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The Effects of a Non-Contributory Pension Program on Labor Force Participation: The Case of 70 y Más in Mexico*

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Abstract: We estimate the effect of 70 y Más, an age-conditioned transfer program for individuals age 70 and older in rural Mexico, on the labor force participation of beneficiaries and of younger individuals who live with them. Using data from the 2010 Mexican Census, we exploit the age and locality population thresholds to identify the effects of the program. We find that the program reduces the labor force participation of elderly men, particularly of those who live alone and who are relatively poor, but has a much weaker effect on that of elderly women. The program has no statistically significant effect on the labor force participation of either prime-age men or women who live with potential beneficiaries, and it has a negative and significant effect on the labor force participation of boys age 12 to 17, particularly those in the lowest wealth quintiles, but not on that of same-age girls. These results suggest that the program affects mostly the labor supply of the intended beneficiaries, and that of marginal workers, like adolescent boys.

Keywords: Pensions, Social Protection, Labor Force Participation, Mexico.
JEL Classification: D04, J26, O12.

Resumen: Estimamos el efecto de 70 y Más, un programa de transferencias condicionado a la edad para individuos con 70 y más años en el México rural, sobre la participación laboral de los beneficiarios y de los individuos más jóvenes que viven con ellos. Usando datos del censo mexicano de 2010, explotamos los umbrales de la edad y de la población de la localidad para identificar los efectos del programa. Encontramos que el programa reduce la participación laboral de los hombres adultos mayores, particularmente la de aquellos que viven solos y que son relativamente pobres, pero tiene un efecto mucho más débil sobre la de las mujeres adultas mayores. El programa no tiene un efecto estadísticamente significativo sobre la participación laboral de los hombres o mujeres en edad productiva que viven con los beneficiarios potenciales, y tiene un efecto negativo y significativo sobre la oferta laboral de los niños entre 12 y 17 años de edad, particularmente aquellos en los quintiles de riqueza más bajos, pero no en la de las niñas de la misma edad. Estos resultados sugieren que el programa afecta en su mayor parte la oferta laboral de los beneficiarios previstos y la de trabajadores marginales, como los varones adolescentes.

Palabras Clave: Pensiones, Protección Social, Participación Laboral, México.

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1 Introduction

In Mexico, as in other developing countries, many older adults do not qualify for a pension due to the low coverage of the contribution-based social security system, so they keep working beyond the normal retirement age. In rural areas, the likelihood of receiving a pension is even lower, which results in labor force participation and poverty rates among the elderly that are higher than those in urban areas.[1]

In 2007, the Mexican federal government started the 70 y Más (70 and older) program, which pays a monthly cash transfer of 500 pesos (40 USD) to individuals age 70 and older in qualifying rural localities.[2] This transfer, which represents about 31percent of total income and 96 percent of labor income for eligible individuals, is conditioned exclusively on age and locality of residence, and not on any measure of socio-economic status, labor supply or previous social security contributions.[3]

In this paper, we examine whether this program, which quickly expanded to become the first federal non-contributory pension program in Mexico, decreases the labor force participation of the intended beneficiaries, allowing them to retire. Our work is related to the vast literature that studies the effect of pensions on retirement. However, a large part of this literature examines the effect of different features of the contribution-based Social Security systems in the United States and other countries on the labor supply of older workers.[4] Many of these features, like the earnings test, typically

[1]Parker and Wong (2001) report that 30 percent of Mexican men age 60 and older report receiving a social security pension, and that this figure is 39 percent in urban areas, and only 12 percent in rural ones. A much lower proportion of women age 60 and older receive a pension (15%), and an urban-rural gap is also observed for them. These authors also report that the poverty rates for household with one person age 60 and older are 25 percent in urban areas and 57 percent in rural ones.

[2]For the conversion, we used an exchange rate of 12.5 pesos per U.S. dollar, which is the 2013 average. Using the purchasing power parity for private consumption calculated by the OECD (8.94 pesos per dollar in 2012), such transfer amounts to 56 USD per month (please refer to the *OECD Stat Extracts*, available at http://stats.oecd.org).

[3]According to data from the 2008 Mexican Income and Expenditure Survey (ENIGH), the total income for individuals age 70 and older in localities with 15,000 to 99,999 inhabitants was 1613 pesos per month. Given the wide locality population ranges available in the ENIGH data, this is the closer we can get to our own sample. Our data have information only on labor income, so for our sample of individuals age 70 and older, the mean of this variable was 523 pesos per month.

[4]For a survey on the effects of Social Security provisions on the labor supply of older

imply high marginal tax rates on earnings that have both income and substitution effects. In contrast, the unconditional nature of the transfer from 70 y Más allows us to estimate a pure income effect on labor force participation, which we expect to be negative if leisure is a normal good.[5]

We also estimate the effect of the program on the labor force participation of prime-age individuals and adolescents who live with potential beneficiaries. Theoretically, this effect depends on the extent to which the income increase experienced by the elderly is shared with them.[6] In the case of non-contributory pensions, previous evidence for South Africa shows that pensions paid to poor elderly individuals do affect the labor supply of their younger co-residents. Bertrand, Mullainathan, and Miller (2003) find a large drop in labor supply for prime-age males who live with a female pensioner, and no significant effect for prime-age women, using cross section data. In contrast, using panel data, Ardington and Hosegood (2009) show a positive effect of the same pension program on the labor supply of prime-age individuals, which is mostly explained by an increase in the probability of migrating for work after the household gains pension status. Regarding child labor, Edmonds (2006) finds that the South African pension decreases the work hours, but not the labor force participation, of boys age 13-17 who live with a male pensioner, and has no effect on the labor supply of same-age girls.

For Mexico, Juárez (2010) finds that a state-level transfer program for Distrito Federal (DF) residents age 70 and older, the first non-contributory pension in the country, also reduces the labor supply of prime-age men and women who live with a female beneficiary, but has no significant effects on

workers, see Hurd (1997). Evidence on the effect of other Social Security rules on the decision of retiring vs. working around the world can be found in Gruber and Wise (2005).

[5]In this sense, our study is closer to that of Costa (1995), who finds that Union Army pensions, which were not conditioned on labor force participation, income or past wages, significantly increased retirement rates among white male veterans at the beginning of the 20th century.

[6]If income is fully pooled, an increase in an individual's nonlabor income affects her labor supply and that of other household members only through the increase in total household resources. As a result, keeping total household income constant, whose income increases within the household is irrelevant. In contrast, in collective models in which income is not fully pooled, whose income increases within the household matters for outcomes: first, because own income allows an individual to get a higher fraction of household resources and affirm her preferences, and second, because different household members might share their income with others to a different extent (see, for instance, Chiappori (1997)).

that of targeted seniors. Our paper contributes to this literature by providing evidence on the labor supply effects of a large federal age-conditioned transfer program for the Mexican rural elderly, who have higher labor participation rates than their urban counterparts in DF, and are also less likely to receive a pension from Mexico's social security system.[7] Given that such pensions usually start to be drawn at the age of 65, their existence should be expected to blunt the effect of additional transfers drawn later in life. We also contribute by showing whether the resources targeted to the rural elderly are reaching other age groups and affecting their labor supply.[8]

In 2007, when the 70 y Más program started, only individuals age 70 and older in localities with less than 2,500 inhabitants were eligible for benefits.As part of an early evaluation of 70 y Más, Galiani and Gertler (2009) examine the effect of the program on the income, expenditures, savings and time use of beneficiaries. Their dataset is a panel specifically collected for the evaluation in 2007 and 2008, before and after the program's implementation. They use a difference-in-differences strategy to compare the change in the labor supply of individuals age 70 to 74 in localities with less than 2,500 inhabitants between those years, with the change for same-age individuals living in localities with 2,500-3,300 inhabitants, and find that the program decreases the probability of working for pay, and increases that of working in the household. However, a potential problem with their study is that, due to the rapid expansion of the program in the early years, localities just above the initial population threshold were incorporated to the program in 2008. Even though individuals age 70 and older in their control localities were delayed benefits until the end of 2008, when they received the accumulated transfers of the whole year in a one-time payment, they could have reacted in anticipation, especially given that this expansion was widely publicized.[9]

[7]According to data from the Mexican Occupation and Employment Survey, in the first quarter of 2010, the labor force participation of individuals age 65 and older was 23 percent in urban areas and 32 percent in rural ones (see *Encuesta Nacional de Ocupación y Empleo. Tabulados básicos*, available at www.inegi.org.mx).

[8]Other mechanisms through which non-contributory pensions end up benefiting younger individuals are the nutrition and schooling and children (Duflo 2003, Edmonds 2006, Gutierrez and Rubli 2011) and family transfers (Jensen 2004, Juárez 2009, Amuedo-Dorantes and Juárez 2012, Fan 2010).

[9]This delay of benefits for the control group in 2008 is explained in the Final Impact Report that accompanies the Galiani and Gertler (2009) study (see p. 13 of *Informe Final del Estudio de Impacto del Programa de Atención a Adultos Mayores de 70 y Más, Parte 2*, available at http://www.2006-2012.sedesol.gob.mx/en/SEDESOL/70_y_mas). Whether

In this paper, we use the 2010 Mexican Census and both the age 70 and 30,000 inhabitants cutoffs in a difference-in-differences estimation. Given that localities above 30,000 inhabitants were unexpectedly incorporated into the program in 2012, we believe our strategy has advantages over theirs.

We use a sample of individuals at least 60 years old in localities with 25,000 to 35,000 inhabitants from the 2010 Mexican Census, and we exploit both the age and the locality population thresholds for identification. Our treatment group is composed of individuals who are at least 70 years old and live in localities with 25,000 to 29,999 inhabitants, who were exposed to the program in 2010. Same-age individuals in localities with 30,000 to 35,000 inhabitants, and individuals age 60-69 in both types of localities were not affected by the program in that year, so they are our control groups. For the effects on the labor supply of younger co-residents, we use a similar strategy and a subsample of individuals age 12-59 who live with at least one individual over the age of 60 in treated and control localities. Although we also focus on the short-term effects of the program on labor force participation, other differences between the Galiani and Gertler (2009) report and our paper are that we present results by gender and type of household, and by wealth quintiles.

For the empirical analysis, we estimate linear probability models for labor force participation by OLS. For the elderly, the effect of 70 y Más is captured by the interaction of being age 70 and older in a locality with less than 30,000 inhabitants, where the program operates. For younger individuals, it is captured by the interaction of living with individuals age 70 and older in a treated locality. In all cases, we control for linear terms in age and locality population, and cluster the standard errors at the locality level.

Our results show that the program has the expected effect of reducing the labor force participation, but mostly for elderly men. Its effect for elderly women is much weaker, probably because of their lower participation in the labor force to begin with, and the partial crowding out effect of the program on the private transfers they receive. The negative effects on labor force participation are generally stronger for poorer individuals, as would be expected, so the program is allowing those who are particularly vulnerable

control individuals knew they would receive the annual accumulated benefits at the end of 2008 remains a possibility, especially because former Mexican president, Felipe Calderon, explicitly announced the expansion of the program to localities with less than 20,000 inhabitants on national television at the beginning of 2008, as part of his New Year's message.

to retire. Throughout, our results indicate that the transfer from 70 y Más mostly affects the labor force participation of the direct beneficiary, and not that of other members of the household. This applies to the spouses of beneficiaries, as well as to other non-elderly individuals living with them. The only exception are young males age 12 to 17, who lower their participation in the labor force if they live with a beneficiary in a treated locality. Lastly, we do not find evidence of anticipation effects among individuals approaching 70 years of age, which implies that, in the localities of our sample, the expectation of receiving the program in a few years did not induce early retirement among individuals in their sixties, at least until 2010. This lack of anticipation effects is consistent with the uncertainty about the program that prevailed at the time, and might change as a result of later expansions, which extended the program to all localities, regardless of their size, in 2012, and lowered the age cutoff to 65 in 2013.

2 Background and description of the program

In Mexico, social security pensions are mostly provided through two main public institutes: the Mexican Institute of Social Security (IMSS) for salaried employees in the private sector, and the Institute of Health and Social Security for Government Employees (ISSSTE) for federal employees [10]. Funds come from employer and employee wage-based contributions, which are deposited into individual saving accounts. Only salaried workers are legally forced to save for their retirement through these institutes, whereas other kinds of workers, like the self-employed, are allowed to participate voluntarily in IMSS, but in practice only few of them do (Levy 2008). In addition, as in other developing countries, evasion is widespread even among eligible workers, and transitions between covered and uncovered employment lower the likelihood of receiving a pension, which depends on the accumulated years in formal employment. As a result, the fraction of the elderly population that actually receives a formal pension is low, especially in rural areas:

[10] The military and employees of Pemex, the national public oil company, and of state local governments are covered through their own social security institutes. Employer-provided private pension plans are very limited, and they are provided only to a small fraction of workers in addition to, and not in place of, IMSS coverage (Aguila, Diaz, Manqing-Fu, Kapteyn, and Pierson 2011).

in our sample, only 25 percent of individuals age 70 and older report receiving a social security pension in 2010. Given this, according to data from before the 70 y Más program, most of the elderly's income came from work at advanced ages and family support, rather than from public contribution-based pensions (Aguila, Diaz, Manqing-Fu, Kapteyn, and Pierson 2011).[11]

This context provides the rationale for the 70 y Más federal program, which pays a non-contributory pension of 1000MXP (about 80 USD) every two months to individuals age 70 and older in qualifying localities. In terms of purchasing power, such transfers cover 72 percent of the monthly per capita cost of the basic food basket used to measure extreme poverty in rural areas.[12] Regarding the fiscal cost of the program, Levy and Levy and Schady (2013) estimate that it was about 0.09 percent of Mexican GDP in 2011. The program started in 2007 by covering about a million age-eligible individuals living in localities with up to 2,500 inhabitants, and it expanded rapidly afterwards. In January 2008, the program was extended to localities with up to 20,000 inhabitants, and the number of beneficiaries grew to 1.9 million. In 2009, localities with up to 30,000 inhabitants were included in the program and, according to the official *2009-2010 Program Performance Report*, by the end of that year the program operated in all qualifying localities in the 2,433 municipalities in the country.

During this initial expansion, and until 2011, the transfer from the program was exclusively conditioned on age and locality of residence, so it was not means-tested and not taxable. As a result, in the first four years of the program, eligibility was not correlated with past labor and saving decisions, or with unobservable factors that affect the labor supply of beneficiaries. To enroll in 70 y Más, an individual must present an official ID, proof of age (her birth certificate or unique population id number, CURP), and a utility bill to verify her address.

In January 2012, all localities with more than 30,000 inhabitants were finally incorporated into the program. However, an additional eligibility requirement was introduced with this last expansion: new applicants age 70 and older must not receive any other pension income to qualify. This change does not affect our empirical strategy because we use data from the 2010 Mexican Census, and in that year, no requirements were added and no

[11] Aguila, Diaz, Manqing-Fu, Kapteyn, and Pierson (2011) use the 2001 round of the Mexican Health and Aging Study.

[12] The value of such basic food basket was 692 pesos in 2010 (please refer to www.coneval.gob.mx).

further expansions of the program were announced to the public.

The 70 y Más program is not the only non-contributory pension scheme in Mexico. In 2001, the state government of Distrito Federal implemented the first program of this type for residents age 70 and older. By 2010, 15 states had also implemented similar programs of their own. These state programs vary in their rules and coverage: some cover only urban individuals, who were not eligible for 70 y Más in 2010, and some are means-tested (Aguila, Diaz, Manqing-Fu, Kapteyn, and Pierson 2011).[13] In an appendix available online, we show that our main results are robust to the exclusion of the states that had such programs in 2010 from our sample.

3 Data and Empirical Strategy

Our individual and household level data come from the micro sample of Mexico's year 2010 national census, carried out between May 31 and June 25, i.e. almost a year and a half after the program was expanded to localities with 20,000-30,000 inhabitants. The country's decennial main census applies an extended questionnaire to a 10 percent random sample of households, representative at the municipal level. This produces a large cross-sectional data set of more than 10 million observations capturing a large number of individual and household characteristics. The population threshold of 30,000 inhabitants is large enough to identify almost all localities around the discontinuity in the micro data.

Our identification strategy consists of running a difference-in-differences (DD) estimation around two thresholds, locality size and age eligibility. We compare treatment localities with 25,000-30,000 inhabitants to a control group of localities with 30,000-35,000 inhabitants, and individuals aged 70 or older to controls 60-69 years of age.The strength of our approach lies in restricting the sample to individuals living in two groups of localities that are not systematically different from one another. As with any DD strategy, the crucial (non-testable) assumption is that in the absence of the program the change in the outcome between individuals age 70 and older and those age 60 to 69 would have been on average the same in treatment and control localities. The similarities of the localities makes this assumption reasonable.

[13]For a summary of these state programs, their rules, coverage and year of implementation, see Aguila, Diaz, Manqing-Fu, Kapteyn, and Pierson (2011), table A.1.

Given that in the census we do not observe whether a person actually receives transfers from the 70 y Más program, we use eligibility for the program to estimate intention-to-treat effects. A potential concern with this strategy is the discrepancy between assignment and actual treatment. Some eligible individuals in participating localities might choose not to enroll in the program. In control localities some might find ways to receive program benefits, for example by declaring residence with a close friend or relative in a treated one. First, note that both cases would work against finding a program effect. Second, according to a *2009-2010 Program Performance Report*, participation rates in the 70 y Más program were practically 100 percent in localities with less than 30,000 inhabitants by the end of 2009.[14] Finally, the main advantage of the census, compared to other surveys, is that it is large enough to exploit the discontinuity in the locality population criterion. We believe that only observing assignment into treatment is a price well worth paying for a clear cut identification strategy.

However, if individuals age 60 to 69 in treated localities change their labor supply today because they anticipate receiving program benefits when they reach 70, they would not be a suitable control group. Galiani and Gertler (2009) show that the 70 y Más program decreased the labor force participation of individuals age 65 to 69 in localities with less than 2,500 inhabitants, which they attribute to the existence of anticipation effects. In section 5 we conduct a couple of placebo tests on the subsample of individuals in their sixties in treatment and control localities, and find no evidence of any such anticipation effects. In our data, 17 out of the 42 localities that qualified for the program according to their population in the 2005 census, which was used by the Ministry of Development (Sedesol) to roll out the program, no longer did in 2010. In these localities, existing beneficiaries continued in the program, but no new applications were accepted after 2010.[15] Thus, in our sample of treated localities in 2010, individuals in their sixties would most probably be uncertain about getting program benefits in the future.

We estimate the effect of the program transfer on the labor force participation of the elderly and the non-elderly who live with them. We report only

[14]Please refer to "Informe de la Evaluación Específica de Desempeño 2009-2010", available at www.conveval.gob.mx.

[15]This does not affect our eligibility measure, because the results from the 2010 Census were used to revise the eligibility of localities that surpassed the 30,000-population threshold after that year. So, for instance, in outgrown localities, individuals who turned 70 in 2010 would still be able to enroll in the program, but not those turning 70 in 2011.

results on participation, because the effects on hours worked for those still working are mostly not significant, which suggests that the additional income from the program affects mostly the extensive margin, rather than the intensive one. For brevity, these results are not shown, but they are available upon request. Thus, our outcome of interest ($y_{i,l}$ below) is a variable equal to one if a person declared she worked for at least one hour during the week prior to the interview, or if she did not work but actively looked for a job .[16] We estimate the following linear probability model by OLS for observation i, living in locality l:

$$\begin{aligned} y^*_{i,l} =& \alpha_0 + \alpha_1 Locality < 30,000_l + \alpha_2 Age70 +_{i,l} + \alpha_3 Locality < 30,000_l * Age70 +_{i,l} \\ &+ \beta_1 Locality\ Population_l + \beta_2 Age_{i,l} + u_{i,l}, \end{aligned} \tag{1}$$

where "$Locality < 30,000_l$" is a dummy variable equal to one if i lives in a treatment locality, "$Age70+_i$" is a dummy variable equal to one if i is age 70 or older, and α_3, our parameter of interest, measures the strength of their interaction term. Assuming a linear relationship around the threshold, we also control for the actual number of inhabitants in the locality and the individual's age in years. This basic model will undergo slight modifications when applied to different household structures and members, but will always keep its parsimonious nature. In the appendix, we show that our main estimates are not altered by the inclusion of additional individual, household and locality level characteristics.

For the program expansion the Ministry of Development (Sedesol) assigned localities to treatment based on their total population in the 2005 census.[17] We follow exactly the same procedure with localities in our data.

[16] Our dependent variable is based on the labor force definition used by both the Bureau of Labor Statistics (BLS) and the Mexican Institute of Statistics (INEGI), which includes the employed and the unemployed, who are looking for a job. To verify the working status of individuals who reported not working at least an hour in the previous week, the census has an additional question asking whether they helped in any family or non-family business, sold any products, or made any products to sell, participated in farming activities or performed any activities for pay. Individuals participating in any of these activities are also counted as working.

[17] Mexico conducts two different types of censuses: the principal one is carried out every year ending in zero and collects information on a large number of variables. In addition, every year ending in five the country carries out another

Consulting administrative records corresponding to March/April 2010 (i.e. in the last program period prior to the census), we were also able to confirm that all our treatment localities did indeed participate, while none of our control localities had any beneficiaries.

Using the 30,000-inhabitants threshold results in 42 treatment and 29 control localities. The treatment group can be expected to be larger, as there are always more agglomerations of a smaller size[18]. Both types of localities can be found in every Mexican region, with a slight concentration in the central one, which is expected given the higher population density there.[19]

Our final data set consists of households with at least one member age 60 and older in these 71 localities. This leaves us with a total of 16,887 elderly individuals, living in 12,563 households. Of these households, 1,870 are single member households, 1,756 are couples with at least one member 60 years of age or older, and 8,937 are multigenerational households. These are the three groups we will consider separately for males and females.

We perform our analysis for three different age groups: individuals age 60 and older, adults age 18 to 59 and children age 12 to 17; and break them down by gender. Table 1 shows the labor force participation of individuals in each of these groups in treatment and control localities. As would be expected, the labor force participation is highest among individuals 18-59 years old, and it declines with age. At all ages, women are substantially less likely to be in the labor force than men. Comparing treatment and control localities, the numbers are almost identical, and most of the reported p-values indicate that the null of equality in means between groups cannot be rejected. The only exceptions are the participation rates of women age 60 and older, which are significantly higher in the treatment group.

(Table 1 about here)

In tables 2 and 3, we use OLS regressions to check for systematic differences between treatment and control groups at the locality and individual

census (*Conteo*) collecting only a small number of characteristics (please refer to http://www.inegi.org.mx/est/contenidos/proyectos/ccpv/presentacion.aspx).

[18]See for example Fujita, Krugman, and Venables (2001), Chapter 12, for a discussion on city sizes following a power law.

[19]Figure (A.1) in the appendix shows the geographical distribution of treatment and control localities.

level, respectively.[20] In table 2, our dependent variable is a dummy for being a treated locality, i.e. for having 25,000-29,999 inhabitants, and our regressors are locality characteristics like elevation, the fraction of the population that is age 60 and older, the average number of births per woman, the fraction of the population that is indigenous, the average years of schooling in the locality, the labor force participation rate, the unemployment rate and the fraction of workers in the formal sector. Just two of those characteristics are significant at the 10 percent only. In addition, the p-value for the F-test reported at the bottom of table 2, further confirms that these regressors are not jointly significant to explain treatment at the locality level.

(Table 2 about here)

In table 3, we report OLS regressions of a dummy for living in a treated locality for individuals age 60 to 69 and age 70 and older (columns 1 and 2), and the interaction of being age 70 and older in a treated locality for both age groups together (column 3), on several individual and household characteristics. In columns 1 and 2, being indigenous and having fewer years of schooling are positively correlated with living in a treated locality, and both are statistically significant at 1 percent. In addition, individuals in the oldest group are less likely to live in a treated locality if they are part of an elderly couple, and this effect is significant at 5 percent. As a result, in columns 1 and 2, we reject the null that individual and household characteristics do not jointly explain living in a treated locality. However, given that the correlations between living in a treated locality and the indigenous and education variables are similar for the two age groups, we expect these correlations to be differenced-out when we pool both age groups together. In fact, this is the case in column 3, where the dependent variable is the interaction of being age 70 and older with living in a treated locality: only the individual dummies that are part of the interaction are statistically significant at 1 percent, whereas the rest of the regressors are not. As a result, in that column the F-test indicates that individual and household characteristics are not jointly significant to explain being age-eligible in a treated locality, which will be our treatment variable.

(Table 3 about here)

[20] We report the means of all these locality and individual characteristics by treatment status in tables A.2 and A.3 in the appendix. In those descriptive tables, the two groups also look fairly similar.

As explained above, in the 2010 census data we are not able to directly observe whether an individual is actually receiving the transfer from 70 y Más, but only whether she receives any sort of public transfer, which could originate at any level of government. In table 4, we use this variable to check whether it reflects the increase in the public transfers paid to age-eligible individuals in treated localities, caused by the 70 y Más program.

Table 4 reports the OLS regressions for the probability that individuals age 60 and older receive any contributory pensions (columns 1 and 2) and any government cash transfers (columns 3 and 4). Columns 1 and 2 show that for older men and women, being age 70 and older in a locality with less than 30,000 inhabitants, where the program operates, has no statistically significant effect on the probability of receiving a contributory pension. This is reassuring given that, for individuals who are age 60 and older in 2010, such probability depends on their total years of formal employment, which are the result of labor decisions taken long time before the start of the 70 y Más program.[21] The effect of being age 70 and older in the first two columns of table 2 is positive, because older individuals have a higher probability of receiving a pension, but significant at 10 percent only.

In contrast, in columns 3 and 4, being age-eligible in a treated locality increases the probability of receiving government cash transfers of elderly men and women by 31 and 32 percentage points, respectively. In these columns, the positive and significant effects of the age dummy suggest that individuals age 70 and older have a higher probability of receiving public transfers than their younger counterparts in both types of localities. This could be explained by the existence of other programs targeted at this population at the state level. In addition, some individuals in control localities might take advantage of a close friend or relative living in a locality with less that 30,000 inhabitants and benefit from the 70 y Más program by declaring residence there, even though they are not supposed to. Nevertheless, in columns 3 and 4 the estimates for our key interaction imply a 100 percent increase in the probability of receiving government transfers, relative to the means at the bottom of the table, and they are at least two times those of the age dummy alone, which confirms that the 70 y Más program effectively increased the public transfers received by the age-eligible in treated areas. Furthermore, being in a treated locality has no statistically significant effect on either

[21]For instance, to qualify for the minimum guaranteed pension, an individual must accumulate 25 years of contributing to IMSS, i.e. of formal employment.

pension or government transfer receipt, which is additional evidence of the similarities between treatment and control localities.

(Table 4 about here)

To estimate the effects of interest by wealth quintiles, we constructed a wealth index. It is based on 20 different binary variables at the household level, indicating the quality of the dwelling and the existence of certain durable consumption goods.[22] We follow the approach proposed by Filmer and Pritchett (2001), using the first principal components as weights in order to collapse the information contained in the 20 variables into one single, mean zero, index. Intuitively, the first principal components give a weight to each variable, based on its own variance and its covariance with the other variables, in order to extract the maximal amount of information from their linear combination. We conduct this procedure based on the entire 10 percent micro sample of Mexican households. A households index, and its corresponding wealth quintile, is therefore based on its position relative to the entire country, not just our sample. We are aware that this index, and hence the derived quintiles, are endogenous to the extent that the additional income from the program is invested into the index's components. However, we believe this effect to be marginal at best; it is unlikely to significantly change the composition of households falling into each quintile.

In the next section, we present our main estimation results by age, household type and gender. For all these groups, we present results for the entire sample, and for two subsamples of relatively poor individuals: those in the first three wealth quintiles, and in the first quintile. As we restrict the sample to the poor, we lose some observations, but we also expect to find a stronger effect for two reasons. First, program participation rates are likely to be higher for the poor than for the rich, which results in a closer alignment between assignment and actual treatment.[23] Second, the marginal effect of

[22]The first group of characteristics indicates whether or not the dwelling has solid floors, solid walls, a solid roof, a separate kitchen, piped water, its own toilet with a water connection, a connection to the sewage system, a gas or electric stove, a water cistern, hot water, a shower, or an electricity meter. The consumption variables capture whether or not the household has a radio, a tv set, a fridge, a washing machine, a car, a computer, a phone(either landline or mobile), or an internet connection.

[23]In our data, among individuals age 70 and older in treated localities, 66 percent of those in the first wealth quintile report receiving any government transfer versus 48 percent in the top wealth quintile, a difference of 18 percentage points. The corresponding difference

the additional income on labor market decisions could be higher for poorer households. Results are shown for the parsimonious specification shown in (1) above; standard errors are clustered at the locality level in all estimations, as suggested by Bertrand, Duflo, and Mullainathan (2004). Including additional individual, household, and locality controls does not change results, as will be shown in the appendix.

4 Results

4.1 Effects on the elderly

Tables 5 to 7 present the results for the labor force participation of individuals age 60 and older by gender and by whether they live alone, in a couple, or in an extended household. As mentioned before, in all estimations, we include only the regressors shown in the corresponding table.

In table 5, columns 1 to 3 show estimation results for elderly men who live by themselves. For the full sample of single elderly males, the first column shows that being age 70 and older in a locality with less than 30,000 inhabitants, where the program operates, has a negative effect of 15 percentage points on their labor force participation, which is significant at 5 percent. Given that about 50 percent of men in this sample participate in the labor force in both types of localities, as shown at the bottom of column 1, this effect amounts to a 30 percent decrease in their labor force participation. For single elderly men in the first three wealth quintiles, the program effect is a bit larger in absolute value (-0.179), as shown in column 2, and it is the largest for men in the first quintile, who reduce their labor force participation by 21 percentage points if they are age-eligible in a treated locality.

In contrast with the results obtained for single elderly men, columns 4 to 6 in table 5 show that for single elderly women, being age 70 and older in a treated locality has a negative, but not statistically significant, effect on their labor force participation, not even for those who are relatively poor. While

for same-age individuals in control localities, where the program was not operating in 2010, is 27 percentage points (47 percent for wealth quintile 1 vs. 20 percent for wealth quintile 5), which confirms that even though program participation is likely to be higher for the relatively poor, the gap is smaller for the 70 y Más program compared to other government programs, precisely because it is not means-tested.

the lack of statistical significance may be partially due to the lower level of labor force participation among elderly women, the implied effect relative to participation is still only about half as large as the one for single men.

Other results worth noting from table 5 are that the coefficient on the dummy for being age 70 and older by itself is not statistically significant across columns, and neither is the dummy for being in a treated locality. These results confirm that elderly single men and women living in localities just below and above the 30,000 inhabitants threshold are comparable in terms of their labor force participation. In all columns, age has a negative and significant effect on the probability of working, as would be expected, whereas the effect of the locality population is mostly insignificant.

(Table 5 about here)

Table 6 shows the results for elderly men and women who live with their spouse and no one else in the household. In this table, our key independent variables are the interaction of having a male age 70 and older in the household in a locality with less than 30,000 inhabitants, and a similar one for having a female age 70 an older in the household. Given that we run separate estimations for men and women, these interactions allow us to separate the effect of being individually eligible for the program from that of having an eligible spouse in a participating locality. The first row shows that for men, the effect of being individually eligible for the program in a treated locality on their labor force participation in columns 1 and 2 is positive, but small and not statistically significant. In those same columns, the effects of living with an age-qualifying woman in a treated locality are also small and not statistically significant either. So, for the whole sample of older men who live in a couple, and for those among them who are in the first three wealth quintiles, the program had no effect on their labor force participation decision either through their own eligibility or that of their spouse. However, column 3 shows that for men in the lowest wealth quintile, being age-eligible for the program in a treated locality has a negative effect of 28 percentage points on their labor force participation, which is 53 percent of the mean of this variable and significant at 5 percent. In contrast, in that same column the effect of living with an age-qualifying woman in a treated locality is not statistically significant.

Columns 4 to 6 in table 6 report the results for older women who live with their spouse. The second row shows that the effects of being individually

eligible for the program in a treated locality on their labor force participation are all negative, but they become larger in magnitude and more statistically significant only for relatively poor women. In column 5, for women in the first three wealth quintiles, the program has a negative effect of 12 percentage points on their labor supply, which is significant at 10 percent, and in the last column, for women in the lowest wealth quintile, the corresponding effect is -21.3 percentage points, which is significant at 5 percent. As before, the effect of having an age-eligible spouse in a treated locality, which for women is reported in the first row, is positive, but small and not statistically significant, in the last three columns.

The results for both older men and women living in a couple confirm that the program decreases the labor force participation of those beneficiaries who are relatively poor. This is expected given that the transfer represents a higher proportional income increase for them. In addition, these results show that the program affects labor force participation through the individual's own exposure to the program, and not through that of his or her spouse, which is consistent with previous empirical work showing that the individual's own income has a larger effect on his/her labor supply (Schultz 1990).

(Table 6 about here)

Table 7 presents the estimates for older men and women in extended households, i.e. those in which more than one generation living together. The majority of the elderly individuals in our sample live in extended households, as can be seen by comparing the sample sizes in this table with those in previous ones. For all elderly men in such households, being age-eligible in a treated locality has a negative, but small and not statistically significant, effect on their labor force participation in the first column. As before, the effects are larger in absolute value for the poor. Men in the first three wealth quintiles decrease their labor force participation by about 4.4 percentage points when exposed to the program, and those in the lowest quintile decrease theirs by 3.1 percentage points, but only the estimate in column 2 is significant at 10 percent. In columns 1 to 3, the effects of having other age-qualifying individuals in the household in treated localities are close to zero and not statistically significant, so the weak reduction in labor supply caused by the program in this group is working through the income of the individual, rather than that of the household.

For elderly women who live in extended households, table 7 shows that being age 70 and older in a treated locality has positive, but statistically

insignificant effect on the probability of working in the last three columns, even for those in the lowest wealth quintiles. In addition, the effects of having other age-eligible individuals in the household in a locality in which the program operates are close to zero and not statistically significant either, except for the positive effect of 12 percentage points in column 6, which is significant at 5 percent. Thus, having other potential beneficiaries in the household actually increases the labor force participation of elderly women living in the poorest extended households. Given that the majority of households that have more than one individual over the age of 70, have two of opposite sex, for the poorest women this positive effect is likely due to the presence of a male beneficiary. A potential explanation for this result is that poor elderly men receiving the program reduce their work for pay, as shown in columns 2 and 3, and increase their housework time, thus freeing up time for poor older women to participate in the labor market. However, we find no comparable effect for poor women living in couples.[24]

(Table 7 about here)

In summary, our results suggest that the program effectively decreases the labor force participation of eligible men, particularly those who are relatively poor, and has a weaker effect on that of eligible women. Specifically, we only find significant negative effects for women who live with their spouse and belong to the first three wealth quintiles. These differences by gender could be due to the low labor force participation of elderly women to start with, which is between 25 to 50 percent that of elderly men, as shown at the bottom of tables 5 to 7, so the program would have a lower impact on that margin for them. In addition, if the program reduces the private transfers received by women more than those received by men, as shown in the robustness checks section, the income effect of the program would be further neutralized for elderly women. For elderly men, the magnitude of the negative effect on labor supply varies across household structures. Specifically, the effects for elderly men in extended households are weaker than those found for men living by themselves or in a couple. The possibility of exploiting economies

[24]In the appendix, we explore whether the program effects depend on the specific structure of the extended household by interacting the number of members age 19-59 and 12-18 in the household with the variable for having other age-qualifying members in a treated locality. When doing this, the positive effect for the poorest women decreases and becomes insignificant, but none of these additional interactions are significant either.

of scale in larger households, and the housing transfer that elderly men might be receiving through shared living arrangements probably makes their labor force participation less responsive to the program transfer.

4.2 Effects on other household members

The transfer from the program could potentially affect the labor force participation of non-elderly individuals that live with beneficiaries, so in table 8 we present the estimates for adults age 18-59 and children age 12-17 by gender. In these estimations, our key regressor is the interaction of the number of age-qualifying individuals in the household with the dummy for a treated locality, which captures both household eligibility for 70 y Más and variation in the amount potentially received from the program. In the literature, given that resources owned by women are often found to have different effects than those owned by men, it is standard to further control for the gender of the beneficiary, as in Bertrand, Mullainathan, and Miller (2003), Juárez (2010), and Edmonds (2006). However, for our samples of prime-age adults and adolescents, we only find significant differences in the program's effect by beneficiary's gender for boys age 12-17. So, for the sake of brevity, we omit these results, but they are available upon request.

The first row of the top panel in table 8 shows that for prime-age men and women living in extended households, our key coefficients are all small and not statistically significant, not even for those who are relatively poor. So, we find no evidence of the program changing the work participation decision of prime-age individuals. These results are different from those found by similar papers in the literature, in which an age-conditioned public transfer for the elderly reduces the labor supply of individuals in their prime (Juárez 2010, Bertrand, Mullainathan, and Miller 2003). For the 70 y Más program, Galiani and Gertler (2009) find that the program decreases the labor income of individuals age 25-54. We cannot directly compare our estimates to theirs because of the differences in the dependent variable (labor income vs participation), sample and estimation strategy. We also estimate similar regressions for the incidence of labor migration, as do Ardington and Hosegood (2009) for the South African pension. These results, which we omit, show no significant effects of the program on migration either.

The bottom panel of table 8 shows that, for all boys age 12 to 17, having an additional individual age 70 and older in the household in a treated

locality has a negative effect of 4.8 percentage points on their labor force participation. This effect is about 24 percent of the labor force participation rate for boys in this age group, as shown at the bottom of the table, but it is significant at 10 percent only. In column 2, for boys in the first three wealth quintiles, this effect increases to 6.5 percentage points, and becomes statistically significant at 5 percent. In both cases, this negative effect is mostly driven by the effect of living with a female beneficiary in a treated locality (not shown). However, column 3 shows that for the poorest boys, the program effect becomes positive and statistically insignificant.

Even though, as argued before, we would expect the negative effects to be stronger among the poorest, in the case of rural adolescent boys, another program might explain why we find otherwise. The Progresa/Oportunidades program, which started in 1997 and continues to operate, pays a generous cash transfer to poor households for keeping their children in school, and has been found to decrease the labor force participation of rural adolescent boys in both the short and medium term (Skoufias and Parker 2001, Behrman, Parker, and Todd 2007). Thus, the preexistence of Progresa might explain why the 70 y Más program causes no further decrease in the labor force participation of the poorest boys.

For girls age 12-17, columns 4 to 6 in the bottom panel show that the effects of the program on labor force participation are negative, but not significant at any conventional levels. Controlling for the gender of the recipient yields no significant results either, so we omit these results. Once again, these gender differences among adolescents might be due to the lower probability of working in the market of girls, compare to same-age boys, and a higher probability of working in the house, which we do not measure.

(Table 8 about here)

5 Robustness Checks

In this section we address the most important threats to internal validity of our results, namely the concern of anticipation effects among individuals approaching their 70th birthday, already discussed in section 3, and the program's effect on migration decisions, living arrangements, and family transfers to the elderly; all of which would be important mediating effects for our

results. Additional robustness checks (for narrower bounds around the cutoff, placebo cutoffs, and exclusion of states with their own programs) will be presented in the appendix.

In table 9 we assess the first concern by performing two different tests. First, using only individuals age 60 to 69 in our treatment and control localities, we estimate the effect of being age 65 to 69 in a treated locality, because any anticipation effects, if they exist, are likely to be stronger for this group than for those in their early sixties. Some individuals in this age group live with individuals age 70 and older, so we control for their presence in the household. The top panel of table 9 shows that being age 65 to 69 in a treated locality has no significant effect on labor force participation in any of the columns. In addition, living with individuals age 65 to 69 or 70 and older in treated localities has no significant effects either. The only exception is the large positive effect of living with a woman age 70 and older in a treated locality on the labor force participation of men living in a couple, which is mostly due to the fact that we have very few cases in which the man is younger than the woman. In the bottom panel of table 9, we perform a similar exercise but we interact age with the treated locality dummy. Once again, we find no significant effect of approaching 70 on the labor force participation of individuals in their sixties.

(Table 9 about here)

Regarding the mediating effects, we first explore whether the program induced the elderly to migrate in order to qualify for benefits. The census has information on the municipality of residence in both 2005 and 2010, so we measure migration with an dummy equal to one if the municipality of residence differs between those years. The top panel of table 10 shows that being age-eligible in a treated locality has no significant effect on the probability of migrating. Given that our main effects on the labor force participation of the elderly differ by household structure, we also check whether these arrangements are being affected by the program. In the middle panel of table 10, the dependent variable is a dummy equal to one if the person lives in a one-generational household, i.e. either alone or only with his or her spouse. In all columns, being age 70 and older in a treated locality has a positive, but mostly small and statistically insignificant effect, on the probability that elderly men and women live in a one-generational household.

In the bottom panel of table 10, we estimate the program effect on the private transfers received by the elderly. If 70 y Más crowds out these private transfers, then the program's impact on labor force participation would be reduced. In this case, the dependent variable is a dummy indicating the receipt of a transfer from friends or family. In columns 1 to 3, for elderly men our key estimates are positive, but close to zero and statistically insignificant. For women, the corresponding estimates in columns 4 to 6 are negative, become larger in absolute value for relatively poor, but are mostly not significant. The reduction of 5.4 percentage points in the probability of receiving family transfers for the poorest women is significant, but at 10 percent only. These findings weakly suggest that the private support received by older women decreases in response to 70 y Más, which could partly explain why we find much weaker effects on labor force participation for them, in addition to their lower labor market attachment to begin with.[25]

(Table 10 about here)

6 Conclusions

Over the course of the last decade, many Latin American countries have implemented non-contributory social protection schemes aimed at providing a minimal safety net for their most vulnerable citizens. The crucial question is to what extent these programs are able to meet the policy goals they were designed for.

In this paper, we estimate the effect of the non-contributory rural pension scheme 70 y Más in Mexico on labor force participation. The primary goal of this program is to relieve the poor of the need to work at an advanced age. However, given that a large fraction of the Mexican rural elderly live in extended households, the program might also benefit non-elderly individuals if the pension is partly shared with them.

Applying a difference-in-differences estimation around two eligibility thresholds, age and locality population, we find that the program significantly

[25]These results are broadly consistent with those reported by Amuedo-Dorantes and Juárez (2012). Using the Mexican Income and Expenditure Survey (ENIGH), they find that 70 y Más crowds out the private transfers received by women to a larger extent than those received by men, in localities with less than 2,500 inhabitants.

reduces the labor force participation of male beneficiaries. This effect is particularly pronounced for men in the lowest wealth quintiles, and for those living either by themselves or only with their spouse. Given these groups might be the most vulnerable, the program seems to accomplish its stated goals. Yet, for elderly women, we find mostly insignificant effects of the program on their labor supply, which are explained by their low participation in market work and a potentially larger crowding out effect of the program on their probability of receiving private transfers. This finding suggests that some of the program resources are ultimately benefiting younger individuals.

Finally, we find no effects of the program on the labor force participation of prime-age individuals, but a negative and significant effect on that of poor adolescent boys, who can be considered the marginal worker within a household. This once again shows a certain degree of fungibility of program benefits, even if in a way that may be considered desirable. Given that we only focus on the labor supply response at the extensive margin, a broader picture of the program impact on the well being of beneficiaries requires further research on other outcomes of interest, such as consumption and health.

Table 1: Labor force participation by gender and age.

	Treated loc	Control loc	p-value	N
Men				
Age 12-17	0.20	0.19	0.60	1829
Age 18-59	0.83	0.83	0.56	8464
Age 60-69	0.65	0.62	0.14	4217
Age 70+	0.34	0.34	0.61	3492
Women				
Age 12-17	0.08	0.07	0.35	1789
Age 18-59	0.50	0.49	0.79	10981
Age 60-69	0.25	0.22	0.01***	4852
Age 70+	0.11	0.09	0.04**	4326

Notes: Table shows proportion of individuals who work (at least for one hour per week) or are actively looking for work in each age group for treatment and control localities. The p-value refers to a t-test under the H_0 that the proportions are equal.

Table 2: Determinants of treatment at the locality level.

	All Localities
Locality elevation in meters	-.0001*
	(.0000733)
Fraction elderly	-6.407
	(5.082)
Average fertility	.763*
	(.417)
Fraction indigenous	-.259
	(.554)
Average years of schooling	.134
	(.099)
Labor force	1.098
	(2.737)
Unemployment rate	.617
	(3.301)
Fraction of workers in formal sector	-.549
	(.565)
Obs.	71
F statistic p-value	0.29

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Dependent variable is binary, indicating whether a locality is in treatment group (25,000-30,000 inhabitants). Linear probability model with robust standard errors in parenthesis. *Fertility* captures the number of live births by women 12 years of age or older, *indigenous* is defined as speaking an indigenous language, the *labor force* is defined as individuals either working or looking work, the *unemployment rate* is defined as individuals looking for work as a proportion of the labor force, the *formal sector* is defined as individuals working and contributing to the public pension and health care funds. Source: INEGI.

Table 3: Determinants of treatment at the individual level.

	(1) 60-69 years	(2) 70+ years	(3) 60+ years
Age	-.001	-.002	.0001
	(.0009)	(.002)	(.0004)
Female	-.006	.008	-.002
	(.019)	(.011)	(.004)
Dummy=1 if speaks an indigenous language	.092***	.100***	-.001
	(.015)	(.014)	(.005)
Years of schooling	-.011***	-.008***	.0004
	(.002)	(.001)	(.0005)
Dummy=1 if disabled	.026	.031	.0002
	(.020)	(.019)	(.007)
Wealth index	-.004	.003	-.002*
	(.003)	(.003)	(.001)
Dummy=1 if senior lives alone	-.038	-.042	-.0009
	(.024)	(.027)	(.009)
Dummy if elderly couple	-.003	-.061**	.015*
	(.024)	(.024)	(.008)
Dummy=1 if extended household	-.022	-.029	.001
	(.022)	(.023)	(.008)
Disabled hh member	-.004	-.024	.006
	(.020)	(.016)	(.006)
Household size	-.003	-.010	.002
	(.015)	(.012)	(.005)
Boys age 12-17 in hh	.002	.016	-.005
	(.017)	(.014)	(.005)
Girls age 12-17 in hh	.020	.015	.0005
	(.017)	(.014)	(.005)
Men age 18-59 in hh	-.022	.0006	-.005
	(.016)	(.014)	(.005)
Women age 18-59 in hh	.016	.010	.001
	(.016)	(.012)	(.005)
Men age 70+ in hh	-.018	.005	-.011*
	(.021)	(.019)	(.006)
Women age 70+ in hh	-.021	.027	-.011*
	(.019)	(.024)	(.007)
Dummy=1 if age 70+			.564***
			(.009)
Dummy=1 if locality <30,000			.463***
			(.004)
Obs.	7774	9016	16790
F statistic p-value	0.000	0.000	0.228

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. In columns (1) and (2), dependent variable is binary, indicating whether an individual (60-69 years of age, or 70 years of age or older, respectively) lives in a treatment locality (25,000-30,000 inhabitants). In column (3), dependent variable is interaction term between the binary variable indicating a treatment locality and the one indicating an individual is 70 years of age or older (i.e. eligibility for treatment), and the specification includes the whole sample of individuals 60 years of age or older. F statistic tests for all the coefficients on individual non-treatment related characteristics being jointly equal to zero (i.e. excluding "*Dummy=1 if age 70+*" and "*Dummy=1 if locality <30,000*" in column (3)). *Disabled* refers to any kind of disability is declared in the census questionnaire; the construction of the *wealth index* by principal component analysis is described in more detail in the main text. The variable indicating whether one or more household members are disabled is binary. *Household size* is a count variable of all household members, the remaining variables are count variables for each subgroup. Source: INEGI.

Table 4: Determinants of pensions and government transfers for individuals 60 years of age or older.

	(1) Pension male	(2) Pension female	(3) Gov't Transfer male	(4) Gov't Transfer female
Age 70+*Locality <30,000	-.006	-.020	.311***	.324***
	(.028)	(.017)	(.040)	(.034)
Dummy=1 if age 70+	.044*	.028*	.094***	.146***
	(.024)	(.016)	(.036)	(.033)
Dummy=1 if locality <30,000	.029	.056	.040	-.017
	(.069)	(.041)	(.049)	(.057)
Age	.0009	.0007	.009***	.003***
	(.001)	(.0008)	(.001)	(.001)
Locality population	.0000179	.0000147*	.0000113	4.87e-06
	(.000016)	(8.59e-06)	(8.59e-06)	(9.29e-06)
Obs.	7709	9178	7709	9178
Mean Dep. Var.	0.32	0.15	0.26	0.3

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variable is binary, indicating whether an individual (60 years of age or older) declares receiving a pension or a government transfer, respectively.

Table 5: Results for elderly living by themselves.

	(1) male	(2) male	(3) male	(4) female	(5) female	(6) female
Age 70+*Locality <30,000	-.150**	-.179***	-.208**	-.063	-.050	-.047
	(.062)	(.069)	(.086)	(.052)	(.061)	(.119)
Dummy=1 if age 70+	.050	.090	.058	.035	.030	.016
	(.072)	(.081)	(.090)	(.045)	(.047)	(.089)
Dummy=1 if locality <30,000	.083	.103	.134	-.023	-.035	.084
	(.097)	(.092)	(.114)	(.073)	(.080)	(.124)
Age	-.019***	-.020***	-.021***	-.014***	-.014***	-.018***
	(.003)	(.003)	(.004)	(.002)	(.002)	(.004)
Locality population	-7.07e-06	-9.69e-06	-3.10e-06	-.0000153*	-.0000185*	1.65e-06
	(.0000155)	(.000016)	(.0000216)	(9.27e-06)	(.00001)	(.0000178)
Obs.	737	612	271	1133	924	272
Num. Loc.	69	68	63	70	70	61
Wealth Quintiles	All	1-3	1	All	1-3	1
Mean Dep. Var.	0.5	0.52	0.59	0.25	0.25	0.32

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variable is binary, indicating whether an individual (60 years of age or older) works or is actively looking for work.

Table 6: Results for elderly living in couples.

	(1) male	(2) male	(3) male	(4) female	(5) female	(6) female
Male 70+ in hh* Locality<30,000	.014	.017	-.277**	.009	.023	.005
	(.061)	(.069)	(.126)	(.061)	(.070)	(.085)
Female 70+ in hh* Locality<30,000	-.017	-.011	.077	-.090	-.118*	-.213**
	(.063)	(.077)	(.137)	(.055)	(.062)	(.098)
Dummy=1 if a male 70+ in hh	.003	-.038	.192	.050	.046	.064
	(.054)	(.063)	(.120)	(.039)	(.049)	(.058)
Dummy=1 if a female 70+ in hh	.085	.081	.009	.019	.012	.034
	(.056)	(.067)	(.126)	(.036)	(.041)	(.064)
Dummy=1 if locality <30,000	-.039	-.082	-.024	.120**	.110*	.198*
	(.067)	(.077)	(.163)	(.054)	(.064)	(.110)
Age	-.019***	-.018***	-.024***	-.006***	-.003	-.0006
	(.002)	(.002)	(.004)	(.002)	(.002)	(.004)
Age of spouse	-.005**	-.004*	-.005	-.004**	-.004**	-.006
	(.002)	(.003)	(.005)	(.002)	(.002)	(.004)
Locality population	-.0000151	-.0000225*	-.0000238	2.98e-06	3.13e-06	3.78e-07
	(.0000128)	(.0000132)	(.0000237)	(7.48e-06)	(8.32e-06)	(.0000119)
Obs.	1663	1078	228	1315	869	183
Num. Loc.	71	71	59	70	70	57
Wealth Quintiles	All	1-3	1	All	1-3	1
Mean Dep. Var.	0.47	0.48	0.52	0.13	0.12	0.13

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variable is binary, indicating whether an individual (60 years of age or older) works or is actively looking for work.

Table 7: Results for elderly living in multigenerational households.

	(1) male	(2) male	(3) male	(4) female	(5) female	(6) female
Age 70+*Locality <30,000	-.002	-.044*	-.031	.018	.034	.062
	(.025)	(.027)	(.066)	(.020)	(.024)	(.064)
Others age 70+ in hh* Locality<30,000	-.012	-.004	.053	-.006	.011	.119**
	(.034)	(.038)	(.091)	(.019)	(.022)	(.050)
Dummy=1 if age 70+	-.025	-.043*	-.064	-.052***	-.066***	-.112*
	(.027)	(.026)	(.072)	(.018)	(.024)	(.065)
Others age 70+ in hh	.016	.002	-.012	-.024	-.049***	-.107***
	(.022)	(.025)	(.061)	(.015)	(.016)	(.030)
Number Adults age 18-59 in hh	-.002	-.0003	-.023	-.010***	-.016***	-.012
	(.005)	(.007)	(.015)	(.003)	(.004)	(.014)
Number Minors in hh	.009**	.010*	.014	-.002	.002	-.003
	(.004)	(.005)	(.012)	(.004)	(.005)	(.012)
Dummy=1 if locality <30,000	-.037	-.007	-6.07e-06	.006	.0004	.003
	(.045)	(.045)	(.092)	(.036)	(.046)	(.079)
Age	-.022***	-.020***	-.020***	-.008***	-.008***	-.009***
	(.001)	(.001)	(.003)	(.0007)	(.0009)	(.002)
Locality population	-.0000101	-7.46e-06	1.75e-06	-1.06e-06	9.67e-07	.000013
	(9.55e-06)	(9.39e-06)	(.0000156)	(5.10e-06)	(6.38e-06)	(.0000115)
Obs.	5307	3243	677	6730	4208	855
Num. Loc.	71	71	68	71	71	68
Wealth Quintiles	All	1-3	1	All	1-3	1
Mean Dep. Var.	0.51	0.53	0.59	0.17	0.17	0.22

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variable is binary, indicating whether an individual (60 years of age or older) works or is actively looking for work.

Table 8: Results for non-elderly individuals living in a household with at least one elderly individual

	(1) male	(2) male	(3) male	(4) female	(5) female	(6) female
18-59 years of age:						
Number age 70+ in hh* Locality<30,000	.019	.009	.024	.008	-.004	.018
	(.012)	(.016)	(.032)	(.019)	(.021)	(.059)
Number age 70+ in hh	-.037***	-.032***	-.015	.032*	.040***	.042
	(.006)	(.008)	(.024)	(.016)	(.015)	(.041)
Dummy=1 if locality <30,000	-.027	-.017	-.023	-.016	-.022	-.057
	(.021)	(.025)	(.032)	(.028)	(.036)	(.063)
Age	.005***	.004***	.002**	-.003***	-.002***	-.003*
	(.0005)	(.0005)	(.001)	(.0005)	(.0005)	(.001)
Locality population	-2.14e-06	-2.67e-06	-1.31e-06	-3.11e-06	-4.09e-06	-9.48e-07
	(3.81e-06)	(4.77e-06)	(6.41e-06)	(4.63e-06)	(5.50e-06)	(9.77e-06)
Obs.	8464	5249	1107	10981	6596	1249
Num. Loc.	71	71	69	71	71	69
Mean Dep. Var.	0.83	0.83	0.84	0.5	0.46	0.43
12-17 years of age:						
Number age 70+ in hh* Locality<30,000	-.048*	-.065**	.054	-.003	-.024	-.005
	(.027)	(.032)	(.089)	(.022)	(.029)	(.039)
Number age 70+ in hh	.014	.004	-.020	-.003	-.010	-.014
	(.024)	(.025)	(.053)	(.017)	(.022)	(.019)
Dummy=1 if locality <30,000	.080	.126**	.084	.036	.055	.068
	(.049)	(.055)	(.119)	(.040)	(.051)	(.090)
Age	.078***	.090***	.110***	.030***	.036***	.034***
	(.006)	(.007)	(.013)	(.004)	(.004)	(.010)
Locality population	.0000119	.0000187*	.0000245	5.38e-06	6.59e-06	8.48e-06
	(7.99e-06)	(9.64e-06)	(.0000178)	(5.30e-06)	(6.79e-06)	(.000013)
Obs.	1829	1250	317	1789	1173	269
Num. Loc.	71	71	53	71	71	50
Mean Dep. Var.	0.2	0.23	0.29	0.08	0.09	0.1
Wealth Quintiles	All	1-3	1	All	1-3	1

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variable is binary, indicating whether an individual works or is actively looking for work. The variables not shown in the table are, for adults 18-59 years of age, the number of other working age adults, and the number of minors living in the households. For minors aged 12-17, the variables not shown are the number of other minors, and the number of working age adults (18-59 years of age) living in the household.

Table 9: Testing for anticipation effects for elderly 60-69 years of age.

	(1) single male	(2) single female	(3) couple male	(4) couple female	(5) multi male	(6) multi female
Binary control & interaction 65-69 years of age:						
Age 65+*Locality <30,000	-.035	.037			.026	.044
	(.114)	(.101)			(.050)	(.035)
Male 65+ in hh* Locality<30,000			-.116	.042		
			(.079)	(.087)		
Male 70+ in hh* Locality<30,000				.056		
				(.088)		
Female 65+ in hh* Locality<30,000			.107	.074		
			(.128)	(.066)		
Female 70+ in hh* Locality<30,000			.417**			
			(.181)			
Others age 65+ in hh* Locality<30,000					.070	.015
					(.076)	(.041)
Others age 70+ in hh* Locality<30,000					-.076	.025
					(.055)	(.043)
Interaction with age for 60-69 years of age:						
Age for 60-69 year old*Locality <30,000	-.019	-.005			.0006	.007
	(.021)	(.016)			(.008)	(.006)
Age for 60-69 year old Male hh* Locality<30,000			-.024	-.001		
			(.015)	(.002)		
Male 70+ in hh* Locality<30,000				-.030		
				(.137)		
Age for 60-69 year old Female in hh* Locality<30,000			.003	.016		
			(.002)	(.013)		
Female 70+ in hh* Locality<30,000			.480***			
			(.181)			
Age for 60-69 year old Others in hh* Locality<30,000					-.0003	.0000957
					(.0008)	(.0006)
Others age 70+ in hh* Locality<30,000					-.080	.023
					(.056)	(.042)
Obs.	275	322	524	507	1784	2174
Num. Loc.	61	70	71	70	71	70
Wealth Quintiles	1-3	1-3	1-3	1-3	1-3	1-3
Mean Dep. Var.	0.67	0.37	0.61	0.16	0.68	0.25

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variable is binary, indicating whether an individual works or is actively looking for work. Only interactions terms are shown. Not shown, but included in the regression, are the variables constituting the interaction terms, and the additional controls corresponding to each specification as shown in tables 5-7

Table 10: Results for mediating outcomes

	(1) male	(2) male	(3) male	(4) female	(5) female	(6) female
Inter-municipal migration:						
Age 70+*Locality <30,000	.0007	-.008	.013	-.006	-.007	.012
	(.007)	(.009)	(.019)	(.007)	(.007)	(.017)
Dummy=1 if age 70+	-.007	.004	-.003	.007	.010	.019
	(.007)	(.008)	(.019)	(.007)	(.007)	(.015)
Dummy=1 if locality <30,000	-.006	-.002	.010	-.0002	.009	.036*
	(.010)	(.012)	(.020)	(.013)	(.014)	(.020)
Age	-.0005	-.0007	-.0009	-.0002	-.0007*	-.002***
	(.0003)	(.0005)	(.0009)	(.0004)	(.0004)	(.0006)
Locality population	-1.34e-07	-7.19e-07	2.97e-06	-4.16e-07	1.06e-06	6.78e-06**
	(1.62e-06)	(1.94e-06)	(3.72e-06)	(1.96e-06)	(2.14e-06)	(2.99e-06)
Obs.	7709	4935	1177	9178	6001	1310
Num. Loc.	71	71	70	71	71	70
Mean Dep. Var.	0.03	0.03	0.03	0.03	0.03	0.03
Living arrangements:						
Age 70+*Locality <30,000	.024	.012	.014	.025	.005	.013
	(.022)	(.029)	(.055)	(.020)	(.023)	(.044)
Dummy=1 if age 70+	.053*	.039	.044	.050**	.066**	.171***
	(.028)	(.036)	(.069)	(.021)	(.028)	(.046)
Dummy=1 if locality <30,000	.043	.052	.058	.025	.034	.041
	(.037)	(.041)	(.098)	(.035)	(.038)	(.079)
Age	.0001	.002	.005*	-.002**	-.002	-.003
	(.001)	(.002)	(.003)	(.0009)	(.001)	(.002)
Locality population	.0000159***	.0000168**	.0000202	.0000103*	.0000116*	8.38e-06
	(5.99e-06)	(7.65e-06)	(.0000158)	(5.94e-06)	(6.76e-06)	(.0000116)
Obs.	7709	4935	1177	9178	6001	1310
Num. Loc.	71	71	70	71	71	70
Mean Dep. Var.	0.31	0.34	0.42	0.27	0.3	0.35
Family transfers:						
Age 70+*Locality <30,000	.013	.007	.023	-.010	-.025	-.054*
	(.017)	(.020)	(.034)	(.020)	(.019)	(.032)
Dummy=1 if age 70+	.012	-.0004	-.077**	.035**	.032*	.066**
	(.014)	(.017)	(.033)	(.017)	(.016)	(.028)
Dummy=1 if locality <30,000	.042	.038	.012	.043	.052	.095*
	(.035)	(.037)	(.040)	(.045)	(.044)	(.049)
Age	.004***	.004***	.007***	.003***	.002**	.0009
	(.0008)	(.001)	(.002)	(.0009)	(.001)	(.002)
Locality population	7.26e-06	7.03e-06	3.70e-06	7.64e-06	9.03e-06	9.86e-06
	(5.76e-06)	(6.11e-06)	(7.24e-06)	(7.54e-06)	(7.45e-06)	(9.35e-06)
Obs.	7612	4869	1161	9087	5936	1295
Num. Loc.	71	71	70	71	71	70
Mean Dep. Var.	0.11	0.11	0.08	0.16	0.16	0.12
Wealth Quintiles	All	1-3	1	All	1-3	1

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variables are binary, indicating whether an individual 60 years of age or older (i) has moved between municipalities between 2005 and 2010, (ii) lives in a one generational household, or (iii)receives transfer payments from family members.

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Appendices

In this appendix we present, in addition to a more detailed explanation on the selection of our localities, a number of additional specification and robustness checks that for reasons of space did not fit in the main paper. For the robustness checks, we will stick to our most important specifications and present results only for the elderly and for minors living in households in the bottom three quintiles of our wealth index (that is those corresponding to columns 2 and 5 in tables 5, 6, 7, and the bottom part of 8). Results for adults 18-59 years of age are omitted, given that no effect was found in first place.

A Inclusion of localities

As explained in the main text, there are a total of 83 localities with between 25,000-35,000 inhabitants in Mexico according to the country's 2005 census. Since the expansion of 70 y Más to localities of up to 30,000 inhabitants in early 2009 was based on that census, the elderly living in these 83 localities constitute our population of interest. The problem is that, due to confidentiality reasons, the locality of residence is not coded in the micro data if it is smaller than 50,000 inhabitants. For the observations we are interested in, we are only able to observe the state and municipality of residence, and whether the locality has between 15,000 and 49,999 inhabitants. Fortunately, only ten of our localities of interest are in municipalities with one or more other localities in that range. These will be excluded from our sample, since we are unable to clearly identify an observation's locality of residence. From the remaining 73, we drop a further two localities because, according to the 2005 and 2010 census data, they had unrealistically large changes in their population. This leaves us with observations from 71 localities.

Table A.1 shows a list of the 12 localities not included. Four of them have been dropped, and eight could not be clearly identified. Among the former, we have the locality Hacienda Santa Fe in Tlajomulco, Jalisco which increased its recorded number of inhabitants from 28,252 to 86,935 over five years. A similar case applies to Jardines de la Silla in Juáres, Nuevo León. The two localities in the Federal District (i.e. Mexico City) are a special case.

Though we are unable to identify in which of the two an individual resides, we can be certain whether or not he/she lives in one of the two. Given that they both have an almost identical number of inhabitants we could potentially include them in our control group. However, given that Mexico City has a more generous non-contributory pension program that predates 70 y Más and benefits all citizens 70 years of age or older, we decided not to include them.

(Table A.1 about here)

Overall, we tend to exclude localities in larger municipalities. This would be expected, as larger ones are more likely to have another locality with 15,000-50,000 inhabitants. The average size of the municipality at the moment of data collection in our sample is 73,626, whereas in table A.1 it is 356,569. Also, nine out of the 12 excluded localities are in municipalities with more than 100,000 inhabitants. I our sample only 7 out of 71 are.

Figure A.1 provides a graphical impression of the geographical distribution of treatment and control localities. The former are in lighter shades, while the latter are in darker ones. Squares show localities that do not fall within the narrower margin of 27,000-33,000, used in one of the robustness checks that follows, whereas circles are always part of the sample. No systematic geographical pattern emerges, and the two types of localities can be found in every Mexican region. The concentration in Mexico's central region is expected given the higher population density there.

(Figure A.1 about here)

B Adding control variables

In order to save on space and keep the number and size of tables at a manageable level, we only presented results for the most parsimonious specifications, without any additional control variables. In this section we show the interested reader that our results are virtually unaltered, as would be expected under proper identification, if additional individual, and locality characteristics are controlled for.

We use the set of controls already employed in determining the exogeneity of treatment in tables 2 and 3. These are, the locality's elevation in meters above sea level; the fractions of its population that are female, elderly (60 years of age or older), or speak an indigenous language; the average number of children (i.e. live births) a woman can expect to have during her life; the average years of schooling completed by the population 15 years of age or older; the fraction of the population in the labor force (defined as having work or looking for work), the fraction of that labor force being unemployed (defined as being looking for work), the fraction of it being female, and fraction of the female labor force being unemployed. Lastly, we also control for the the fraction of the labor force working in the formal sector, defined as paying contributions into the public health and pension systems. At the individual level, we control for whether a person speaks an indigenous language, his/her completed years of schooling, whether the person has a disability, whether the household has a member with a disability (all of the preceeding variables are binary), and the wealth index of the household (constructed as described in the main text). The remaining variables used in table 3 capture household size and structure and are already implicitly controlled for by the different specifications.

Table A.2 shows summary statistics for the variables just described at the locality level. As can be seen, and would be expected given the results in table 2, the two groups look almost identical.

(Table A.2 about here)

Table A.3 provides summary statistics on individual and household characteristics for individuals age 60 and older in our sample. For household characteristics, the means are weighted by the number of elderly members in the household. We break down the statistics by age and locality groups to compare individuals age 60 to 69 and individuals age 70 and older in treatment and control localities. For both age groups, we observe once again that the mean characteristics are almost identical between the two types of localities. When comparing older to younger individuals, we see some expected patterns. For instance, the mean years of schooling are low for both, but more so for the older group, which is expected given that schooling levels have been increasing across age cohorts in Mexico. In addition, about 40 percent of individuals in the oldest group in both treated and control local-

ities report being disabled, whereas only about 18 percent of the younger group do so.

(Table A.3 about here)

In table A.4 we show additional statistics on our wealth index. Namely, the percentage of households in our sample that belong to each wealth quintile in treatment and control localities. It can be seen that the top and bottom quintiles are underrepresented, whereas the central three quintiles, in particular the second and third, are over-represented. Wealth can be expected to correlate strongly with city size, as the highest levels of poverty can be found in rural areas and most of the richest individuals live in big cities.[26] Given that our sample consists only of smaller towns, this explains the observed pattern. Also, the fraction of households in the upper three quintiles is larger in control localities than in treated ones, so control households appear to be slightly wealthier.

(Table A.4 about here)

Finally, table A.5 shows the results for our most important specifications including a full set of control variables. It can be seen that all our results stay identical in terms of sign and significance, and that point estimates are only altered very marginally. This further confirms the robustness of our identification strategy. The number of observations in each sample are slightly lower (in single digits) than in the corresponding columns in tables 5-7, given that for a handful of individuals in each some characteristics are not observed.

(Table A.5 about here)

[26]In 2010, the Mexican Council for the Evaluation of the Social Development Policy (CONEVAL) estimated that food poverty was 13 percent in urban areas, and 29 percent in rural ones. This urban-rural difference in poverty is also observed when using alternative measures, called assets and capacities poverty (see "Análisis y Medicion de la Pobreza" at www.coneval.gob.mx).

C Additional robustness checks: narrower bounds, excluding states with own programs, and placebo treatments

In tables A.6 and A.7 we show results for a number of additional robustness checks. In both tables, due to space restrictions, we only show results on the interaction term of interest. However, all specifications are identical to those presented in tables 5-7, and include the variables comprising the interaction terms, as well as, controls for age and locality population.

First, we narrow the bounds around the 30,000 inhabitants cut-off point to 27,000-33,000, which reduces our sample roughly by half and leaves us with 20 localities in each of the treatment and control groups. As shown in table A.6, these results are consistent with our main ones, and the negative effect of being age-eligible in a treated locality on the labor force participation of single elderly men becomes stronger (-0.24). The only differences are that the effect of the program on the labor force participation of men age 12 to 18 preserves its magnitude and sign, but becomes insignificant, probably due to the reduction in sample size, and that the small negative effect for elderly men in extended households vanishes, which is also related to the weakness of this effect in the first place.

As mentioned before, several Mexican states have also implemented their own non-contributory pension schemes for individuals age 70 and older. These programs differ in their additional eligibility rules, transfer amounts, and year of implementation. Thus, for our second robustness check, we exclude from our sample the 6 states that implemented such parallel programs between 2007 and 2010, and re-estimate the effects of the 70 y Más federal one[27]. By excluding the six states, we again lose close to half of our observations, resulting naturally in much larger standard errors. The results, also in table A.6, are consistent with our main ones. In particular, the sign and magnitude of the estimates is similar, but those that were statistically significant are no longer so, which we also attribute to the reduction in sample size. The only change is the stronger negative effect of own eligibility for women in couples (-0.21).

[27]These states are Durango, Jalisco, Sinaloa, Sonora, Tabasco and Yucatan.

(Table A.6 about here)

Third, we perform placebo tests using only localities that are either below or above the 30,000-population threshold. For localities that are below such threshold, we classify them as "treated" if they have 20,000 to 24,999 inhabitants and as control if they have 25,000 to 30,000 inhabitants, and re-estimate our labor force participation equations. As shown in table A.7, we find no significant effects of being age 70 and older, or living with age-qualifying individuals, in a "treated" locality. This is reassuring because individuals age 70 and older in all localities with less than 30,000 inhabitants were exposed to the program in 2010. Alternatively, we repeat this exercise for localities above the 30,000-population threshold, none of which participated in the program in 2010, classifying those with 30,000 to 34,999 inhabitants as "treated" and those with 35,000 to 40,000 as controls. As shown in the bottom panel of table A.7, once again we find no significant effects of either being age-eligible for the program, or residing with those who are, in "treated" localities on the labor force participation of the elderly and non-elderly. Out of the 20 coefficients that measure the fictitious effect of the program in these placebo tests for different age groups, just 2 are statistically significant- and only at 10 percent.

(Table A.7 about here)

In summary, our main results are robust to tightening the bounds around the locality population threshold and to the exclusion of states with their own local programs. Additionally, our placebo tests confirm that we are identifying the effect of the program and not of other systematic differences between localities.

D Results for elderly living in multigenerational households including a full set of interaction terms

In table 7 different household structures were controlled for by including controls for other household members 70 years of age or older, the number of

working age adults, and the number of minors living in the household. It is of interest to establish whether the results found are mediated by these variables. This is especially the case in light of the positive effect, significant at the 5 percent level, for the other eligible household members on female labor force participation in column 6. For that reason, in table A.8 we rerun the models in table 7 including a full set of interaction terms. That is, we interacted the number of working age adults and minors with the dummies for treatment localities and the number of other household members 70 or older. We also include the triple interaction of these variables. It can be seen that the estimates on our interaction term of interest barely budge. The aforementioned significant point estimate in column 6, however, loses significance (the point estimate is cut in half and it becomes statistically insignificant). In addition, none of the additional interaction terms is significant or even close to it, probably because they also added collinearity.

(Table A.8 about here)

E Additional results on mediating outcomes

Lastly, we take a closer look at the results on migration and living arrangements presented in table 10 . In table A.9 we confirm that the program had no effect on the elderly's living arrangements with other generations. While it has already been shown the middle part of table 10 that there is no effect on the likelihood of living in a one generational household, table A.9 shows that there is also no effect on either living with a working age adult or a minor. This result is of interest since one could hypothesize that, for example, elderly who are financially better off are less likely to live with their own children (who are mostly adults), but may be more likely to take care of their grand children.

(Table A.9 about here)

In the top part of table 10 we presented results for inter municipal migration in response to the program, using data at the individual level that are observable in the census micro sample. However, at that level we are not able to observe whether or not an individual migrated between localities

within the same municipality. For municipalities with localities with more than 30,000 inhabitants, one would hypothesize that households with elderly members will either be less likely to move from small localities (which are eligible for the program) to the locality in our sample, or, alternatively, more likely to move in the opposite direction. The upshot is that in such municipalities we would expect to see more of the elderly to be living in its smaller localities.

The exercise in table A.10 tests for this possibility. The sample consists of all localities between 100 and 15,000 inhabitants in the municipalities corresponding to our sample of localities between 25,000-35,000 inhabitants. The binary treatment variable indicates whether it belong to a municipality with a treatment locality (i.e. 25,000-30,000 inhabitants). The outcome variables are the percentage change in the number of individuals 65 years of age or older living in the locality between 2005 and 2010, and the change in the proportion of this age group in the locality's total population. We have to stick to this variable as INEGI does not publish more detailed figures on the age distribution at the locality level. If the program affected intra-municipal migration decisions, the parameter estimate on this treatment would be negative. This is because there would be no incentive to move to a smaller locality from the one with 25,000-30,000 inhabitants, or not to move in the opposite direction, in order to gain program benefits. For the first outcome variable, we also present results for a weighted regression that takes into account the much higher variance of that outcome variable in small localities. In all three specifications, there is no evidence for intra-municipal migration in response to the program. In the first two columns, the point estimate is negative, but insignificant, and in the third one it is insignificantly positive.

(Table A.10 about here)

Table A.1: Localities excluded from analysis.

State Name	**Muni Name**	**Muni Code**	**Loc. Name**	**Loc. Code**	**Loc. Pop. 2005**	**Loc. Pop. 2010**	**Muni Pop. 2011**	**Reason why not included**
Coahuila	Múzquiz	5020	Ciudad Melchor Múzquiz	1	31999	35060	66834	not identified
Distrito Federal	Tlalpan	9012	San Miguel Ajusco	26	25649	29781	650567	dropped
Distrito Federal	Tlalpan	9012	San Miguel Topilejo	27	26764	34603	650567	dropped
Hidalgo	Tepeapulco	13061	Fray Bernardino	2	28609	28556	51664	not identified
Jalisco	Tlajomulco	14097	Hacienda Santa Fe	822	28252	86935	416626	dropped
Edo de Mxico	Tenancingo	15088	Tenancingo De Degollado	1	30047	14174	90946	not identified
Edo de Mxico	Toluca	15106	San José Gpe.	72	29847	31299	819561	not identified
Edo de Mxico	Toluca	15106	San Pablo Autopan	83	30531	35141	819561	not identified
Michoacn	Lázaro Cárd.	16052	Las Guacamayas	77	34700	37980	178817	not identified
Nuevo León	Juárez	19031	Jardines De La Silla	45	33833	53742	256970	dropped
Puebla	San Martín	21132	Santa María Moyotzingo	15	25544	27137	141112	not identified
Sinaloa	Navolato	25018	Navolato	1	28676	29153	135603	not identified

Figure A.1: Treatment and control localities

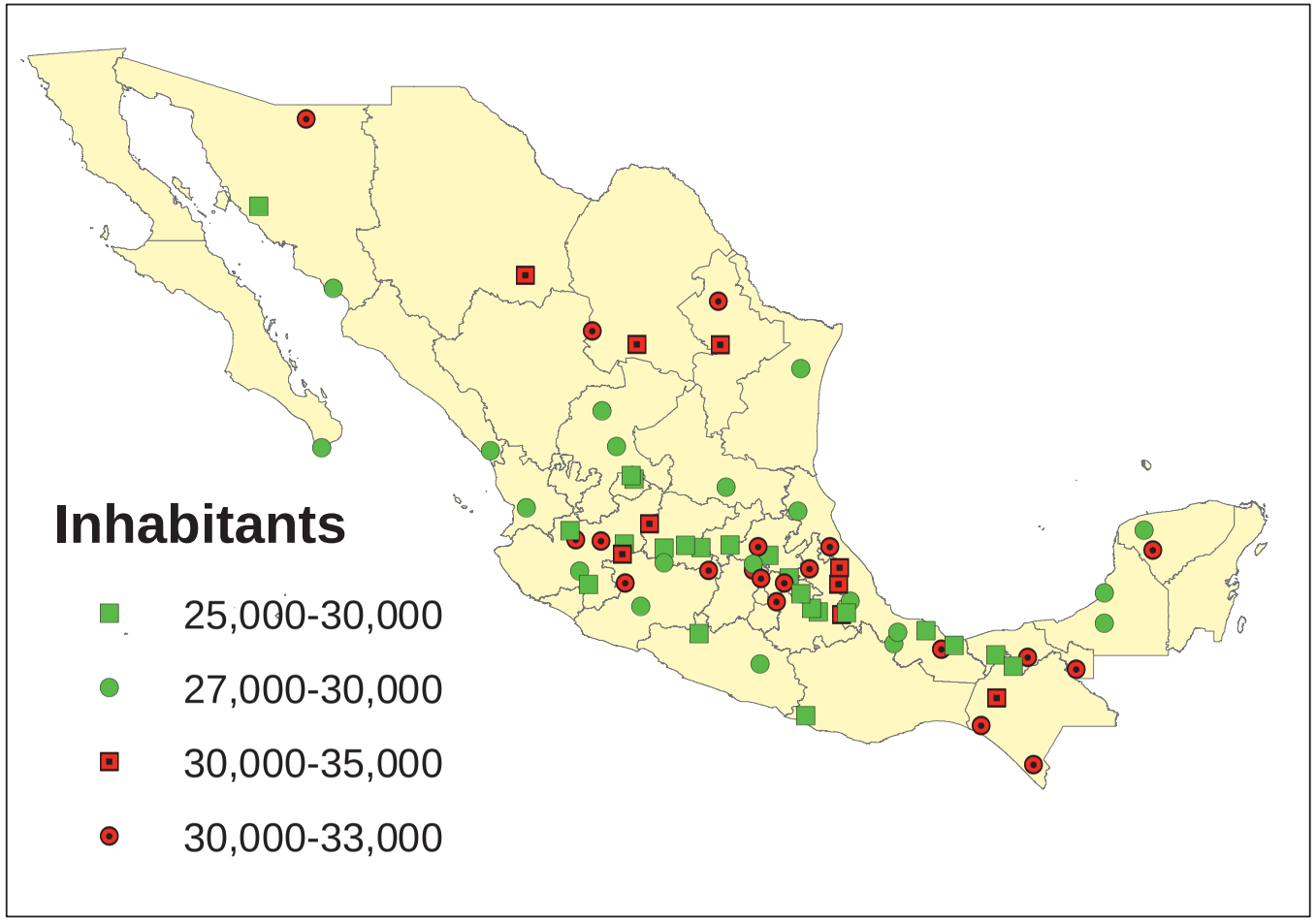

Table A.2: Summary statistics for locality level characteristics for treatment and control group (means and, in parenthesis, standard deviation).

	treated loc	control loc
Elevation (m)	1024	1187
	(877)	(867)
Female fraction of the population	0.52	0.52
	(0.01)	(0.01)
Elderly fraction of the population (age≥60)	0.06	0.06
	(0.01)	(0.01)
Average fertility	2.36	2.31
	(0.20)	(0.14)
Indigenous fraction of the population	0.06	0.06
	(0.09)	(0.15)
Average years of schooling for those age≥15	8.52	8.66
	(0.89)	(0.86)
Labor force as fraction of population	0.53	0.53
	(0.03)	(0.03)
Female fraction of the labor force	0.35	0.35
	(0.03)	(0.03)
Unemployment rate	0.04	0.04
	(0.02)	(0.02)
Female unemployment rate	0.02	0.03
	(0.01)	(0.01)
Fraction of labor force in formal sector	0.36	0.40
	(0.13)	(0.14)
N	42	29

Notes: *Fertility* captures the number of live births by women 12 years of age or older, *Indigenous* is defined as the proportion of the population speaking an indigenous language, the *labor force* is defined as individuals either working or looking work, the *unemployment rate* is defined as individuals looking for work as a proportion of the labor force, the *formal sector* is defined as individuals working and contributing to the public pension and health care funds. Source: INEGI.

Table A.3: Summary statistics for individual and household characteristics for each group (means and, in parenthesis, standard deviation).

	70+treated	70+control	6069 treat	6069control
Age	77.62	77.60	63.97	63.97
	(6.39)	(6.33)	(2.87)	(2.83)
Female	0.55	0.56	0.54	0.53
	(0.50)	(0.50)	(0.50)	(0.50)
Indigenous	0.19	0.14	0.19	0.13
	(0.40)	(0.34)	(0.39)	(0.34)
Years of schooling	2.78	3.41	4.58	5.22
	(3.44)	(3.74)	(4.32)	(4.41)
Disabled	0.40	0.37	0.18	0.17
	(0.49)	(0.48)	(0.39)	(0.38)
Wealth Index	1.14	1.35	1.46	1.59
	(1.98)	(1.93)	(1.93)	(1.89)
Lives alone	0.14	0.56	0.08	0.08
	(0.35)	(0.35)	(0.27)	(0.28)
Lives only with spouse	0.17	0.17	0.17	0.20
	(0.38)	(0.37)	(0.38)	(0.40)
Lives in an extended hh	0.58	0.58	0.67	0.65
	(0.49)	(0.49)	(0.47)	(0.48)
Someone disabled in hh	0.50	0.48	0.31	0.31
	(0.50)	(0.50)	(0.46)	(0.46)
Household size	3.67	3.62	3.97	3.88
	(2.38)	(2.32)	(2.34)	(2.36)
Individuals age 12-17 in hh	0.75	0.68	0.87	0.80
	(1.25)	(1.17)	(1.29)	(1.27)
Boys age 12-17 in hh	0.36	0.34	0.45	0.41
	(0.74)	(0.70)	(0.81)	(0.77)
Girls age 12-17 in hh	0.38	0.34	0.42	0.39
	(0.78)	(0.74)	(0.79)	(0.78)
Individuals age 18-59 in hh	1.39	1.39	1.57	1.53
	(1.48)	(1.47)	(1.45)	(1.44)
Men age 18-59 in hh	0.62	0.66	0.67	0.66
	(0.84)	(0.85)	(0.85)	(0.85)
Women age 18-59 in hh	0.77	0.73	0.90	0.87
	(0.94)	(0.91)	(0.96)	(0.94)
Individuals age 70+ in hh	1.34	1.36	0.17	0.17
	(0.49)	(0.50)	(0.40)	(0.40)
Men age 70+ in hh	0.61	0.61	0.11	0.11
	(0.51)	(0.51)	(0.31)	(0.31)
Women age 70+ in hh	0.73	0.74	0.06	0.06
	(0.50)	(0.49)	(0.25)	(0.25)
Number of observations	4311	3467	4995	4074

Notes: *Indigenous* is defined as speaking an indigenous language; *Disabled* is binary and equal to one if any kind of disability is declared in the census questionnaire; the construction of the *Wealth Index* by principal component analysis is described in more detail in the main text. The variables for living arrangements are all binary, same for the variable indicating whether one or more household members are disabled. *Household size* is a count variable of all household members, the remaining variables are count variables for each subgroup. Source: INEGI.

Table A.4: Percentage of households in each wealth quintile for treatment and control localities.

	1	2	3	4	5
Treatment	16.48%	25.45%	24.95%	21.57%	11.55%
Control	14.53%	22.36%	27.9%	22.18%	13.03%

Table A.5: Results with additional control variables

	(1) single male	(2) single female	(3) couple male	(4) couple female	(5) multi male	(6) multi female	(7) minor male	(8) minor female
Age 70+*Locality <30,000	-.132**	-.051			-.054*	.027		
	(.067)	(.059)			(.028)	(.025)		
Male 70+ in hh* Locality<30,000			.040	.033				
			(.064)	(.071)				
Female 70+ in hh* Locality<30,000			-.023	-.120*				
			(.075)	(.062)				
Others age 70+ in hh* Locality<30,000					-.022	.010		
					(.037)	(.023)		
Number age 70+ in hh* Locality<30,000							-.066**	-.032
							(.032)	(.030)
Dummy=1 if age 70+	.038	.013			-.030	-.059**		
	(.076)	(.048)			(.027)	(.024)		
Dummy=1 if a male 70+ in hh			-.063	.042				
			(.057)	(.051)				
Dummy=1 if a female 70+ in hh			.068	.008				
			(.066)	(.042)				
Others age 70+ in hh					.007	-.058***		
					(.026)	(.017)		
Number Adults age 18-59 in hh					-.004	-.015***	-.022***	.006
					(.007)	(.004)	(.007)	(.006)
Number Minors in hh					.008	.0004		
					(.005)	(.005)		
Other Minors							.013*	.001
							(.008)	(.006)
Dummy=1 if locality <30,000	.125*	.007	-.114*	.135***	.008	.017	.049	.016
	(.066)	(.063)	(.068)	(.050)	(.033)	(.029)	(.056)	(.034)
Age	-.016***	-.011***	-.016***	-.003	-.017***	-.007***	.126***	.041***
	(.003)	(.002)	(.002)	(.002)	(.001)	(.001)	(.008)	(.007)
Age of spouse			-.003	-.004**				
			(.003)	(.002)				
Locality population	.0000103	-9.33e-06	-.0000134	.0000108	-1.64e-06	2.92e-06	5.73e-06	-2.01e-06
	(.0000121)	(8.78e-06)	(.0000103)	(6.74e-06)	(6.32e-06)	(4.14e-06)	(9.76e-06)	(4.99e-06)
Dummy=1 if indigenous	.012	.013	.036	.029	.018	.038*	-.064*	.009
	(.042)	(.040)	(.043)	(.039)	(.024)	(.022)	(.034)	(.030)
Years of schooling	-.004	.009*	-.004	-.001	-.004	.006***	-.053***	-.006
	(.005)	(.005)	(.005)	(.004)	(.003)	(.002)	(.008)	(.007)
Dummy=1 if disabled	-.208***	-.083***	-.172***	-.058	-.257***	-.058***	-.134*	-.060
	(.041)	(.029)	(.050)	(.039)	(.026)	(.019)	(.077)	(.045)
Dummy=1 if hh member with disability			-.002	.040	.034*	.045**	.056***	.026
			(.045)	(.038)	(.020)	(.019)	(.019)	(.019)
Wealth index	-.024**	-.038***	-.018*	-.008	-.014***	-.015***	-.010	-.006
	(.009)	(.009)	(.010)	(.007)	(.005)	(.004)	(.008)	(.006)
Locality elevation in meters	.0000225	.0000199	9.73e-06	.0000313**	.0000262**	.0000288***	.0000267	.0000386***
	(.000038)	(.000018)	(.0000207)	(.0000153)	(.0000127)	(7.82e-06)	(.0000182)	(9.85e-06)
Fraction female	-3.621	-.652	2.341	-5.384*	3.119	-3.905**	-.089	-.138
	(6.427)	(3.345)	(4.122)	(2.885)	(2.883)	(1.638)	(3.652)	(1.844)
Fraction elderly	-4.188**	-1.678	-1.430	-.284	-.274	.789	1.639	1.550*
	(1.929)	(1.130)	(1.406)	(.927)	(.843)	(.651)	(1.243)	(.835)
Average fertility	-.195	-.263*	.141	-.373***	-.089	-.305***	.087	-.036
	(.260)	(.154)	(.160)	(.100)	(.108)	(.070)	(.149)	(.086)
Fraction indigenous	.071	-.049	.007	-.107	.016	-.067	-.044	-.114**
	(.123)	(.088)	(.113)	(.089)	(.051)	(.047)	(.086)	(.049)
Average years of schooling	-.030	-.038	.020	-.046**	.003	-.035**	.010	-.042**
	(.056)	(.026)	(.037)	(.024)	(.023)	(.014)	(.028)	(.016)
Labor force	-1.543	-.524	1.722	-.708	.750	-.395	1.772*	.467
	(1.477)	(1.053)	(1.126)	(.752)	(.899)	(.487)	(.909)	(.507)
Female fraction of the labor force	1.535	.828	-1.105	1.406*	-1.389	1.141**	-.044	.088
	(1.624)	(.941)	(1.208)	(.837)	(.855)	(.459)	(1.043)	(.452)
Unemployment rate	.567	-.533	.855	2.927***	-1.117	2.985***	-1.945	-.922
	(3.890)	(1.759)	(1.810)	(1.067)	(1.178)	(.708)	(1.490)	(.883)
Female unemployment rate	-2.104	2.358	-.340	-4.772***	-.252	-6.049***	2.619	.584
	(5.325)	(2.764)	(3.057)	(1.765)	(1.838)	(1.278)	(2.937)	(1.431)
Fraction of workers in formal sector	-.622**	-.244	-.460**	-.300**	-.345***	-.259***	.033	.005
	(.264)	(.167)	(.187)	(.122)	(.114)	(.082)	(.165)	(.096)
Obs.	608	917	1076	868	3224	4194	1242	1168
Num. Loc.	68	70	71	70	71	71	71	71
Wealth Quintiles	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variable is binary, indicating whether an individual works or is actively looking for work. Specifications shown correspond to columns (2) and (5) in tables 5, 6, 7, and the bottom part of 8. Summary statistics and description of the additional control variables can be found in tables A.2 and A.3 above.

Table A.6: Results excluding states with own programs and with narrower bounds between 27,000-33,000.

	(1) single male	(2) single female	(3) couple male	(4) couple female	(5) multi male	(6) multi female	(7) minor male	(8) minor female
Excluding states with own program:								
Age 70+*Locality <30,000	-.121	.054			-.024	.045		
	(.093)	(.088)			(.034)	(.042)		
Male 70+ in hh* Locality<30,000			-.109	.116				
			(.095)	(.101)				
Female 70+ in hh* Locality<30,000			.043	-.209**				
			(.110)	(.093)				
Number age 70+ in hh* Locality<30,000							-.071	-.0002
							(.050)	(.038)
Obs.	317	489	577	467	1764	2276	710	652
Num. Loc.	40	42	43	42	43	43	43	43
Bounds 27,000-33,000:								
Age 70+*Locality <30,000	-.244***	-.049			.010	.016		
	(.068)	(.065)			(.031)	(.033)		
Male 70+ in hh* Locality<30,000			-.036	.023				
			(.089)	(.094)				
Female 70+ in hh* Locality<30,000			.019	-.066				
			(.096)	(.080)				
Number age 70+ in hh* Locality<30,000							-.043	.002
							(.046)	(.040)
Obs.	380	545	638	481	1924	2379	697	651
Num. Loc.	38	39	40	39	40	40	40	40
Wealth Quintiles	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variable is binary, indicating whether an individual works or is actively looking for work. Table only shows interaction terms of interest. Not shown, but included, are the variables comprising the interaction terms, as well as, locality population, age and (for columns (3) and (4)) the age of the spouse. Specifications shown correspond to columns (2) and (5) in tables 5, 6, 7, and the bottom part of 8.

Table A.7: Results for placebo treatment thresholds at 25,000 and 35,000 inhabitants.

	(1) single male	(2) single female	(3) couple male	(4) couple female	(5) multi male	(6) multi female	(7) minor male	(8) minor female
Localities 20-30k:								
Age 70+*Locality <25,000	.060	.017			.017	.003		
	(.060)	(.057)			(.025)	(.019)		
Male 70+ in hh* Locality<25,000			-.056	-.024				
			(.059)	(.060)				
Female 70+ in hh* Locality<25,000			-.058	.052				
			(.061)	(.057)				
Number age 70+ in hh* Locality<25,000							.048*	.026
							(.025)	(.026)
Obs.	921	1375	1639	1314	4878	6261	2150	2067
Num. Loc.	107	109	111	108	111	111	110	111
Localities 30-40k:								
Age 70+*Locality <35,000	.092	.059			-.024	-.050*		
	(.084)	(.055)			(.032)	(.029)		
Male 70+ in hh* Locality<35,000			.007	.045				
			(.085)	(.067)				
Female 70+ in hh* Locality<35,000			.011	.021				
			(.085)	(.052)				
Number age 70+ in hh* Locality<35,000							.015	.006
							(.037)	(.025)
Obs.	519	720	923	764	2693	3435	1158	1213
Num. Loc.	57	58	59	59	59	59	59	58
Wealth Quintiles	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variable is binary, indicating whether an individual works or is actively looking for work. Table only shows interaction terms of interest. Not shown, but included, are the variables comprising the interaction terms, as well as, locality population, age and (for columns (3) and (4)) the age of the spouse. Specifications shown correspond to columns (2) and (5) in tables 5, 6, 7, and the bottom part of 8.

Table A.8: Results for elderly living in multigenerational households including all interaction terms with household structure.

	(1) male	(2) male	(3) male	(4) female	(5) female	(6) female
Age 70+*Locality <30,000	-.004	-.047*	-.035	.019	.034	.055
	(.025)	(.027)	(.062)	(.019)	(.024)	(.066)
Others age 70+ in hh* Locality<30,000	-.005	.039	.185	-.060*	-.047	.066
	(.048)	(.054)	(.128)	(.032)	(.033)	(.076)
Number Adults age 18-59 in hh* Locality<30,000	.005	.010	.011	-.013*	-.014	-.021
	(.010)	(.014)	(.032)	(.007)	(.010)	(.025)
Number Minors in hh* Locality<30,000	-.010	-.012	.014	-.012	-.007	.029
	(.010)	(.011)	(.027)	(.008)	(.010)	(.023)
Dummy=1 if age 70+	-.024	-.041	-.069	-.052***	-.066***	-.100
	(.027)	(.026)	(.071)	(.018)	(.024)	(.068)
Others age 70+ in hh	.008	-.052*	-.018	.006	-.024	-.060
	(.031)	(.030)	(.087)	(.024)	(.022)	(.052)
Number Adults age 18-59 in hh	-.008	-.013	-.017	-.005	-.012*	.005
	(.006)	(.009)	(.025)	(.005)	(.007)	(.017)
Number Minors in hh	.020**	.022**	.007	.007	.009	-.024
	(.008)	(.009)	(.022)	(.007)	(.008)	(.017)
Dummy=1 if locality <30,000	-.037	-.011	-.032	.044	.037	.013
	(.054)	(.056)	(.113)	(.041)	(.052)	(.091)
Number Adults age 19-59*Others age 70+ in hh	.017	.043**	.008	-.011	-.006	-.046
	(.013)	(.018)	(.043)	(.009)	(.009)	(.032)
Number Minors*Others age 70+ in hh	-.026*	-.025	-.024	-.010	-.013	.029
	(.015)	(.019)	(.049)	(.011)	(.010)	(.028)
Number Adults age 19-59*Others age 70+ in hh* Locality<30,000	-.005	-.019	-.087	.028**	.034**	.049
	(.021)	(.031)	(.056)	(.014)	(.015)	(.041)
Number Minors*Others age 70+ in hh* Locality<30,000	.005	-.006	.026	.003	-.0004	-.027
	(.023)	(.032)	(.064)	(.017)	(.018)	(.046)
Age	-.022***	-.020***	-.019***	-.008***	-.008***	-.009***
	(.001)	(.001)	(.003)	(.0007)	(.0009)	(.002)
Locality population	-.00001	-7.24e-06	3.63e-06	-9.21e-07	1.23e-06	.0000132
	(9.54e-06)	(9.36e-06)	(.0000156)	(5.11e-06)	(6.37e-06)	(.0000116)
Obs.	5307	3243	677	6730	4208	855
Num. Loc.	71	71	68	71	71	68
Wealth Quintiles	All	1-3	1	All	1-3	1

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variable is binary, indicating whether an individual works or is actively looking for work.

Table A.9: Effects on living arrangements with minor and adult 18-59 years of age.

	(1) male	(2) male	(3) male	(4) female	(5) female	(6) female
Lives with minor:						
Age 70+*Locality <30,000	-.009	-.010	-.073	-.019	-.012	-.060
	(.021)	(.026)	(.047)	(.020)	(.025)	(.055)
Dummy=1 if age 70+	-.020	-.021	-.026	-.010	-.010	-.051
	(.024)	(.028)	(.054)	(.020)	(.027)	(.058)
Dummy=1 if locality <30,000	-.037	-.043	.018	-.012	-.035	.052
	(.038)	(.034)	(.077)	(.035)	(.031)	(.072)
Age	-.004***	-.005***	-.007***	-.002**	-.004***	-.003
	(.001)	(.001)	(.002)	(.001)	(.001)	(.002)
Locality population	-.0000162**	-.000017***	-.0000113	-7.43e-06	-.000011*	-2.87e-07
	(6.51e-06)	(6.56e-06)	(.0000124)	(6.50e-06)	(6.36e-06)	(.0000104)
Mean Dep. Var.	0.39	0.38	0.34	0.38	0.37	0.35
Lives with adult 18-59 years of age:						
Age 70+*Locality <30,000	-.019	-.020	.010	-.021	-.0000569	.005
	(.021)	(.026)	(.056)	(.022)	(.027)	(.045)
Dummy=1 if age 70+	-.051**	-.031	-.087	-.020	-.043	-.153***
	(.026)	(.032)	(.059)	(.025)	(.033)	(.054)
Dummy=1 if locality <30,000	-.047	-.041	-.120	-.052	-.056	-.120
	(.039)	(.045)	(.098)	(.037)	(.043)	(.091)
Age	-.005***	-.007***	-.007**	-.001	-.001	.0008
	(.001)	(.001)	(.003)	(.001)	(.001)	(.003)
Locality population	-.0000146**	-.0000141*	-.0000208	-.0000125**	-.0000123*	-.0000192
	(6.30e-06)	(7.79e-06)	(.0000151)	(6.21e-06)	(7.09e-06)	(.0000126)
Mean Dep. Var.	0.7	0.66	0.56	0.67	0.63	0.57
Obs.	7709	4935	1177	9178	6001	1310
Num. Loc.	71	71	70	71	71	70
Wealth Quintiles	All	1-3	1	All	1-3	1

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variables is binary, indicating whether an individual 60 years of age or older lives in a household with a minor (younger then 18 years of age) or an 18-59 years old adult, respectively.

Table A.10: Effect of program eligibility on intra-municipal migration.

	(1)	(2)	(3)
Municipality with Locality 25,000-30,000	-.086	-.018	.0005
	(.060)	(.066)	(.002)
Obs.	2858	2858	2858
Num. Loc.	71	71	71
Dep. Var	% Change	% Change	% Change in Prop.
Weights	No	Yes	No

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. OLS with standard errors, clustered at the locality level, in parenthesis. Sample consists of all localities 100-15,000 inhabitants in the municipalities included in the analysis. Dependent variables are (i) the percentage change in the number of individuals 65 years of age or older in columns (1) and (2), and (ii) the change in the proportion such individuals in the locality total population between 2005 and 2010. Column (2) includes weights inversely proportional to the locality population to account for their higher variance.