

Consumption Smoothing, Frequency of Benefit Payments, and Effectiveness of Social Programs

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Abstract

We study the effect of differences in payment frequencies (monthly and bimonthly) across two noncontributory pension programs in Yucatan, Mexico. Compared to the bimonthly program, the monthly program increased doctor visits, reduced the incidence of hunger spells and lessened the need for support from charities. Under the bimonthly program expenditures on food and beverages significantly decreased near the end of the pay-cycle, while in comparison with the monthly program expenditures on more expensive non-cereal food as well as ownership of durable goods are higher. The results suggest that frequency of benefit payments is an important design feature of social programs.

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I. Introduction

Various studies have documented that individuals or households with little savings do not smooth their consumption between paychecks (or social security checks). Rather, consumption tends to peak when the check arrives and then falls until the arrival of the next check. This pattern is found both for expenditures (Stephens 2003; Stephens 2006) and for caloric intake (Shapiro 2005; Mastrobuoni and Weinberg 2009). The same pattern is found among Japanese pensioners (Stephens and Unayama 2011). From an academic viewpoint, these findings are of interest, since they may point towards hyperbolic discounting (Ainslie 1975; Laibson 1997).¹ From a policy viewpoint, a concern is that toward the end of the pay period people will reduce their food intake until it falls below recommended levels. For instance, Mastrobuoni and Weinberg (2009) report that in a sample from an older population without savings, the probability of consuming less than the USDA recommended consumption level for total calories increased by nearly 15 percent in the final week of the pay period.

In this paper, we analyze the extent of consumption smoothing among elderly households in the state of Yucatan, Mexico. Not only is it of interest to see if similar patterns of consumption are found among an older population in a very different setting, but given that many of the persons 70 years old or older in Mexico and other developing countries suffer from inadequate food availability, reporting not having enough money to eat, making sure that the caloric intake for older populations is sufficient during the whole pay period is of obvious importance. Under imperfect consumption smoothing, we would expect that

¹ One has to be careful in distinguishing consumption from expenditures. For instance expenditures tend to have a strongly cyclical component, due to regularly recurring bills (e.g. monthly rent or mortgage payments; cf. (Gelman et al. 2014)). Thus, observing cyclicity in expenditures by itself does not necessarily imply that consumption is not smoothed.

higher frequency of payments would be associated with more consistent spending on basic needs, such as food staples and doctor visits, and a reduction of hunger spells (increased food security).

On the other hand, receiving funds in a single larger payment instead of more frequent smaller amounts may allow individuals to take on large investments, such as house improvements or durable goods purchases. A large literature shows that poor individuals in developing countries often face difficulties in saving even for moderate goals (for instance, Banerjee and Duflo 2007). In fact, randomized-controlled trial evaluations of microcredit programs have shown that the largest impact of microcredit is to allow individuals to purchase durable goods, and reduce consumption of every-day “temptation items” such as tea in India (Banerjee et al. 2015). This can be explained by a lack of financial services that would allow for safely accumulating wealth or by self-control problems and credit constraints. Thus, a potential positive aspect of lower-frequency of payments is that it may allow individuals to take on investments, some of which may be health improving.

Thus, we would expect higher frequency of payment to be associated with higher spending on basic needs while low frequency could be associated with more durable good purchases. In fact, in a field-experiment Haushofer and Shapiro (2013) compare the impact on consumption of either giving rural households in Kenya a one-off cash transfer or dividing the transfer into nine smaller monthly amounts. They find that households receiving monthly transfers are more likely to improve food security, while households receiving lump-sum transfers are more likely to spend the money on durable goods.

Also, previous literature has found that individuals are unwilling to maintain large amounts of money because family pressures may arise when a family member keeps a substantial amount of money (Dupas and Robinson 2013), which suggests that lower frequency payments may result in more strenuous

family relationship and less security about money than higher frequency disbursements.

This paper exploits the introduction of two very similar permanent non-contributory pension programs in the State of Yucatan, Mexico, which have as the key difference between them, the frequency of the payments: *Reconocer Urbano* (monthly pension or high frequency) and *70 y Más* (bimonthly² pension or low frequency). In order to evaluate its impacts, *Reconocer Urbano* was rolled out experimentally: first, two towns with similar characteristics were chosen; second, one of them (Valladolid) was randomly selected by the government of the State to receive the program in 2008 (see Aguila et al. 2014) for a more detailed description of the town matching and selection process). The control town, Motul, did not receive the program. We conducted baseline surveys (Wave 1 or W1) in Valladolid and Motul before the roll-out of the monthly pension program in Valladolid in December 2008. Towards the end of the first follow-up surveys (Wave 2 or W2), in the summer of 2009, the Federal government began extending *70 y Más*, which originally targeted towns with less than 20,000 inhabitants, to towns with less than 30,000 inhabitants. As a result, on July 28 of 2009, households in Motul became eligible for the federal bimonthly pensions but not households in Valladolid because it had more than 30,000 inhabitants. In the first follow-up around 30 percent of the age eligible individuals in Motul report that they just started receiving *70 y Más*. In order to understand the effects of the differences in frequency of payments of non-contributory pension programs, we decided to conduct a second follow-up survey in 2010 (Wave 3 or W3) in both Valladolid and Motul. By that time Valladolid was still only eligible to receive the monthly pensions.

² To avoid ambiguity: we use the term bimonthly as synonymous to “every two months”.

First we show that households do not smooth consumption, and that expenditures on food and beverages decline throughout the payment cycle (with the consequences being more visible in the longer cycle).

We then analyze the changes experienced by the elderly in Valladolid and Motul between Waves 1 and 3 (W1 to W3) to shed light on the differential impacts of the high and low frequency programs. Between W1 and W3, we observe larger increases in expenditures on necessities (such as food and doctor visits) in the monthly program town (Valladolid) than in the bimonthly program town (Motul), as well as a reduction of cases in which families run out of food, reports of being hungry, or having a medical emergency and being unable to go to the doctor. On the other hand, the ownership of cell phones and bicycles increased in Motul relative to Valladolid, as does the consumption of more expensive food items (non-cereal). We also observe changes within the shorter time intervals (W1 to W2 and W2 and W3) and confirm that the timing of the changes is consistent with the timing of the introduction of each program.

The monthly program led to a larger reduction in net-transfers to the elderly by their family members, which is consistent with a pattern of higher expenditures at the early stage of the two-month cycle and subsequent need for transfers for basic needs. In addition, there is some evidence that the monthly pension program reduces older persons' fear that their money will be taken by someone they know and increases their satisfaction with their relationship with family members and other social contacts. No such effects appear to emerge with the bimonthly program.

The reader may note that the comparison between the two programs is not exact, since by the third wave the high frequency program had been operating longer than the low frequency program. Therefore, we interpret results with care. First, we focus on outcomes where the effect plausibly will be realized within a short time. Second, we look at whether effects are going in different directions

between W1 and W2, and between W2 and W3. Third, we do not try to interpret small differences between W1 and W3.

The remainder of the paper is organized as follows. In Section two, we describe the monthly and bimonthly non-contributory pension programs, the evaluation design, and the data. In Section three, we explore patterns of consumption smoothing in the two towns, particularly focusing on how expenditures vary with the time since last payment. Section four presents difference-in-differences (diff-in-diff) estimates of the impact of the monthly and bimonthly programs on a series of expenditure and consumption variables, family transfers and satisfaction measures. Section five analyzes the robustness of the diff-in-diff results using parametric and non-parametric methods. Section six discusses how our interpretation of the results may be affected by the fact that the monthly program had been operating longer than the bi-monthly program at wave W3. Section seven discusses potential sources of bias and Section eight concludes.

II. Background, Experimental Design, and Data

The social security program being implemented by the State of Yucatan is called *Reconocer Urbano*, a non-contributory, universal pension program aimed at elderly in towns with more than 20,000 inhabitants. The program was designed to provide a non-contributory pension payment of MXN\$550 or US\$70.2 at 2013 PPP per month to any individual 70 or older in semi-urban and urban areas (see Aguila et al. 2014). The monthly benefit is equal to almost one third of the monthly minimum wage in Yucatan (MXN\$1,865.95 in January 2013 or US\$238.2 at 2013 PPP).³ The program was implemented in phases throughout the state.

³ We denote Mexican pesos as MXN\$. The 2013 PPP exchange rate from Mexican pesos to U.S.

To be able to evaluate the effect of the provision of the old age pension, we chose two towns of more than 20,000 inhabitants with similar demographic and economic characteristics, one of which would receive the pension, while the other would be the control town and only receive the pension at a later stage. Valladolid was randomly chosen to start receiving the pension in 2008, while Motul was chosen as a control town.

We conducted a community survey to understand in more detail the differences between the two cities in terms of healthcare infrastructure, economic activity, and government programs, among others. None of the towns have flooding problems, they have enough public light systems, and the air quality is good. Both towns have similar federal government programs and state government programs. In terms of health infrastructure both towns have clinics of the Mexican Social Security Institute (IMSS), and the Ministry of health of the Government of the State of Yucatan. Valladolid has 6 clinics of the Ministry of health and Motul has only one. Also Valladolid has 4 private hospitals and Motul has none. All other health infrastructure is similar. The economic activity in both towns includes manufacturing (textile, automotive, wood, plastic, etc.), assembly plants, construction, wholesale and retail commerce, restaurants, and hotels. In addition, Valladolid has some agricultural employment. The most important economic activities in Motul are the assembly plant, construction, and services (commerce, restaurants, and hotels). For Valladolid the most important activities are services, manufacturing, and agriculture.

In sum, Valladolid has more inhabitants; therefore there is a larger infrastructure of services. The poverty index in Motul is slightly higher. They

dollars is taken from the Organisation for Economic Co-Operation and Development.

receive similar federal and state government programs. In terms of economic activity, they overlap in most sectors but Valladolid has also agriculture.

The federal government program *70 y Más* is a national non-contributory pension program similar to *Reconocer Urbano*. The program provides a bimonthly cash payment equal to MXN\$1,000 or US\$127.80 at 2013 PPP to individuals 70 and older. The program is run by the Ministry of Social Development (Secretaría de Desarrollo Social or SEDESOL) and was introduced in 2007 to rural localities with less than 2,500 inhabitants. In 2008, *70 y Más* was extended to towns with up to 20,000 inhabitants and in 2009 to towns of up to 30,000 inhabitants. In 2012, the program *70 y Más* was extended to the whole country for individuals 70 years old or older without other social security benefits, covering almost 80,000 localities across Mexico and more than 3.5 million beneficiaries.

Motul became eligible for *70 y Más* after the 2009 changes in the eligibility criteria. In July 2009, individuals aged 70 or over in Motul began receiving the non-contributory pension from *70 y Más*. Valladolid remained ineligible for the federal government program until 2012.

To evaluate the effects of the introduction of *Reconocer Urbano*, we conducted a number of surveys in both the control town and the treatment town. Items included in the survey instrument were taken or adapted from other longitudinal studies including the Mexican Health and Aging Study, the U.S. Health and Retirement Study, the New Immigrant Study in the U.S., *Oportunidades*, as well as from various family life surveys.

The surveys collected detailed community, household, and individual-level data at baseline (before the program was announced or implemented) and in two follow up interviews in both treatment and control towns. In those cases where eligible adults could not be interviewed, due to health issues or language difficulties, the interview was conducted with a proxy respondent within the same

household.⁴ Both baseline and follow up surveys collect data on health,, food security, and household-level data on availability of food, health care utilization and out-of pocket expenditures, financial and in-kind transfers among beneficiaries' children and neighbors, and on the economic activity of older workers, among other topics (see Aguila et al. 2014).

To build the sampling frame for this study, we first carried out a complete listing of all households in each town and screened them in order to identify households with age-eligible adults. We entered into a collaborative agreement with INEGI, the National Institute for Statistics and Geography (the federal agency in Mexico responsible for conducting the population census in addition to many other surveys) whereby they provided us with maps of the towns selected for each phase of *Reconocer Urbano*, while updating these maps as necessary (a cartographer accompanied our data collection team and updated the maps as households were being listed). The listing of households in Valladolid and Motul was conducted during June and July 2008. This created the sampling frame for the baseline survey. We compared the information (total number of households, number of households with age-eligible individuals and age-eligible individuals in the households) collected during the listing in Valladolid and Motul with the information of the Mexican Census 2005. Overall, the number of observations is very similar between our listing and the Census 2005, with small differences, mainly as a result of the different years of data collection (2005 vs. 2008) (Aguila et al. 2014).

Table 1 shows the dates of pension disbursements and survey dates for both towns.

[TABLE 1]

⁴ The questionnaire used for proxy respondents is a selection of the full survey and does not include any physical or anthropometric measurements.

The baseline data collection (W1) started in August 2008 for Valladolid and in November 2008 for Motul. After the collection of baseline data, the monthly pension program was implemented in Valladolid in December 2008. The first follow-up interview (W2) in both Valladolid and Motul was conducted simultaneously in July, August, and September 2009. Motul, started receiving the bimonthly pension program (*70 y Más*) on July 28, 2009 overlapping with the data collection of our follow-up survey in Motul, which was conducted between July 1 and August 31, 2009. As a result, part of the respondents in Motul were interviewed before they received *70 y Más*, while others were interviewed after they started receiving the federal pension. We compared baseline characteristics of individuals in Motul who were receiving the federal government program at the time of the interview and those who were not, and found no statistically significant differences between groups with the exception of the proportion of males (results available in online Appendix Table A). Households that had started receiving the federal government program in Motul had a higher proportion of males in comparison to those who had not yet received the federal government program (56.4 vs 47.9 percent). Both the monthly and bimonthly programs' disbursements of benefits occurred in a period of 1 or 2 days in Valladolid and Motul, respectively, whereas the survey was conducted over a period of about two months. This resulted in variation in the time gap between the last disbursement and the date of survey. We exploit this variation to study the effect of the two programs on consumption smoothing (Section three).

The second follow-up survey (W3) in Valladolid and Motul was conducted in June, July, and August 2010, one and a half years after Valladolid started receiving the monthly pension and approximately one year after elderly in Motul started receiving the bimonthly pension program.

Table 2 shows descriptive statistics for the samples in Valladolid and Motul at baseline (W1). The t-tests for the differences between the two towns

show that they have similar characteristics in terms of age, marital status, education, language spoken, the proportion of elderly living alone, number of household residents, proportion working for pay and monthly household income. Respondents in Motul are more likely to be able to read and write a message in Spanish (65.8 vs. 55.0 percent). Motul has a larger share of males 70 and older than Valladolid (50.4 vs 46.1 percent).

[TABLE 2]

The response rates at baseline were 91.4 percent in Valladolid and 95.2 percent in Motul; in the first follow-up survey response rates were 87.9 percent and 81.9 percent; and in the second follow-up the response rates were 80.6 percent and 78.5 percent, respectively.⁵ From the original sample interviewed at baseline in Valladolid of 1,346 individuals, 69 persons died, 19 changed addresses, 30 could not be contacted and 66 refused to be interviewed between baseline and first follow-up. The baseline sample in Motul comprised 1,073 respondents. Between baseline and first follow-up 64 persons died, and 17 changed addresses, 35 could not be contacted, and 101 refused to be interviewed. Between first and second follow-up surveys, 70 persons died, 23 changed addresses, 65 could not be contacted, and 114 refused to be interviewed in Valladolid and 59 persons died, 28 changed addresses, 46 were unable to be contacted, and 98 refused to be interviewed in Motul. We conducted an attrition analysis comparing demographic characteristics of the baseline respondents with the panel respondents and we did not find statistically significant differences

⁵ The response rate reported is AAPOR RR2, defined as the number of complete interviews (including proxy interviews) divided by the number of interviews (complete plus partial) plus the number of non-interviews (refusal and break-off plus non-contacts plus others) plus all cases of unknown eligibility following the guidelines of the American Association for Public Opinion Research (American Association for Public Opinion Research 2011) for calculating non-response rates.

(Aguila et. al 2015). Additional analyses of potential sample selection problems due to attrition are presented in section five.

III. Imperfect Consumption Smoothing

The considerable length of the survey instruments resulted in the survey team staying in each town over an extended time period. Table 1 presents the dates of the surveys and the dates of the disbursement of the two pension towns. The dates of the interviews vary substantially, even within wave and town, and hence for different respondents the time elapsed since the most recent benefit receipt varies substantially as well.

This allows us to study whether expenditures vary with the time elapsed since benefit receipt. In particular, the survey asks about expenditures on food and drinks at home and outside the home. The questionnaire included the following questions:

- *How much did the household spend last week on food eaten at home?*
- *How much did the household spend last week on beverages that you drank at home?*
- *How much did the household spend last week on food and beverages consumed out of the home?*

Table 3 shows estimation results of regressing total food and beverage expenditures (the sum of the three items asked in the questions above) both inside and outside the home during the previous week on the number of days elapsed since the most recent pension disbursement and a number of controls, using data from W2 and W3. See equation (1) below, where Y_{it} is the expenditure variable, α is a constant, D_{it} is the number of days elapsed since the last disbursement date, v_t are dummy variables for each of the waves -W2 and W3-, X_{it} is a vector of individual and family characteristics and ε_{it} is the error term.

$$Y_{it} = \alpha + \beta D_{it} + v_t + \delta X_{it} + \varepsilon_{it}$$

We estimate the equation above and cluster standard errors at the individual level⁶. Column 5 shows that in Motul each elapsed day is statistically significantly associated with about 2.1 fewer pesos spent on food and beverages. In Valladolid, on the other hand, column 1 does not show a statistically significant association among these variables. Columns 2 and 6 show results when we include a set of background characteristics in the regression. This changes the estimates somewhat, but qualitatively the conclusions remain the same.⁷

[TABLE 3]

Also note that the question asks how much was spent in the last week. Therefore, for interviews conducted during the first 7 days after payment, we would have inaccurate estimates regarding consumption smoothing after receiving the monthly or bimonthly pension. On the one hand, they just received the pension payment, while on the other hand they have had fewer days to spend it. In the extreme, when they have just received the pension, they may have not have had time to spend it at all. In fact, columns 3 and 4 for the monthly program and columns 7 and 8 for the bimonthly program of Table 3 show that the negative relationship becomes slightly stronger when we delete observations where the time since last disbursement is less than 7 days.

Conducting the same regressions for the separate expenditure variables (expenditures on food at home, beverages at home, and food and beverages outside of home), yields qualitatively similar results. A negative relationship is observed for each of those variables, and is robust to the set of controls included

⁶ Expenditure variables are deflated to real Mexican pesos of 2010, using the *Indice de Precios y Cotizaciones* by INEGI.

⁷ The lack of statistical significance in the monthly program does not necessarily mean a lack of relationship, but perhaps reflects a lower power due to a lower potential number of days. In fact, when we restrict the sample to observations that are at most one month after benefit receipt, results for the monthly and bimonthly program group are statistically insignificant (results available upon request).

in the specification, although the magnitude of the effect does vary somewhat depending on the exact specification (See online Appendix Table B, Panels B1 and B2).

Figure 1 shows the time paths of the estimated mean expenditures per day elapsed since last pension payment for the different expenditure categories, using a fractional polynomial approximation of the data. The grey bands are 95 percent confidence bands. In each panel, the left side figures graph expenditures in the monthly program (Valladolid), whereas the right side figures do the same for the bimonthly pension town (Motul). For both total expenditures and each expenditure category separately (food at home; beverages at home; food and beverages outside the home) we observe a peak right after the disbursement of the benefit in the bimonthly program and then a steep decline. It is interesting to note that for a number of categories the data actually suggest a rise in expenditures in the first few days of the payment cycle. This is consistent with the fact that recipients in this situation have had only a few days to spend the extra income and the survey question inquires about expenditures over the previous seven days.

[FIGURE 1]

Given that Figure 1 only shows mean expenditures, another way to examine this is by looking at the proportion of households spending less than certain cut-off amounts. Figure 2 shows the relationship between “days since payment” and the proportion of households who spent less than MXN\$400. The proportion of households in the bimonthly program spending less than MXN\$400 increases with time since receipt of the last paycheck.

[FIGURE 2]

This relationship does not depend on the specific threshold chosen to conduct this analysis. Online appendix Figure C, Panels C.1 to C.5 show the same graphs when the thresholds are, respectively, MXN\$100, MXN\$200, MXN\$300, MXN\$400, and MXN\$500. These results are consistent with other studies

(Stephens 2003; Stephens 2006) showing that expenditures peak after receipt of social-security benefits in the US and the UK, and decline thereafter. Other studies (Shapiro 2005; Mastrobuoni and Weinberg 2009) find this cyclicalities not only in expenditures but also in consumption. Unfortunately, we cannot directly test for the cyclicalities of consumption since we do not have data on daily food intake. In the following section, we examine the impact of the monthly and the bimonthly pension programs on a variety of other outcome measures.

IV. Estimates of the Effects of the Monthly and Bimonthly Pension Programs

Given that the two towns are similar in terms of their location in the State of Yucatan—and their socioeconomic and demographic characteristics—we would expect the introduction of the pension programs to have similar effects if the programs had been exactly the same. Therefore, we attribute the differences in the outcome variables to the difference in the design of these two programs: namely, the periodicity of the payments (monthly and bimonthly).

First, we analyze the mean difference in the changes between W1 and W3 between the two groups. The comparison is subject to the caveat that by W3 the monthly program had operated for longer because the monthly program started in December 2008 and the bimonthly program started in July 2009. To the extent that some recipients take a long time to adapt their behavior, the W1-W3 comparison would tend to overestimate the impact of the monthly program in comparison to the bimonthly program. This would not affect outcomes whose effect is fully realized within one year. We discuss this further in the following Section.

Second, we compare the changes in outcomes that occurred between W1 and W2. By comparing W1 and W2, we analyze short-term changes following the introduction of the monthly pension program. An extensive analysis of these six-

month effects of the monthly program on food availability and economic outcomes, health care utilization and health outcomes is provided in Aguila et al. (2015). While in W1 none of the towns were receiving pensions, by W2 the elderly of Valladolid had been receiving monthly pension payments for approximately six months, while the elderly in Motul during the fieldwork for W2 started receiving the bimonthly program. We assume negligible effects of the bimonthly program for elderly in Motul who started receiving the pension while we were collecting the W2 data. We conducted robustness analysis by including and excluding individuals in Motul who received the bimonthly pension during W2 and we did not find statistically significant differences, likely because the program in Motul was too recent to have an impact already (results available in online Appendix Table D).

Third, we analyze changes between W2 and W3 to compare the effects of the introduction of the bimonthly program in comparison with the monthly program. It is important to note here that, to the extent that certain effects of the monthly program take more than six months to fully realize, the W3-W2 comparison does not fully capture the effects of the bimonthly program, i.e. Valladolid is an imperfect control group for the introduction of the bimonthly program in Motul.

We group the outcomes of interest in four categories: 1) basic needs: health care, food consumption, and other income; 2) durable good ownership and luxury good expenditures; 3) private transfers: to and from family and friends; 4) measures of subjective wellbeing: satisfaction with income and relationships with family members and social contacts, and emotional state. Table 4 summarizes the variables.

[TABLE 4]

A. Program Participation

Before analyzing program impacts, we study the incidence of the programs. The monthly and bimonthly pension programs are universal and voluntary, but none of the programs achieved 100 percent coverage. Table 5 shows that both programs significantly increased the proportion of older persons receiving any support. Ninety-four percent of Valladolid respondents in W2 reported receiving the monthly pension (up from zero), and this number remained stable in W3.

[TABLE 5]

In all waves, a negligible number of respondents in Valladolid report receiving benefits from the bimonthly pension program. These answers most likely reflect measurement error, as this program had not been implemented in Valladolid. A negligible number of respondents in W1 also report receiving the bimonthly pension at the baseline survey in Motul, increasing to 38 percent in W2 (when the program was being rolled out) and 89 percent in W3 (when the program had been in effect for about a year).

One possible concern is that the access to other public programs or their take-up may have changed as a result of the introduction of the monthly or the bimonthly pension programs. We do in fact find a modest reduction in W2 and W3 in the proportion of older persons reporting receiving *Oportunidades*⁸ in Motul. The proportion of older persons with *Oportunidades* in Motul decreased by 4.5 percentage points between W2 and W3 (see columns 5 and 6 in Table 5). This effect may be explained by a change in the operation rules of *Oportunidades* published in December 2009 and implemented since 2010 to avoid duplicity of benefits. Individuals claiming *Oportunidades* cannot be beneficiaries of *70 y Más*.

⁸ *Oportunidades* offers a cash transfer and a food assistance transfer for elderly adults living in eligible households, conditional on attending nutrition and health training sessions. Since 2014, *Oportunidades* is called *Prospera*.

Similar but smaller effects can be observed for the program *PROCAMPO*.⁹ Those effects are small compared with the changes in the proportion of older persons who started receiving the monthly and bimonthly pension benefits. Thus, the introduction of both pension programs had a substantial effect on the percentage receiving support from any public program: In Valladolid, the percentage not receiving any support decreased from 84.6% to 4.3%; while in Motul it fell from 75% to 7.8%.

We now turn to an analysis of the impact of the programs on the outcomes of interest. Results are presented in Tables 6.1 through 6.4, which show the average values of the outcome variables in Valladolid and Motul for W1, W2, and W3. Column 7 of each table shows the diff-in-diff estimates of the monthly pension program six months after its implementation, using Motul as comparison group. Column 8 of each table shows the diff-in-diff estimates of the impact of the bimonthly program in comparison to the monthly program using W3 and W2. Column 9 of each table shows the diff-in-diff estimates of the impact of the bimonthly program in comparison to the monthly program using W3 and W1.¹⁰ Since we are testing multiple hypotheses at the same time, we apply a Holm-Bonferroni correction (Holm 1979).

B. Basic needs outcomes

We would expect both the monthly and bimonthly programs to increase expenditures on basic needs. However, one might expect the impact of the

⁹ PROCAMPO is an agricultural support program with the aim of improving the wellbeing of growers by increasing and stabilizing their income. The program provides flat-rate payments to help farmers overcome financial constraints.

¹⁰ Columns 7 to 9 show the Valladolid minus Motul difference in the mean individual difference among sample respondents. Since not all respondents are present in all rounds, these estimates in some cases differ (although only slightly) from differencing directly the means presented in Columns 1 to 6 of these tables.

monthly pension program to be larger when high-frequency payments lead to more consumption smoothing; while receiving less frequent but higher payments may lead to expenditures on larger investment goods or splurging.

We find evidence consistent with these hypotheses. First of all, we note that the effect of the monthly pension program seems to be larger for many of the basic needs outcomes. For example, the indicator variable for having visited a doctor increased in the monthly pension town, Valladolid, from 41.7 percent in W1 to over 50 percent in W2 and W3 (Table 6.1); while it remained fairly constant over the period in Motul. Overall, there is a 10 percentage point increase in the probability of doctor visits between W1 and W3 in Valladolid relative to Motul (see column 9 in Table 6.1) which is statistically significant even after accounting for multiple hypotheses testing. The change mostly happened between W1 and W2 (0.070 – see column 7) consistent with the introduction of the program. Similarly, the probability that someone had a serious health problem but did not visit a doctor was reduced in Valladolid relative to Motul; and the average total number of doctor visits increased between W1 and W3 by 0.287 in Valladolid compared to Motul (p-value is 0.03 before the Holm-Bonferroni correction, but this difference is still significant at the 10 percent after the correction).

[TABLE 6.1]

Several other expenditures on basic needs also increased more between W1 and W3 in Valladolid compared to Motul: the number of interviewees who responded they had health problems but did not go to the doctor because of lack of money was reduced between W1 and W3 in Valladolid compared to Motul by 9.5 percentage points.

Compared to Motul, the frequency of running out of food reported by respondents in Valladolid decreased by 0.169 between W1 and W2 (on a 1 to 4 scale, where 1 is never and 4 is always), and that effect remained approximately

the same up to W3 (0.159). Similarly, the frequency with which Valladolid respondents reported to be hungry because they could not afford food also declined in comparison to Motul between W1 and W3 (the 1 to 4 scale declined by 0.314 points). The effect on several variables including “how often hungry because can’t afford food”; “how often someone in the household does not eat for 1 day”; “how frequently received food from charity” had a larger positive effect for the monthly pension program than for the bimonthly pension program. This is clear from Column 9, where the sign of these diff-in-diff estimates is negative.

Finally, we found a decline in work for pay by 50.8 percent and 43.8 percent between W1 and W3 in Valladolid and Motul respectively. The difference in the decline was not statistically significant among towns suggesting a similar reduction in work for pay in the monthly and bimonthly programs. Consistent with these results, Juarez and Pfutze (2014) found that the federal program *70 y Más* with bimonthly disbursements significantly reduced the labor force participation predominantly for elderly men. Similarly Kassouf and Rodriguez De Oliveira (2012) found a decrease in the probability of elder beneficiaries to work in the Brazilian noncontributory pension program with monthly disbursements.

C. Durable and Luxury Good Expenditures

The increased pension income should allow older persons and members of their households to buy durable goods and perhaps also consume more of non-basic or “luxury” consumption goods. Though both programs may have an impact on the durable and luxury good variables, one could expect the effect of the bimonthly pension program to be larger, since right after benefit receipt the recipients have more liquidity to spend on big ticket items. The surveys contained questions on household ownership of several such items: telephone, cell-phone, refrigerator, bicycle, etc. In addition, we created one variable: “no-equipment” which is an indicator of the household owning none of the listed durables.

Table 6.2 shows an increase in the ownership of several goods in Motul relative to Valladolid. For some of the goods, we observe a statistically significant increase (after correcting for multiple hypotheses testing) from W1 to W3 in Motul relative to Valladolid, despite the fact that the bimonthly program was rolled out later (and therefore there was less time for the increase in ownership to materialize). In particular we observe an increase in Motul in the percentage of older persons owning a cell phone from 14.0 percent to 24.0 percent, while the ownership rate decreased in Valladolid from 17.9 percent to 14.5 percent. The ownership of bicycles decreased in Valladolid from 20.4 percent to 13.6 percent, while it stayed flat in Motul.¹¹

[TABLE 6.2]

Neither of the programs seems to have had a significant effect on the number of livestock owned. The reported frequency with which pensioners eat non-cereal food items increased in both towns, but the bimonthly pension program appears to have the largest effect. The differences in effects between the two towns are however often insignificant. Compared to *tortilla*, and other cereals, the consumption of these other food-types could be considered as luxury goods. The diff-in-diff coefficients in Column 9 of Table 6.2 are negative (indicating a larger increase in Motul) for the consumption of non-cereal food-items (meat, eggs, dairy, and fruit). Valladolid did not see an increase between W1 and W2 (coefficients in Column 7 are not statistically significant), whereas there was an increase in Motul relative to Valladolid between W2 and W3, and overall between W1 and W3. There was a statistically significant (and robust to multiple hypotheses testing correction) increase in the consumption of meat, eggs, dairy and fruit increased between W2 and W3 in Motul relative to Valladolid.

¹¹ Some went from not owning bicycles to owning, while others went from owning to not owning, resulting in an unchanged level of ownership in Motul.

This increase remains statistically significant overall between W1 and W3 for the case of dairy (the p-value for meat and fruit equaled 0.08 and 0.1 respectively). These results suggest that the bimonthly program had a larger effect on the consumption of non-necessities.

D. *Private Transfers to and from Family and Friends*

One may expect that the increase of income of the older population may reduce the net-transfers they receive from family members and friends. A “crowding-out” effect of private transfers as a result of the introduction of a non-contributory pension program has been documented, among others, by Jensen (2004) for the South African case and by Juarez (2009) for Mexico City.

Although we would expect both the monthly and bimonthly programs to affect net-transfers, we may also expect some differences in the effects of each program. If consumption is smoother with the higher frequency of payment of the pension program, it could reduce or eliminate transfers from family or their social network or charity for basic needs. The inability to smooth consumption under a low-frequency pension program could result in pension recipients in Motul ending the period without cash and in need of assistance from family, friends and/or charity. The receipt of a large sum of money in the bimonthly pension program could also increase transfers from the recipient to family and friends right after the receipt of payment, because it may be more difficult to deny sharing the cash from the pension while receiving a large amount. If the bimonthly pension is partly transferred to others, then later in the two-month period, the elderly may require a transfer to cover basic needs. Thus, we could expect the monthly pension program to reduce or eliminate the transfers to the older population, while the bimonthly pension program could be less successful in doing so (while possibly increasing the transfers in the other direction as well).

We find evidence for these mechanisms in the results presented in Table 6.3. The monthly pension program reduces both the percentage of the older population receiving money from others and the total amount of money received by them. At baseline, 31.0 percent of individuals 70 or older in Valladolid received money, while only 23.0 percent did so at the second follow-up (W3). The percentage that received money in Motul was reduced only from 21.5 to 19.1 percent in the same period. Compared to Motul, the reduction between waves 1 and 3 in the number of recipients who received funds in Valladolid was 5.8 percentage points (or 18.7 percent of the baseline level). The reduction in Valladolid mainly occurred between W1 and W2 (consistent with the introduction of the program), but it continued between W2 and W3. Similarly, Valladolid showed a reduction, compared to Motul, in the total amount of money received, the percentage of the older population receiving in-kind transfers, total in-kind transfers received, and the frequency with which family or friends pay for expenses including out of pocket.

These findings are consistent with the results in Juarez (2009) and Jensen (2004) who both analyze noncontributory pension programs with monthly disbursements.

[TABLE 6.3]

On the other hand, the cases where the elderly gave out money increased in Motul relative to Valladolid. Total money given by the elderly increased in Motul relative to Valladolid between W1 and W3 (significant at the 10 percent level after correcting for multiple hypotheses testing), as a result of out-transfers are falling in Valladolid and slightly increasing in Motul. This set of results is consistent with a situation where under the program with lower frequency of payments, the elderly are more likely to give out money at the beginning of the payment period, but then are in need of help and receive more transfers towards

the end of the two-month period. The average amounts given are very modest however, so these are small effects on average.

E. Subjective Wellbeing and Satisfaction with Relationships and Income

Table 6.4 shows that between W1 and W3 satisfaction with income changed in both towns by about the same amount so that the difference in the changes is indistinguishable from zero (from 3.435 to 3.713 in Valladolid, and from 3.421 to 3.738 in Motul, on a five point scale where 1 is very dissatisfied and 5 is very satisfied). However, satisfaction with income improved (0.047) in Valladolid relative to Motul from W1 to W2, and in Motul relative to Valladolid from W2 to W3 (0.094), consistent with the timing of the introduction of each program.

[TABLE 6.4]

That satisfaction with income improves after the introduction of a pension program is no surprise. However, the sporadic possession of relatively large sums of money by the older persons could create tensions within the family that a higher-frequency pension might avoid. In fact, one of the often-cited obstacles for savings is the pressure by family members to get access to those funds (Dupas and Robinson, 2013). In view of this and the effects on the direction of transfers observed in the previous subsection, it is possible that a lower frequency of payment has detrimental effects on the relationship of the pensioner with family members and other social contacts.

Satisfaction with the relationship with family members improved less in the bimonthly program (Motul) than in the monthly program (Valladolid). This is also the case with regard to the relationship with social contacts; how often the respondent feels abused and feels that his money will be taken by someone else. Given that Motul started receiving the pension around the second interview, it is remarkable that between W2 and W3 the changes in Valladolid were more

favorable than in Motul: satisfaction with family relations and social contacts increased more and the frequency with which one feels abused fell.

Satisfaction with relationships with family members and satisfaction with social contacts both improved more in Valladolid than in Motul. Both types of satisfaction improved marginally in Motul, but quite substantially in Valladolid. This is consistent with the hypothesis that holding sums of disposable income creates stress in relationships, especially so when the sum of the pension is large (which may counteract an overall positive impact on relationships of having more money).¹² It suggests that smaller sums with higher frequency may be better in terms of reducing or avoiding increased frictions with social contacts.

V. Robustness of Difference in Difference Estimates

In this section, we describe the robustness tests we conducted using parametric diff-in-diff methods and nonparametric diff-in-diff methods with propensity score matching. We also provide a more formal analysis of the assumptions needed to support our interpretation of the diff-in-diff estimates.

Parametric and Nonparametric Diff-in-Diff Estimates

The first robustness test consists of conducting the diff-in-diff in means analysis of Section IV in a regression framework where we control for individual and household characteristics. The equation estimated to analyze the impact of the monthly and bimonthly programs between waves 1 and 3 is as follows:

$$Y_{it} = \alpha_0 + v_t + \alpha_1 T + \alpha_2 (T*B) + \delta X_{it} + \varepsilon_{it}, \quad t = 1, 3 \quad (1)$$

¹² Although on average satisfaction with relationship with family members improves in both Motul and Valladolid, there were significant proportions for whom satisfaction went down. In Valladolid, only 14 percent of individuals reported a lower level of satisfaction with family members in W3 than in W1, whereas 21 percent of Motul expressed a lower level in the final wave.

where Y_{it} is the outcome of interest for observation i in wave t ; ν_t is a time effect, which is equal to zero for W1. It represents common trends across both towns. The dummy variable T equals 1 when a town is treated, so in this case $T=1$ at W3 for both towns and $T=0$ at W1 for both towns; the indicator variable B equals 1 for the bimonthly town (Motul) and zero for the monthly town (Valladolid). X_{it} is a vector of individual controls. The parameter α_2 measures the difference in the treatment effect between the monthly and the bimonthly pension program between W1 and W3. This coefficient is the regression analog of the differences-in-differences in means reported in column 9 of Tables 6.1 through 6.4. Since not all households take up the monthly and bimonthly pension benefits, the estimated effects are Intent to Treat (ITT) estimates. Since here we are comparing only waves 1 and 3, the parameters ν_3 and α_1 are not separately identified, but we retain the notation for comparability with later discussions.

A second robustness check uses propensity score matching, to correct nonparametrically for differences in baseline characteristics between Valladolid and Motul (Heckman et al. 1997). The propensity score includes the same control variables as in the regression equation (1). We impose common support across groups and use Kernel matching to estimate the ITT. The standard errors are obtained with the bootstrap method with 1,000 replications.

Appendix Table I, Panels I.1 through I.4 provides comparisons of the diff-in-diff estimates between W1 and W3 with the ITT regressions and the results from propensity score matching. Column 1 in these tables reproduces the diff-in-diff in means from Tables 6.1 to 6.4; column 2 presents ITT regressions and column 3 presents propensity score matching results. Overall, the results are very

similar across the three methods both in terms of sign and magnitude and in terms of statistical significance.

We conducted similar analyses of the changes between W1 and W2, and between W2 and W3. These results are shown in Online Appendix Table C, Panels C.1 to C.4. The results including the regression analysis with control variables and the propensity score are again very similar to the diff-in-diff of the means. In addition, we conducted an analysis that excludes Motul respondents whose W2 survey happened after the rollout of *70 y Más* (the bimonthly program), that is, excluding observations for Motul households whose survey date fell after the start of the *70 y Más* rollout. These results are available in online Appendix D Panels C.1 to C.4 columns 4 and 8. We find qualitatively similar results between the diff-in-diff in means results reported in Section IV (and columns 1 and 5 in Panels C.1 to DC4), which includes Motul respondents whose W2 survey happened after the *70 y Más* program started the rollout.

VI. Interpreting the Estimates under Alternative Sets of Assumptions

Although we argue that the differences in the frequency of payment are responsible for the different impacts of the programs, it is important to acknowledge that the programs differ in more respects than just the frequency of payment. In particular, the bimonthly program was introduced later while there is also a small difference in the payment amounts (the monthly equivalent of the bimonthly program payment was MX\$500, while the monthly program paid MX\$550). In what follows, we discuss the extent to which these differences may impact our interpretation of the results.

Program Duration

At W3 the monthly program had been in place longer. In this section, we discuss more formally the assumptions needed for our interpretation of the results

to be accurate. We start with an informal discussion and then turn to a formal analysis.

First, we note that, the analysis of W1 to W2 depends only on the standard diff-in-diff assumptions (though it only captures the short-term impacts of the monthly program). Second, as long as the effects take less than one year to be fully realized, our W1 to W3 comparisons accurately capture the differential effects of the monthly versus the bimonthly program. In addition, if the effects take at most six months to fully realize, then both the W1 to W2 analysis fully captures the effect of the monthly program, and the W2 to W3 captures the effects of the bimonthly program. If the effect of the program takes more than six months to be realized, the W2 to W3 comparison does not identify the sole effect of the bimonthly program (as it is still affected by the changes taking place in Valladolid as a result of the introduction of the monthly program). If it takes more than a year, then the W1 to W3 presents a biased comparison of the two programs, as the bimonthly program effect is not fully realized by W3.

However, even when we are not comfortable with the assumption that the effects are fully realized within a year, we can still make important inferences. As is shown below, as long as we are willing to assume that the effects are monotonically increasing or decreasing with time, and at a non-increasing rate (i.e. the additional effect in the second year would not be higher than the effect in the first year), we can bound effects in certain cases. For instance, whenever we observe a larger W3-W1 increase in Motul than in Valladolid, then the bimonthly program effect is decidedly larger (since with only one year, its effect was larger than the one and a half years effect of the monthly program). This is relevant for instance for the durable good effects: the fact that the effect is larger there even though the program was in place for only one year (versus one and a half of the comparison program) suggests that the effect could be even larger over a longer time period.

Similarly, assuming that the rate of change in the effects of the programs is non-increasing over time, when we observe an increase in the W2-W1 outcome in Valladolid, and the difference in that outcome between Valladolid and Motul did not decrease between W3 and W2 (as for some of the necessities outcomes), we can be certain the effect of the monthly program was larger than of the bimonthly program (since, in that case, the effect from month 6 to 18 of the former was larger than the month 0 to 12 of the latter, and we are assuming that the changes in effect sizes are non-increasing with time).

Turning to a more formal analysis, we lay out several assumptions under which the interpretation of the outcomes is justified. Consider the following two equations, the first one for the monthly program group (m) and the second one for the bimonthly program group (b).

$$Y_{it}^m = \alpha_0 + \nu_t + \gamma_{mt}T_{mt} + \varepsilon_{it}^m, \quad t = 1, 2, 2', 3 \quad (2)$$

$$Y_{it}^b = \delta_0 + \nu_t + \gamma_{bt}T_{bt} + \varepsilon_{it}^b, \quad t = 1, 2, 2', 3 \quad (3)$$

The notation $t = 1, 2, 2', 3$ indicates that for ease of interpretation we distinguish four waves (W1, W2, W2', and W3) with 6 months between each wave, although we only collected data in waves W1, W2, and W3. T_{mt} and T_{bt} are dummies indicating the *monthly* (m) or *bimonthly* (b) treatment. T_{m1} is zero and T_{m2} , $T_{m2'}$, and T_{m3} are equal to one, indicating that the *monthly* treatment was implemented after W1 and continued in subsequent periods. Similarly, T_{b1} and T_{b2} are zero and $T_{b2'}$, and T_{b3} are equal to one, indicating that the *bimonthly* treatment was implemented after W2. Notice that ν_t is the same in both equations, which represents the common trends assumption. The error terms ε_{it}^m and ε_{it}^b , satisfy the classical assumptions with conditional mean zero. We have omitted individual controls for simplicity of exposition, but these do not affect the basis argument.

Notice that equations (2) and (3) are generalizations of equation (1), which only compares W1 and W3. This can be seen as follows. Define

$$\begin{aligned} Y_{it} &\equiv B.Y_{it}^b + (1-B).Y_{it}^m \\ \varepsilon_{it} &\equiv B.\varepsilon_{it}^b + (1-B).\varepsilon_{it}^m \end{aligned} \quad (4)$$

Note that $T_{m1} = T_{b1} = 0$ and $T_{m3} = T_{b3} = 1$, so we can replace these treatment variables by one treatment variable T equal to zero at W1 and equal to one at W3. Thus (2) and (3) imply:

$$\begin{aligned} Y_{it} &= B.\delta_0 + (1-B).\alpha_0 + v_t + (B.\gamma_{b3} + (1-B).\gamma_{m3})T + \varepsilon_{it} \\ &= \alpha_0 + B(\delta_0 - \alpha_0) + v_t + \gamma_{m3}.T + (\gamma_{b3} - \gamma_{m3}).(T * B) + \varepsilon_{it} \end{aligned} \quad (5)$$

This is equivalent to (1) with $\alpha_1 = \gamma_{m3}$ and $\alpha_2 = \gamma_{b3} - \gamma_{m3}$; the term $B(\delta_0 - \alpha_0)$ would be absorbed in δX_{it} in (1) provided that X_{it} contains a dummy variable to indicate the bimonthly town.

We define:

$$\bar{Y}_t^m \equiv E[Y_{it}^m], \bar{Y}_t^b \equiv E[Y_{it}^b], \Delta \bar{Y}_t = \bar{Y}_t^m - \bar{Y}_t^b, t = 1, 2, 2', 3 \quad (6)$$

So that,

$$\Delta \bar{Y}_t = \alpha_0 - \delta_0 + \gamma_{mt}T_{mt} - \gamma_{bt}T_{bt}, t = 1, 2, 2', 3 \quad (7)$$

Result 1. The 6 months effect of the monthly program, W2-W1, is identified under standard diff-in-diff assumptions (no additional assumptions needed).

Derivation of Result 1:

For $t=1$ we have that $\Delta \bar{Y}_1 = \alpha_0 - \delta_0$. That implies that the difference between the monthly and bimonthly groups at W1 identifies $\alpha_0 - \delta_0$. For $t=2$ we have $\Delta \bar{Y}_2 = \alpha_0 - \delta_0 + \gamma_{m2}$. Then, $\Delta \bar{Y}_2 - \Delta \bar{Y}_1 = \gamma_{m2}$. γ_{m2} is the treatment effect of the monthly program six months after the pension program implementation. This is the population equivalent of the diff-in-diff estimator between W2 and W1 (referred as W2-W1).

Result 2. When the effects take less than one year to be fully realized, then the W3-W1 diff-in-diff analysis identifies the differential effects of the monthly and bimonthly programs.

Derivation of Result 2:

For $t = 3$ we have $\Delta\bar{Y}_3 = \alpha_0 - \delta_0 + \gamma_{m3} - \gamma_{b3}$. Thus, we identify $\gamma_{m3} - \gamma_{b3}$ by $\gamma_{m3} - \gamma_{b3} = \Delta\bar{Y}_3 - \Delta\bar{Y}_1$. Ideally, we would compare treatments in the monthly and bimonthly programs of the same duration. So we would like to compare $\gamma_{m2'} - \gamma_{b3}$, the effect of monthly program one year after the pension implementation ($\gamma_{m2'}$) and the effect of the bimonthly program one year after the pension implementation (γ_{b3}).

Assumption 1: $\gamma_{m2'} = \gamma_{b3}$. That is, the effect in the monthly program group takes at most one year to fully realize. In that case we have:

$$\gamma_{m2'} - \gamma_{b3} = \gamma_{m3} - \gamma_{b3} = \Delta\bar{Y}_3 - \Delta\bar{Y}_1 \quad (8)$$

We would identify the differential effects of the programs, by the diff-in-diff between W3 and W1 (referred as W3-W1).

Result 3. When the effects of the monthly and bimonthly programs take less than six months to be fully realized, the effect of the bimonthly program is identified through the W3-W2 comparison.

Derivation of Result 3:

Assumption 2: $\gamma_{m3} = \gamma_{m2'} = \gamma_{m2}$ and $\gamma_{b3} = \gamma_{b2'}$, i.e. the effects of the *monthly* and bimonthly programs take at most six months to be fully realized.

$$\text{Then, } \Delta\bar{Y}_3 - \Delta\bar{Y}_2 = \gamma_{m3} - \gamma_{b3} - \gamma_{m2} = -\gamma_{b3} = -\gamma_{b2'} \quad (9)$$

We would identify the effects of the bimonthly program by the diff-in-diff between W2 and W3 (W3-W2). However, if we are not willing to assume that the effects take a given time to fully realize, but we assume that all effects are either monotonically non-decreasing with time (the first derivative is non-negative everywhere) or monotonically non-increasing with time (the first derivative is

non-positive everywhere) and if moreover the rate of change of an effect is not increasing over time (the second derivative is non-positive everywhere), then we obtain Results 4 and 5.

Result 4. If the W3-W1 diff-in-diff estimate is larger in the bimonthly program group for a given outcome, then the impact of the bimonthly program is larger for that outcome.

Result 5. If we observe an increase in the outcome between W1 and W2 in the monthly program group, and the difference in that outcome between the *monthly* and bimonthly program groups diff-in-diff do not decrease between W2 and W3 (as for some of the necessities outcomes), we can be certain the effect of the monthly program was larger than of the bimonthly program (since, in that case, the effect from months 6 to 18 of the monthly program was larger than the months 0 to 12 of the bimonthly program and we are assuming non-positive second derivatives).

Derivation of Results 4 and 5:

Assumption 3: Effects of each program are either monotonically non-decreasing or non-increasing with time; the second derivative is non-positive everywhere.

Without loss of generality, assume all impacts are non-negative (we can always redefine outcomes so that this is the case). This implies

$$0 \leq \gamma_{m2} \leq \gamma_{m2'} \leq \gamma_{m3} \text{ and } 0 \leq \gamma_{b2'} \leq \gamma_{b3} \quad (10)$$

Case 1: The bimonthly program overall impact (W3-W1) is larger (effects in the bimonthly program group are stronger than in the monthly program group). Then we have

$$\text{Result 4. } \gamma_{m3} - \gamma_{b3} < 0 \rightarrow \gamma_{m2'} \leq \gamma_{m3} < \gamma_{b3} \quad (11)$$

In other words, the bimonthly program effect is larger.

Case 2: The difference between the monthly and bimonthly program increased between W2 and W3. In other words:

$$\Delta \bar{Y}_3 - \Delta \bar{Y}_2 = \gamma_{m3} - \gamma_{b3} - \gamma_{m2} > 0 \quad (12)$$

Since $\gamma_{m2'} \geq \gamma_{m3} - \gamma_{m2}$, equation (12) implies:

Result 5. $\gamma_{m2'} \geq \gamma_{m3} - \gamma_{m2} > \gamma_{b3}$.

It is straightforward (though somewhat tedious) to verify that under these assumptions our interpretation of the differences between the two programs remains valid, despite the difference in treatment duration. In what follows, we discuss which of the above results are invoked to sustain our main findings.

Basic Needs (Health Care and Food Consumption) Under the weakest assumptions, we can conclude that the monthly program increased necessities consumptions in the first 6 months (result 1). Since, for several outcomes, the impact of the monthly program increased between W2 and W3, so that the W3-W1 coefficient (column 9 in Table 6.1) is larger for W2-W1 (column 7) we can invoke *Result 5* to conclude, under the assumption of weak monotonicity of program impact (A3), the 1-year effect of the monthly program is larger than the bimonthly program. This result applies to outcomes such a number of doctor visits, which increased in Valladolid relative to Motul between W1 and W2; and to the frequency with which they run out of food, which decreased in Valladolid relative to Motul between W1 and W2, and stayed even between W2 and W3.

If we wanted to establish the impact of the bimonthly program (beyond stating that the impact was smaller than that of the monthly program), we would need to use Result 3 by making the stronger assumption that the effect of the monthly program was fully realized within 6-months (A2). This may not be the case for some of these variables as suggested by the fact that the number of doctor visits in Valladolid continued increasing between W2 and W3. The same thing

happened, for example, with the percentage of people who said sometimes they do not have enough to eat. Thus, we do not venture into establishing the impact of the bimonthly program on health care and food consumption items beyond stating that its effect is lower than that of the monthly program

Work for Pay. The 6-month impact of the monthly program (Result 1) points to a reduction in the number of elderly who work for pay (4 percentage points or approximately 23%). Assuming the program effects are fully realized in less than a year (A1), Result 2 allows us to interpret the coefficient of column 9 in Table 6.1 as the difference in the effect between the programs, which was statistically indistinguishable from zero. Making the stronger assumption that effect was fully realized by W2 (A2), Result 3 would allow interpreting the result in column 8 of Table 6.1 as the effect of the bimonthly program, which equaled 5.7 percentage points, or an effect of a magnitude statistically indistinguishable from the 6-month monthly program effect. Overall, we can conclude that both programs reduced work for pay by the elderly.

Durable and Luxury Goods Assuming that the increase in ownership of luxury and durable goods due to the pension programs is marginally decreasing (the effect may increase over time, but at a non-increasing rate), the effect of the bimonthly program is larger than that of the monthly program, since the W3-W1 comparison favors Motul despite the lower time it had to affect these outcomes (at least for cellphone and bicycle ownership, and dairy good consumption). Under Result 1, we can conclude too that the monthly program had no effect on these outcomes, or that it was small enough that we could not detect it statistically. Under Result 3, we can estimate statistically significant increases in durable good ownership and “luxury” good (meat, egg, dairy and fruit) consumption as a result of the bimonthly program.

Transfers. Result 1 allows us to interpret the W2-W1 result as implying that the monthly program crowded-out monetary and in-kind transfers to the elder (see

column 7 of Table 6.3, though some coefficients are not statistically significant after applying the Holm-Bonferroni correction). These effects become even larger at W3, and thus we can use Result 5 to conclude that the monthly program created a larger crowd-out than the bimonthly program. If we were willing to assume that effect of the monthly program had been fully realized by W2, we could use Result 3 to assert that the bimonthly program did not cause crowd-out (column 8). However, Result 3 relies on A2 which states that the effect of the programs are fully realized within six months, which may not be the case as transfers continued to decrease in Valladolid between W1 and W2. As discussed above, this result is consistent with the hypothesis that lack of consumption smoothing causes situations of need at the end of the two-month period, and the elder needing to resort to personal transfers.

Satisfaction. The effect on satisfaction with income was not statistically different across program between W3 and W1, and we can conclude that, if the effects take no more than a year to be realized (A1), both programs increase satisfaction with income by comparable amounts (Result 2). The increase in satisfaction with income in Valladolid between W1 and W2 was matched by a larger increase in Motul between W2 and W3 (which identifies the impact of the bimonthly program under A2).

On the other hand satisfaction with relationships of family members and social contacts increased more in Valladolid than they did in Motul. The same pattern emerges regarding the feeling of being abused and the fear of money being taken away. Assuming that effects are realized within a year (A2) we can use Result 3 to interpret this as evidence that the monthly program improved these outcomes relative to the bimonthly program. However, it appears that the effects on satisfaction (except for satisfaction with income) get realized slowly: for example, the reduction of the feeling of abuse experienced by pensioners in Valladolid between W1 and W2, continued between W2 and W3 which suggests

A1 may not hold in which case the W3-W2 result would not identify the bimonthly program effect.

Payment Amount

The amount of the pension is slightly larger in Motul than in Valladolid (over a two-month period, MX\$1,100 versus MX\$1,000) and one could pose the alternative interpretation that it is this difference, rather than the frequency of payment, that is driving the different impacts of the programs. However, we argue this cannot explain most of our findings.

First, we note that this would strengthen, rather than weaken, the conclusions that the bimonthly program increases some outcomes (for instance, durable good ownership) more than the monthly program. Second, we also note that the magnitude of the difference is not likely to explain some of the conclusions. For instance, the differential impact we find on the reduction of the total transfers received per month was MX\$150, about three times, or two standard errors above, the monthly difference of MX\$50 in the pension amount. Third, we note that under Result 3 above (which uses the assumption that effects are realized in six months), we can interpret causal estimates for the bimonthly program. Whenever these effects are zero (and those of the monthly program are not), as is the case in health care outcomes and food consumption variables such as *often run out of food*, we interpret that one program had effects while the other one did not. In those cases, we are not comparing impacts of different magnitude but rather consider the presence versus absence of effects. More generally, we abstain from interpreting small differences in the program effects, especially where the introduction of both programs affected the outcomes (for instance, in the “work for pay” variable or on “satisfaction with household income”), and in these cases we do not go beyond stating that both programs had effects of roughly similar orders of magnitude.

VII. Potential Sources of Bias

In this section we discuss potential sources of bias of the diff-in-diff estimates. These include attrition, differential trends in Valladolid and Motul, treatment announcement effects, and differential implementation of the government programs in the monthly and bimonthly program towns, as well as changes in living arrangements.

Attrition

Attrition may cause bias if either attrition is higher in one of the two towns, or if those who attrite in one town have different consumption patterns than those who do in the other town. In this study, the potential sources of attrition are nonresponse or death of survey respondents. We compared demographic and socioeconomic characteristics of attriters and panel respondents for Valladolid and Motul and the differences between them. We find statistically significant differences within Motul but no statistically significant differences between Valladolid and Motul. In Motul, a higher proportion of attriters in comparison to panel respondents are in couple households (63.9 vs 53.2 percent), a lower proportion of attriters in comparison to panel respondents are widows (30.3 vs 37.7 percent), attriters have higher mean years of education (2.4 vs 1.8), a higher proportion of panel respondents in comparison to attriters speak Mayan (63.9 vs 78.6 percent), attriters have lower mean number of household residents (3.0 vs 3.5). We conducted a similar analysis comparing deceased and panel respondents. We find statistically significant differences within Valladolid and within Motul but no statistically significant differences between them (see results in online Appendix Table D). Deceased are older, a higher proportion are widows, speak Mayan, a lower proportion live alone and work for pay, and the mean number of household residents is higher than panel respondents in both towns. Overall, these results do not point to there being substantially different attrition that could cause different patterns across towns.

Announcement Effects and Different Macro Trends

We designed the rollout schedule of the program and the timing of public information campaigns in close cooperation with the State government of Yucatan. This level of input into the design of the program allowed us to prevent of anticipatory effects.

To evaluate the possible role of different macro trends that may have led to changes in Valladolid and Motul unrelated to the introduction of the pension programs, it is helpful to slightly generalize equations (2) and (3):

$$Y_{it}^m = \alpha_0 + v_t^m + \gamma_{mt} T_{mt} + \varepsilon_{it}^m, \quad t = 1, 2, 2', 3 \quad (13)$$

$$Y_{it}^b = \delta_0 + v_t^b + \gamma_{bt} T_{bt} + \varepsilon_{it}^b, \quad t = 1, 2, 2', 3 \quad (14)$$

In comparison to (2) and (3) the time trends are now allowed to differ across the towns. To illustrate the possible effect of different macro trends across towns on the robustness of our results, we consider the six month effect of introduction of the monthly pension in Valladolid, with Motul as a control town. Using the same notation as when discussing robustness result 1, it is easy to see that in this case

$$\Delta \bar{Y}_2 - \Delta \bar{Y}_1 = \gamma_{m2} + \Delta v_2^m - \Delta v_2^b \quad (15)$$

So this identifies the effect of the introduction of the social security program, γ_{m2} , plus a possible effect of different aggregate effects in the two towns, $\Delta v_2^m - \Delta v_2^b$.

The question arises if such aggregate movements are observable. In the community survey, we also collect information about aggregate changes in the treatment and control towns. Neither of the two towns has experienced floods, earthquakes, fires, landslides, hurricanes or plagues since the beginning of the social security program. However, both towns have had droughts (April and May 2009). In Valladolid, officials reported that the drought affected 22 persons and Motul did not report any effects. This suggests only small differences in aggregate effects between the two towns. Since one of Valladolid's economic activities is agriculture, we would expect that if anything aggregate effects have been more

severe in Valladolid and would have reduced the short-term impact of the *Reconocer* program (since it happened before W2).

Differential Implementation of Government Programs in Treatment and Control Groups

The State of Yucatan agreed to ensure there would be no differential implementation of other public programs. Consistent with this, we did not see major differences in the percentage receiving benefits of other public programs (see Table 5 in Section IV).

Changes in Living Arrangements

Another typical concern arises that programs may affect household composition. If that were the case, the variables representing household outcomes would not be comparable. Again, it is not obvious why the different programs would have different impacts on living arrangements and how those changes could differentially affect our sets of outcomes. Nonetheless, we analyzed changes on the total number of household residents for each program and we do not find evidence of any changes on living arrangements.

VIII. Conclusions

The results of this study confirm the behavioral finding from previous studies that individuals do not smooth consumption perfectly. The frequency with which individuals receive their income matters for the type and time path of expenditures. Particularly when the period is long, expenditures on food and beverages are significantly higher the closer the survey date is to the last receipt of the pension payment.

This lack of consumption smoothing translates into different effects of two non-contributory pension programs that are similar to each other except for the frequency of payment. Both programs lead to an increase in expenditures on basic goods and reduce the likelihood of hunger spells in the households. However, the

impact of the monthly program is larger than of the bimonthly program. In particular, the monthly program increases doctor visits and reduces the chances that an older person does not visit a doctor due to lack of money. The higher frequency program reduces hunger spells more strongly while the lower frequency program increases the consumption of more expensive non-cereal food items. In addition, it appears that the bimonthly program increases the ownership of durable goods: in particular cell phones and bicycles.

The monthly program reduces the total amount of family transfers to the benefit recipient. As expected, both pension programs increase satisfaction with income. The receipt of the lower frequency pension is associated with a smaller improvement in satisfaction with family and social relationships. This could be because, in the bimonthly pension case, the positive effect of higher income is partially counteracted with increased social pressure to share some of the pension receipt. Consistent with this, receiving the bimonthly instead of monthly pension increases the fear of recipients that someone will take their money and increases the frequency with which they feel verbally or physically abused.

Altogether our results make clear that the frequency of benefit disbursements is an important design issue for social programs.

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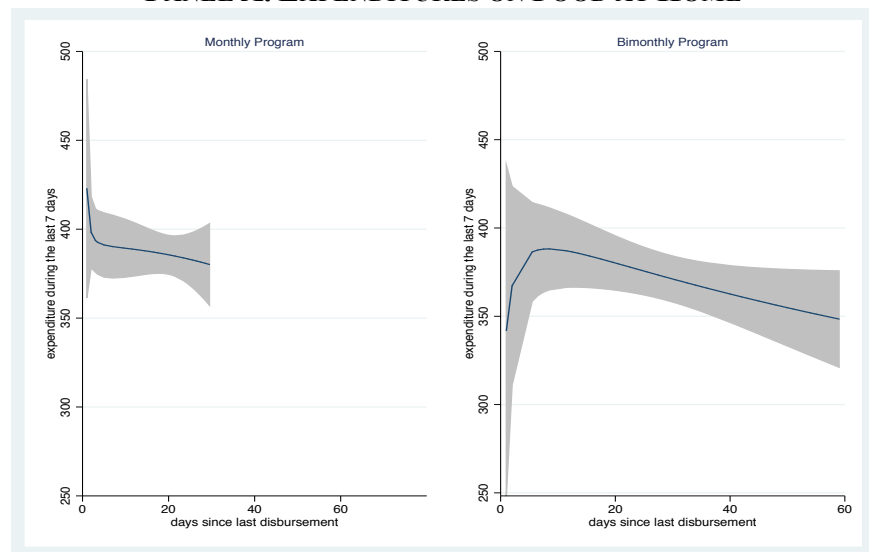
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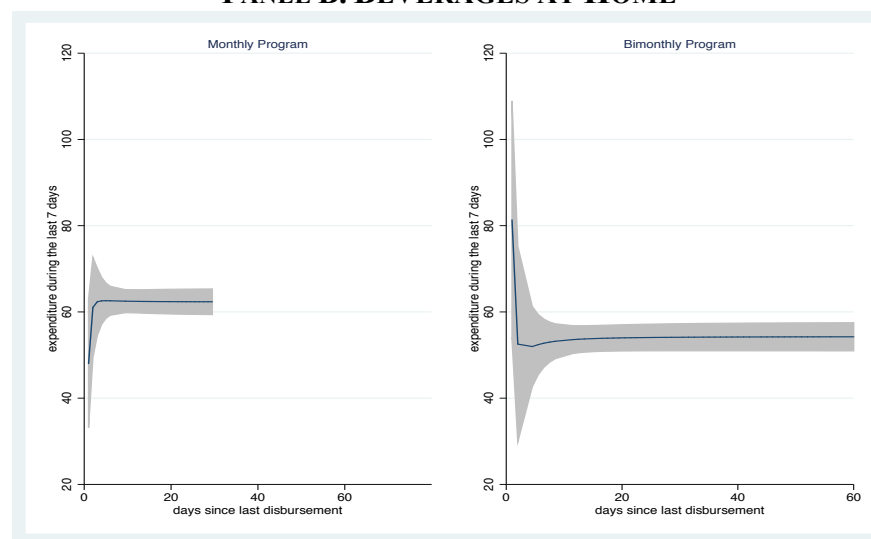
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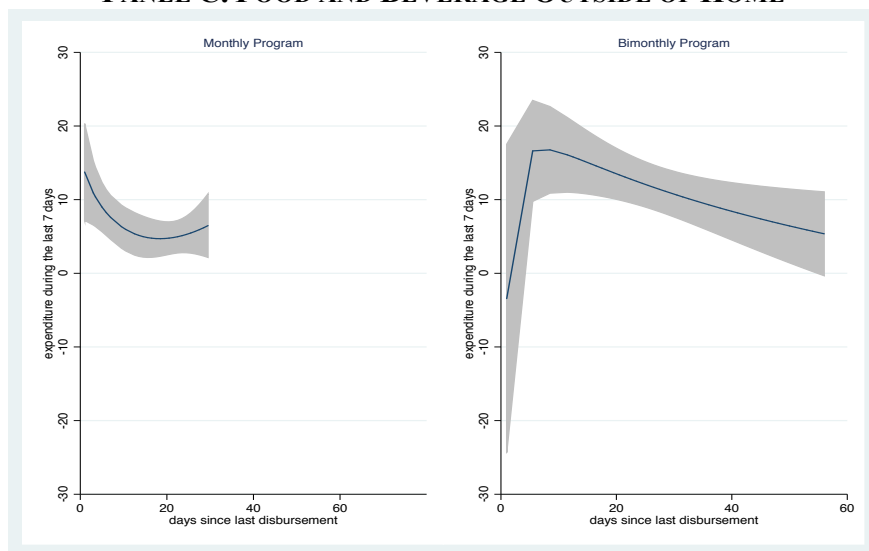
PANEL A. EXPENDITURES ON FOOD AT HOME



PANEL B. BEVERAGES AT HOME



PANEL C. FOOD AND BEVERAGE OUTSIDE OF HOME



PANEL D. TOTAL EXPENDITURES

FIGURE 1. HOUSEHOLD EXPENDITURES AS A FUNCTION OF TIME ELAPSED SINCE LAST PENSION PAYMENT

Source: Authors' calculations.

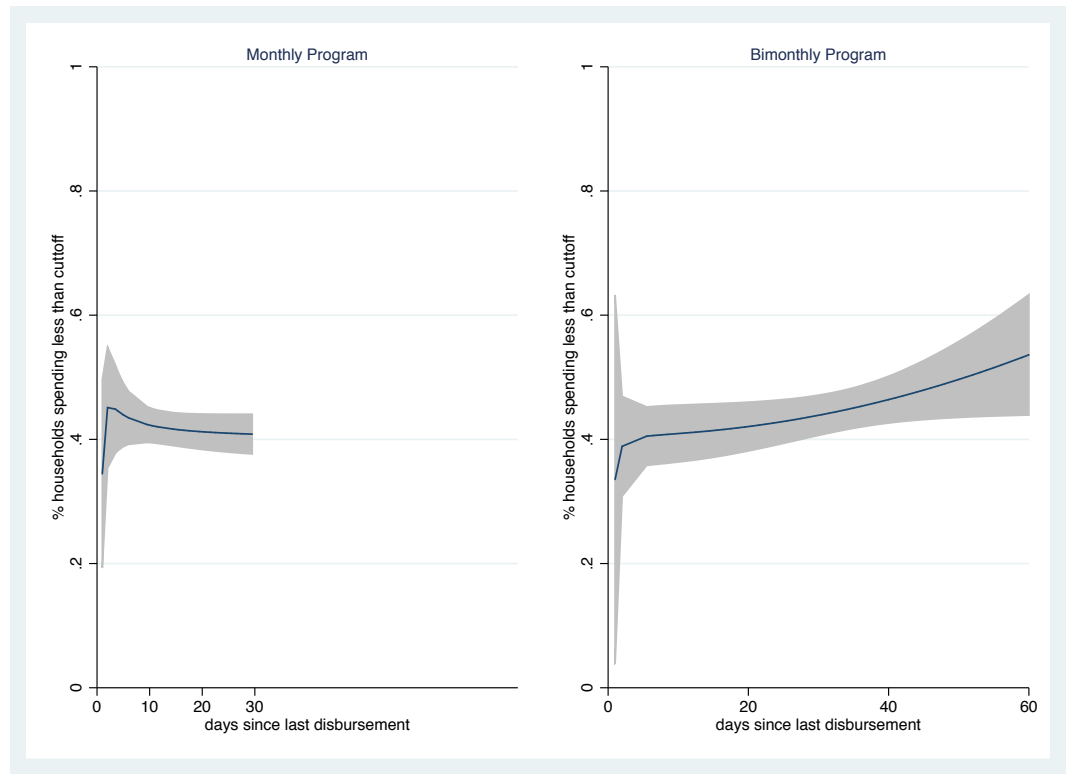


FIGURE 2. FRACTION OF HOUSEHOLDS SPENDING LESS THAN MXN\$400 AS A FUNCTION OF TIME SINCE LAST PENSION PAYMENT

Source: Authors' calculations.

Table 1 - Pension Disbursements and Survey Dates

Period Program		Monthly Program (Valladolid)			Bimonthly Program (Motul)		
		Pension Disbursement Dates	Survey	Survey Dates	Pension Disbursement Dates	Survey	Survey Dates
2008	August		W1	11-31			
	September		W1	1-21			
	October						
	November					W1	3-28
	December	16					
2009	January	22					
	February	20					
	March	20					
	April	24					
	May	25					
	June	24					
	July	24	W2	7-31	28-29	W2	1-31
	August	21	W2	3-27		W2	3-31
	September	25	W2	3-9	29-30		
	October	23					
	November	23			26-27		
	December	15					
2010	January	29					
	February	26			04-05		
	March	29					
	April	28			01-02		
	May	26			27-28		
	June	28	W3	15-30		W3	14-30
	July	28	W3	1-28	28-29	W3	1-30
	August	25				W3	2-13
	September	27			29-30		
	October	27					
	November	24					
	December	15					

Source: RECONOCER, and 70 y Más programs' administrative information 2008, 2009, and 2010.

Table 2 - Descriptive Statistics Baseline

	Monthly Program (Valladolid)	Bimonthly Program (Motul)	Difference
Mean age	77.87	77.49	-0.38
Male (%)	46.10	50.42	4.32**
Marital status (%)			
Single/Divorced/Separated	9.21	8.20	-1.01
Couple	52.67	53.31	0.64
Widowed	38.11	38.40	0.28
Mean years of Education	1.80	1.93	0.13*
Speaks Mayan (%)	76.15	78.10	1.95
Read and write a message in Spanish (%)	55.05	65.80	10.74***
Living alone (%)	12.85	13.79	0.94
Mean number of household residents	3.45	3.45	0.00
Work for pay (%)	16.73	14.75	-1.98
Monthly household income (MXN\$)	1223.27	1253.90	30.63
No. Observations	1346	1073	

Notes:

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

Source: Authors' calculations.

Table 3 - Cyclicalities of Expenditures in Monthly and Bimonthly Programs
Total Food and Beverages Expenditures by Household During Previous Week

Variables	Monthly Program (Valladolid)				Bimonthly Program (Motul)			
	1	2	3	4	5	6	7	8
Change in food and beverages expenditure per day since last disbursement (MXN\$)	0.041 (0.786)	0.137 (0.714)	-0.404 (1.221)	-0.201 (1.138)	-2.610 (0.578)***	-1.93 (0.533)***	-2.514 (0.637)***	-2.092 (0.566)***
Background Characteristics	NO	YES	NO	YES	NO	YES	NO	YES
Excludes observations with less than seven days elapsed since last disbursement	NO	NO	YES	YES	NO	NO	YES	YES
Observations	1,732	1,722	1,434	1,426	1,107	1,107	1,030	1,030
R-squared	0.004	0.178	0.002	0.173	0.017	0.190	0.017	0.192

Notes: Dependent variables are in expenditures in 2010 Mexican Pesos. Standard errors are clustered at the individual level. Standard errors in parentheses. All models are linear regressions and include survey indicators. Background characteristics are age, age squared, gender, an indicator variable for living alone, household size, dummy variables for highest education level achieved, marital status and language spoken.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

Source: Authors' calculations.

Table 4 - Summary of Outcome Variables

Basic needs
<i>Health care</i>
Visited a Doctor (last 3mo.)
Number of doctor visits (last 3mo.)
Had a serious health problem but no doctor visits because of money (last 3mo.)
<i>Food consumption</i>
Sometimes do not have enough to eat (last 3mo.)
Often run out of food (last 3mo.)
Someone in household skips or cuts meals (last 3mo.)
Often eats less than should (last 3mo.)
Often hungry because cannot afford food (last 3mo.)
Often in last 3 months someone in the household did not eat for 1 day
Received food from charity (last 3mo.)
Eats cereal daily
<i>Other Income</i>
Work for pay (last mo.)
Durable and luxury goods
<i>Durable goods (equipment and investment)</i>
Owning refrigerator
Owning telephone
Owning a cellphone
Owning a bicycle
Owens no piece of equipment
Number of chicken you own
Number of pigs you own
Number of turkeys you own
<i>Luxury goods</i>
How often does one eat food items (non-cereal): meat, fruit, eggs, dairy?
How much spent on beverages at home? (last week)
How much spent on food and beverages out of home? (last week)
Private transfers (from/to family and friends)
<i>In-Transfers to the elderly:</i>
Receive money (last mo.)
Total Money Received (last mo.)
Receive in-kind (last mo.)
Total received in-kind (last mo.)
Out of Pocket Expenses paid by a relative (last 3mo.)
Family or friends pay for Expenses (last 3mo.)
<i>Out-Transfer from the elderly:</i>
Give money (last mo.)
Total money given (last mo.)
Give in-kind (last mo.)
Subjective Wellbeing
<i>Income</i>
Satisfied with household income
<i>Family and social relationships</i>
Satisfied with relationships with family members
Satisfied with relationships with social contacts
<i>Emotional State</i>
How often do you feel abused?
How often do you fear money will be taken by someone else?

Table 5 - Program Participation Rates

Variable	Monthly Program (m) (Valladolid)			Bimonthly Program (b) (Motul)		
	W1	W2	W3	W1	W2	W3
	1	2	3	4	5	6
Receives <i>Reconocer</i>	0.0%	93.6%	92.4%	0.0%	0.0%	0.0%
Receives <i>70 y Más</i>	1.2%	2.4%	0.9%	3.2%	37.7%	89.2%
Receives <i>Oportunidades</i>	12.1%	8.9%	8.2%	20.3%	19.3%	13.8%
Receives <i>Atención a Adultos Mayores</i>	2.1%	1.1%	0.2%	1.7%	0.7%	0.1%
Receives <i>PROCAMPO</i>	0.3%	0.2%	0.3%	1.7%	1.9%	0.4%
Receives <i>any other program</i>	0.4%	0.4%	1.6%	0.3%	0.1%	0.0%
Receives <i>no-program</i>	84.6%	3.6%	4.3%	75.0%	47.1%	7.8%

Notes: Percentages may add to more than one hundred since individuals may receive benefits from more than one program. *Reconocer* is a poverty alleviation program for adults 70 and older program in certain locations in the state of Yucatan. *70 y Más* is a federal poverty alleviation program for adults 70 years and older. *Oportunidades* is a poverty alleviation program for urban and rural households in extreme poverty. *Atención a Adultos Mayores* is a poverty alleviation program for older adults 60 years and older in food poverty living in high and very high marginalization areas that are not covered by other poverty alleviation programs. *PROCAMPO* is an income supplement program for agricultural workers. *Any other program* refers to any other program different from those previously stated.

Source: Authors' calculations.

Table 6.1 - Differential Effects of the Monthly and Bimonthly Programs on Basic Needs

Variable	Monthly Program (m) (Valladolid)			Bimonthly Program (b) (Motul)			Diff-in-Diff $\Delta m - \Delta b$		
	W1	W2	W3	W1	W2	W3	$\Delta = (W2 - W1)$	$\Delta = (W3 - W2)$	$\Delta = (W3 - W1)$
	1	2	3	4	5	6	7	8	9
Health Care									
Visited a Doctor	0.417 (0.016)	0.532 (0.016)	0.535 (0.016)	0.470 (0.019)	0.515 (0.019)	0.485 (0.019)	0.070 (0.031)*	0.032 (0.031)	0.103 (0.032)**
Number of doctor visits	1.089 (0.058)	1.234 (0.048)	1.363 (0.073)	1.269 (0.096)	1.189 (0.055)	1.262 (0.076)	0.227 (0.120)	0.053 (0.116)	0.287 (0.145)*
Had a serious health problem but no doctor visits because of money	0.177 (0.012)	0.084 (0.009)	0.071 (0.008)	0.124 (0.013)	0.062 (0.009)	0.114 (0.012)	-0.031 (0.021)	-0.065 (0.019)**	-0.095 (0.022)**
Food Consumption									
Sometimes do not have enough to eat	0.289 (0.015)	0.269 (0.014)	0.162 (0.012)	0.347 (0.018)	0.355 (0.018)	0.237 (0.016)	-0.029 (0.030)	0.011 (0.029)	-0.018 (0.030)
Often run out of food never-always (1-4)	1.595 (0.029)	1.387 (0.024)	1.187 (0.016)	1.468 (0.027)	1.427 (0.026)	1.219 (0.019)	-0.169 (0.049)**	-0.011 (0.039)	-0.159 (0.045)**
Someone in household skips or cuts meals never-always (1-4)	1.674 (0.028)	1.448 (0.024)	1.700 (0.049)	1.579 (0.028)	1.454 (0.026)	1.535 (0.051)	-0.104 (0.048)*	0.209 (0.105)	-0.184 (0.110)
Often Eat less than should never-always (1-4)	1.622 (0.027)	1.378 (0.021)	1.678 (0.052)	1.529 (0.026)	1.389 (0.023)	1.569 (0.056)	-0.103 (0.044)*	0.115 (0.104)	-0.142 (0.102)
Often hungry because cannot afford food never-always (1-4)	1.416 (0.024)	1.178 (0.015)	1.361 (0.048)	1.292 (0.022)	1.167 (0.016)	1.299 (0.046)	-0.121 (0.036)**	0.057 (0.083)	-0.314 (0.093)**
Someone in household often does not eat for 1 day, never-always (1-4)	1.262 (0.018)	1.074 (0.010)	1.206 (0.040)	1.146 (0.015)	1.100 (0.013)	1.132 (0.034)	-0.150 (0.028)**	0.093 (0.069)	-0.320 (0.080)**
Received food from charity never-always (1-4)	1.094 (0.013)	1.039 (0.007)	1.040 (0.007)	1.042 (0.009)	1.057 (0.010)	1.036 (0.007)	-0.071 (0.019)**	0.021 (0.016)	-0.050 (0.019)**
Eats cereal daily	0.924 (0.009)	0.956 (0.007)	0.474 (0.016)	0.960 (0.008)	0.981 (0.005)	0.521 (0.019)	0.010 (0.014)	-0.022 (0.026)	-0.010 (0.027)
Other Income									
Work for pay	0.175 (0.012)	0.124 (0.011)	0.086 (0.009)	0.162 (0.014)	0.168 (0.014)	0.091 (0.011)	-0.057 (0.018)**	0.040 (0.017)**	-0.018 (0.018)

Notes: ** indicates significance at 5% and * indicates significance at 10% using the Holm-Bonferroni correction for multiple hypotheses testing. Standard errors in parentheses.

Source: Authors' calculations.

Table 6.2 - Differential Effects of the Monthly and Bimonthly Programs on Durable and Luxury Goods

Variable	Monthly Program (m) (Valladolid)			Bimonthly Program (b) (Motul)			Diff-in-Diff $\Delta m - \Delta b$		
	W1	W2	W3	W1	W2	W3	$\Delta = (W2 - W1)$	$\Delta = (W3 - W2)$	$\Delta = (W3 - W1)$
	1	2	3	4	5	6	7	8	9
Durable Goods (Equipment and Investment)									
Owning Refrigerator	0.633 (0.016)	0.669 (0.016)	0.661 (0.016)	0.645 (0.019)	0.662 (0.018)	0.661 (0.018)	0.021 (0.021)	-0.015 (0.021)	0.008 (0.022)
Owning Telephone	0.193 (0.013)	0.184 (0.013)	0.186 (0.013)	0.187 (0.015)	0.168 (0.014)	0.186 (0.015)	0.017 (0.015)	-0.021 (0.013)	-0.003 (0.015)
Owning Cellphone	0.179 (0.013)	0.195 (0.013)	0.145 (0.012)	0.140 (0.013)	0.206 (0.015)	0.240 (0.016)	-0.047 (0.024)	-0.088 (0.024)**	-0.146 (0.023)**
Owning Bicycle	0.204 (0.013)	0.178 (0.013)	0.136 (0.011)	0.338 (0.018)	0.337 (0.018)	0.340 (0.018)	-0.025 (0.021)	-0.045 (0.021)	-0.070 (0.021)**
Owning No Piece of Equipment	0.305 (0.016)	0.262 (0.015)	0.293 (0.015)	0.231 (0.016)	0.219 (0.016)	0.199 (0.015)	-0.028 (0.023)	0.057 (0.022)*	0.025 (0.023)
Number of chickens you own	2.910 (0.216)	2.402 (0.190)	2.163 (0.182)	2.441 (0.214)	2.076 (0.155)	2.000 (0.152)	-0.113 (0.285)	-0.161 (0.258)	-0.351 (0.314)
Number of pigs do you own	0.059 (0.013)	0.044 (0.016)	0.026 (0.009)	0.039 (0.011)	0.032 (0.010)	0.022 (0.010)	-0.013 (0.020)	-0.008 (0.022)	-0.013 (0.022)
Number of turkeys do you own	0.344 (0.046)	0.350 (0.063)	0.220 (0.036)	0.658 (0.165)	0.510 (0.082)	0.397 (0.060)	0.119 (0.183)	-0.005 (0.100)	0.132 (0.175)
Luxury Goods									
How often do you eat meat? never-once a day – (1-5)	3.488 (0.036)	3.554 (0.031)	3.806 (0.017)	3.513 (0.039)	3.507 (0.036)	3.928 (0.018)	0.074 (0.065)	-0.169 (0.051)**	-0.098 (0.055)
How often do you eat eggs? never-once a day – (1-5)	3.932 (0.035)	3.884 (0.029)	3.766 (0.021)	3.836 (0.036)	3.719 (0.034)	3.740 (0.024)	0.065 (0.063)	-0.139 (0.051)**	-0.069 (0.056)
How often do you eat dairy? never-once a day – (1-5)	3.126 (0.047)	3.303 (0.045)	3.744 (0.035)	2.938 (0.053)	3.068 (0.053)	3.764 (0.037)	0.046 (0.079)	-0.254 (0.069)**	-0.208 (0.072)**
How often do you eat fruit? never-once a day – (1-5)	3.599 (0.039)	3.706 (0.035)	4.001 (0.021)	3.624 (0.045)	3.671 (0.042)	4.127 (0.024)	0.061 (0.070)	-0.161 (0.057)**	-0.102 (0.062)
How much spent on beverages at home? (MXN\$)	61.395 (1.993)	63.615 (1.946)	60.418 (1.811)	55.504 (2.035)	49.786 (1.976)	53.782 (1.941)	5.558 (3.885)	-5.570 (3.584)	-3.805 (3.810)
How much spent on food and beverages out of home? (MXN\$)	15.797 (2.298)	6.755 (1.258)	5.690 (1.396)	15.471 (2.453)	15.083 (2.338)	8.171 (1.645)	-7.346 (4.488)	6.043 (3.465)	0.582 (4.158)

Notes: ** indicates significance at 5% and * indicates significance at 10% using the Holm-Bonferroni correction for multiple hypotheses testing. Standard errors in parentheses.
Source: Authors' calculations.

Table 6.3 - Differential Effects of the Monthly and Bimonthly Programs on Private Transfers (from/to Family and Friends)

Variable	Monthly Program (m) (Valladolid)			Bimonthly Program (b) (Motul)			Diff-in-Diff $\Delta m - \Delta b$		
	W1	W2	W3	W1	W2	W3	$\Delta = (W2 - W1)$	$\Delta = (W3 - W2)$	$\Delta = (W3 - W1)$
	1	2	3	4	5	6	7	8	9
In-transfers to the elderly									
Received Money	0.310 (0.015)	0.250 (0.014)	0.230 (0.014)	0.215 (0.016)	0.205 (0.015)	0.191 (0.015)	-0.053 (0.026)	-0.006 (0.025)	-0.058 (0.026)**
Total money received (MXN\$)	260.678 (48.801)	187.293 (21.270)	114.666 (11.835)	150.144 (23.465)	187.813 (35.692)	155.295 (17.876)	-111.054 (65.275)	-40.109 (42.479)	-151.163 (56.060)**
Receive in-kind	0.187 (0.013)	0.123 (0.011)	0.074 (0.009)	0.092 (0.011)	0.110 (0.012)	0.065 (0.009)	-0.081 (0.022)**	-0.004 (0.020)	-0.086 (0.021)**
Total received in-kind (MXN\$)	56.379 (9.872)	38.898 (10.245)	11.144 (2.351)	21.676 (5.303)	35.496 (11.381)	12.648 (3.180)	-31.301 (18.588)	-4.905 (15.780)	-36.206 (11.465)**
Out of Pocket expenses paid by a relative	0.266 (0.014)	0.138 (0.011)	0.144 (0.011)	0.146 (0.013)	0.148 (0.014)	0.122 (0.012)	-0.130 (0.024)**	0.034 (0.021)	-0.099 (0.023)**
Family or friends pay for expenses never - always (1-4)	2.173 (0.040)	2.156 (0.039)	2.257 (0.038)	2.025 (0.045)	2.059 (0.044)	1.872 (0.039)	-0.046 (0.068)	0.284 (0.067)**	0.236 (0.066)**
Out-Transfer from the elderly									
Give money	0.030 (0.006)	0.024 (0.005)	0.007 (0.003)	0.026 (0.006)	0.016 (0.005)	0.023 (0.006)	0.005 (0.010)	-0.024 (0.009)**	-0.019 (0.010)
Total money given (MXN\$)	19.958 (8.211)	11.674 (3.451)	1.764 (0.807)	12.547 (5.103)	8.173 (4.056)	14.302 (6.052)	-3.910 (10.907)	-16.040 (8.124)*	-19.949 (11.404)*
Give in-kind	0.019 (0.005)	0.009 (0.003)	0.001 (0.001)	0.006 (0.003)	0.013 (0.004)	0.007 (0.003)	-0.018 (0.007)**	-0.002 (0.006)	-0.020 (0.006)**

Notes: ** indicates significance at 5% and * indicates significance at 10% using the Holm-Bonferroni correction for multiple hypotheses testing. Standard errors in parentheses.

Source: Authors' calculations.

Table 6.4 - Differential Effects of the Monthly and Bimonthly Programs on Subjective Wellbeing

Variable	Monthly Program (m) (Valladolid)			Bimonthly Program (b) (Motul)			Diff-in-Diff $\Delta m - \Delta b$		
	W1	W2	W3	W1	W2	W3	$\Delta = (W2 - W1)$	$\Delta = (W3 - W2)$	$\Delta = (W3 - W1)$
	1	2	3	4	5	6	7	8	9
Income									
Satisfied with household income very dissatisfied – very satisfied (1-5)	3.435 (0.029)	3.658 (0.025)	3.713 (0.026)	3.421 (0.034)	3.627 (0.030)	3.738 (0.025)	0.047 (0.057)	-0.094 (0.053)*	-0.039 (0.057)
Family and Social Relationships									
Satisfied with relationship with family members very dissatisfied – very satisfied (1-5)	3.903 (0.023)	3.905 (0.023)	4.094 (0.023)	3.879 (0.026)	3.974 (0.025)	3.933 (0.026)	-0.085 (0.044)	0.211 (0.044)**	0.082 (0.046)*
Satisfied with relationship with social contact very dissatisfied – very satisfied (1-5)	3.743 (0.024)	3.784 (0.022)	3.931 (0.019)	3.740 (0.028)	3.839 (0.026)	3.815 (0.024)	-0.030 (0.047)	0.156 (0.044)**	0.117 (0.045)**
Emotional State									
How often do you feel abused? never-always (1-4)	1.124 (0.015)	1.115 (0.015)	1.064 (0.011)	1.102 (0.017)	1.102 (0.018)	1.113 (0.016)	-0.003 (0.032)	-0.074 (0.030)**	-0.076 (0.032)**
How often do you fear money will be taken by someone else? never-always (1-4)	1.257 (0.022)	1.219 (0.020)	1.130 (0.016)	1.170 (0.020)	1.161 (0.022)	1.125 (0.016)	-0.016 (0.041)	-0.055 (0.037)	-0.089 (0.039)**

Notes: ** indicates significance at 5% and * indicates significance at 10% using the Holm-Bonferroni correction for multiple hypotheses testing. Standard errors in parentheses.

Source: Authors' calculations.

APPENDIX

**Table I - Impact of Monthly Program (Valladolid) versus Bimonthly Program (Motul)
(W3-W1)**

Variable Verbal scale (numeric codes)	Means	Diff-in-Diff Regressions	Propensity Score Matching
Panel I.1 - Basic Needs Outcomes			
Health Care			
Visited doctor	0.103 (0.032)	0.103 (0.033)	0.118 (0.033)
Number of doctor visits	0.287 (0.145)	0.280 (0.150)	0.348 (0.153)
Had a serious health problem but no doctor visits because of money	-0.095 (0.022)	-0.095 (0.023)	-0.092 (0.023)
Food Consumption			
Sometimes do not have enough to eat	-0.018 (0.030)	-0.018 (0.035)	-0.008 (0.032)
Often run out of food	-0.159 (0.045)	-0.160 (0.051)	-0.136 (0.048)
Someone in household skips or cuts meals	-0.184 (0.110)	0.071 (0.090)	-0.152 (0.117)
Often Eat less than should	-0.142 (0.102)	0.016 (0.093)	-0.117 (0.100)
Often hungry because cannot afford food	-0.314 (0.093)	-0.062 (0.085)	-0.292 (0.099)
Someone in household often does not eat for 1 day	-0.320 (0.080)	-0.043 (0.065)	-0.288 (0.077)
Received food from charity	-0.050 (0.019)	-0.049 (0.021)	-0.047 (0.019)
Eats cereal daily	-0.010 (0.027)	-0.011 (0.029)	0.010 (0.028)
Other Income			
Work for pay	-0.018 (0.018)	-0.018 (0.018)	-0.026 (0.018)

(Cont.)

**Table I - Impact of Monthly Program (Valladolid) versus Bimonthly Program (Motul)
(W3-W1)**

Variable Verbal scale (numeric codes)	Means	Diff-in-Diff Regressions	Propensity Score Matching
Panel I.2 – Durable and Luxury Goods Outcomes			
Durable Goods (Equipment and Investment)			
Owning Refrigerator	0.008 (0.022)	0.012 (0.025)	0.005 (0.024)
Owning Telephone	-0.003 (0.015)	-0.007 (0.018)	-0.006 (0.016)
Owning Cellphone	-0.146 (0.024)	-0.134 (0.027)	-0.140 (0.025)
Owning Bicycle	-0.070 (0.022)	-0.070 (0.024)	-0.082 (0.021)
Owning No Piece of Equipment	0.025 (0.023)	0.020 (0.026)	0.035 (0.024)
Number of chickens you own	-0.351 (0.314)	-0.307 (0.354)	-0.438 (0.297)
Number of pigs do you own	-0.013 (0.022)	-0.016 (0.023)	0.002 (0.026)
Number of turkeys do you own	0.132 (0.175)	0.138 (0.180)	0.065 (0.158)
Luxury Goods			
How often do you eat meat?	-0.098 (0.055)	-0.097 (0.059)	-0.097 (0.057)
never - once a day (1-5)			
How often do you eat eggs?	-0.069 (0.056)	-0.070 (0.059)	-0.062 (0.057)
never - once a day (1-5)			
How often do you eat dairy?	-0.208 (0.072)	-0.209 (0.076)	-0.216 (0.076)
never - once a day (1-5)			
How often do you eat fruit?	-0.102 (0.062)	-0.100 (0.067)	-0.133 (0.070)
never - once a day (1-5)			
How much spent on beverages at home? (MXN\$)	-3.805 (3.810)	0.745 (4.204)	-3.905 (4.030)
How much spent on food and beverages out of home? (MXN\$)	0.582 (4.158)	-2.806 (4.608)	1.629 (4.360)

(Cont.)

**Table I - Impact of Monthly Program (Valladolid) versus Bimonthly Program (Motul)
(W3-W1)**

Variable Verbal scale (numeric codes)	Means	Diff-in-Diff Regressions	Propensity Score Matching
Panel I.3 - Private transfers Outcomes			
In-transfers to the elder			
Receive Money	-0.058 (0.026)	-0.056 (0.027)	-0.047 (0.027)
Total money received (MXN\$)	-151.163 (56.060)	-151.163 (72.579)	-148.629 (56.478)
Receive in-kind	-0.086 (0.021)	-0.085 (0.021)	-0.100 (0.022)
Total received in-kind (MXN\$)	-36.206 (11.455)	-36.206 (11.812)	-36.600 (11.992)
Out of Pocket expenses paid by a relative	-0.099 (0.023)	-0.099 (0.023)	-0.101 (0.026)
Family of friends pays for expenses never - always (1-4)	0.236 (0.066)	0.237 (0.070)	0.252 (0.072)
Out-Transfer from the elder to the rest of the family			
Give money (MXN\$)	-0.019 (0.010)	-0.019 (0.010)	-0.018 (0.010)
Total money given (MXN\$)	-19.949 (11.404)	-19.949 (11.397)	-17.151 (12.003)
Give in-kind	-0.020 (0.006)	-0.020 (0.007)	-0.021 (0.006)

(Cont.)

**Table I - Impact of Monthly Program (Valladolid) versus Bimonthly Program (Motul)
(W3-W1)**

Variable		Diff-in-Diff	
Verbal scale (numeric codes)	Means	Regressions	Propensity Score Matching
Panel I.4 - Satisfaction Outcomes			
Income			
Satisfied with household income	-0.039	-0.039	-0.027
very dissatisfied – very satisfied (1-5)	(0.057)	(0.056)	(0.060)
Family and Social Relationships			
Satisfied with relationship with family members	0.082	0.138	0.082
very dissatisfied – very satisfied (1-5)	(0.046)	(0.046)	(0.049)
Satisfied with relationship with social contacts	0.117	0.112	0.129
very dissatisfied – very satisfied (1-5)	(0.045)	(0.045)	(0.047)
How often do you feel abused?	-0.076	-0.070	-0.086
never-always (1-4)	(0.032)	(0.029)	(0.032)
How often do you fear money will be taken by someone else?	-0.089	-0.081	-0.087
never-always (1-4)	(0.039)	(0.037)	(0.040)

Notes: Standard Errors in parentheses.

ONLINE APPENDIX

Table A - Descriptive Statistics Baseline for Motul

	<i>70 y Más</i> Recipients	<i>Non 70 y</i> <i>Más</i> Recipients	Difference
Mean age	77.28	77.57	-0.29
Male (%)	56.39	47.87	8.51**
Marital status (%)			
Single/Divorced/Separated	9.35	7.71	1.63
Couple	53.27	53.33	-0.06
Widowed	37.38	38.83	-1.45
Mean years of Education	1.95	1.92	0.03
Speaks Mayan (%)	77.57	78.32	-0.75
Read and write a message in Spanish (%)	68.54	64.63	3.91
Living alone (%)	14.95	13.30	1.66
Mean number of household residents	3.45	3.45	0.00
Work for pay (%)	16.82	13.87	2.96
Monthly household income (MXN\$)	1237.01	1261.14	-24.14
No. Observations	321	752	

Notes:

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

Source: Authors' calculations.

Table B - Cyclicity of Expenditures in Monthly and Bimonthly Program
Food at Home, Beverages at Home, and Food and Beverages Outside of Home Expenditures by Household During Previous Week

Variable	Food at Home				Beverages at Home				Food and Beverages Outside of Home			
	1	2	3	4	5	6	7	8	9	10	11	12
Panel B1. Monthly Pension (Valladolid)												
Change in expenditure per day since last disbursement (MXN\$)	-0.045 (0.703)	-0.227 (0.643)	-0.222 (1.104)	-0.057 (1.035)	0.12 (0.148)	0.125 (0.140)	-0.297 (0.240)	-0.223 (0.227)	-0.044 (0.052)	-0.039 (0.053)	-0.060 (0.082)	-0.063 (0.081)
Background Characteristics	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Excludes observations with less than seven days elapsed since last disbursement	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Observations	1,732	1,722	1,434	1,426	1,828	1,818	1,494	1,486	2,071	2,062	1,698	1,691
R-squared	0.001	0.171	0.000	0.167	0.006	0.109	0.009	0.107	0.006	0.019	0.006	0.022
Panel B2. Bimonthly Pension (Motul)												
Change in expenditure per day since last disbursement (MXN\$)	-2.377*** (0.521)	-1.772*** (0.482)	-2.292*** (0.573)	-1.916*** (0.513)	-0.215* (0.122)	-0.159 (0.119)	-0.182 (0.132)	-0.142 (0.128)	-0.009 (0.046)	-0.03 (0.048)	0.007 (0.049)	-0.012 (0.050)
Background Characteristics	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Excludes observations with less than seven days elapsed since last disbursement	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Observations	1,107	1,107	1,030	1,030	1,172	1,171	1,084	1,084	1,222	1,221	1,125	1,125
R-squared	0.017	0.189	0.017	0.189	0.002	0.084	0.002	0.085	0.000	0.040	0.000	0.042

Notes: Dependent variables are in expenditures in 2010 Mexican Pesos. Standard errors are clustered at the individual level. Standard errors in parentheses. All models are linear regressions and include survey indicators. Background characteristics are age, age squared, gender, an indicator variable for living alone, household size, dummy variables for highest education level achieved, marital status, and language spoken.

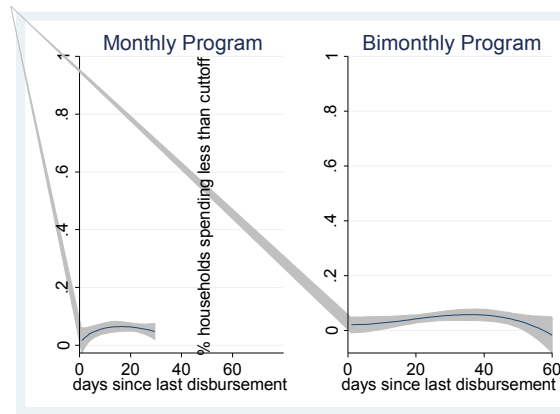
*** Significant at the 1 percent level.

** Significant at the 5 percent level.

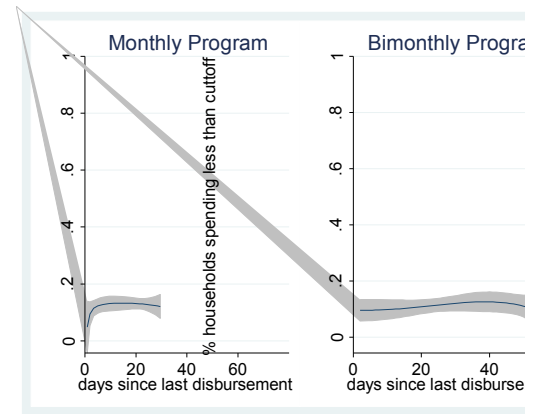
* Significant at the 10 percent level.

Source: Authors' calculations.

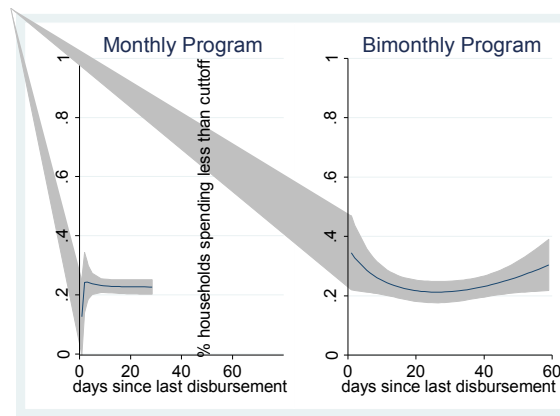
PANEL C1 - EXPENDITURE LESS THAN MXN\$100



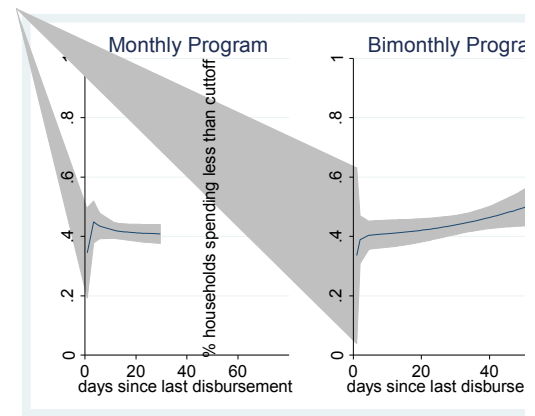
PANEL C2 - EXPENDITURE LESS THAN MXN\$200



PANEL C3 - EXPENDITURE LESS THAN MXN\$300



PANEL C4 - EXPENDITURE LESS THAN MXN\$400



PANEL C5 - EXPENDITURE LESS THAN MXN\$500

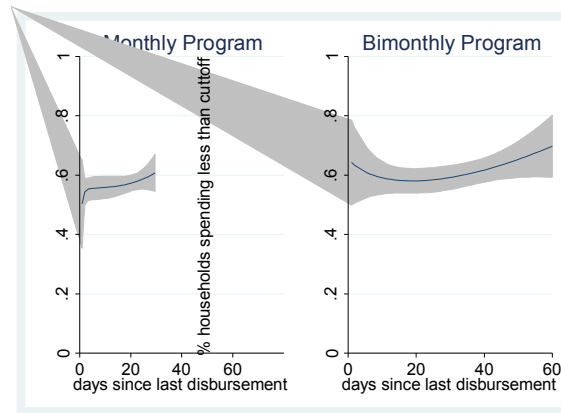


FIGURE A. FRACTION OF HOUSEHOLDS SPENDING BELOW CERTAIN CEILINGS AS A FUNCTION OF TIME ELAPSED SINCE LAST PENSION PAYMENT

Source: Authors' calculations.

**Table C - Impact of Monthly Program (Valladolid) versus Bimonthly Program (Motul)
(W2-W1) & (W3-W2)**

Variable Verbal scale (numeric codes)	(W2-W1) Diff-in-Diff				(W3-W2) Diff-in-Diff			
	Means	Regressions	PSM	Means ⁺	Means	Regressions	PSM	Means ⁺
	1	2	3	4	5	6	7	8
Panel C.1 - Basic Needs Outcomes								
Health Care								
Visited doctor	0.070 (0.031)	0.116 (0.021)	0.058 (0.031)	0.103 (0.037)	0.032 (0.031)	0.033 (0.021)	0.059 (0.031)	0.048 (0.084)
Number of doctor visits	0.227 (0.120)	0.145 (0.066)	0.230 (0.138)	0.266 (0.120)	0.053 (0.116)	0.073 (0.073)	0.108 (0.115)	0.356 (0.228)
Had a serious health problem but no doctor visits because of money	-0.031 (0.021)	-0.093 (0.015)	-0.025 (0.023)	-0.046 (0.025)	-0.065 (0.019)	-0.010 (0.010)	-0.068 (0.020)	-0.073 (0.039)
Food Consumption								
Sometimes do not have enough to eat	-0.029 (0.030)	-0.020 (0.022)	-0.017 (0.032)	-0.055 (0.035)	0.011 (0.029)	-0.081 (0.019)	0.009 (0.031)	-0.092 (0.078)
Often run out of food never-always (1-4)	-0.169 (0.049)	-0.208 (0.040)	-0.140 (0.050)	-0.216 (0.058)	-0.011 (0.039)	-0.036 (0.027)	-0.023 (0.041)	0.040 (0.100)
Someone in household skips or cuts meals never-always (1-4)	-0.104 (0.048)	-0.225 (0.038)	-0.091 (0.054)	-0.086 (0.055)	0.209 (0.105)	0.026 (0.037)	0.225 (0.118)	0.274 (0.202)
Often Eat less than should never-always (1-4)	-0.103 (0.044)	-0.244 (0.035)	-0.097 (0.045)	-0.073 (0.049)	0.115 (0.104)	0.011 (0.034)	0.108 (0.101)	0.320 (0.201)
Often hungry because cannot afford food never-always (1-4)	-0.121 (0.037)	-0.239 (0.030)	-0.106 (0.039)	-0.117 (0.042)	0.057 (0.083)	0.020 (0.026)	0.074 (0.084)	0.194 (0.168)
Someone in household often does not eat for 1 day never-always (1-4)	-0.150 (0.028)	-0.188 (0.023)	-0.139 (0.031)	-0.155 (0.031)	0.093 (0.069)	-0.008 (0.019)	0.116 (0.068)	0.120 (0.177)
Received food from charity never-always (1-4)	-0.071 (0.019)	-0.055 (0.017)	-0.074 (0.021)	-0.057 (0.022)	0.021 (0.016)	-0.007 (0.010)	0.026 (0.018)	-0.049 (0.038)
Eats cereal daily	0.010 (0.014)	0.032 (0.012)	0.009 (0.014)	0.006 (0.017)	-0.022 (0.026)	-0.037 (0.014)	-0.001 (0.027)	-0.058 (0.071)
Other Income								

Work for pay	-0.057 (0.018)	-0.051 (0.011)	-0.060 (0.017)	-0.053 (0.021)	0.040 (0.017)	-0.025 (0.013)	0.035 (0.017)	0.068 (0.040)
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(Cont.)

**Table C - Impact of Monthly Program (Valladolid) versus Bimonthly Program (Motul)
(W2-W1) & (W3-W2)**

Variable Verbal scale (numeric codes)	(W2-W1) Diff-in-Diff				(W3-W2) Diff-in-Diff			
	Means	Regressions	PSM	Means ⁺	Means	Regressions	PSM	Means ⁺
	1	2	3	4	5	6	7	8
Panel C.2 - Expenditure Outcomes								
Durable Goods (Equipment and Investment)								
Owning Refrigerator	0.021 (0.021)	0.036 (0.015)	0.018 (0.024)	0.044 (0.024)	-0.015 (0.021)	0.003 (0.025)	-0.018 (0.023)	-0.012 (0.049)
Owning Telephone	0.017 (0.015)	-0.009 (0.011)	0.015 (0.016)	0.002 (0.018)	-0.021 (0.013)	0.007 (0.021)	-0.021 (0.014)	-0.015 (0.038)
Owning Cellphone	-0.047 (0.024)	0.015 (0.018)	-0.050 (0.026)	-0.039 (0.026)	-0.088 (0.024)	-0.053 (0.019)	-0.079 (0.025)	-0.099 (0.061)
Owning Bicycle	-0.025 (0.021)	-0.027 (0.013)	-0.043 (0.021)	-0.008 (0.024)	-0.045 (0.021)	-0.181 (0.021)	-0.039 (0.021)	-0.073 (0.062)
Owning No Piece of Equipment	-0.028 (0.023)	-0.043 (0.017)	-0.026 (0.025)	-0.043 (0.027)	0.057 (0.022)	0.068 (0.021)	0.066 (0.024)	0.134 (0.053)
Number of chickens you own	-0.113 (0.285)	-0.508 (0.219)	-0.227 (0.284)	0.044 (0.359)	-0.161 (0.258)	0.245 (0.241)	-0.142 (0.265)	0.349 (0.879)
Number of pigs do you own	-0.013 (0.020)	-0.016 (0.019)	-0.007 (0.024)	-0.001 (0.024)	-0.008 (0.022)	0.008 (0.014)	-0.002 (0.025)	-0.035 (0.024)
Number of turkeys do you own	0.119 (0.183)	0.007 (0.077)	0.050 (0.162)	0.025 (0.132)	-0.005 (0.100)	-0.168 (0.078)	-0.004 (0.099)	0.757 (0.554)
Luxury Goods								
How often do you eat meat? never - once a day (1-5)	0.074 (0.065)	0.065 (0.044)	0.084 (0.068)	0.086 (0.076)	-0.169 (0.051)	-0.037 (0.030)	-0.178 (0.054)	-0.278 (0.141)
How often do you eat eggs? never - once a day (1-5)	0.065 (0.063)	-0.048 (0.044)	0.067 (0.067)	0.003 (0.075)	-0.139 (0.051)	0.096 (0.031)	-0.134 (0.055)	-0.058 (0.128)
How often do you eat dairy? never - once a day (1-5)	0.046 (0.079)	0.177 (0.051)	0.037 (0.079)	0.052 (0.093)	-0.254 (0.069)	0.108 (0.054)	-0.253 (0.071)	-0.225 (0.183)
How often do you eat fruit? never - once a day (1-5)	0.061 (0.070)	0.108 (0.049)	0.059 (0.076)	0.045 (0.084)	-0.161 (0.057)	-0.045 (0.037)	-0.190 (0.058)	-0.584 (0.172)

How much spent on beverages at home? (MXN\$)	5.558 (3.885)	2.220 (2.984)	5.262 (4.227)	3.089 (4.435)	-5.570 (3.584)	10.139 (2.440)	-5.342 (3.805)	-1.068 (8.920)
How much spent on food and beverages out of home? (MXN\$)	-7.346 (4.488)	-9.041 (2.758)	-8.233 (5.250)	-2.047 (6.112)	6.043 (3.465)	-5.373 (2.097)	7.875 (4.019)	-2.131 (18.555)

(Cont.)

**Table C - Impact of Monthly Program (Valladolid) versus Bimonthly Program (Motul)
(W2-W1) & (W3-W2)**

Variable Verbal scale (numeric codes)	(W2-W1) Diff-in-Diff				(W3-W2) Diff-in-Diff			
	Means	Regressions	PSM	Means ⁺	Means	Regressions	PSM	Means ⁺
	1	2	3	4	5	6	7	8
Panel C.3 - Private transfers Outcomes								
In-transfers to the elder								
Receive Money	-0.053 (0.026)	-0.060 (0.018)	-0.047 (0.027)	-0.059 (0.029)	-0.006 (0.025)	0.042 (0.018)	-0.002 (0.026)	-0.065 (0.054)
Total money received (MXN\$)	-111.054 (65.275)	-73.385 (68.099)	-140.677 (75.974)	-166.456 (79.434)	-40.109 (42.479)	-20.574 (26.446)	-7.951 (55.525)	5.403 (130.593)
Receive in-kind	-0.081 (0.022)	-0.064 (0.016)	-0.085 (0.022)	-0.071 (0.025)	-0.004 (0.020)	0.012 (0.011)	-0.014 (0.021)	-0.049 (0.040)
Total received in-kind (MXN\$)	-31.301 (18.588)	-17.481 (14.008)	-35.766 (22.030)	-27.054 (21.596)	-4.905 (15.780)	0.949 (8.011)	-0.835 (19.244)	-34.951 (25.623)
Out of Pocket expenses paid by a relative	-0.130 (0.024)	-0.129 (0.016)	-0.127 (0.026)	-0.131 (0.028)	0.034 (0.021)	0.006 (0.014)	0.029 (0.023)	0.022 (0.058)
Family of friends pays for expenses never - always (1-4)	-0.046 (0.068)	-0.017 (0.052)	-0.037 (0.075)	-0.079 (0.079)	0.284 (0.067)	0.241 (0.049)	0.289 (0.069)	0.158 (0.168)
Out-Transfer from the elder to the rest of the family								
Give money (MXN\$)	0.005 (0.010)	-0.005 (0.007)	0.002 (0.010)	0.006 (0.011)	-0.024 (0.009)	-0.004 (0.005)	-0.021 (0.009)	-0.017 (0.006)
Total money given (MXN\$)	-3.910 (10.907)	-8.284 (8.792)	-4.574 (12.169)	-5.466 (13.467)	-16.040 (8.124)	-4.519 (4.026)	-12.577 (8.200)	-9.910 (3.550)
Give in-kind	-0.018 (0.007)	-0.011 (0.005)	-0.020 (0.008)	-0.022 (0.009)	-0.002 (0.006)	-0.005 (0.003)	-0.001 (0.006)	0.008 (0.016)

(Cont.)

**Table C - Impact of Monthly Program (Valladolid) versus Bimonthly Program (Motul)
(W2-W1) & (W3-W2)**

Variable Verbal scale (numeric codes)	(W2-W1) Diff-in-Diff				(W3-W2) Diff-in-Diff			
	Means	Regressions	PSM	Means ⁺	Means	Regressions	PSM	Means ⁺
	1	2	3	4	5	6	7	8
Panel C.4 - Satisfaction Outcomes								
Income								
Satisfied with household income	0.047	0.224	0.031	0.084	-0.094	0.004	-0.072	-0.157
very dissatisfied – very satisfied (1-5)	(0.057)	(0.037)	(0.061)	(0.069)	(0.053)	(0.029)	(0.056)	(0.130)
Family and Social Relationships								
Satisfied with relationship with family members	-0.085	0.003	-0.067	-0.048	0.211	0.043	0.200	0.281
very dissatisfied – very satisfied (1-5)	(0.044)	(0.029)	(0.047)	(0.053)	(0.044)	(0.028)	(0.046)	(0.128)
Satisfied with relationship with social contacts	-0.030	0.041	-0.034	-0.008	0.156	0.029	0.175	0.222
very dissatisfied – very satisfied (1-5)	(0.047)	(0.030)	(0.049)	(0.056)	(0.044)	(0.025)	(0.045)	(0.120)
How often do you feel abused?	-0.003	-0.009	-0.016	-0.022	-0.074	-0.017	-0.079	0.014
never-always (1-4)	(0.032)	(0.023)	(0.035)	(0.036)	(0.030)	(0.016)	(0.033)	(0.076)
How often do you fear money will be taken by someone else?	-0.016	-0.038	-0.023	-0.026	-0.055	0.032	-0.048	-0.016
never-always (1-4)	(0.041)	(0.030)	(0.045)	(0.045)	(0.037)	(0.021)	(0.041)	(0.101)

Notes: Standard Errors in parentheses.

PSM means Propensity Score Matching.

* Means without 70 y + sample.

Table D - Comparison of Baseline Descriptive Characteristics for All Baseline Respondents and Panel Respondents

	Monthly Program (Valladolid)			Bimonthly Program (Motul)			
Panel 1: Attriters vs. Panel Respondents							
	Attriters (a)	Panel Respondents (b)	Difference (b) - (a) = (c)	Attriters (d)	Panel Respondents (e)	Difference (e)- (d) = (f)	Diff-in-Diff (f) - (c)
Mean age	77.37	77.34	-0.03	77.11	77.09	-0.02	0.01
Male (%)	46.90	45.14	-0.02	48.36	51.22	2.86	4.62
Marital status (%)							
Single/Divorced/Separated	15.04	9.40	-5.65	5.74	8.87	3.13	8.78**
Couple	49.56	53.22	3.66	63.93	53.23	-10.71**	-14.37**
Widowed	35.40	37.38	1.98	30.33	37.77	7.44*	5.46
Mean years of Education	1.93	1.71	-0.22	2.42	1.89	-0.54***	-0.32
Speaks Mayan (%)	69.03	76.24	7.21	63.93	78.68	14.75***	7.54
Read and write a message in Spanish (%)	59.29	52.69	-6.60	71.31	66.09	-5.22	1.38
Living alone (%)	12.39	12.78	0.39	13.93	14.02	0.09	-0.30
Mean number of household residents	3.51	3.41	-0.10	3.00	3.52	0.52**	0.62**
Work for pay (%)	21.24	17.44	-3.80	11.48	16.07	4.59	8.39*
Monthly household income (MXN\$)	1469.61	1177.39	-292.23	1548.98	1278.67	-270.31	21.91
No. Observations	113	947		122	699		
Panel 2: Deceased vs Panel Respondents							
	Deceased (a)	Panel Respondents (b)	Difference (b) - (a) = (c)	Deceased (d)	Panel Respondents (e)	Difference (e)- (d) = (f)	Diff-in-Diff (f) - (c)
Mean age	82.90	77.34	-5.56***	81.57	76.99	-4.58***	0.98
Male (%)	46.09	46.10	0.00	48.70	50.63	1.93	1.93
Marital status (%)							
Single/Divorced/Separated	7.03	9.44	2.41	7.83	8.25	0.42	-1.99
Couple	42.97	53.69	10.73**	45.22	54.29	9.07*	-1.65
Widowed	50.00	36.86	-13.14**	46.96	37.37	-9.59*	3.55
Mean years of Education	1.91	1.79	-0.11	1.64	1.96	0.32*	0.44**
Speaks Mayan (%)	79.69	75.78	-3.91	89.57	76.72	-12.84***	-8.94**
Read and write a message in Spanish (%)	54.69	55.09	0.40	56.52	66.91	10.39**	9.99*
Living alone (%)	8.59	13.30	4.71*	8.70	14.41	5.71**	1.00
Mean number of household residents	3.77	3.42	-0.35*	3.77	3.41	-0.36*	-0.01
Work for pay (%)	4.69	18.00	13.31***	8.70	15.48	6.79**	-6.52**
Monthly household income (MXN\$)	881.72	1259.01	377.29	1177.32	1263.08	85.76	-291.53
No. Observations	128	1218		115	958		

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

Source: Authors' calculations.