

Income Effects of Time Allocation in Poor South African Households: Evidence from South Africa's Old Age Pension

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Abstract

How do poor households in developing countries change their time allocation in response to an anticipated increase in income. Using the age-eligibility of the South African Old Age Pension for identification, we inform this question using South African time use data. We find that time allocation to productive consumption, home production, market work, and leisure all change amongst non-recipients in the household. The magnitudes, significance and dimensions of reallocation differs by the gender of the household member. Women reduce their time in both home production and market production. Men do too, but the coefficients are generally smaller and are seldom significant. Both genders seem to increase their time spent in leisure activities. Men significantly increase the time they spend eating. It is unlikely that the observed

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changes are a result of changes in household composition. Policy evaluations that fail to account for these intra-household adjustments of time allocation are likely to provide an incomplete assessment of the effects of these cash transfers.

PRELIMINARY AND INCOMPLETE. PLEASE DO NOT CITE.

Comments and suggestions are most welcome.

1 Introduction

How do prime aged household members in developing countries respond to an exogenous increase in non-market income? In particular, how does it affect their choices regarding time allocation to various activities? We explore this question using nationally representative time use data from South Africa. We make use of the age of resident elderly members, in conjunction with pension eligibility rules to identify the aforementioned income effects.

Time is one of the most valuable resources available to individuals and families. Through employment and wages, the financial budget constraint and time budget constraints are intrinsically related. Thus, a relaxing of the household's financial constraints is likely to affect the goods purchased by the household, the quantity and types of home production activities, as well as the consumption of leisure by various household members.

Several researchers have explored the relationship between income transfers and various measures of social and economic well being. These include poverty, nutrition and health, adult labor, child labor, schooling enrollment, intra-household bargaining outcomes and pooling of resources across households. In the South African context, effects on time allocation have been restricted to crude measures of schooling enrollment and labor force participation. To date, the impact on specific time allocation choices in recipient households has been ignored. Given that households do indeed share resources, and that multi-generational households are common, we obtain an incomplete understanding of the impacts of such policies if our analyses excludes the impacts on time allocation.

Policy implications notwithstanding, simply knowing the responsiveness of people's time with respect to income is an economically interesting query. Revealed preferences suggests that any observed changes will reflect the optimal allocation of the income transfer to a new set of time allocation and consumption bundles. Observing these allows us to gauge some element of household preferences, even if not very cleanly.

In this paper, we use data from the South African Time Use Survey of 2000. This is a

large, nationally representative dataset which reports respondents' activities the previous day, as well as a household roster with each member's demographic information. Included in the household roster are basic income and welfare measures. To identify income effects, we make use of the the age eligibility rules that govern the South African Old Age Pension (OAP). The OAP is a relatively generous means tested income transfer, which is universally available, non-contributory and highly anticipated. Our investigation in essence involves the comparison of the time allocation of prime aged adults who live with an elderly person who is not yet of pensionable age, with similar individuals who live with an elderly person who is pension age-eligible.

Our analysis consists of two methods. We first perform non-parametric analyses and present the results graphically. While these are less constrained by the structure imposed by a specification in a regression, they are also less informative in some ways. We then employ multivariate regression techniques to estimate parametric models which allow us to control for additional differences between the two groups. In a nutshell, we observe that adults in the household respond in several dimensions of time allocation, including market work, informal sector services, child care, time spent eating, sleeping and socializing.

2 Literature and Pension Rules

Related Pension Literature

Several researchers have investigated the effects of pension reciprocity on various dimensions of household welfare. Case and Deaton (1998) analyze the redistributive consequences of the OAP, and find that the OAP is an effective transfer to the poor and poverty stricken in general. Duflo (2000), Case (2001), and Duflo (2003) all find that the health of household members is improved as a result of the pension.

Jensen (2003) estimates that crowding out of remittances by pensions is large and significant.

On average, every rand of pension income received by the elderly is met with a 0.25 to 0.30 rand decrease in remittances received from the pensioner's children. Pension income is thus *de facto* shared with non-resident family members as well.

Edmonds et al (2005) find that household composition itself is affected by someone becoming pension age-eligible. They find a decrease in the number of prime working-age women, and an increase in the number of children younger than five and young women of childbearing age. This is supported by more recent work by Ardington et al (2007)

Bertrand et al (2003) find that having a pension eligible person in the household has a statistically significant and negative impact on the labor supply of prime aged individuals in the household. Edmonds (2003) finds that when a household member who is male becomes pension eligible, there is a sizable decline in child labor, coupled with an increase in schooling attendance and attainment. Ranchhod (2006) finds that the pension induces sharp levels of labor force withdrawal amongst the elderly themselves.

All of these suggest that we might reasonably expect that the pension may cause changes in the time allocation of adult household members as well. Estimating these income effects is the primary contribution of this paper.

Pension Rules

Lund (1993) provides an introduction to the OAP as we see it today. As stated previously, the pension is means tested, and provides a relatively generous cash transfer to recipients. Eligibility depends only on age, nationality and satisfying the means test. The age-eligibility threshold is 60 for women and 65 for men. The level of the means test is set fairly high, so that most of the elderly receive the grant. ¹ Ranchhod (2006) notes that the prevailing distribution of observed wages amongst the elderly is such that most of the elderly could

¹Data from the September wave of the South African Labour Force Survey indicates that about 80% of age-eligible African South Africans report receiving the pension.

continue to work while still satisfying the requirements to receive the pension.

Moreover, the means test is based on individual income for the unmarried elderly, or joint spousal income for married couples. Hence, it should not have direct distortionary ‘implicit taxation’ effects for other non-elderly household members, although it implicitly does change the costs of market time for some pensioners and thus for some households.

The value of the pension is adjusted periodically, usually on an annual basis, to adjust for inflation. In 2000, the period during which our data was collected, this was 540 South African rands per month. Depending on the exchange rate and inflation rate, this generally equates to between 100 and 125 US dollars per month in current terms.² This is a large transfer relative to potential wage income, and continues for as long as the pensioner remains alive and continues to satisfy the means test.

3 Theory

We adopt the model provided by Becker in his seminal paper on “A Theory of the Allocation of Time” (1965). In this model, the household acts to maximize utility by consuming a bundle of commodities Z , subject to an income constraint, a time constraint, and constraints imposed by the technology of production.³ Formally, the household’s optimization problem is written as:

$$\max U(Z_1, \dots, Z_m) \tag{1}$$

subject to :

$$Z_i = f_i(x_i, T_i) \tag{2}$$

²Own Calculations. The deflator used is the official Consumer Price Index released by Statistics South Africa.

³While a unitary household preference seems unreasonable given the existing empirical findings on the OAP, we are not attempting to test between the competing models of intra-household allocation of resources. As such, the unitary model suffices for providing a relatively simple framework within which we can interpret our findings.

$$\sum_{i=1}^m p_i \cdot x_i = V + T_w \cdot \bar{w} \quad (3)$$

and

$$\sum_{i=1}^m T_i + T_w = T \quad (4)$$

In this framework,

- $i = 1, \dots, m$ is an index of the m commodities the household might choose to consume.
- f_i represents the production technology used to convert the market inputs x_i and time inputs T_i into commodity Z_i .
- (3) is a financial budget constraint. V represents unearned income, p_i is the price of a unit of x_i , T_w is a vector of time that the household allocates to market work, and \bar{w} is the corresponding wage vector.
- (4) is the household's time constraint, where T is the household's total endowment of time.

The comparative statics of the model are derived in Becker's paper. In the case of the pension, and for the sub-sample that we consider (discussed later), we treat the pension as an anticipated increase in V . We are thus assuming that the means test is non-binding for those pensioners who retire at the pensionable age.⁴

The comparative statics are fairly straightforward. An increase in V does not change the relative price of commodities. Thus, changes in consumption should be positive for all normal commodities, and negative for inferior ones. Since leisure is assumed to be normal, we expect to observe an increase in leisure amongst household members as well. Moreover, given that

⁴We expect that this assumption is relatively innocuous. First, most of the elderly could continue to work and satisfy the means test. Second, South Africa is a high unemployment environment, and about half of the elderly are no longer in the work force prior to the pensionable age. (see Lam *et al* (2005)). Finally, monitoring and enforcement of the means test is likely to be exceedingly difficult in an environment with predominantly cash wages and large informal sectors.

a significant number of the elderly retire when they become eligible for the pension, the household potentially gets a large increase in adult time for home production activities. This is likely to further affect adult members' time allocation behaviors, as the pension is then also implicitly relaxing the non-elderly adults' time constraints.

4 Data

Sampling methodology

The South African Time Use Survey was carried out by Statistics South Africa in 2000. The information is based on recall diaries from about 14 000 individuals. The individuals were selected in a three stage sampling process. In the first stage 902 primary sampling units were selected from a set of enumerator areas stratified by location, viz. urban formal, urban informal, commercial farming and ex-homeland rural areas. The urban informal and commercial farming areas were oversampled at this stage. In the second stage dwellings were sampled within these clusters and in the third two individuals (if the household had two or more eligible individuals, otherwise one individual) were selected based on a randomization procedure within the household. Only individuals aged ten and above were eligible to be interviewed. Statistics South Africa have provided a set of weights to correct for the different sampling probabilities. These weights are used in all the estimation procedures reported below.

In order to account for some seasonal and weekly variations in time use, the survey was collected in three tranches: February, June and October. Within each tranche attempts were made to collect information across the working week. Unlike with some surveys conducted in other countries, however, no attempt was made to interview the same individual on more than one day. This means that we cannot investigate any day-to-day variation in the choices made (e.g. in relation to home work).

The information was recorded through three different instruments. Once the household had been selected a household level questionnaire was administered to a knowledgeable person. This questionnaire included some basic socio-economic information on the entire household, such as access to services and total household income. A roster of household members provided the basis from which to select the individuals to be interviewed further. The selected individuals were asked a set of questions about themselves, such as educational attainment, marital status, labour market participation and personal income. The main focus of the personal interviews, however, was the time diary.

Measuring time allocation

Individuals were interviewed about their use of time during the previous twenty-four hours. The activities were recorded within half-hour time slots according to an “activity classification system”. Frequently reported categories included ‘sleep’, various forms of ‘work’, ‘cooking’, ‘cleaning’, ‘watching TV’, ‘listening to the radio’, various forms of ‘socializing’, ‘childcare’ and ‘doing nothing’. Provision was made for up to three activities in each slot. In order to convert slots into actual time use, we divided the thirty minutes equally between the activities recorded in that time.

One of the questions that arises with a recall diary in the South African context is whether the informants, many of whom do not own watches, are able to give sufficiently accurate information about what happened in particular time slots. The problem is not only forgetting, but the ability to anchor activities to times of the day. Some exploratory work done by Statistics South Africa suggests that there are many ways in which even rural South Africans succeed in doing so . They use radio and TV schedules, the passage of buses and trains and information from other individuals to keep track of time.

Sample Selection

Our investigation focusses on the changes in activities amongst adult African South Africans. We additionally pay specific attention to ‘prime aged’ adults, who we categorized as adults aged 25 to 55 inclusive. The race restriction was imposed in order to keep our study comparable to the existing OAP literature. It is also beneficial because our proxy for the pension is age, and a majority of age-eligible Africans receive the pension.⁵ In our regressions, we also restricted the sample to respondents who reported weekday activities. This was done as minutes spent working was of particular interest to us.⁶

Table 1 shows the mean minutes and standard errors spent in various categories across the three different regression samples. The largest expenditure of time is spent in sleeping. This is followed by home production for women and wage related employment for men. Various forms of socializing, including ‘doing nothing’, takes up between 3.5 and 4 hours on an average weekday.

Table 2 shows the mean values of the various covariates included in the regressions. Slightly fewer than half of the respondents are male. The mean years of schooling is between 7.5 and 8.6 years, depending on the sample being considered. Amongst the prime aged adults, almost one in five women and one in four men have some post high school education. Slightly more than 15% of prime aged males and females co-reside with a pensioner.

5 Empirical Strategy

Our investigation composes of two methods of analysis. First, we make use of non-parametric techniques to describe the changes observed between households where the eldest resident is pension age-eligible and those where said resident is not. These are informative both to

⁵The proportion of age-eligible white South Africans who receive the OAP is approximately 30% in the September 2000 Labour Force Survey.

⁶In our non-parametric estimates, we included weekend observations to increase the density of our data.

obtain a feel for the data as well as to visually observe that some adjustments do seem to occur in anticipation of the pension. Our sample in this case is the pooled set of prime aged African males and females. We employ locally weighted regressions with a bandwidth of 0.3 and 0.5 for non-pensioner and pensioner households respectively. The set of dependent variables are the time allocation of respondents to various activities, and to the extent that the data allows, ownership of relevant consumer durables such as radios, TVs and cars.

Second, we perform regression analyses on some of the time allocation variables. This allows us to obtain numerical estimates of the effect of having a pensioner present, with corresponding standard errors. We control for the individual demographic characteristics of the respondents, such as their age and education, as well as their geographic and household composition attributes. We estimate each regression for both genders combined, as well as separately for men and women. Our estimation samples include all adults including pensioners, prime aged women and prime aged men.

The specific equation we estimate for person i in household j is:

$$Y_{ij} = \alpha_0 + \beta X_{ij} + \gamma X_j + \delta Pensioner_j + \varepsilon_{ij} \quad (5)$$

where

- Y_{ij} is the dependent variable, measured in minutes. The outcomes we consider are time spent in wage work, informal employment, care giving to the elderly, child care, sleeping, doing nothing, watching TV, socializing within the family, socializing with non-family members, cooking, cleaning and eating.
- X_{ij} are person specific attributes; gender, age, age squared, years of schooling, an indicator for post secondary schooling, whether the individual is themselves a pensioner (in the ‘all adults’ sub-sample), and marital status.
- X_j are household level variables; household size, the type of area the residence is based eg. urban, rural, farm etc , the month in which they were interviewed, and the day of the week that the response pertained to.

- Our primary coefficient of interest is δ . $Pensioner_j$ is an indicator variable that takes on a value of one if there is at least one pensioner in the household. Thus δ provides us with the mean difference in time allocation between the group of respondents who reside with a pensioner and those who do not.

In all cases, robust standard errors were estimated and clustered at the household level.

6 Results

Non-parametric results

The non-parametric regression results are presented graphically in Figures 1 through 23. Since the pensionable age is 65 for men, there are some respondents who live with someone aged above 60 who do not live with a pensioner. Given that these are simply bivariate regressions, we interpret them with caution. However, the ‘gap’ observed in some cases are valid estimators of the effect of the pension insofar as the effects of the pension can be interpreted in a regression discontinuity framework. The dependent variables can be grouped within the broadly defined categories of market activities, home production, productive consumption and leisure. We also estimate asset ownership where possible.

In the productive consumption group (Fig. 1-2), we find a big increase in time spent eating, of about 10 minutes. This represents an increase of more than 15%. We do not observe a clear change in time spent on religious activities.

In the leisure activities group (Fig. 3-9), we observe some increase in the minutes spent ‘doing nothing’, and an increase in time spent socializing with both family as well as non-family members. The increase in socializing within families is about 20 minutes, an increase of more than 30%. Sleep, radio listening and TV watching do not seem to be discontinuously affected, although TV watching does occur at a higher level amongst those who live with a

pensioner.⁷

The market related activities (Fig. 10 - 15) are where we observe the strongest responses. Time spent searching for employment increases from 5 minutes to 10 minutes, while time spent in primary production decreases from 30 minutes to 25 minutes. Schooling activities seem largely unaffected, and any effects on service work are unclear. Of particular interest are the graphs of the proportion of prime adults working, and the minutes that they work, (Fig. 13 and 14 respectively). While there is no discontinuity present, we certainly do see a gradual reduction both in the likelihood of employment and the minutes worked per day. As the age of the eldest household member increases from 40 to 60 (in our cross-section), the proportion of prime aged adults working drops from about 0.45 to below 0.30, while the minutes worked drops from about 150 per day to about 75 per day. These are exceptionally large differences, although we cannot be sure that the OAP causes these to occur.

In the home production group (Fig. 16 - 19), we observe clear and large decreases in time spent on child care and cooking. These are of a magnitude of 7 and 20 minutes respectively, with corresponding percentage decreases of about 25% and 33%.

Finally, we use the data to check whether there are any changes in market inputs that would correspond to changes in time allocation (Fig. 20 - 23). TV ownership is certainly higher among those who live with a pensioner, although no discontinuity is present. On the other hand, there is a clear and large increase in the proportion that cook using electricity. The proportion increases from about 0.32 to 0.42, an increase of about 30%. This fits very neatly with the discontinuous reduction in time spent cooking.

⁷Some of the activities have such low levels of time allotted to it that even relatively large proportionate changes are not really meaningful. These are captured in Figures 3, 16 and 18, which correspond to games, accompanying the elderly and caring for the elderly.

Regression results

Whereas the non-parametric estimates provided some evidence of discontinuities at the pension reciprocity ages, they did not control for any of the other characteristics of the respondents. Within our regression framework, we are able to do so. Our coefficient of interest in this case represents the mean difference in the dependent variable between the two groups defined by those who live with a pensioner and those who do not, conditional on the other characteristics included in the regression.

Table 3 provides the regression coefficients for minutes worked. The coefficients are all negative and large, but not statistically significant for the male subpopulation. Female minutes worked is clearly negatively associated with the presence of a pensioner, with a magnitude of about 38 minutes. This is true even for the sub-sample of prime aged women. In conjunction with the non-parametric estimates, we find that the pension does indeed affect the labor supply of the non-elderly.

Table 4 focusses our attention on care giving between household members. As expected, residing with a pensioner has almost no effect on reported care giving to the elderly. However, there are large and significant effects on child care provision. Somewhat puzzling, male provision of child care increases by 6 minutes on average, and the coefficient estimate is marginally significant. Significant at the 1% level though, is the reduction by 21 minutes in prime aged female provision of child care. This is a reduction of almost 50% from the overall mean.

We next consider the coefficient estimates for informal production and service activities in Table 5. Our coefficient estimates for informal production are both small and insignificant. For informal services, they suggest a decrease of about 12 minutes in each of the sub-groups considered, although only the estimate for all prime aged adults is even marginally significant.

A glance at Table 6 indicates that all groups sleep more and do more of ‘nothing’ if they reside with a pensioner. Again we observe a gender difference. The coefficient is twice as

large for women in both sleep and ‘doing nothing’ (19.53 vs. 8.336 and 18.265 vs 7.869 respectively) and the female coefficient on doing nothing is significant at the 10% level.

In Table 7 our dependent variables are time spent socializing with family members and non-family members. While pensioners themselves are more likely to socialize outside of the household, the effect for non-pensioners is not significant. Within the family, however, socializing certainly becomes more prevalent, with a mean increase of between 11 and 13 minutes.

When we consider time spent on home production of cooking and cleaning, reported in Table 8, we find relatively small coefficient estimates. For prime aged women, the estimates are not that small, at 10.15 and 9.259 minutes each, but the standard errors are also large and we cannot claim that they are significant.

In Table 9, our dependent variables are time spent watching TV and Eating. Effects on TV watching are small and insignificant, while the effects on eating time are sizable and significant. For prime aged men in particular, we observe an increase in time spent eating of 10 minutes which is significant at the 5% level. Given prior studies on the nutritional effects of the pension, it is likely that this is brought about by an increase in the purchase of food.

7 Caveats

There are various challenges to our identification strategy. First, there exists significant measurement error in terms of ages reported due to the ‘age-heaping’ phenomena. Since respondents tend to heap to numbers ending in ‘zero’ or ‘five’, this becomes particularly problematic. We believe that this biases us away from finding significant results, and our estimates are thus conservative.

Second, the pension is fully anticipated. As such, households would optimally smooth their consumption and time allocations, and we would observe no sharp changes in behavior.

Such smoothing will not occur if households are liquidity constrained or highly risk averse. The non-parametric analysis indicated that there is indeed some pre-pension adjustment occurring, and again we believe our estimates to be conservative.

Third, South Africa has no anti-age discrimination bill. Indeed, compulsory retirement ages are acceptable as long as they have a long standing precedent within the company. These ages generally fall at either age 60 or 65. This could be particularly problematic since, if widespread, our analysis is confounded because the household is obliged to allocate the pensioner's time to leisure and home production activities. Our results would not then be reflecting only the effect of the OAP. This is partially mitigated by the fact that self-reported retirement rates as well as the willingness to take up an "acceptable offer" exhibit sharp discontinuities at the pensionable ages for the respective genders. Moreover, relatively few of the African elderly are employed in formal sector, and the proportion that receive any form of employer related pension is tiny. (see Ranchhod (2006)).

Some nuance is required in interpretation when considering the effects of changes in household composition. These might be driving the observed changes in time allocation. For example, suppose that the OAP causes the in-migration of an adult female who never performs child care. If the total amount of time spent on child care by the household remains unchanged, we would empirically observe a reduction in the mean time spent on child care by adult women. In Table 10 we calculate the mean proportion in each demographic group for pensioner and non-pensioner households. The estimation sample included only households with at least one member aged 50 or greater. Column 3 presents the difference of these means, which are generally very small for the non-elderly groups.⁸ The largest difference in means, in absolute value, is observed amongst prime aged women at -0.024. It thus seems unlikely that the findings are largely driven by compositional adjustments. Moreover, this does not invalidate the interpretation that a particular *group* has some change in their mean time allocation.

⁸The sample selection we imposed necessarily results in large differences in the elderly groups.

8 Conclusion

We began this research by asking what income effects the cash transfer that the OAP involves has on the time allocation of adult household members. Using the nationally representative time use data from South Africa, and the pension rules for identification, we observed a number of shifts in the time allocation of prime aged residents.

Combining the findings from our two methodologies, and providing a brief summation, what have we learnt? In terms of productive consumption, South Africans and particularly males spend significantly more time eating when they live with a pensioner. We observe large decreases in time worked for both genders amongst prime aged adults, but these results are larger and significant for prime aged females only. Our non-parametric results also indicated that prime aged adults smooth their transition out of the labor force in anticipation of the pension. Prime aged females also spend 50% less time on child care when they live with a pensioner. This is probably not surprising since home production is likely to have flexible hours and females perform most of the home production activities in our data. Leisure is also consumed in greater quantities by household members. This is manifest in terms of sleeping, ‘doing nothing’ and socializing. We find almost no time being spent on care giving to the elderly.

From a policy perspective, this implies that the OAP impacts on the household and its members in multiple ways. Adults, including the non-elderly, eat more, consume more leisure and work less, both at home and in the market. While this may or may not be desirable depending on the social welfare function, it is clear that such cash transfers impact on the household not only financially, but also in terms of its optimal allocation of time. Policy evaluations that ignores such time allocation considerations within households are likely to be inaccurate.

9 References

- Ardington C, Case A & Hosegood V, “Labor supply responses to large social transfers: Longitudinal evidence from South Africa”, Paper presented at the Twelfth Annual Conference of the African Econometric Society, Cape Town. July 2007
- Becker GS, “A Theory of the Allocation of Time”, *Economic Journal* 75 (299): 493-517 1965
- Case A, “Does money protect health status? Evidence from South African pensions”, NBER working paper 8495, October 2001
- Case A & Deaton A, “Large cash transfers to the elderly in South Africa”, *Economic Journal* 108 (450): 1330-1361, Sep 1998
- Bertrand M, Mullainathan S & Miller D, “Public policy and extended families: Evidence from pensions in South Africa”, *World Bank Economic Review* 17 (1): 27-50 2003
- Duflo E, “Grandmothers and granddaughters: Old-age pensions and intrahousehold allocation in South Africa”, *World Bank Economic Review* 17 (1): 1-25 2003
- Duflo E, “Child health and household resources in South Africa: Evidence from the Old Age Pension program”, *American Economic Review* 90 (2): 393-398 MAY 2000
- Edmonds EV, Mammen K & Miller DL, “Rearranging the family? Income support and elderly living arrangements in a low-income country”, *Journal of Human Resources* 40 (1): 186-207 WIN 2005
- Edmonds EV, “Child labor and schooling responses to anticipated income in South Africa”, forthcoming in *Journal of Development Economics*, accepted May 2005
- Jensen RT, “Do private transfers ‘displace’ the benefits of public transfers? Evidence from South Africa”, *Journal of Public Economics* 88 (1-2): 89-112 Jan 2004

Lam D, Leibbrandt M and Ranchhod V, “Labour Force Withdrawal of the Elderly in South Africa”, CSSR working paper # 118, 2005

Lund, F, . “State social benefits in South Africa.”, International Social Security Review, 46 1993

Ranchhod V, “The effect of the South African old age pension on labour supply of the elderly”, South African Journal of Economics 74 (4): 725-744 Dec 2006

10 Graphs

Figure 1

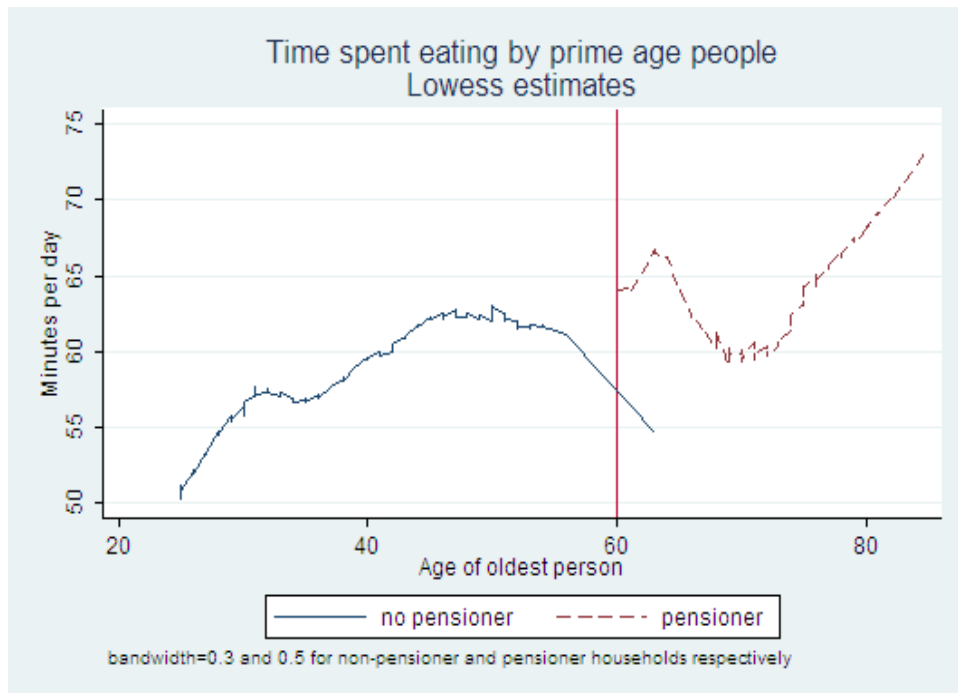


Figure 2

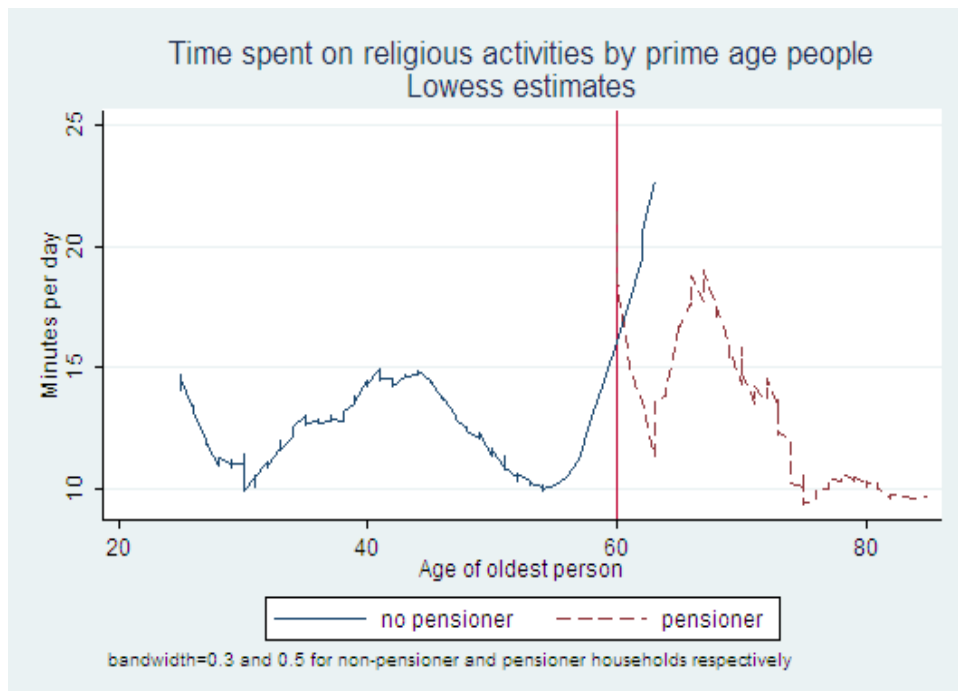


Figure 3

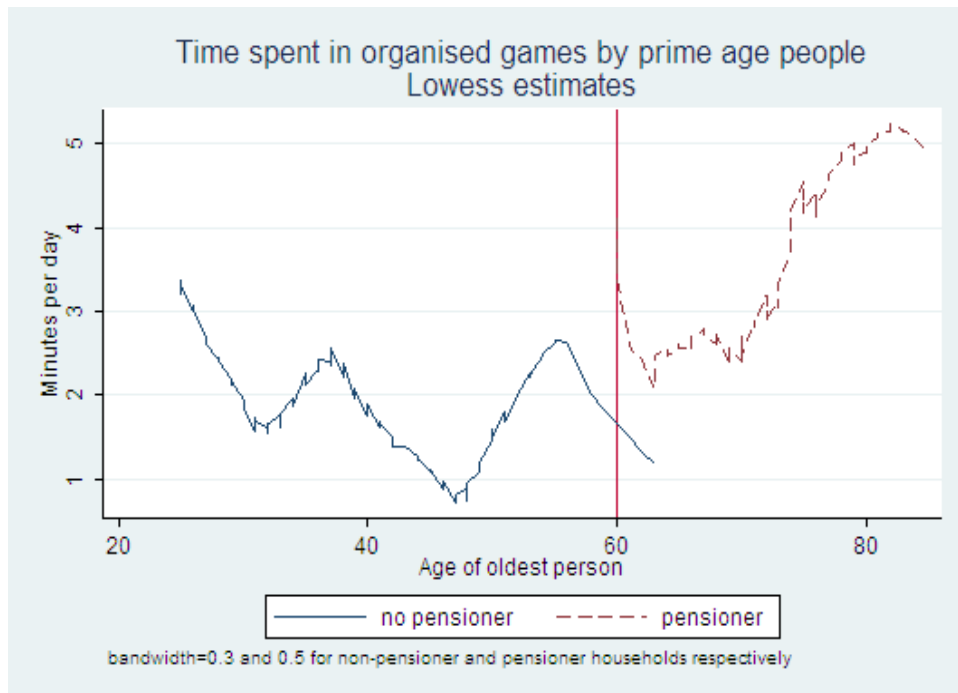


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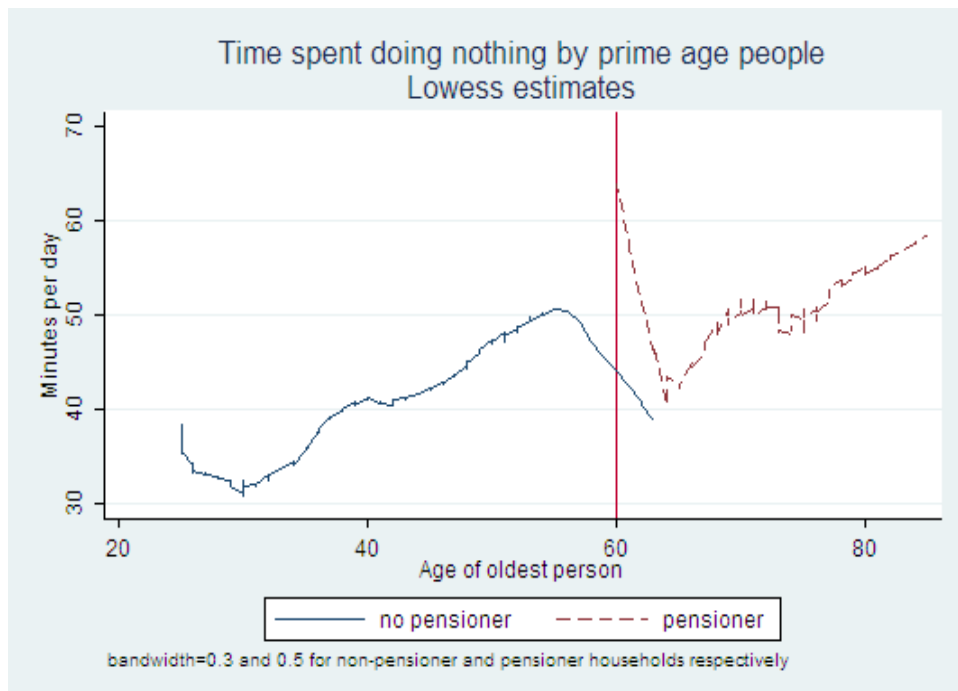


Figure 5

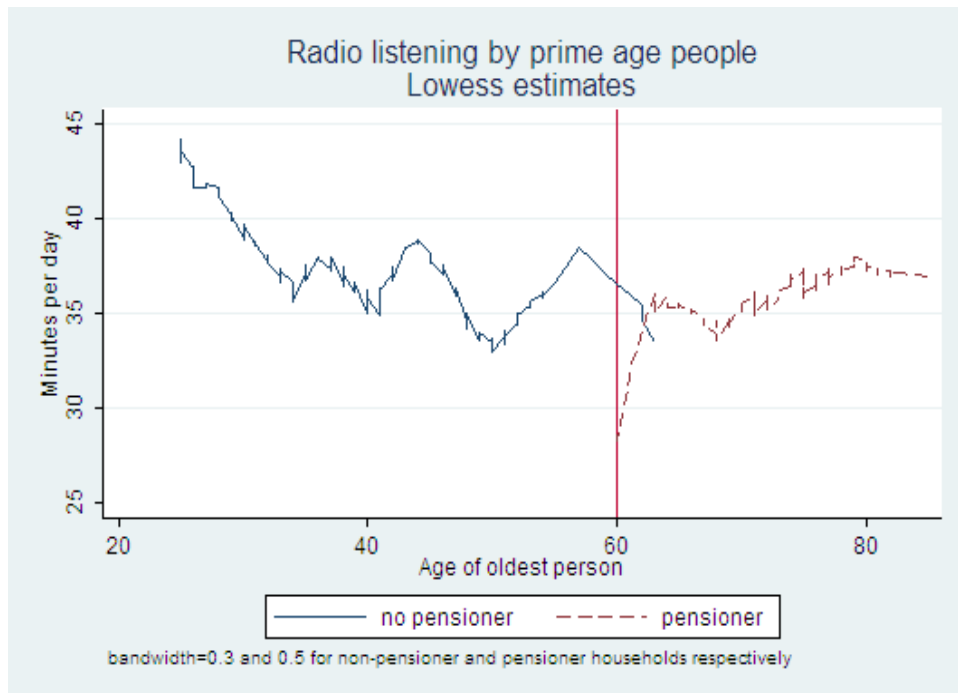


Figure 6

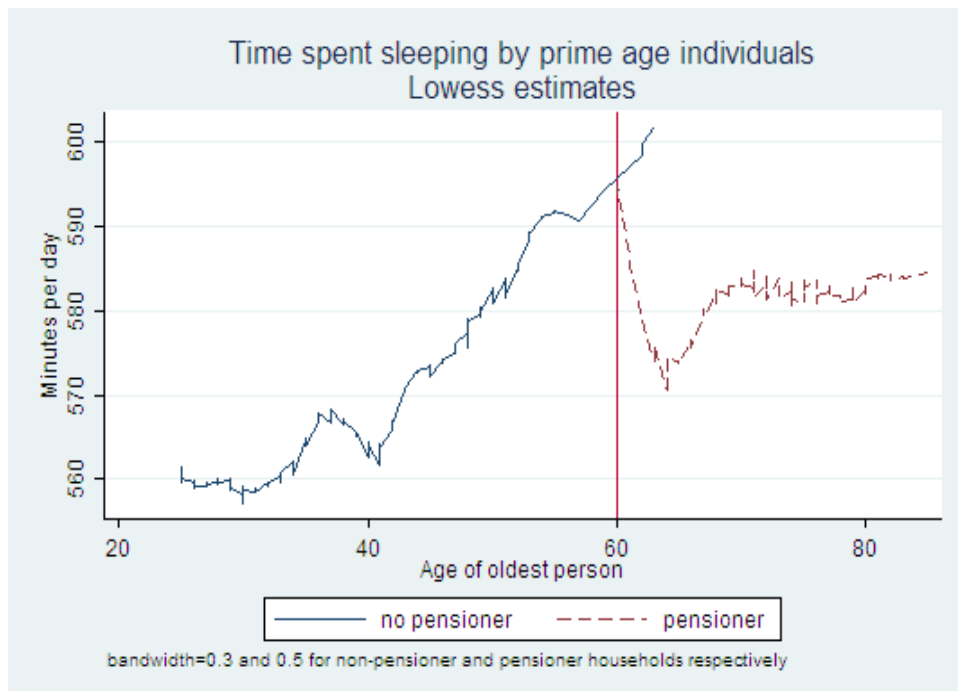


Figure 7

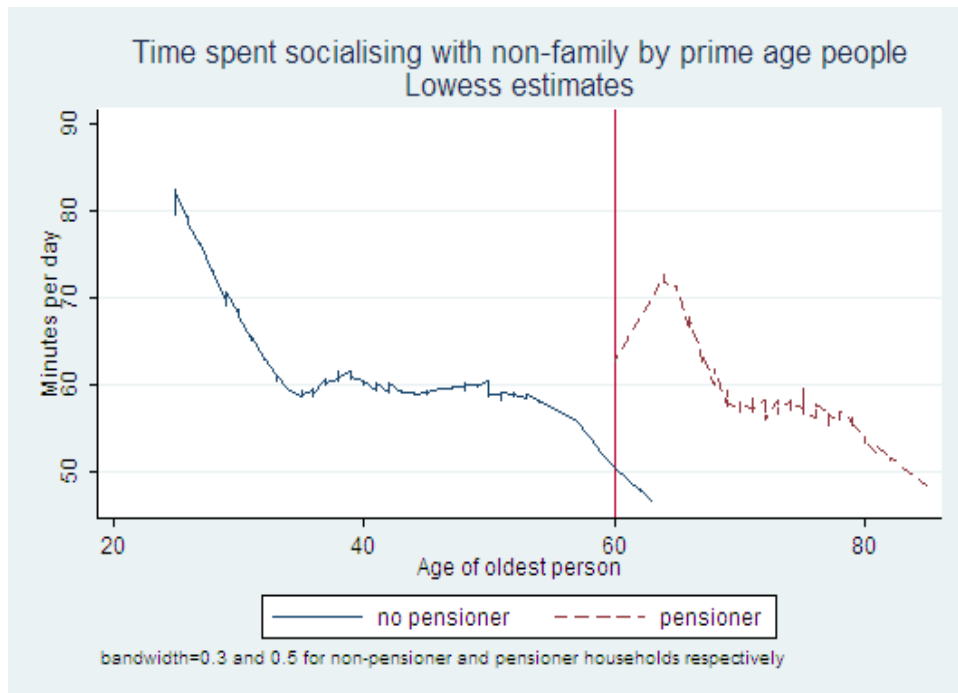


Figure 8

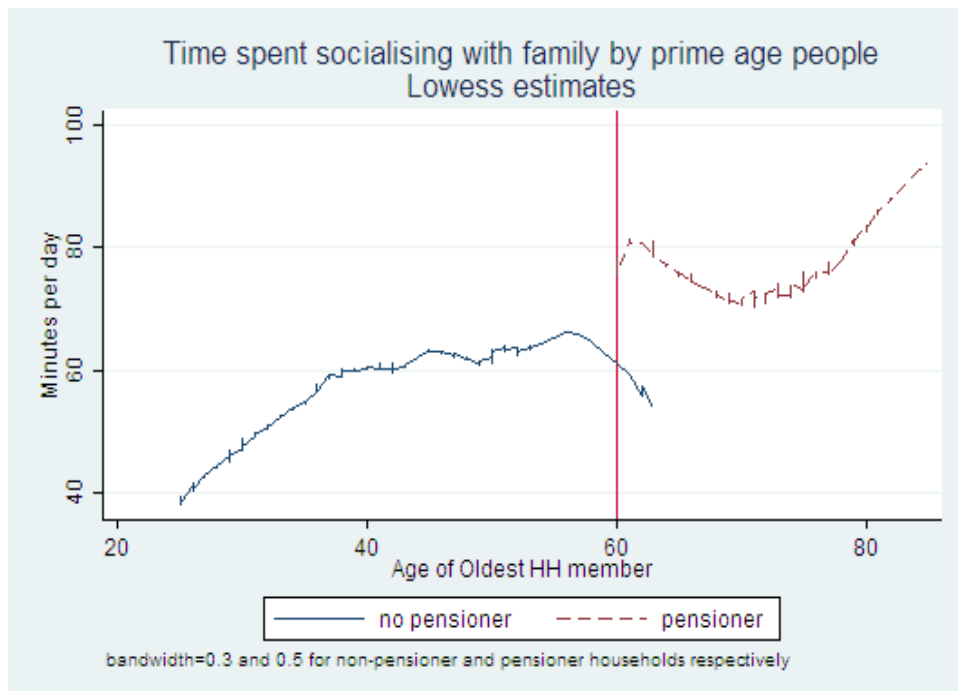


Figure 9

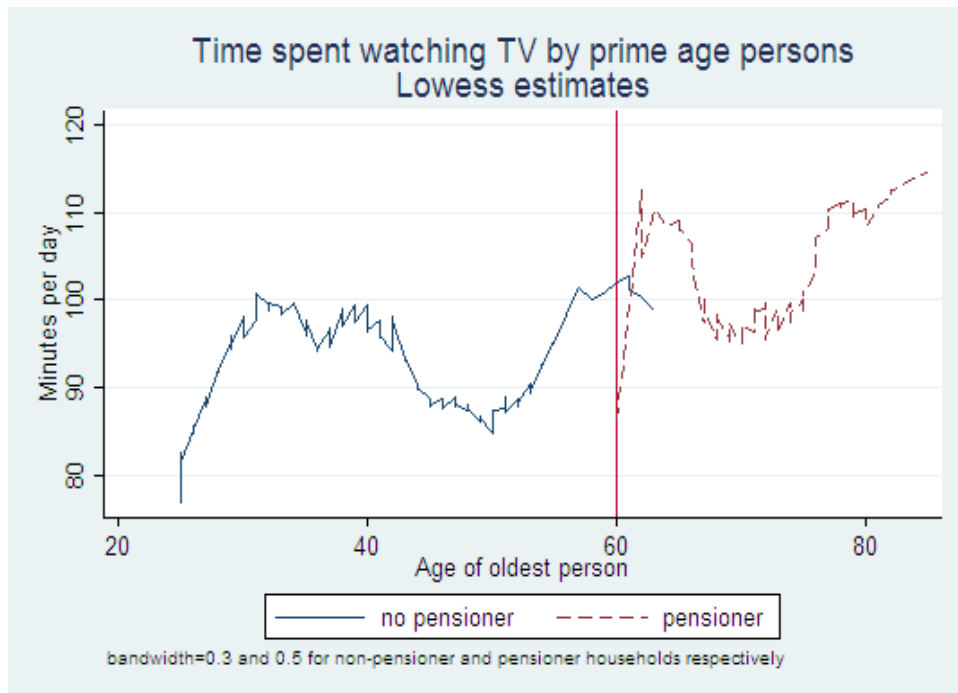


Figure 10



Figure 11

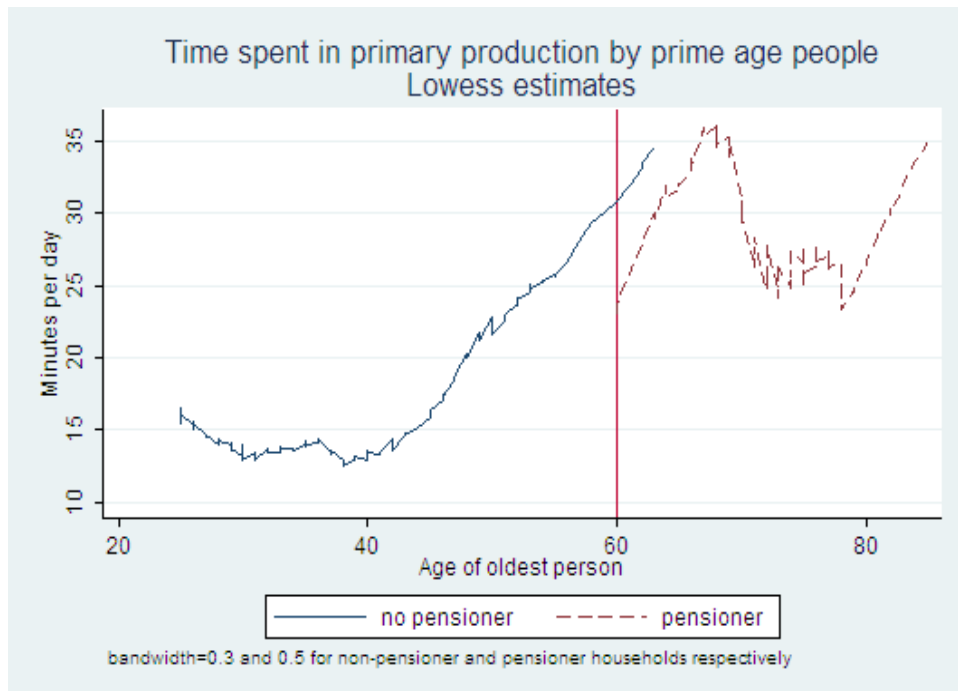


Figure 12

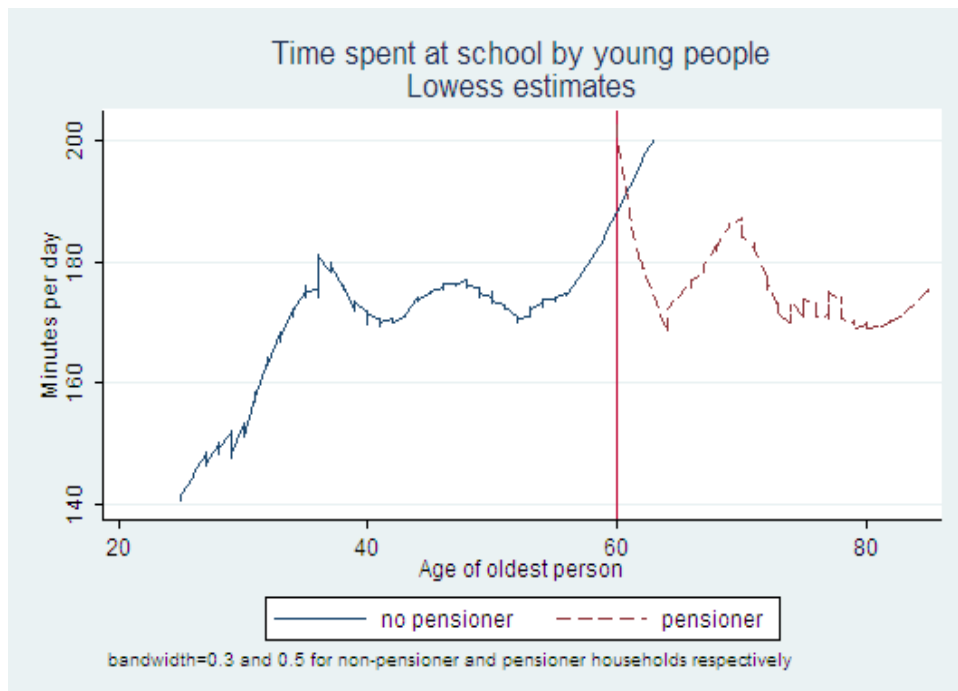


Figure 13

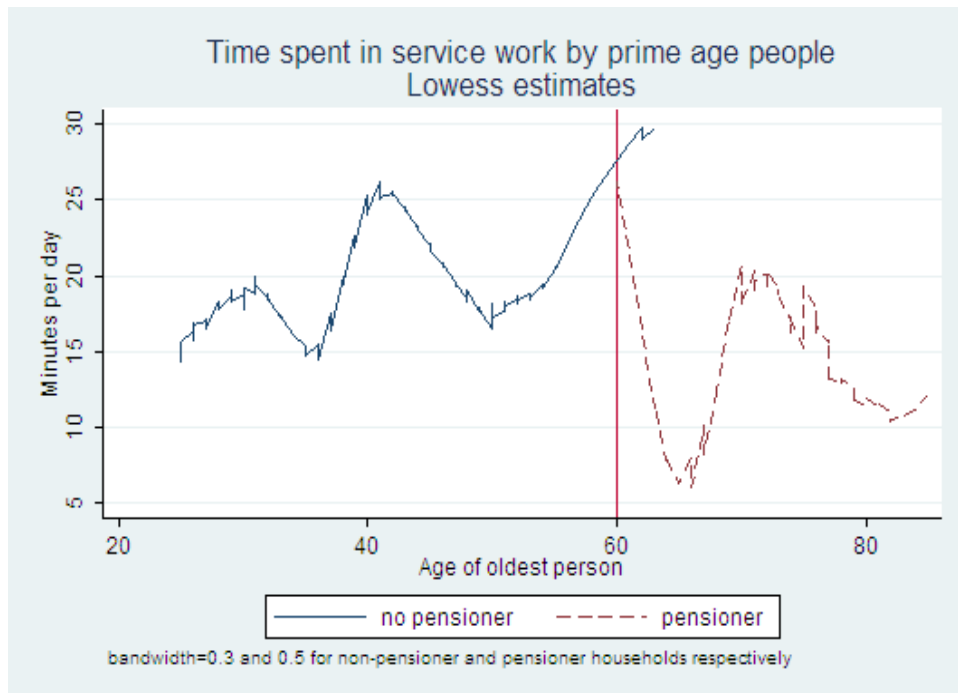


Figure 14



Figure 15



Figure 16

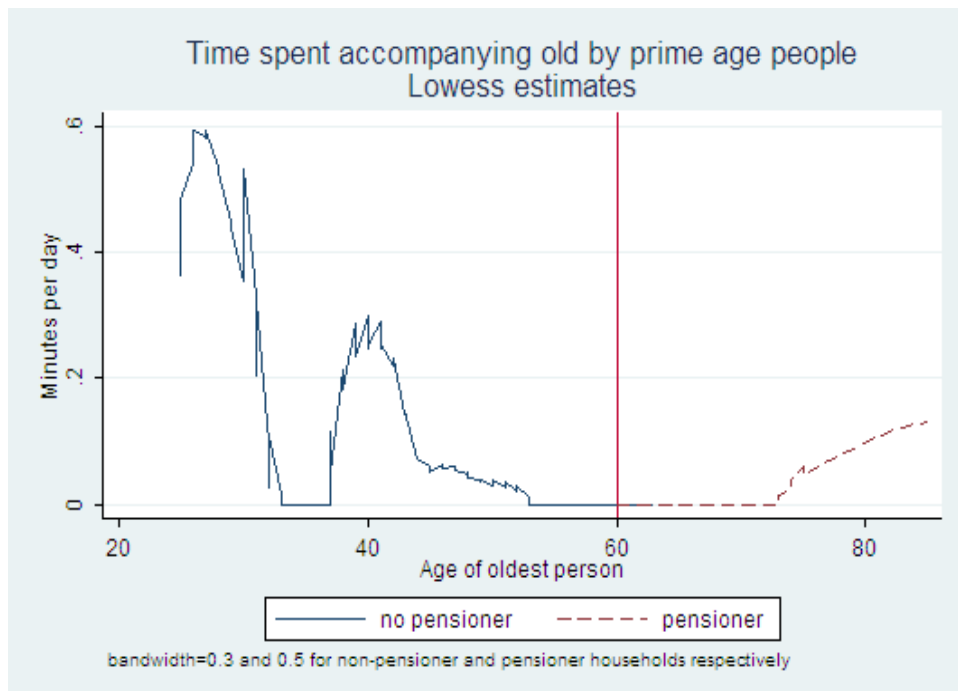


Figure 17

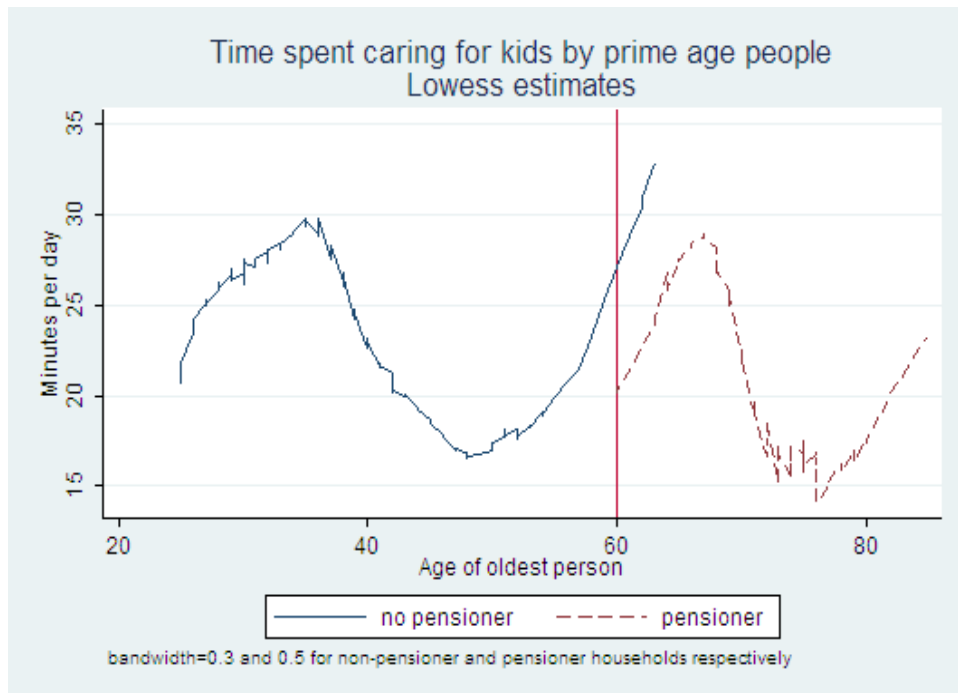


Figure 18

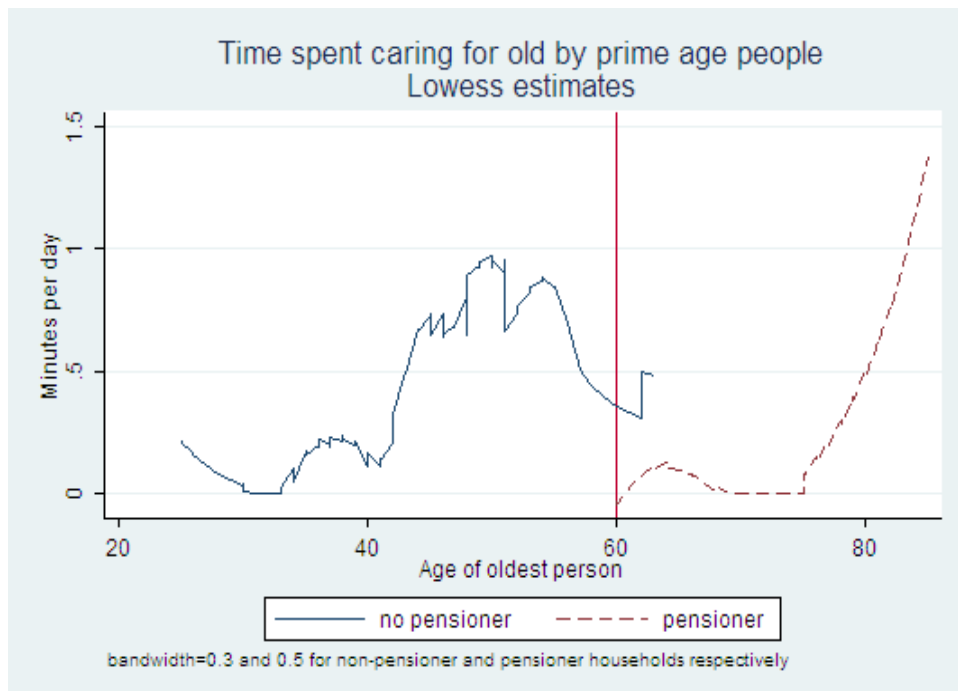


Figure 19

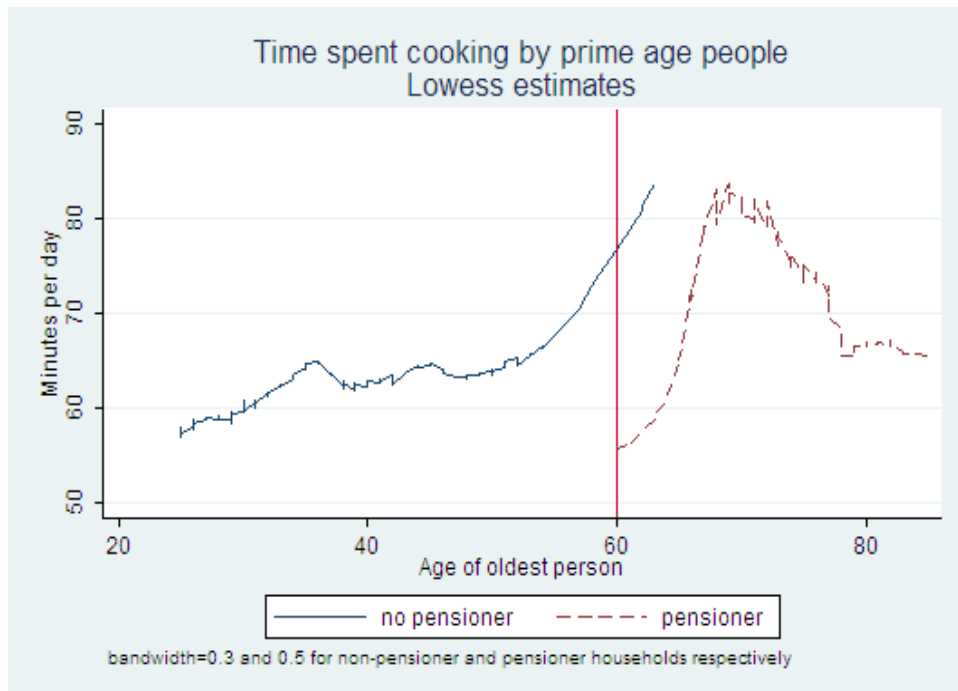


Figure 20

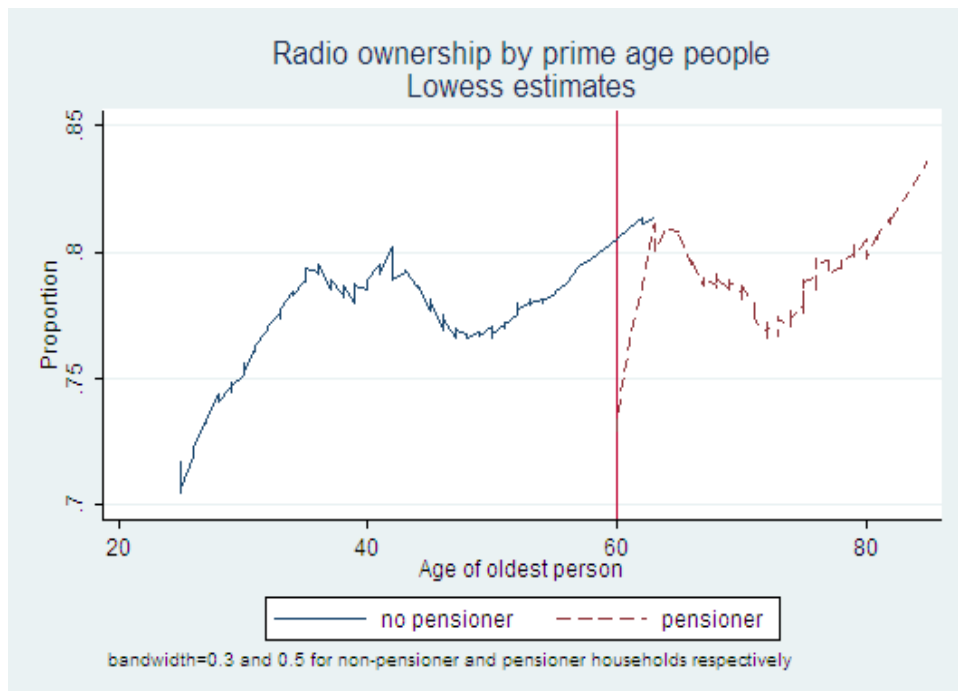


Figure 21

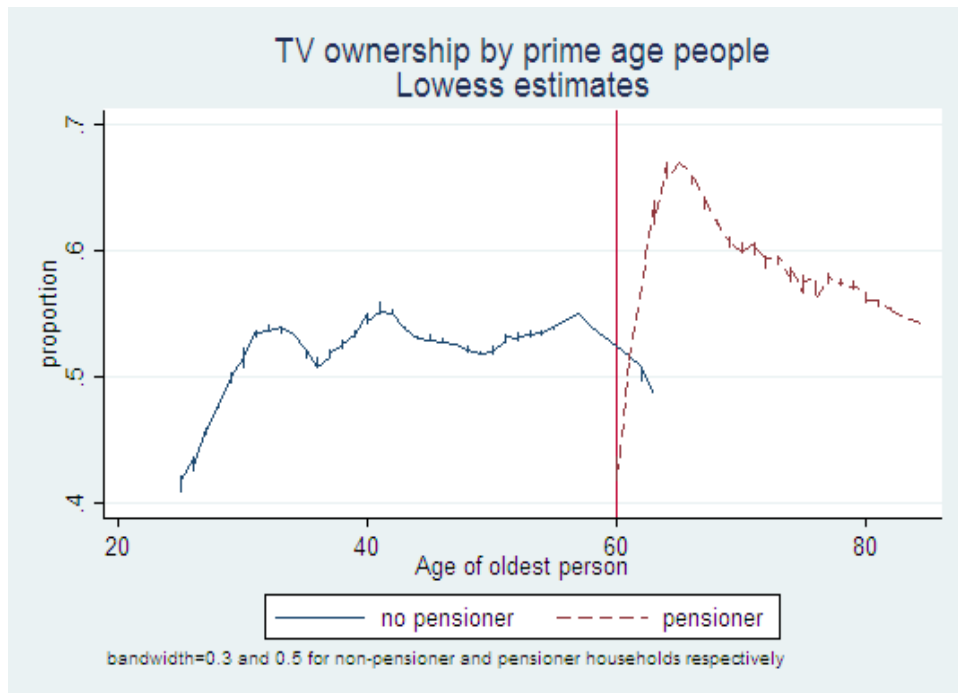


Figure 22

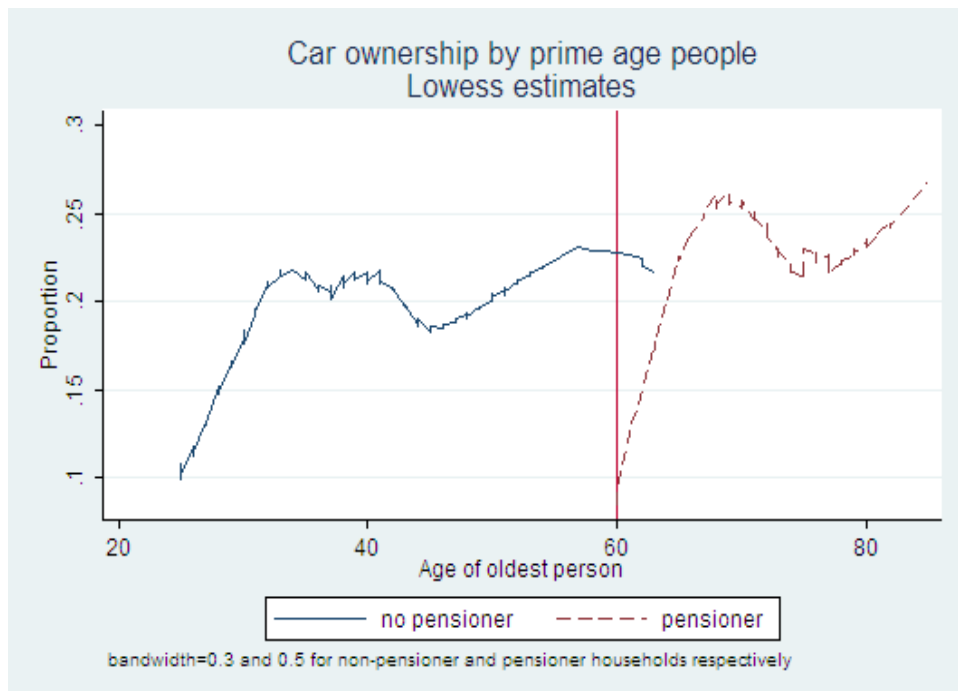
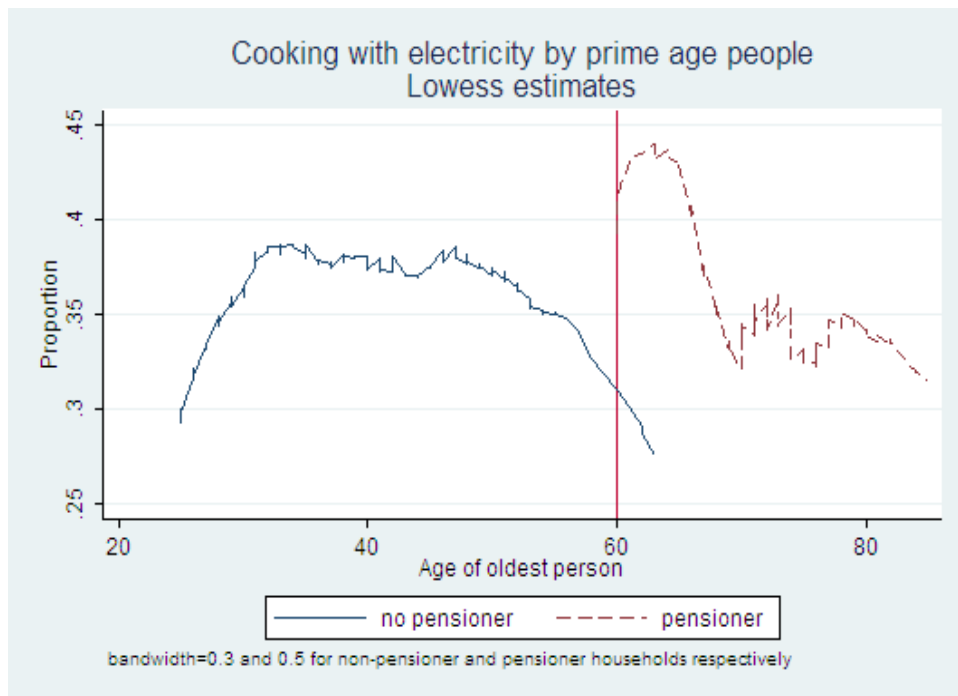


Figure 23



11 Tables

Table 1: Means of time allocation

	-1	-2	-3	-4	-5	-6
	All		Female prime		Male prime	
	Mean	s.e.	Mean	s.e.	Mean	s.e.
Time spent (minutes):						
wage work	78	3.7	94.9	5.4	200	8.8
produce	23.8	2	21.3	2.6	17.2	2.4
service	12.3	0.9	17.8	1.9	19.8	2.4
care old	0.4	0.1	0.5	0.2	0	0
accompany old	0.1	0.1	0.4	0.3	0.2	0.1
care kids	18.9	0.8	43.3	1.9	5.0	0.7
sleep	570	2.6	563.2	3.3	540.4	4.6
do nothing	38.2	1.4	38.8	2.1	39	2.6
TV	74.5	2.5	72.3	3.3	76.7	3
socialise family	61.6	1.7	70.5	2.9	59.4	2.8
socialise nonfamily	51.8	1.4	35.3	1.7	76.1	3.8
eat	65.7	0.7	59.4	1	68.6	1.4
cook	51.3	1.1	97.9	2.5	18.8	1.2
clean	36.2	0.9	54	2.1	24.8	1.8

Notes:

1. Columns 1 & 2 include any adult aged ≥ 25
2. Prime aged adults are adults aged 25 - 55 inclusive.

Table 2: Means of regression covariates

	-1	-2	-3	-4	-5	-6
	All		Female prime		Male prime	
	Mean	s.e.	Mean	s.e.	Mean	s.e.
Explanatory variables						
gender (1=male)	0.467	0.007				
age	31.2	0.3	37.2	0.2	37.1	0.3
age2	1286	20.8	1452.3	15.5	1445.1	19.2
years of schooling	7.5	0.1	8.1	0.2	8.6	0.1
post school	0.133	0.008	0.186	0.012	0.258	0.017
pensionable age	0.08	0.004				
Pensioner present	0.272	0.011	0.155	0.011	0.158	0.012
Additional pensioners	0.081	0.007	0.03	0.005	0.043	0.008
Household size	5.4	0.1	5	0.1	4.5	0.1
married	0.335	0.008	0.553	0.014	0.603	0.015
widowed	0.05	0.003	0.059	0.006	0.012	0.003
divorced	0.032	0.002	0.073	0.007	0.04	0.005
E. Cape	0.151	0.017	0.131	0.016	0.108	0.013
N. Cape	0.021	0.004	0.023	0.004	0.02	0.004
Free State	0.068	0.009	0.073	0.01	0.076	0.011
KwaZulu	0.21	0.022	0.202	0.023	0.183	0.021
NorthWest	0.083	0.013	0.072	0.011	0.084	0.013
Gauteng	0.185	0.017	0.212	0.022	0.265	0.026
Mpumalanga	0.067	0.01	0.069	0.01	0.065	0.01
Limpopo	0.111	0.017	0.099	0.015	0.079	0.016
urban informal	0.089	0.009	0.099	0.01	0.116	0.012
other rural	0.36	0.025	0.287	0.025	0.212	0.023
farm	0.06	0.006	0.063	0.007	0.081	0.008
June	0.333	0.022	0.348	0.024	0.322	0.024
October	0.327	0.023	0.303	0.023	0.349	0.025
Tues	0.164	0.013	0.154	0.014	0.148	0.013
Wed	0.13	0.011	0.137	0.015	0.135	0.013
Thurs	0.118	0.012	0.117	0.014	0.114	0.014
Fri	0.136	0.011	0.127	0.012	0.15	0.013

Notes:

1. Columns 1 & 2 include any adult aged ≥ 25
2. Prime aged adults are adults aged 25 - 55 inclusive.

Table 3: Minutes Spent working

Wage work	-1	-2	-3	-4	-5	-6
	all	all prime	women	women prime	men	men prime
gender	97.837 (11.067)**	111.098 (12.944)**				
age	6.761 (1.551)**	11.974 (5.640)*	4.837 (1.671)**	8.903 (6.715)	4.697 (2.870)	12.631 (9.418)
age squared	-0.067 (0.015)**	-0.126 (0.073)+	-0.036 (0.015)*	-0.085 (0.086)	-0.059 (0.031)+	-0.151 (0.124)
years of schooling	7.057 (1.383)**	8.612 (1.558)**	6.708 (1.454)**	8.233 (1.741)**	6.598 (2.521)**	8.307 (2.607)**
post school	59.936 (16.807)**	55.113 (17.929)**	78.255 (22.229)**	72.116 (22.361)**	39.617 (23.894)+	37.702 (26.013)
Pensionable age	-33.267 (21.247)		-44.74 (18.145)*		-54.416 (46.390)	
Pensioner present	-37.372 (14.035)**	-31.029 (15.411)*	-37.479 (13.789)**	-38.295 (14.563)**	-35.38 (24.159)	-20.547 (25.662)
household size	-5.049 (2.098)*	-6.73 (2.654)*	-4.868 (1.506)**	-6.66 (1.917)**	-5.892 (3.770)	-8.164 (4.589)+
Constant	-100.327 (56.679)+	-207.236 (111.404)+	-71.691 (53.352)	-152.096 (133.481)	58.564 (89.752)	-83.541 (176.147)
Observations	4664	3862	2490	2016	2174	1846
R-squared	0.2	0.18	0.14	0.11	0.21	0.18

Notes:

1. Robust standard errors in parentheses
2. + significant at 10%; * significant at 5%; ** significant at 1%
3. Standard errors corrected for clustering.
4. Results weighted with Stats SA person weights.
5. Coefficients on marital status, province, area type, month and day of week have been suppressed.

Table 4: Time spent on caregiving to other household members

	Care for old				Child care			
	-1 all	-2 all prime	-3 women prime	-4 men prime	-5 all	-6 all prime	-7 women prime	-8 men prime
gender	-0.418 (0.307)	-0.343 (0.133)**			-37.078 (2.407)**	-40.394 (2.669)**		
age	0.011 (0.059)	-0.008 (0.093)	-0.036 (0.166)	-0.022 (0.023)	-2.09 (0.592)**	-3.168 (1.944)	-5.791 (3.254)+	-1.315 (1.493)
age squared	0.001 (0.001)	0 (0.001)	0.001 (0.002)	0 -	0.015 (0.006)**	0.029 (0.025)	0.054 (0.041)	0.017 (0.019)
years of schooling	-0.068 (0.060)	-0.017 (0.030)	-0.034 (0.054)	0.005 (0.005)	0.229 (0.373)	0.236 (0.423)	0.329 (0.754)	0.255 (0.154)+
post school	0.419 (0.421)	0.336 (0.390)	0.704 (0.817)	-0.035 (0.036)	-4.095 (4.369)	-2.761 (4.551)	-3.899 (8.870)	1.852 (2.145)
Pensionable age	-2.809 (1.630)+				3.466 (5.857)			
Pensioner present	0.341 (0.606)	0.042 (0.188)	0.055 (0.353)	-0.008 (0.010)	-8.979 (3.483)*	-9.043 (3.852)*	-21.464 (5.981)**	6.098 (3.619)+
household size	-0.022 (0.021)	-0.023 (0.016)	-0.042 (0.030)	-0.003 (0.003)	2.406 (0.574)**	2.45 (0.664)**	4.553 (1.118)**	0.454 (0.318)
Constant	0.002 (1.073)	0.842 (1.718)	1.668 (3.206)	0.375 (0.380)	79.3 (15.070)**	96.252 (37.156)**	141.769 (65.365)*	18.473 (26.188)
Observations	4664	3862	2016	1846	4664	3862	2016	1846
R-squared	0.01	0.01	0.01	0.01	0.13	0.14	0.08	0.04

Notes:

1. Robust standard errors in parentheses
2. + significant at 10%; * significant at 5%; ** significant at 1%
3. Standard errors corrected for clustering.
4. Results weighted with Stats SA person weights.
5. Coefficients on marital status, province, area type, month and day of week have been suppressed.

Table 5: Time spent in informal employment

	Informal production activities				Informal service activities			
	-1 all	-2 all prime	-3 women prime	-4 men prime	-5 all	-6 all prime	-7 women prime	-8 men prime
gender	-0.321 (4.718)	-2.756 (4.579)			2.669 (4.398)	3.828 (5.148)		
age	1.181 (0.896)	-5.358 (2.818)+	-6.229 (3.663)+	-2.332 (3.401)	0.548 (0.695)	2.357 (2.346)	4.182 (2.874)	0.346 (3.588)
age squared	-0.013 (0.010)	0.072 (0.038)+	0.088 (0.050)+	0.028 (0.045)	-0.007 (0.007)	-0.032 (0.030)	-0.052 (0.037)	-0.011 (0.045)
years of schooling	-2.713 (0.758)**	-2.731 (0.757)**	-3.474 (0.998)**	-1.469 (0.861)+	0.651 (0.696)	0.909 (0.803)	0.747 (0.843)	1.192 (1.376)
post school	-4.644 (5.377)	-1.923 (5.328)	0.367 (4.888)	-3.661 (9.065)	-1.911 (7.582)	-8.376 (7.047)	-8.496 (7.829)	-10.163 (9.326)
Pensionable age	5.151 (13.672)				10.278 (10.821)			
Pensioner present	-2.268 (6.578)	-2.234 (6.585)	-1.939 (7.787)	0.517 (11.685)	-11.082 (6.893)	-12.591 (7.637)+	-11.9 (8.068)	-12.313 (14.641)
household size	1.276 (1.041)	1.351 (1.195)	0.475 (0.902)	2.418 (2.096)	1.231 (1.009)	1.527 (1.353)	-0.476 (1.032)	3.771 (2.313)
Constant	5.488 (23.700)	116.112 (58.625)*	132.762 (74.839)+	53.504 (63.895)	3.972 (19.600)	-35.934 (43.959)	-60.755 (57.846)	-4.223 (69.741)
Observations	4664	3862	2016	1846	4664	3862	2016	1846
R-squared	0.17	0.19	0.24	0.17	0.02	0.02	0.03	0.06

Notes:

1. Robust standard errors in parentheses
2. + significant at 10%; * significant at 5%; ** significant at 1%
3. Standard errors corrected for clustering.
4. Results weighted with Stats SA person weights.
5. Coefficients on marital status, province, area type, month and day of week have been suppressed.

Table 6: Time spent sleeping and doing nothing

	sleep				nothing			
	-1 all	-2 all prime	-3 women prime	-4 men prime	-5 all	-6 all prime	-7 women prime	-8 men prime
gender	-16.238 (6.563)*	-22.708 (6.690)**			0.222 (4.715)	-1.321 (4.085)		
age	-6.269 (1.897)**	-4.523 (3.440)	-7.75 (4.718)	-1.347 (5.542)	-1.514 (1.271)	-3.376 (2.212)	-4.743 (3.172)	-0.508 (3.434)
age squared	0.079 (0.021)**	0.059 (0.045)	0.089 (0.063)	0.033 (0.070)	0.028 (0.015)+	0.051 (0.029)+	0.066 (0.042)	0.02 (0.046)
years of schooling	-5.899 (1.001)**	-6.171 (0.948)**	-5.101 (1.217)**	-8.027 (1.382)**	-2.892 (0.818)**	-3.001 (0.869)**	-3.201 (1.301)*	-2.35 (1.022)*
post school	-40.376 (9.915)**	-39.667 (9.175)**	-36.845 (10.745)**	-35.555 (13.388)**	-8.944 (4.999)+	-7.345 (4.781)	-6.939 (6.549)	-5.317 (6.507)
Pensionable age	-5.403 (23.473)				5.71 (16.079)			
Pensioner present	11.541 (9.296)	17.862 (9.600)+	19.53 (12.418)	8.336 (14.835)	13.082 (6.932)+	13.827 (6.567)*	18.265 (10.865)+	7.869 (8.058)
household size	-0.09 (1.548)	-0.826 (1.746)	1.773 (1.718)	-3.065 (2.527)	-0.96 (0.886)	-1.556 (0.775)*	-0.897 (1.139)	-2.006 (0.983)*
Constant	722.233 (49.335)**	698.495 (66.345)**	746.383 (91.064)**	626.885 (106.117)**	87.91 (29.893)**	131.797 (43.365)**	165.568 (66.414)*	60.384 (61.810)
Observations	4664	3862	2016	1846	4664	3862	2016	1846
R-squared	0.16	0.1	0.09	0.13	0.14	0.07	0.09	0.07

Notes:

1. Robust standard errors in parentheses
2. + significant at 10%; * significant at 5%; ** significant at 1%
3. Standard errors corrected for clustering.
4. Results weighted with Stats SA person weights.
5. Coefficients on marital status, province, area type, month and day of week have been suppressed.

Table 7: Time spent socializing

	Socializing with family members				Socializing with non-family members			
	-1 all	-2 all prime	-3 women prime	-4 men prime	-5 socnonfam all	-6 all prime	-7 women prime	-8 men prime
gender	-13.456 (4.051)**	-13.142 (4.170)**			42.678 (6.605)**	46.503 (6.491)**		
age	-2.474 (1.243)*	-6.006 (2.651)*	-6.757 (3.832)+	-4.835 (3.556)	0.576 (0.800)	-0.449 (2.885)	-2.111 (2.445)	2.103 (5.457)
age squared	0.027 (0.014)+	0.069 (0.034)*	0.076 (0.048)	0.056 (0.047)	-0.015 (0.008)+	-0.003 (0.038)	0.021 (0.031)	-0.039 (0.071)
years of schooling	-3.526 (0.675)**	-3.735 (0.783)**	-3.792 (1.042)**	-3.503 (1.056)**	-1.081 (0.566)+	-0.955 (0.589)	-0.408 (0.581)	-1.759 (1.038)+
post school	5.586 (6.200)	7.266 (6.522)	-6.585 (8.122)	19.13 (9.310)*	-6.038 (5.949)	-5.712 (6.596)	-9.321 (4.672)*	-5.99 (10.923)
Pensionable age	-2.736 (13.185)				38.481 (13.312)**			
Pensioner present	11.303 (6.192)+	13.162 (6.544)*	11.472 (8.920)	13.425 (9.331)	-8.17 (6.141)	-5.961 (6.321)	-2.938 (5.509)	-12.11 (12.463)
household size	3.991 (0.843)**	4.375 (0.955)**	3.917 (1.173)**	4.488 (1.243)**	0.902 (1.074)	0.848 (1.108)	0.056 (0.852)	2.175 (1.885)
Constant	82.06 (31.557)**	153.69 (53.295)**	170.391 (79.053)*	116.748 (64.815)+	38.572 (22.250)+	58.585 (54.212)	88.848 (47.829)+	66.451 (98.594)
Observations	4664	3862	2016	1846	4664	3862	2016	1846
R-squared	0.11	0.11	0.12	0.12	0.08	0.09	0.04	0.09

Notes:

1. Robust standard errors in parentheses
2. + significant at 10%; * significant at 5%; ** significant at 1%
3. Standard errors corrected for clustering.
4. Results weighted with Stats SA person weights.
5. Coefficients on marital status, province, area type, month and day of week have been suppressed.

Table 8: Time spent cooking and cleaning

	cook				clean			
	-1 all	-2 all prime	-3 women prime	-4 men prime	-5 all	-6 all prime	-7 women prime	-8 men prime
gender	-79.868 (3.282)**	-82.202 (3.384)**			-28.346 (3.521)**	-29.462 (3.717)**		
age	-0.102 (0.646)	1.677 (1.794)	2.575 (3.030)	0.806 (1.657)	0.802 (0.759)	0.783 (1.842)	-1.518 (2.429)	5.058 (2.560)*
age squared	-0.004 (0.007)	-0.029 (0.023)	-0.046 (0.038)	-0.009 (0.021)	-0.013 (0.008)	-0.015 (0.024)	0.011 (0.032)	-0.063 (0.033)+
years of schooling	-0.532 (0.520)	-1.037 (0.582)+	-1.313 (0.925)	-0.418 (0.435)	0.067 (0.445)	-0.53 (0.539)	-0.182 (0.785)	-0.709 (0.799)
post school	-10.815 (4.830)*	-8.607 (5.384)	-11.651 (9.951)	-1.639 (3.250)	-13.249 (5.338)*	-9.517 (5.994)	-14.95 (7.725)+	-2.049 (8.314)
Pensionable age	-9.183 (9.647)				16.046 (11.675)			
Pensioner present	4.648 (5.085)	4.796 (5.442)	10.15 (8.813)	1.14 (5.122)	3.508 (6.126)	3.145 (6.630)	9.259 (8.323)	-2.002 (8.746)
household size	-2.202 (0.565)**	-1.681 (0.683)*	0.951 (1.254)	-3.88 (0.600)**	-0.058 (0.660)	0.037 (0.669)	-0.275 (0.891)	0.7 (1.032)
Constant	129.419 (19.896)**	96.235 (36.489)**	70.38 (64.932)	25.502 (31.648)	49.486 (19.424)*	52.738 (33.699)	92.398 (45.811)*	-56.823 (44.569)
Observations	4664	3862	2016	1846	4664	3862	2016	1846
R-squared	0.29	0.31	0.09	0.16	0.07	0.07	0.06	0.04

Notes:

1. Robust standard errors in parentheses
2. + significant at 10%; * significant at 5%; ** significant at 1%
3. Standard errors corrected for clustering.
4. Results weighted with Stats SA person weights.
5. Coefficients on marital status, province, area type, month and day of week have been suppressed.

Table 9: Time spent Watching TV and Eating

	TV				Eat			
	-1 all	-2 all prime	-3 women prime	-4 men prime	-5 all	-6 all prime	-7 women prime	-8 men prime
gender	-1.821 (4.527)	-3.922 (4.938)			7.596 (2.033)**	6.722 (2.211)**		
age	0.391 (0.834)	-0.128 (2.787)	3.546 (4.056)	-4.481 (3.645)	0.23 (0.470)	1.149 (0.991)	1.036 (1.145)	1.272 (1.937)
age squared	-0.004 (0.008)	0.005 (0.037)	-0.038 (0.055)	0.055 (0.046)	0.002 (0.005)	-0.008 (0.013)	-0.01 (0.015)	-0.005 (0.025)
years of schooling	4.43 (0.738)**	4.523 (0.801)**	4.48 (1.135)**	4.856 (1.126)**	-0.495 (0.256)+	-0.466 (0.282)+	-0.304 (0.328)	-0.635 (0.442)
post school	2.546 (8.400)	1.284 (8.804)	7.769 (10.768)	-3.201 (11.976)	2.621 (2.663)	3.006 (2.429)	4.541 (2.817)	2.779 (3.946)
Pensionable age	-2.047 (12.050)				-7.998 (4.482)+			
Pensioner present	4.041 (8.363)	3.826 (8.726)	2.368 (9.810)	7.166 (15.046)	8.56 (2.898)**	7.643 (3.036)*	4.957 (3.291)	10.916 (5.076)*
household size	2.687 (1.141)*	3.299 (1.252)**	4.188 (1.393)**	2.509 (1.897)	-0.535 (0.350)	-0.52 (0.418)	-0.323 (0.391)	-0.639 (0.715)
Constant	45.508 (23.837)+	49.897 (51.864)	-27.734 (74.447)	131.237 (68.796)+	46.584 (13.109)**	29.793 (20.081)	40.649 (23.561)+	24.473 (34.987)
Observations	4664	3862	2016	1846	4664	3862	2016	1846
R-squared	0.15	0.14	0.17	0.12	0.08	0.07	0.07	0.09

Notes:

1. Robust standard errors in parentheses
2. + significant at 10%; * significant at 5%; ** significant at 1%
3. Standard errors corrected for clustering.
4. Results weighted with Stats SA person weights.
5. Coefficients on marital status, province, area type, month and day of week have been suppressed.

Table 10: Composition: Mean proportion in various age groups in pensioner and non-pensioner elderly households.

	-1	-2	-3
	No Pensioner	Pensioner	Difference
Female Kids (0-5)	0.036	0.036	0.000
Male Kids (0-5)	0.037	0.036	-0.001
Female Youth (6-15)	0.081	0.094	0.013
Male Youth (6-15)	0.085	0.081	-0.004
Young woman (16-24)	0.081	0.067	-0.015
Young man (16-24)	0.079	0.064	-0.016
Prime woman (25-49)	0.114	0.090	-0.024
Prime man (25-49)	0.068	0.083	0.016
Older woman (50-59)	0.198	0.027	-0.171
Older man (50-64)	0.218	0.026	-0.192
Female Pensioner (60+)	0.000	0.269	0.269
Male Pensioner (65+)	0.000	0.126	0.126

Notes:

1. Standard errors in italics below the mean proportion
2. The sample is restricted to households with at least one member aged 50 or above.