

ORIGINAL ARTICLE

## Does money empower the elderly? Evidence from the Agincourt demographic surveillance site, South Africa<sup>1</sup>

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### Abstract

**Aims:** To quantify the impact of the South African old age (social) pension on outcomes for pensioners and the prime-aged adults and children who live with them, and to examine alternative means by which pensions affect household outcomes. **Methods:** We collected socioeconomic data on 290 households in the Agincourt demographic surveillance area (DSA), stratifying our sample on the presence of a household member age-eligible for the old-age pension (women aged 60 and older, men aged 65 and older). **Results:** The presence of a pensioner significantly reduces household reports that adults and, separately, children missed meals because there was not enough money for food. In addition, girls are significantly more likely to be enrolled in school if they are living with a pensioner, an effect that is driven entirely by living with a female pensioner. Our results are consistent with a model in which pensioners have a greater say in household functioning once they begin to receive their pensions. **Conclusions:** We find a program targeted toward the elderly plays a significant role in children's health and development.

**Key Words:** Demographic surveillance, educational outcomes, food security, South African old age pension



### Background

The old-age pension in South Africa delivers large cash sums – more than twice the median per capita income of Black South Africans – to people who reach pension age without a private pension.<sup>1</sup> It is a non-contributory pension which, at the time of our survey, paid a maximum of 620 Rand per month (just over US\$200 in 2002 purchasing power parity dollars) to women aged 60 and above and men aged 65 and above. By law, the pension is means tested, and both eligibility for a pension and the amount received are determined by income and assets [1]. The pension is unusually generous by world standards, and accounts for approximately 60% of total household income in African households receiving a pension, both in the Agincourt demographic surveillance area (DSA) and in South Africa as a whole [2]. The social (old-age) pension provides many households with access to credit markets, and many older women with an income for the first time in their lives [3].

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In many countries, government spending on the elderly and on children are alternatives. However, given South African living arrangements, the pension is an instrument that simultaneously reaches both groups. Over three-quarters of African adults age-eligible for a pension are living with at least one person under age 21, and the majority are living in households containing three or more generations. Almost a third of Africans under age 21 live with a pensioner. A growing body of literature documents the impact of the social pension on behaviors and outcomes – not just those of pensioners, but those of prime-aged adults and children who live with them. These studies include examinations of the pension's impact on poverty [2,3]; household consumption patterns [2]; household members' labour force participation, migration behavior and remittances [4–6]; household living arrangements [7], and children's health [8,9].

For policy purposes, it is important to understand whether differences in outcomes between pensioner and non-pensioner households are attributable simply to the presence of an older adult in the household, or to the additional income that the pension represents, or to the ability of older adults to play a larger role in household decision-making once they begin to receive their pensions. Older adults may care more about certain household outcomes than do the younger adults with whom they live, and may be in a better position to influence household decisions when they become pensioners. Empirical research in the US, for example, has shown that household consumption choices and younger adults' time allocations vary with the share of household income that is held by older adults [10,11]. In developing countries, there is growing evidence that resources which enter households through women have a greater impact on children's health than do resources that enter through men, suggesting that household economic decisions depend in an important way on the distribution of power within households, and not simply on total household resources [2,12–14].

The aims of this paper are twofold. We quantify the extent to which the presence of pensioners is associated with positive outcomes within households, and we test between alternative explanations for the differences that we find. Throughout, we focus on two components of economic well-being: food security, and the school enrollment of members ages 6 to 20.

## Material and methods

### *Sample design*

Since 1992, the MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt) has been collecting information on birth, death, and migration of all individuals identified as members of the approximately 11,500 households under surveillance in a rural sub-district of Limpopo Province, South Africa. In January 2002, using this census information, we drew a stratified random sample of 290 households based on the presence in the household of an older adult age-eligible for a pension.<sup>2</sup> We randomly selected 124 households that had at least one age-eligible older adult, and 166 that did not. (All statistics and regression results presented below are weighted to reflect the sample design.)

### *Data collected*

Households were interviewed between January and May 2002. A knowledgeable household member was asked to provide information on all other members, including their ages, educational attainment, and incomes from a variety of sources and, for younger members, whether they were currently enrolled in school. In addition, this person was asked about household assets, household spending on a range of food stuffs and other items, and whether adults and, separately, children in the household had ever skipped a meal in the past 12 months because there was not enough money for food. Every adult was asked about their spending on personal items (such as clothing and transport), and was asked separately about their sources of income.

### *Statistical methods*

Discrete choice probit regressions were run to examine the association between pension receipt and food security (see Table II), and between pension receipt and school enrollment (see Table III). Results reported are the marginal change in the probability of each outcome, given a unit change in each right-side variable. Standard errors are presented in parentheses, and all regressions are weighted using sampling weights. Results are presented with and without controls for household demographic and socioeconomic characteristics that may have independent effects on these outcomes.

We examined the impact of the presence of a pensioner on each outcome (in the upper panel of each table), and the impact of pension income on each outcome (in the lower panel). By dividing household income into “pension income” and “all

other income” in the lower panel of each table, we can test whether pension income affects food security and school enrollment differently from that of all other income. We used chi-squared tests to examine whether the impact of an extra Rand coming to the pensioner as pension income has a significantly different effect on the probability of missing meals and on school enrollment than does a Rand coming into the household through any other channel.

## Results

Means of variables we use in our analysis are presented in Table I, for households in which a pension is reported (column 1) and where no pension is reported (column 2). The level of significance of the difference between households with and without a pension is presented in the last column of Table I. On average, both pension and non-pension households report just over six members. Although the difference in household size between pension and non-pension households is not significant ( $p$ -value=0.451), the age composition of members varies by type of household, with non-pension households reporting a significantly greater number of children. Women receive the pension at an earlier age (60 versus 65), and women on average live longer. Largely for these reasons, pension households have a significantly greater number of female pensioners (0.91) than male pensioners (0.27) on average.<sup>3</sup>

The Agincourt sub-district has a large Mozambican population who settled in South Africa during and after the civil war in Mozambique. Most members of this community have permanent residency status which, according to the South African Constitutional Court, allows them access to government transfers. However, it is more difficult for Mozambicans to access government grants, largely for want of the documents necessary to do so [15]. While approximately 20% of pension households are Mozambican, this represents only half of all Mozambican households that contain an age-eligible person. (In contrast, 92% of South African households with an age-eligible person report pension receipt.)

Pension households reported significantly higher total household income than do non-pension households. This difference is accounted for by the number of pensioners, and the pension income that they report. There is variation in the amount of pension income between households reporting pensions, for two reasons. Some households have more than one older adult receiving a pension. In addition, in the middle of our data-collection period (April 2002), the maximum amount paid to pensioners increased from 570 Rand to 620 Rand per month, and this increase is reflected in our data.

Almost half of all non-pension households, and a quarter of pension households, reported that an adult missed meals because there was not enough money for food. This difference is significant, as is

Table I. Socioeconomic status of households reporting an old-age pension, Agincourt 2002.

	Pension households	Non-pension households	$p$ -value of difference <sup>a</sup>
Household demographics			
Number of members	6.01	6.35	0.451
Number aged 0–5	0.59	0.97	0.009
Number aged 6–20	2.09	2.63	0.036
Number of female pensioners	0.91	0	0.000
Number of male pensioners	0.27	0	0.000
Head of household is Mozambican	0.188	0.347	0.016
Household socioeconomic status			
Total household income (Rand)	1884.1	1403.4	0.047
Total household pension income	681.0	0	0.000
Income per member	393.5	243.2	0.003
Number of assets owned	3.42	3.78	0.291
Outcomes of interest			
Adults missed meals	0.272	0.443	0.014
Children missed meals	0.182	0.310	0.044
Fraction of girls aged 6–20 enrolled in school (Number of obs.=345)	0.902	0.802	0.050
Fraction of boys aged 6–20 enrolled in school (Number of obs.=362)	0.897	0.910	0.743
Number of observations	82	206	

<sup>a</sup>Columns 1 and 2 present the means for households with and without a pensioner. Column 3 presents the  $p$ -value of the statistical significance of the difference in these means. Means are weighted using sampling weights.

Table II. Food security and the old age pension,<sup>a</sup> Agincourt 2002.

	Dependent variable: Indicator that			
	Adults skipped meals		Children skipped meals	
Indicator: household has a pensioner	-0.171 (0.065)	-0.236 (0.084)	-0.133 (0.058)	-0.130 (0.074)
Indicator: household has a member aged 55 or older		0.080 (0.087)		0.052 (0.076)
Other controls?	No	Yes	No	Yes
Number of observations	288	288	288	288

	Dependent variable: Indicator that			
	Adults skipped meals		Children skipped meals	
All other income (in R1000)	-0.039 (0.023)	-0.014 (0.024)	-0.059 (0.022)	-0.071 (0.029)
Pension income (in R1000)	-0.280 (0.105)	-0.351 (0.149)	-0.237 (0.101)	-0.267 (0.130)
Chi-square test: All other income=pension income (p-value)	5.13 (0.024)	4.85 (0.028)	3.20 (0.074)	2.19 (0.139)
Other controls?	No	Yes	No	Yes
Number of observations	288	288	288	288

<sup>a</sup>All results estimated using probit regressions. Results presented are the marginal change in the probability of missing meals for lack of money, given a unit change in the reported right-side variable. Standard errors reported in parentheses. All regressions are weighted using sampling weights. Controls included in columns 2 and 4 include household size, the number of assets owned, and an indicator that the head of household is Mozambican. The upper panel also includes total household income.

the difference in reports that children missed meals (18% of pension households, 31% of non-pension households). Reports of missing meals are provided at the household level, while information on children's schooling is reported at the individual level. In total, 90% of boys aged 6 to 20 in pensioner and non-pensioner households are reported to be enrolled in school. However, among girls in non-pensioner households, only 80% are enrolled, which is significantly different from the 90% enrollment rates of girls in pensioner households.

#### *Adult food security*

The upper panel of Table II quantifies the relationship between the presence of a pensioner and reports of meals being missed by adults (columns 1 and 2) and children (columns 3 and 4). In the absence of household controls, we find that adults in pension households are 17 percentage points less likely to be reported as missing meals, and that this effect is significant at a 5% level.

This effect, however, may simply reflect the fact that pension households have higher incomes on average. In addition, pension households by their construction have a greater number of older members. More mature members may make it a priority to ensure that there is enough food for all. To test whether the significant association between pensioners and adult food security can be explained by

one of these variables, we add household-level controls (potential confounders) to our analysis and present the results in column 2. Specifically, we add controls for the total number of household members, the number of assets owned by the household, total household income, an indicator that the head of household is Mozambican, and an indicator for whether the household has any members aged 55 or above. This last control allows us to examine whether it is the presence of an older adult in the household, or the fact that the older adult has a pension, that leads to greater food security.

Our results are robust to the inclusion of all of these controls. On average, with or without household-level controls, the presence of a pensioner is associated with a decline in reports of adults missing meals of approximately 20 percentage points. This result is robust to the way in which household income is controlled for in our regressions: probits in which income is entered alternatively as the log of total household income, and as total household income per person, both yield results on the presence of a pensioner very similar to those reported in Table II. In addition, the simple presence of a household member aged 55 or above is not significantly correlated with adults missing meals, and its inclusion has little effect on the estimated impact of a pensioner.

The lower panel of Table II reports the results from probit regressions in which an indicator that adults missed meals is regressed on total household

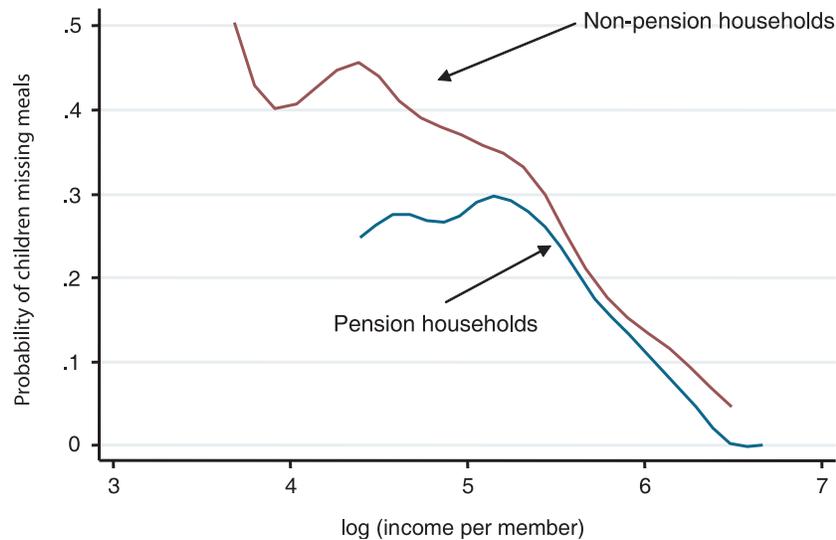


Figure 1. Household income and children's food security, Agincourt 2002.

income, separated into "pension income" and "all other income". Holding constant household assets, nationality, household size and all other income, an increase in pension income of 100 Rand is associated with a reduction in adults skipping meals of 3.5 percentage points. Declines in reports of adults missing meals are significantly larger when additional income comes to the household as pension income than when it comes from other sources (chi-squared test=4.85,  $p$ -value=0.028).

That the impact of pension income is larger than that of other income could, in principle, be due to measurement error, if pension income is better measured than other income. In contrast to many other sources of income, pension income comes regularly and (aside from an annual cost of living adjustment) the amount received remains constant from month to month. Measurement error in other sources of income could bias all estimated coefficients in our probit estimation. To explore whether this was responsible for our results, we re-ran the models presented in Table II, using an instrumental variable technique often used in economic analysis. (Details available from the authors.) We find no evidence that our results are due to measurement error.

#### *Child food security*

The presence of a pensioner has a significant effect on children missing meals (column 3). This can also be seen in Figure 1, which plots the probability that a household reports children missing meals against the log of household income per member, for

pensioner and non-pensioner households. The figure plots these probabilities from the 5th to the 95th percentile of the distributions of the log of income per member, separately for pension and non-pension households. This makes clear that the income distribution for non-pensioner households extends to lower levels of incomes than does that for pension households. Much of the difference in hunger between children in pension and non-pension households is due to differences in incomes – differences attributable in large part to pension income. Indeed, once we control for total household income in our probit regressions of children missing meals (column 4 of Table II), the presence of a pensioner is no longer statistically significantly associated with children missing meals ( $p$ -value=0.113). While both pension and non-pension income lead to declines in reports of children missing meals (lower panel of Table II), and while pension income is estimated to have an effect on children's meals that is four times as large as that estimated for all other income, the difference in their impacts on children's meals is not significant at the 5% level.

Our results suggest that the presence of pensioners and pension income affects both adult and child food security, but does so in subtly different ways. The impact of the pension on children missing meals appears to work through its effect on household income: once we control for household income, the presence of a pensioner is no longer significantly associated with children missing meals. The interaction between the pension and adult food security appears to be more complex. Even with controls for

Table III. Children's school enrollment and the old age pension,<sup>a</sup> Agincourt 2002.  
 Dependent variable: =1 if this member is reported to be enrolled in school.

	Girls aged 6–20			Boys aged 6–20		
Indicator: household has a pensioner	0.100 (0.038)			–0.026 (0.039)		
Household has a female pensioner		0.140 (0.031)	0.139 (0.039)		–0.044 (0.049)	0.016 (0.037)
Household has a male pensioner		–0.074 (0.107)	–0.098 (0.128)		0.035 (0.035)	0.041 (0.030)
Household has at least one female member aged 55 or older			0.005 (0.061)			–0.081 (0.054)
Household has at least one male member aged 55 or older			0.021 (0.051)			–0.014 (0.037)
Number of observations	345	345	345	362	362	362
		Girls		Boys		
All other income (in R '000s)	–0.023 (0.018)			0.014 (0.013)		
Pension income (in R '000s)	0.169 (0.090)			–0.005 (0.048)		
All other income – female		0.018 (0.028)			0.008 (0.019)	
Pension income – female		0.334 (0.119)			–0.036 (0.054)	
All other income – male		–0.036 (0.021)			0.030 (0.015)	
Pension income – male		–0.143 (0.152)			0.083 (0.100)	
Chi-squared test: Pension income male = Pension income female ( <i>p</i> -value)		5.22 (0.022)			1.01 (0.315)	
Number of observations	345	345		362	362	

<sup>a</sup>All results estimated using probit regressions. Results presented are the marginal change in the probability of enrollment, given a unit change in the reported right-side variables. Standard errors reported in parentheses. All regressions are weighted using sampling weights. All regressions include the child's age; the number of assets owned; and an indicator that the household is Mozambican. The upper panel probits also include total household income as a control. All incomes are in 1000s of Rands.

total household income, the presence of a pensioner reduces reports of adults missing meals. This is not true for older adults in general (those aged 55 and above), but only older adults with pensions. This is consistent with a model in which pensioners have a greater say in how pension money is spent, and that they use pension money to ensure that adults (including themselves) do not go hungry.<sup>4</sup>

#### *School enrollment*

Table III examines the relationship between pensioners and the school enrollment of household members aged 6 to 20. We examine the impact of the pension separately for girls (columns 1 to 3) and boys (columns 4 to 6) and, as in Table II, we present results on the presence of a pensioner in the upper panel of the table, and the presence of pension income in the lower panel. All regression results presented in Table III come from probit models that control for children's ages, the number of assets their

households own, and an indicator that the household is Mozambican. Probits in the upper panel also include total household income as a control variable. (Results presented here are robust to choosing different age cut-offs for school enrollment.)

The presence of a pensioner is positively and significantly associated with school enrollment for girls. On average, compared with other girls the same age coming from equally wealthy households, girls living with pensioners are 10 percentage points more likely to be enrolled in school. That is not true for boys: the presence of a pensioner is not significantly associated with the probability of boys' enrollment.

Dividing pensioners by sex, we find that it is the presence of female pensioners that is significantly associated with girls' enrollment. All else held constant, girls living with a woman receiving the pension are 14 percentage points more likely to be enrolled in school. That this result is due to the pension, and not to the presence of an older adult

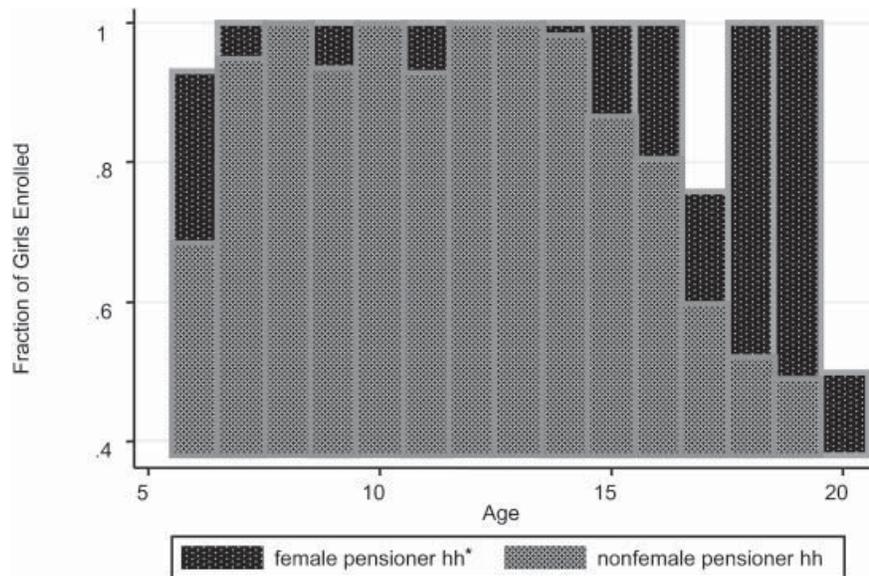


Figure 2. Girls' school enrollment and the presence of female pensioners, Agincourt 2002.  
\*hh: household.

woman in the household, can be seen in the results presented in column 3: female members aged 55 and above have no significant association with school enrollment unless they are pensioners.

Figure 2 presents the average enrollment rates of girls, by age, who are living with a female pensioner and those who are not. Enrollment is nearly universal for girls aged 7 to 14. However, the youngest girls (age 6), and girls above the age of 14 are more likely to be enrolled when living with a woman receiving a pension. It is possible that older girls move to live with their pensioner grandmothers to continue their schooling (a hypothesis we leave for future research).

That the pension income is differentially associated with girls' enrollment can be seen in the lower panel of Table III. Again, it is women's pension income that is responsible for this association (column 2). A 100 Rand increase in a woman's pension is associated with a 3 percentage point increase in the probability of a girl's school enrollment, all else held equal. Other income coming to women, and pension income and other income coming to men have no significant effect on girls' schooling. Consistent with results presented in the upper panel of Table III, we find no association between sources of income and boys' enrollments.

## Discussion

Our results on the impact of pension income suggest that, within the Agincourt demographic surveillance

area, individual preferences and bargaining power matter for adult food security and girls' school enrollment. Prior to pension receipt, older adults (like the household members identified here who are just shy of pension age, or who lack the documents necessary to obtain a pension) may wish to put more food on the table or to keep girls enrolled in school. However, until they secure a pension, these adults may lack the bargaining power necessary to make these events happen.

We anticipate that pensioners' use of pension income will have positive, long-lasting, spillover effects on health. A recent National Food Consumption Survey noted that South African children are at significant risk for underconsumption of vitamins and minerals [16]. For poor households, the income provided through pensions reduces the risk that children miss meals for lack of money. In addition, if grandmothers' pension income leads to increased educational attainment of girls, this can be expected to have long-run effects on the health of these girls, their patterns of childbearing, and the health of their own children later in life [17,18]. In designing cash transfers, policy makers should be mindful of these spillover effects.

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## Notes

- 1 Median income per capita among Whites is 10 times higher than among Blacks in South Africa, and the pension represents only a small fraction of White income. Just over 10% of age-eligible Whites report receiving a state pension, while nearly 80% of age-eligible Blacks do so [2].
- 2 Two single-person households are excluded in all results shown below, because the persons interviewed did not know their ages, which we need for our analysis.
- 3 Among black South Africans, there are 1.75 women aged 60 and above for every man aged 60 and above. Between age 60 and 65, a third of men are lost, leaving 2.72 pension-age eligible women (ages 60 and above) for every age-eligible man (ages 65 and above). Restricting analysis to Limpopo Province, we find three age-eligible women for each age-eligible man, which is consistent with the number of women pensioners relative to men pensioners we report in Table I. (Source: South African 2001 Census.)
- 4 We find no significant difference in food security results for female and male pensioners when they are analyzed separately.

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