed above, we apply this specification on several different age ranges to estimate our pre-pandemic results using the NIDS data. These windows range from five to one on each side of the age-eligibility threshold. We show results with a window of one with some caution because it can take several months after turning 60 to apply for and to start receiving the grant and thus (as can be seen in Figure 2) a meaningful portion of 60 year-old individuals are not yet receiving the grant. Our preferred specifications are those with window sizes of 2 and 3. Table 1 shows balance in the NIDS and CRAM samples with window size 2. Finally, most of our dependent variables of interest are at the household level; however, for one of our results during the COVID-19 pandemic, we estimate the effect of household-level grant receipt on the mental health of the individual who responds to the CRAM phone survey. In 90 percent of the sample, this respondent is not the member who is around the age of 60. Therefore, similar to our results on child hunger, the estimates

[16]Our results are robust to controlling for the running variable: the age of the household member in the window. Our main specifications employ a linear transformation with qualitatively similar results for no transformation or higher order polynomial transformations.

using psychological well-being as an outcome demonstrate within-household spillover effects of grant receipt. To account for the fact that our analysis using the CRAM data is at the household-level; however the sampling in the CRAM was done at the individual level (Wittenberg and Branson, 2021), we construct an inverse probability weight defined as the inverse of the household size in wave five of the NIDS.[17]

4 Results

We present three sets of results. First, we document the effect of the grant on indicators of household well-being using pre-pandemic data. Next, in our core set of results, we report the effect of the grant on key indicators of household well-being during the COVID-19 pandemic. Finally, we explore heterogeneity in the effect of pension receipt during the COVID-19 pandemic by household vulnerability, defined in terms of pre-pandemic household wealth.

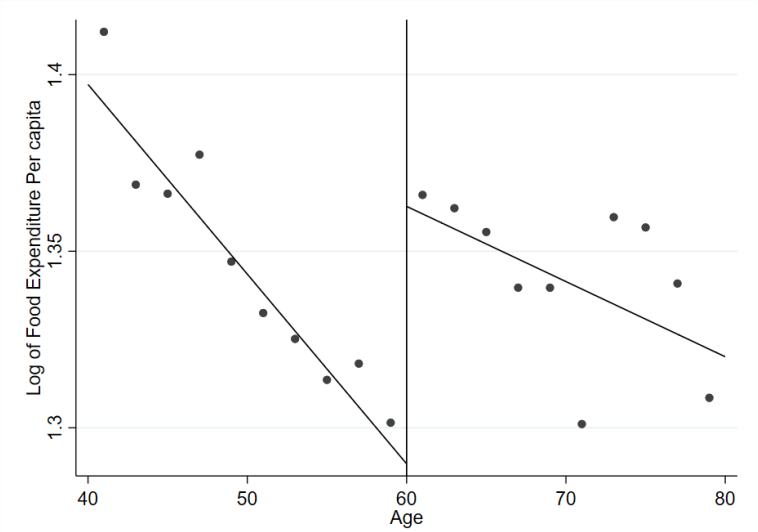
4.1 Pension Receipt Improves Economic Well-Being

We first leverage the discontinuity in grant receipt to show how important measures of household economic well-being change as a member of the household starts receiving the grant. We find that receiving the grant leads to improved economic well-being at the household level. As discussed earlier, we estimate net effects in that they allow for previously documented behavioral changes related to receipt of the Older Person's Grant that may both positively and negatively influence economic well-being.

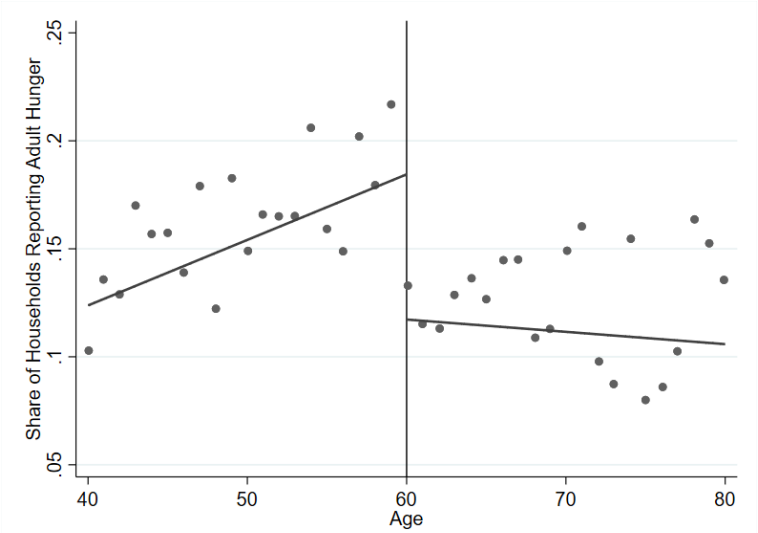
Figure 3 illustrates the relationship between age of the household head and key indicators of household well-being. Panel A of Figure 3 uses data from the NIDS and shows that household food expenditures per capita, depicted in log form, fall gradually as the head of the household ages. Once the household head turns 60 years old, however, we see a sharp increase in household food expenditures. The log of household food expenditures just after the household head turns 60 years old is similar to the log of household food expenditures when the household head is roughly 45 years old, 15 years earlier. Figure A.2 in the Appendix shows a similar discontinuity at age 60 in both per capita household income and per capita household food expenditures based on the age of the oldest member of the household between 50 and 69.

Although food expenditure is a useful measure of economic well-being, it is only instrumentally valuable. We, therefore, further investigate how the age-eligibility threshold

[17] Our results are robust to different weighting solutions as discussed in Section 3.



(A) Household Food Expenditure Per Capita and Age of the Household Head (NIDS data).



(B) Adult Hunger and the Age of the Household Head (DHS data).

FIGURE 3: Discontinuity in household income and food expenditure per capita by the age of the household head. Pooled sample of all households who met the means test eligibility rule for the Older Person's Grant Program.

influences household well-being by assessing the relationship between reported hunger and the age of the household head. The NIDS does not directly measure hunger, so for this analysis we turn to the 2016 wave of the South African DHS data. In Panel B of Figure 3 we see that hunger increases gradually as the household head ages.[18] As a household head approaches 60 years old, almost 20 percent of households report adult hunger. Once

[18]This finding corresponds with the declining food expenditure shown in Panel A and the declining income shown in Figure A.3 in the Supplemental Appendix.

TABLE 2: Improvement in Household-Level Economic Well-being Due to Pension

	Member Age Range centered at 60				
	55-64	**56-63**	**57-62**	**58-61**	**59-60**
	Panel A: Log Household Income Per Capita				
Older Person's Grant Receipt	0.235***	0.255***	0.252***	0.241***	0.200**
	(0.036)	(0.039)	(0.046)	(0.056)	(0.099)
	Panel B: Log Food Expenditure Per Capita				
Older Person's Grant Receipt	0.068***	0.067***	0.066**	0.078**	0.063
	(0.022)	(0.024)	(0.028)	(0.035)	(0.067)
	Panel C: Wealth Index				
Older Person's Grant Receipt	0.095**	0.107**	0.061	0.089	-0.037
	(0.039)	(0.043)	(0.049)	(0.061)	(0.125)
N	8,312	6,854	5,329	3,654	1,902
Effective First-Stage F-Stat	2,895.9	2,207.6	1,571.9	899.8	339.9

Notes: We instrument for grant receipt using a dummy variable of having a member above the age 60 with the sample restricted to households with a member in the age range reported in the column. We control for wave and district fixed effects. A more restrictive approach focusing on only households with members around age 60 who are economically inactive shows similar results Alloush and Wu (forthcoming). Standard errors clustered at the original (i.e., wave 1) sampling cluster area are presented in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

the household head turns 60 years old and is eligible to receive the grant, however, the share of households reporting adult hunger falls to just above 10 percent. In addition, as the household head continues to age, the share of households reporting hunger does not increase. Instead, the Older Person's Grant seems to keep the rate of hunger relatively consistent or even induce a slight decline—reflecting perhaps that more household members are becoming eligible for the grant. Taken together, both panels in Figure 3 illustrate the possible poverty-alleviation role of the Older Person's Grant. It also supports the validity of our main results in this paper in that using different data we continue to see patterns indicating a strong discontinuity in economic well-being within a narrow age-range around the age-eligibility threshold.

Table 2 presents estimates of the effect of grant receipt on three measures of economic well-being. Using the NIDS data, we apply our local randomization regression discontinuity approach with decreasing window sizes to estimate the effect of grant receipt.[19]

[19]Table A.1 in the Supplemental Appendix shows results from a non-fuzzy local randomization regression

In each column in Table 2 we show results with a different window size, from five years to one year on each side of the age-eligibility threshold.[20] Panel A of Table 2 shows that household income per capita increases by over 20 percent on average when a member of the household starts to receive the Older Person's Grant. Panel B of Table 2 shows that food expenditure increases by between six and eight percent at the household-level upon the receipt of the grant by a member of the household. This reinforces work by Case and Deaton (1998) showing that a significant portion of the grant is spent on food. We show in Figure S.4 in the Supplemental Online Appendix that a larger portion of the grant is spent on food by poorer households, who are the primary intended beneficiaries of the program. Finally, in Panel C we also show that household wealth increases with grant receipt, however, this is not statistically significant for the narrow ranges around age 60, perhaps reflecting that wealth takes time to accumulate.[21]

4.2 Effects During the COVID-19 Pandemic

We now turn to leveraging the discontinuity in grant receipt during the pandemic using CRAM data to investigate how important indicators of economic and psychological well-being fared among grant-receiving households during the early stages of the COVID-19 pandemic. Table 3 shows the results of our main local randomization regression discontinuity specification applied to the CRAM data. In each column in Table 3 we show results with a different window, from five years to one year on each side of the age-eligibility threshold. We show first-stage results in Table A.2 in the Supplemental Appendix. These results highlight that our instrument is very strong and predicts grant receipt at the household level.[22]

In Panel A of Table 3, we find that receiving the Older Person's Grant leads to roughly

discontinuity approach where our treatment is defined as having a member in the household who is past the eligibility age of 60 but within the bandwidth around the age-eligibility threshold. This estimation approach will understate the effect of the grant because not every individual who is 60 years old or older receives the grant. These are akin to intention-to-treat estimates.

[20] We show results with one year on each side of the age-eligibility threshold because doing so is preferred in local randomization regression discontinuity literature (Cattaneo, Idrobo and Titiunik, forthcoming). However, given that recipients do not necessarily begin receiving the grant immediately after turning 60 years old, our preferred estimates use a window of two years on each side of the age-eligibility threshold.

[21] The wealth index is constructed through factor analysis of household-level dwelling characteristics and durable goods (assets).

[22] This is despite using household-level information from the prior NIDS survey to determine eligibility of someone in the household for the Older Person's Grant (See Figure A.1). The CRAM was designed as a rapid phone survey and sampled from adults who part of the fifth wave of NIDS–however, detailed household information was not collected in the CRAM survey. We used household-level information from the fifth wave of the NIDS and projected the household members' ages forward to predict who would be eligible for the Older Person's Grant.

TABLE 3: COVID-19 and Older Person's Grant Receipt

	Member Age Range centered at 60				
	55-64	**56-63**	**57-62**	**58-61**	**59-60**
	Panel A: Report Running out of Money for Food				
Older Person's Grant Receipt	-0.187***	-0.209***	-0.228***	-0.218***	-0.112
	(0.038)	(0.043)	(0.050)	(0.067)	(0.124)
	Panel B: Report Adult Hunger				
Older Person's Grant Receipt	-0.094***	-0.090***	-0.113***	-0.139**	-0.036
	(0.030)	(0.034)	(0.041)	(0.055)	(0.107)
	Panel C: Report Child Hunger				
Older Person's Grant Receipt	-0.079***	-0.078***	-0.067**	-0.133***	0.009
	(0.023)	(0.027)	(0.032)	(0.045)	(0.082)
	Panel D: Extreme Hunger (Almost Daily)				
Older Person's Grant Receipt	-0.083***	-0.082***	-0.089**	-0.129***	-0.113
	(0.025)	(0.029)	(0.036)	(0.048)	(0.092)
	Panel E: Psychological Distress				
Older Person's Grant Receipt	-0.096**	-0.098*	-0.076	-0.122	0.047
	(0.048)	(0.054)	(0.063)	(0.082)	(0.169)
N	6,147	5,108	3,940	2,737	1,361
Effective First-Stage F-Stat	954.9	778.5	518.4	290.8	78.9

Notes: We control for wave and lockdown-level fixed effects in addition to a host of household controls. We instrument for grant receipt using a dummy variable of having a member above the age 60 in the age range reported in the column. Panel E is the reported psychological distress of the member who is responding to the CRAM phone-interview who in over 90% of the observations is under the age of 55 and is not the recipient or potential recipient of the Older Person's Grant. The sample size in Panel E is smaller as the mental distress questions were only asked in waves 2, 3, and 5. Standard errors clustered at the original (i.e., wave 1) sampling cluster area are presented in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

a 20 percentage point reduction in the likelihood of running out of money to buy food.[23] Based on a weighted average of the estimates in each of the columns in Panel B of Table 3, we find that receiving the Older Person's Grant leads to a ten percentage point reduction in adult hunger in the seven days prior to the interview. In Panel C of Table 3, again

[23]This number is the weighted average of the all five coefficients using the number of observations as weights. The average is 21.7 when averaging the coefficients estimated with the middle three age ranges.

based on a weighted average across each of the columns, we find that that grant receipt leads to a seven percentage point reduction in household-level child hunger in the seven days prior to the interview. With overall rates of adult hunger at 26 percent and of child hunger at 15 percent (Wills et al., 2020), our estimates imply that the Older Person's Grant led to a nearly 40 percent reduction in adult hunger and a nearly 45 percent reduction in child hunger during the COVID-19 pandemic.[24] Figure A.4 in the Appendix shows reported adult hunger in our sample for households with members just above and just below the age-eligibility threshold. This figure shows that those with a member above the threshold consistently have lower levels of reported hunger throughout all five CRAM waves.[25] Panel D reports additional results showing that grant receipt reduces "extreme hunger" which is defined as respondents reporting that someone in their household has to eat less than they would like almost daily. Consistent with the previous results, we find that receiving the Older Person's Grant leads to lower levels of extreme hunger.

Finally, in Panel E, we use a measure of psychological distress as recorded by the CRAM survey. This measure reports whether the individual CRAM survey respondent had experienced psychological distress in the past month. We find that having a household member who is eligible for and is receiving the Older Person's Grant led to a reduction in reported psychological distress during the COVID-19 pandemic. Although estimates of these effects using our local randomization regression discontinuity approach are not statistically significant for the most narrow age windows, the point estimates are large. Specifically, a weighted average of the coefficients suggests that grant receipt leads to an 8.5 percentage point decline in the likelihood the survey respondent experienced psychological distress in the past month—a nearly 25 percent reduction. Given that the CRAM survey respondent is most often not the actual pensioner, these results suggest that the grant has psychological benefits on other members of the household beyond the previously discussed economic benefits. Moreover, this result is important given the high levels of psychological distress documented during the pandemic.

Table A.3 in the Appendix shows results from analysis where our treatment is simply defined as having a member in the household who is older than the eligibility age of 60 but within our relatively narrow bandwidth around the age-eligibility threshold. This

[24] Weighted averages of the coefficients estimated with the middle three age ranges give estimates of 10.9 and 8.7 reduction in hunger among adults and children, respectively implying slightly lower percent reductions in hunger rates. In addition, rates of hunger are higher among means-tested households with members near the threshold but below it especially in the early stages of the pandemic.

[25] Given that our pre-pandemic measure of hunger comes from the DHS data and uses a slightly different method of measuring hunger than used in the CRAM data collected during the pandemic, we cannot make an easy comparison of the effect of the grant across these two sets of data. With this caveat in mind, when we apply the local randomization regression discontinuity estimation approach to the DHS data, we find that grant receipt leads to about a 6.5 percentage point decline in hunger pre-pandemic.

estimation approach is akin to an intent-to-treat (ITT) analysis and will, by definition, understate the effect of grant receipt because not every individual who is 60 years old or older receives the grant. Despite this, and consistent with our core results, we find that households with individuals above 60 in the narrow ranges report significantly lower levels of hunger and psychological distress. These results supplement the core results in at least two ways. First, they demonstrate the policy-relevant estimates of the effect of grant eligibility on economic and psychological well-being during the COVID-19 pandemic. The South African government can only influence grant eligibility and, at least in the way the policy is currently implemented, cannot force eligible households to receive the grant. Second, these results do not rely on an instrument and an associated exclusion restriction. Therefore, to the extent that concerns persist about the validity of our instrumental variable, these ITT results should help reinforce the credibility of our main finding that the Older Person's Grant increased measures of economic and psychological well-being during the COVID-19 pandemic.

4.3 Effects of the Older Person's Grant on Vulnerable Households

Our results, so far, represent the reduced-form effect of receiving the Older Person's Grant on key measures of economic and psychological well-being *on average*. The nationally-representative nature of our data, along with the broad eligibility of the Older Person's Grant, allow us to investigate heterogeneity along the policy-relevant dimension that are likely correlated with household vulnerability. This type of heterogeneity analysis is one way our work in this paper complements existing studies, such as Banerjee et al. (2020) and Londoño-Vélez and Querubin (2022), who study the effects of cash transfer programs among a relatively narrow sub-national populations.

While vulnerability can be defined on many important and nuanced dimensions, we categorize vulnerable households using a pre-pandemic measure of wealth. Prior to the pandemic, less wealth is strongly correlated with more hunger. Figure A.5(A) in the Appendix shows a strong correlation between our wealth index and reported hunger in data from the 2008 NIDS (Wave 1), which is the only NIDS wave that includes a measure of hunger. The Figure shows that rates of hunger are roughly 50 percent for households in the lowest wealth decile and close to zero percent for households in the highest wealth decile. Using more recent data from the 2016 DHS, Appendix Figure A.5(B) shows a similar pattern. To categorize the households in CRAM sample as vulnerable, we use data on the households from Wave 5 of NIDS (conducted in 2017), and restrict our analysis to

TABLE 4: COVID-19 and Older Person's Grant Receipt Among Vulnerable Households

	Member Age Range centered at 60				
	55-64	**56-63**	**57-62**	**58-61**	**59-60**
	Panel A: Report Running out of Money for Food				
Older Person's Grant Receipt	-0.225***	-0.211***	-0.200***	-0.228**	-0.032
	(0.055)	(0.059)	(0.069)	(0.095)	(0.180)
	Panel B: Report Adult Hunger				
Older Person's Grant Receipt	-0.173***	-0.178***	-0.170***	-0.200**	-0.015
	(0.049)	(0.054)	(0.063)	(0.088)	(0.178)
	Panel C: Report Child Hunger				
Older Person's Grant Receipt	-0.155***	-0.159***	-0.137***	-0.258***	-0.051
	(0.038)	(0.043)	(0.053)	(0.077)	(0.139)
	Panel D: Extreme Hunger (Almost Daily)				
Older Person's Grant Receipt	-0.139***	-0.150***	-0.156***	-0.254***	-0.209
	(0.042)	(0.047)	(0.059)	(0.085)	(0.166)
	Panel E: Psychological Distress				
Older Person's Grant Receipt	-0.102	-0.098	-0.072	-0.200*	0.018
	(0.065)	(0.070)	(0.082)	(0.102)	(0.212)
N	2,995	2,468	1,911	1,321	640
Effective First-Stage F-Stat	417.0	350.7	242.5	110.5	37.2

Notes: We control for wave and lockdown-level fixed effects in addition to a host of household controls. We instrument for grant receipt using a dummy variable of having a member above the age 60 in the age range reported in the column. Panel E is the reported psychological distress of the member who is responding to the CRAM phone-interview who in over 90% of the observations is under the age of 55 and is not the recipient or potential recipient of the Older Person's Grant. The sample size in Panel E is smaller as the mental distress questions were only asked in waves 2, 3, and 5. Standard errors clustered at the original (i.e., wave 1) sampling cluster area are presented in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

the bottom 50 percent of wealth in South Africa.[26] Table 4 shows results with the same outcome variables shown in Table 3 for this group of households in the bottom half of the wealth distribution.

In Panel A of Table 4, based on a weighted average of all five estimates across each

[26] Leibbrandt, Finn and Woolard (2012) show using NIDS data that approximately 50 percent of households in South Africa are poor.

column, we find that receiving the Older Person's Grant leads to roughly a 20 percentage point reduction in the likelihood of running out of money to buy food. This weighted average estimate is nearly identical to the result found in Panel A of Table 3. Panel B of Table 4 shows that household-level adult hunger in the seven days prior to the interview is, based on a weighted average of all five estimates, 16.6 percentage points lower among households receiving the grant. This weighted average is roughly 60 percent larger than the estimates reported in Panel B of Table 3. In Panel C of Table 4, we find that that household-level child hunger in the seven days prior to the interview is, based on a weighted average of all five estimates, 16 percentage points lower among households receiving the grant. This weighted average is over twice the magnitude of the estimates reported in Panel C of Table 3. Panel D in Table 3 shows that grant receipt reduces "extreme hunger," defined as respondents reporting that someone in their household has to eat less than they would like almost daily. Each column shows results that are larger in magnitude than the corresponding column reports in Panel D of Table 3. Finally, in Panel E, we report results on psychological distress among households in the bottom half of the wealth distribution. The results are mostly not statistically significant at conventional levels but, similar to the results shown in Panel E of Table 3, represent magnitudes that potentially large.

Taken together, this heterogeneity analysis finds estimates of the effect of receiving the Older Person's Grant among households in the bottom half of the wealth distribution that are at least as large (in Panels A and E) and substantially larger (in Panels B, C, and D) in terms of magnitude. These results suggest that the Older Person's Grant program provided critical support to the poorest households that may be least likely to be able to shield themselves from adverse shocks related to the COVID-19 pandemic. In particular, we find that for the least wealthy 50 percent of our sample, receiving the Older Person's Grant leads to a reduction in adult and child hunger that is roughly twice as large as the effect among the full population. Similarly, grant receipt leads to a larger decline in almost daily hunger (e.g., "extreme hunger") among vulnerable households than among the full population.

5 Conclusion

The COVID-19 pandemic hit South Africa early and hard. With nearly half of the population vulnerable and living in poverty, the economic disruptions caused by the pandemic resulted in high levels of hunger and psychological distress. Our paper shows that a well-targeted unconditional cash transfer program—the Older Person's Grant—played an important role in allowing recipient households to manage the adverse consequences of a

global health crisis and the associated lockdowns.

The Older Person's Grant has a wide reach in South Africa and constitutes a large portion of the overall net income of poor households. Prior to the pandemic, the program significantly improved the economic well-being of recipient households and reduced reported hunger. During the COVID-19 pandemic, the Older Person's Grant continued to positively affect household well-being. This reliable source of income is linked with between 40 and 45 percent lower rates of adult and child hunger in the household. In addition, individuals living in households with a grant recipient were less likely to report psychological distress.

These results provide important insight into the effectiveness of large cash transfer programs at helping households manage large and unexpected global shocks. Many developing countries have instituted or expanded these types of programs in response to the COVID-19 pandemic. Further, interest in large cash transfer programs is not limited to developing countries nor to acute disaster response. A key feature of South Africa's Older Person's Grant is that it has been providing a reliable source of income for decades, allowing individuals to confidently incorporate this source of income into their response to shocks. Wealthier countries are increasingly looking to build similarly targeted and reliable instruments into their social safety programs—for example, in the form of tax credits for low income households with children in the United States. The South African example suggests that these programs can have important effects on the resilience and well-being of both the target population and those close to them.

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Appendix

TABLE A.1: Household Economic Well-being and Grant Age-Eligibility

	Member Age Range centered at 60				
	55-64	**56-63**	**57-62**	**58-61**	**59-60**
	Panel A: Log Household Income Per Capita				
Member above 60	0.133***	0.135***	0.124***	0.105***	0.073**
	(0.020)	(0.020)	(0.022)	(0.024)	(0.036)
	Panel B: Log Food Expenditure Per Capita				
Member above 60	0.039***	0.035***	0.032**	0.034**	0.023
	(0.012)	(0.013)	(0.014)	(0.015)	(0.024)
	Panel C: Wealth Index				
Member above 60	0.055**	0.059**	0.031	0.040	-0.014
	(0.023)	(0.023)	(0.025)	(0.028)	(0.046)
N	8,312	6,854	5,329	3,654	1,902

Notes: These results are estimated using ordinary least squares regressions. We control for wave and district fixed effects. These are akin to ITT estimates for Table 2 where instead of instrumenting for grant receipt, we simply regress our economic well-being measures on having a member above 60 but restrict the sample to our age windows. Standard errors clustered at the original (i.e., wave 1) sampling cluster area are presented in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

TABLE A.2: First Stage Regression Results (CRAM waves)

Dependent Variable: A member of the household receives the Older Person's Grant		IV First Stage	Effective F-Stat
Age Range 55-64 N=5,676	*HH members 60-64*	0.380*** (0.013)	**815.2**
Age Range 56-63 N=4,785	*HH members 60-63*	0.368*** (0.014)	**629.4**
Age Range 57-62 N=3,940	*HH members 60-62*	0.355*** (0.017)	**442.9**
Age Range 58-61 N=2,737	*HH members 60-61*	0.311*** (0.020)	**230.9**
Age Range 59-60 N=1,361	*HH members 60*	0.240*** (0.028)	**74.8**

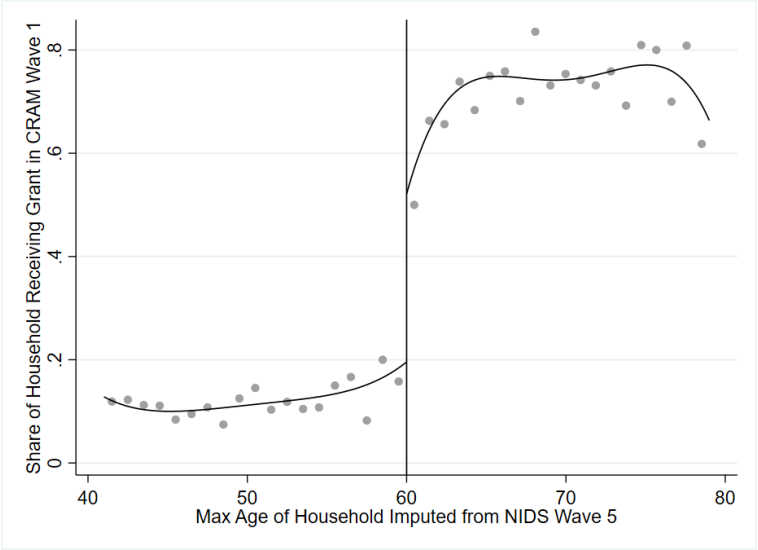
Notes: First stages of the IV regressions show very strong predictive value of the instrumental variable for grant receipt. These first stage results correspond to the IV regression results in Table 3. Effective F-statistics according to Olea and Pflueger (2013) are shown. Standard errors clustered at the original (i.e., wave 1) sampling cluster area are presented in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

TABLE A.3: COVID-19 and Grant Age-Eligibility

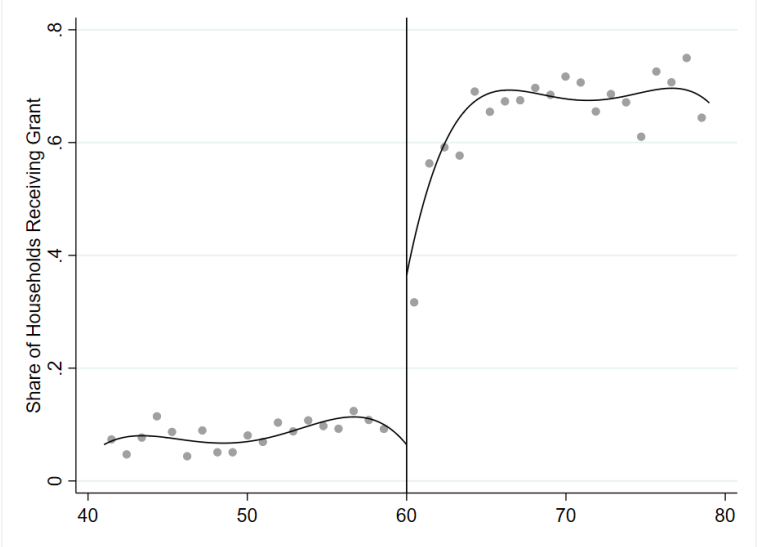
	Member Age Range centered at 60				
	55-64	**56-63**	**57-62**	**58-61**	**59-60**
	Panel A: Report Running out of Money for Food				
Member above age 60	-0.071***	-0.076***	-0.080***	-0.068***	-0.029
	(0.014)	(0.015)	(0.018)	(0.021)	(0.030)
	Panel B: Report Adult Hunger				
Member above age 60	-0.036***	-0.033**	-0.039***	-0.040**	-0.007
	(0.011)	(0.013)	(0.014)	(0.017)	(0.026)
	Panel C: Report Child Hunger				
Member above age 60	-0.030***	-0.029***	-0.024**	-0.041***	-0.002
	(0.009)	(0.010)	(0.011)	(0.014)	(0.020)
	Panel D: Extreme Hunger (Almost Daily)				
Member above age 60	-0.031***	-0.030***	-0.031**	-0.040***	-0.027
	(0.009)	(0.011)	(0.012)	(0.015)	(0.022)
	Panel E: Psychological Distress				
Member above age 60	-0.037**	-0.036*	-0.027	-0.040	-0.012
	(0.018)	(0.020)	(0.023)	(0.027)	(0.041)
N	6,147	5,108	3,940	2,737	1,361

Notes: Coefficients in this table are estimated via ordinary least squares. We control for wave and lockdown-level fixed effects in addition to a host of household controls. These results show differences within the window for households with members above age 60 compared to those with members below age 60; this is akin to an intent-to-treat regression as being eligible does not mean that the member is receiving the Older Person's Grant. Panel E is the reported psychological distress of the member who is responding to the CRAM phone-interview who in over 90% of the observations is under the age of 55 and is not the recipient or potential recipient of the Older Person's Grant. The sample size in Panel E is smaller as the mental distress questions were only asked in waves 2, 3, and 5. Standard errors clustered at the original (i.e., wave 1) sampling cluster area are presented in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Figures

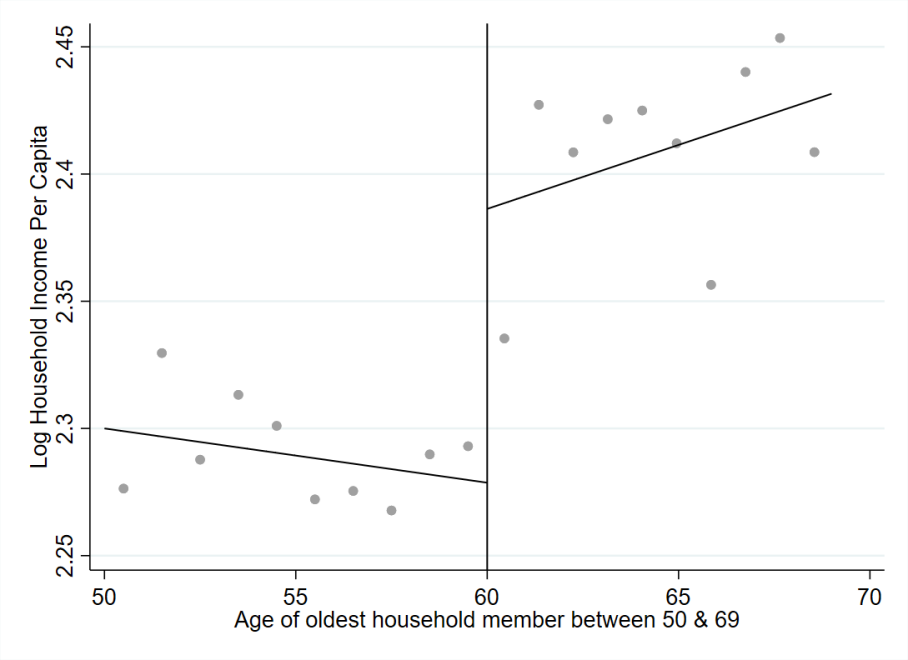


(A) Wave 1 of CRAM

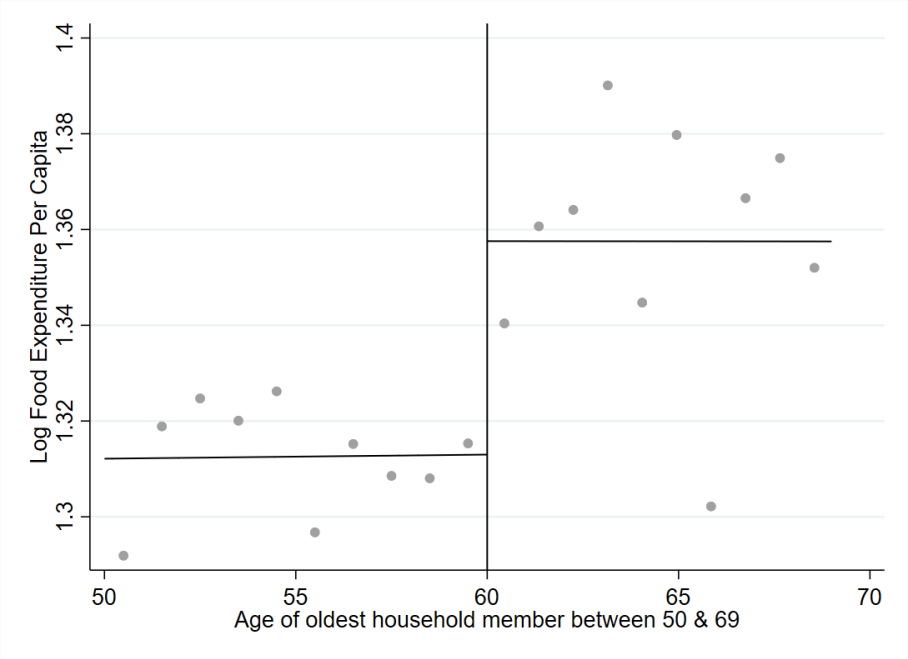


(B) Wave 5 of CRAM

FIGURE A.1: Using household information from Wave 5 of NIDS (2017), we project the age of household members forward into 2020 to predict who will report receiving the Old Age Grant. We find similar discontinuities as in Figure 2.



(A) Household Income Per Capita



(B) Household Food Expenditure Per Capita

FIGURE A.2: Discontinuity at age 60 based on the age of the oldest household member between 50 and 69.

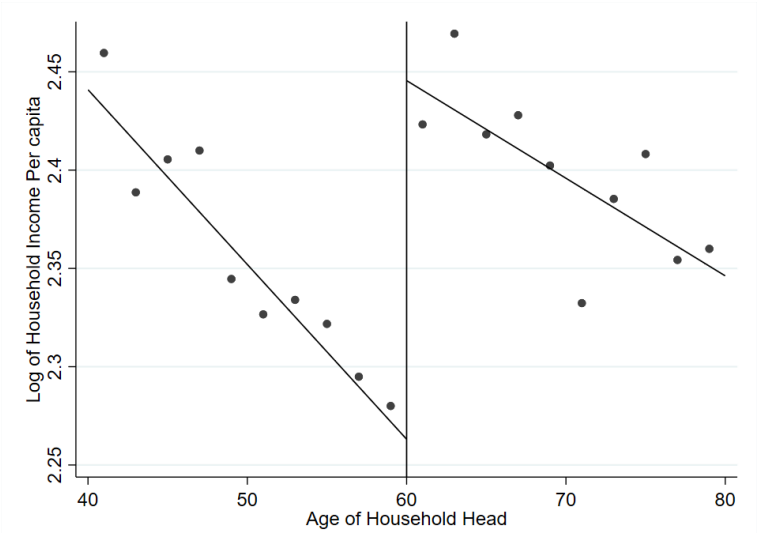


FIGURE A.3: Discontinuity in household income per capita by the age of the household head. Pooled sample of all households who met the means test eligibility rule for the Older Person's Grant Program.

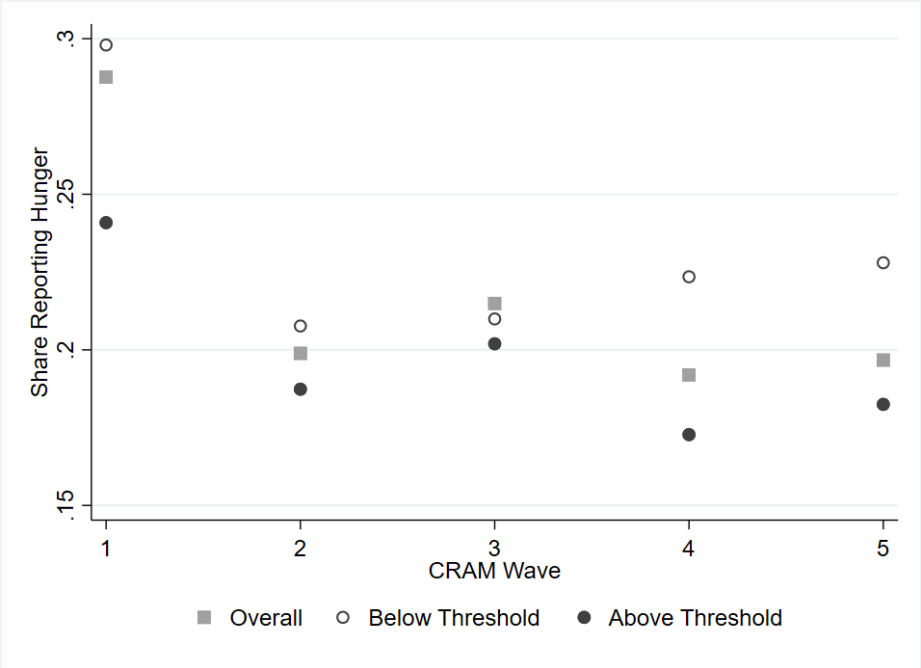
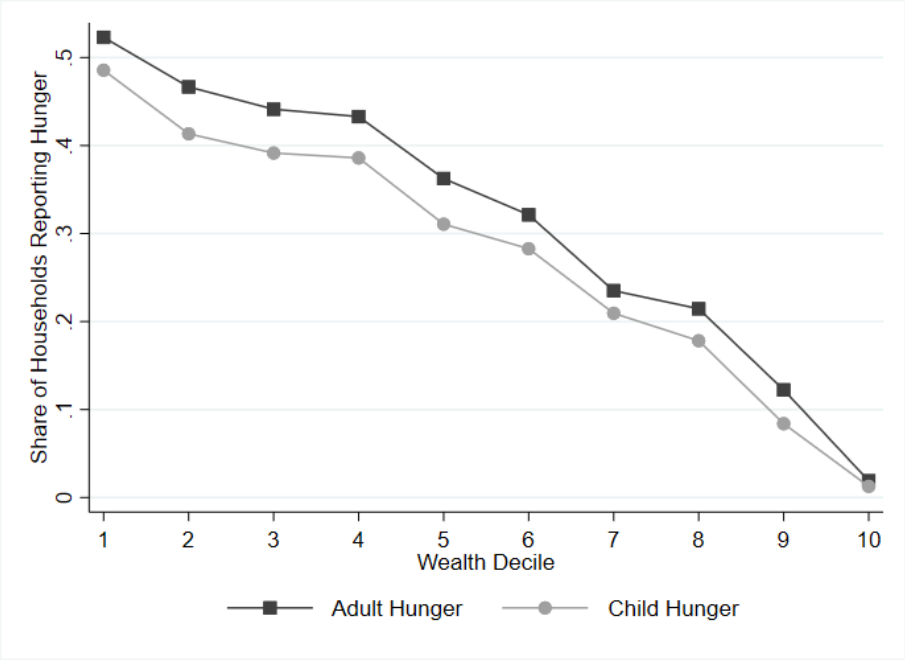
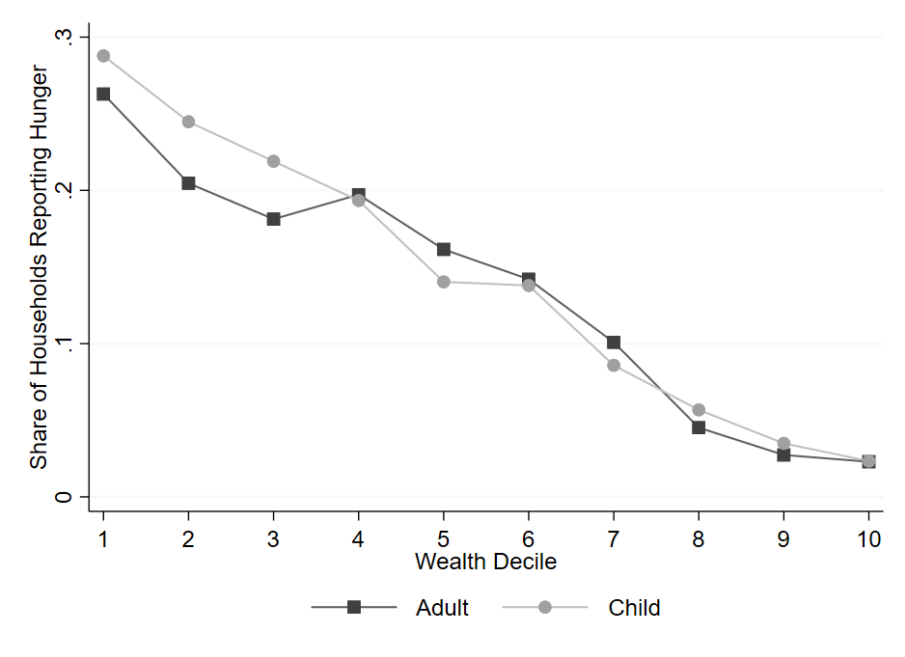


FIGURE A.4: Reported Adult Hunger in a 6-year window around Old Age Grant Receipt during Covid-19 Pandemic



(A) Hunger in the Past Year (Wave 1 of NIDS) by Wealth



(B) Hunger in the Past Week by Wealth

FIGURE A.5: Wealth Indices are predictive of hunger

Supplemental Material (Online Only)

Updated Stylized Facts

In addition the extent to which the Older Person's Grant reaches poor households and housueholds with children (discussed in the main text), another finding of Case and Deaton (1998) is that pension income and non-pension income are spent similarly by households. Specifically, the effect of additional pension income and non-pension income on food expenditures are both statistically different from zero but are not statistically different from one another. We update this finding by replicating the analysis of Case and Deaton (1998) with the pre-pandemic waves of the NIDS data. Table S.1 in the Supplemental Appendix replicates the Case and Deaton (1998) results using their methodological approach.[27] In columns (1) and (2), we estimate the relationship between total income, income excluding grant receipt, and grant income on food expenditure. These regressions control for the number age-eligible adults in the household and show that households spend a larger share of non-grant income relative to grant income on food. This is qualitatively similar finding to Case and Deaton (1998). In columns (3) and (4), still following Case and Deaton (1998), we instrument for income using the number of age-eligible household members in order to address potential measurement error in the reporting of income.

Column (3), which instruments for non-grant income only, returns coefficients for both income sources that are statistically significantly different from zero but not from one another—suggesting that a rand is a rand regardless of its source. Column (4), however, which instruments for both income sources in a manner similar to Case and Deaton (1998)'s preferred specification, returns a larger coefficient on grant income suggesting that more of grant income than non-grant income might go toward food expenditure.

Case and Deaton (1998) describe the limitations of their analysis and suggest how future work could improve these results, noting both the short time the program had been in place as of their analysis and the inherent identification challenges. In Table S.2 in the Supplemental Appendix, we use our expanded dataset and local randomization regression discontinuity approach to re-estimate the effect of grant income on food expenditures. We find that, on average, the amount spent on food from the grant is similar in Table S.2 to the results reported in Table S.1. In short, the stylized facts presented by Case and Deaton (1998) 20 years ago continue to reflect the reach and relative scale of the Older Person's Grant. Not only does a rand of grant income still appear to be as good as a rand of non-grant income when it comes to food expenditure, a rand from the Older Person's Grant may be even more effective in terms of supporting the socio-economic well-being of poor households.

[27] The analogous results are found in Table 5 of (Case and Deaton, 1998)

Additional Tables

TABLE S.1: Comparing Sources of Income and Food Expenditure

	Case & Deaton (1998) Approach			
	Pooled OLS		IV	
	(1)	(2)	(3)	(4)
Total Income	0.035**			
	(0.014)			
Income Excluding Grant		0.035**	0.070***	0.073***
		(0.014)	(0.004)	(0.004)
Grant Income		-0.060	0.090***	0.169***
		(0.045)	(0.016)	(0.020)
Number age-eligible females		1.615***		
		(0.432)		
Number age-eligible males		1.411***		
		(0.428)		
Controls	✓	✓	✓	✓
N	41,196	41,196	41,196	41,196

Notes: In Column (3), we instrument for non-grant income using employment and individual sex and race characteristics replicating the specification of Case and Deaton (1998). In Column (4), we additionally instrument for Grant income using the number of eligible elderly (above age 60) in the household also replicating the specifications used by Case and Deaton (1998). Standard errors clustered at the original (i.e., wave 1) sampling cluster area are presented in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

TABLE S.2: Food Expenditure and the Older Person's Grant

		OLS		IV	
		(1)	(2)	(3)	(4)
Age Range 54-65 N=9,438	*Grant Income*	0.096*** (0.014)	0.060*** (0.013)	0.168*** (0.025)	0.118*** (0.028)
Age Range 55-64 N=8,062	*Grant Income*	0.097*** (0.014)	0.067*** (0.013)	0.167*** (0.027)	0.123*** (0.030)
Age Range 56-63 N=6,651	*Grant Income*	0.094*** (0.016)	0.062*** (0.014)	0.165*** (0.033)	0.122*** (0.034)
Age Range 57-62 N=5,171	*Grant Income*	0.089*** (0.020)	0.058*** (0.016)	0.147*** (0.040)	0.098** (0.042)
Age Range 58-61 N=3,542	*Grant Income*	0.105*** (0.025)	0.075*** (0.017)	0.162*** (0.060)	0.120** (0.061)
Age Range 59-60 N=1,841	*Grant Income*	0.107*** (0.038)	0.069*** (0.026)	0.140 (0.107)	0.122 (0.104)
	Controls		✓		✓

Notes: The results in this table re-estimate the main results in Case and Deaton (1998) with a local randomization regression discontinuity approach and specific samples to take into account several sources of endogoneity pointed out in their work. Standard errors clustered at the original (i.e., wave 1) sampling cluster area are presented in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Additional Figures

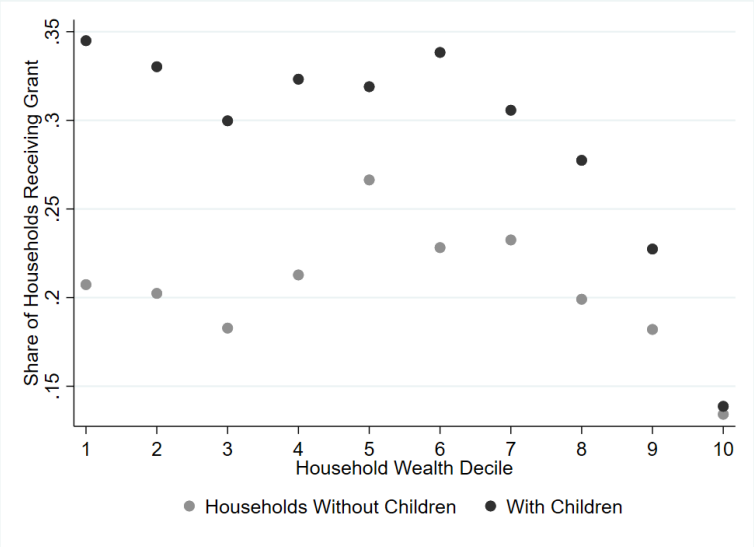


FIGURE S.1: Wealth deciles and grant receipt for households with and without children.

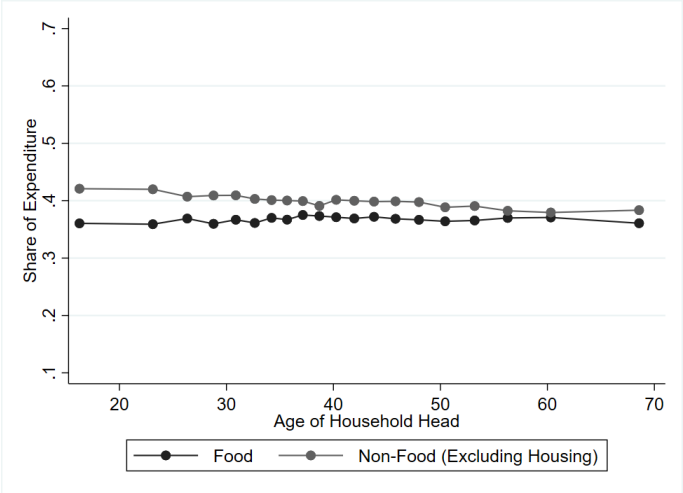


FIGURE S.2: Share of income spent on food by age of the household head. This figure suggests that preferences regarding food expenditure do not change abruptly at age 60.

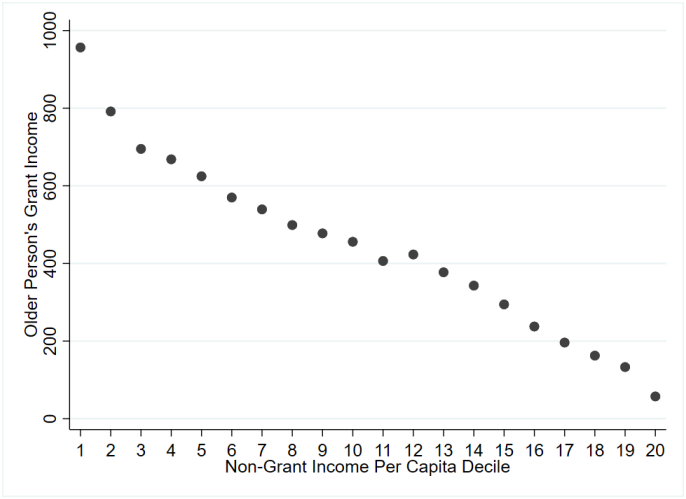


FIGURE S.3: Average amount of grant received by households by non-grant income per capita. This figure shows results for the full Sample.

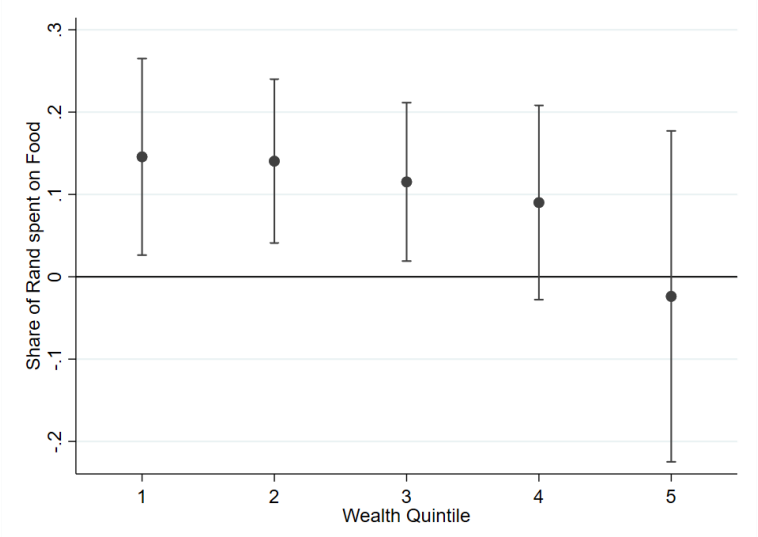


FIGURE S.4: Portion of Grant spent on food by wealth.