Health and Wellbeing of Older Adults: Findings from a Noncontributory Pension Program in Mexico

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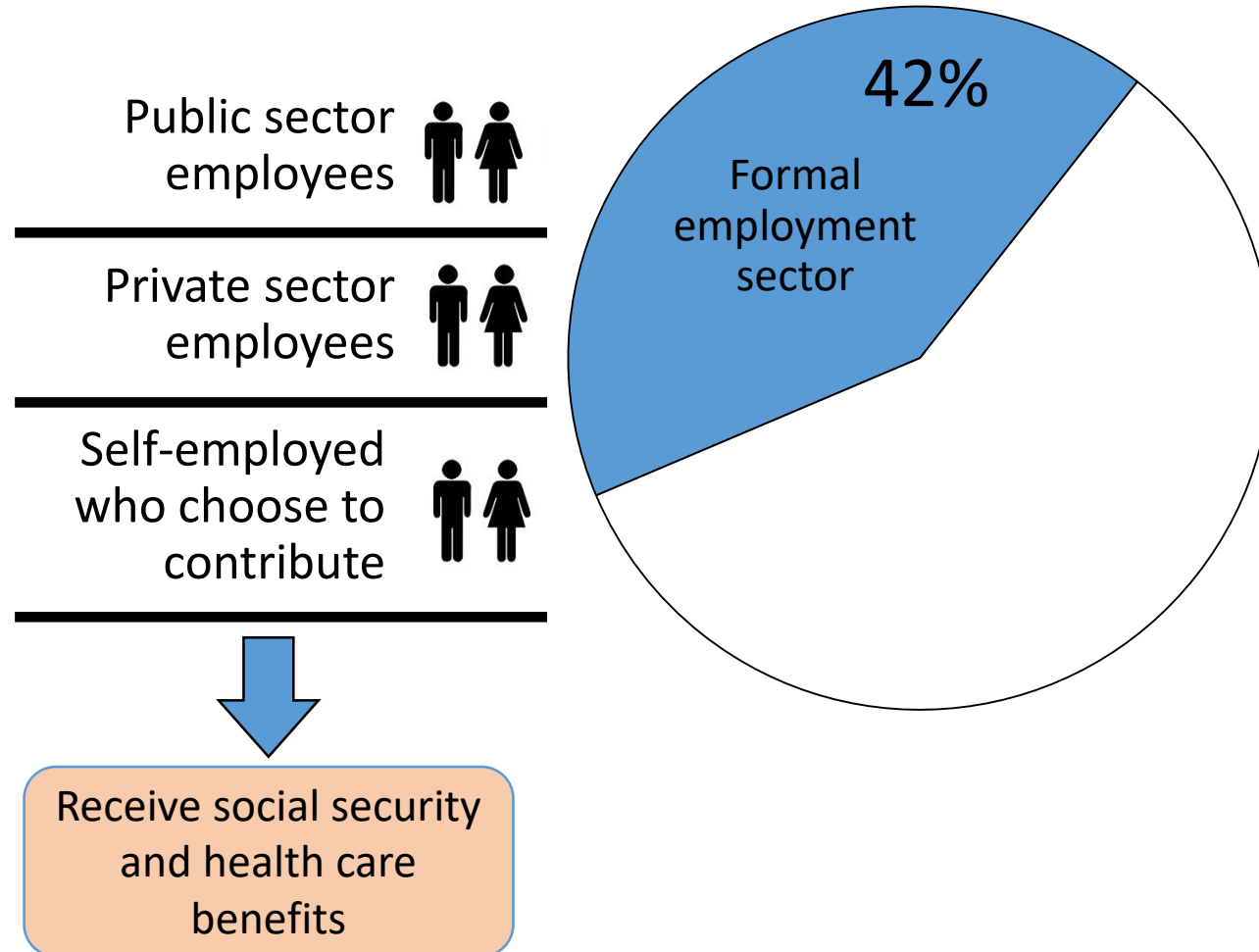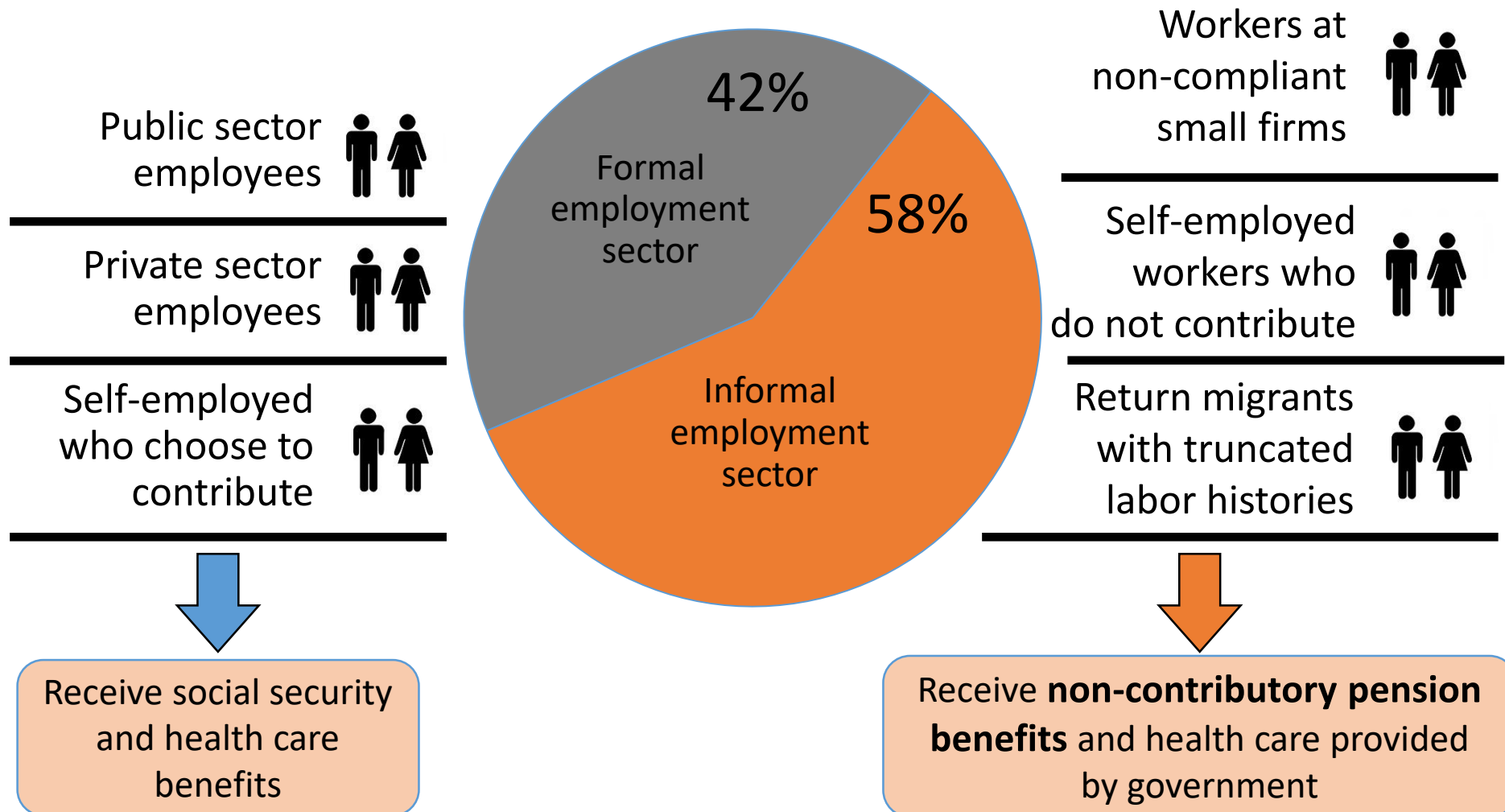
SEDESOL, Mexico City

July 31, 2018

Outline Presentation

- Motivation
- Research Goals
- Survey Design
- Experimental Design
- Empirical Strategy
- Results
- Conclusions

There Are No Universal Social Security Benefits in Mexico

Public sector employees

Private sector employees

Self-employed who choose to contribute

Receive social security and health care benefits

42%

Formal employment sector

There Are No Universal Social Security Benefits in Mexico

Public sector employees

Private sector employees

Self-employed who choose to contribute

Formal employment sector **42%**

Informal employment sector **58%**

Workers at non-compliant small firms

Self-employed workers who do not contribute

Return migrants with truncated labor histories

Receive social security and health care benefits

Receive **non-contributory pension benefits** and health care provided by government

Many Countries Have Implemented Non-Contributory Social Security Programs

Argentina

Bangladesh

Bolivia

Botswana

Brazil

Brunei

Chile

Costa Rica

India

Kenya

Lesotho

Maldives

Mauritius

Mexico

Mozambique

Namibia

Nepal

Philippines

South Africa

Swaziland

Thailand

Uruguay

- Previous studies show that programs reduce poverty and inequality

[e.g. Case and Deaton, 1998; Delgado and Cardoso, 2000; Schwarzer and Querino, 2002; Lund, 2002; Barrientos, 2003; United Nations Department of Economic and Social Affairs, 2007]

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Goals and Contributions of This Research Project

- Impact of a non-contributory program on health, nutrition, and well-being of recipients   => using experimental methods

- Analyzed different implementation designs of the program

  - Frequency of payment (monthly or bimonthly)
  - Method of payment (cash or debit card)

- Causality runs both ways between socioeconomic status and health
  - Opportunity to analyze an exogenous and unexpected income shock

Designing and Implementing a Non-contributory Pension Program

- $550 pesos per month ($78 USD PPP) to adults age 70+ in Yucatan, Mexico
  - Equivalent to 28% of the minimum wage
  - Only conditional on age
  - Uncorrelated with any other observable or unobservable characteristics

- Funded by: National Institute on Aging (NIA), the Government of the State of Yucatan, and RAND

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Household Survey Design

- Questionnaire adapted from existing surveys:

  - Health and Retirement Study (HRS) for the U.S.

  - Mexican Health and Aging Study (MHAS)

Questionnaire

- CAPI (Computer Assisted Personal Interviewing) survey: household and personal income, wealth, food and durables expenditure, OOP (out-of-pocket) health expenditures, health care utilization, life satisfaction, labor supply, cognitive abilities, family transfers, self reported health status, and objective health measures including:

Anthropometric

- Height
- Weight
- Waist circumference
- Arm circumference
- Arm length
- Height to the knee

Biomarkers

- Blood pressure
- Pulmonary capacity
- Grip strength
- Balance test
- Walking speed
- Blood test for Anemia
- Dried Blood Spot: HbA1c, CRP, and Triglycerides

The Survey Measures a Variety of Health Indicators Before and After Intervention

Blood pressure

Pulmonary capacity

Balance

The Survey Measures a Variety of Health Indicators Before and After Intervention

Anemia

Diabetes and other conditions measured with blood test

Grip strength

Grip strength is correlated with disability, mortality, and health-related quality of life

Evaluation Study Is Called Escuchar, or "Listen"

- Baseline survey for treatment and control groups before the intervention **=>** follow-up approx. every 6 and 18 months

- Data collection includes in-person interviews, biomarkers, and anthropometric measurements

- Community level surveys: prices, community infrastructure, economic activity, and macro shocks

  - All the questions are translated into Spanish and Mayan

  - Bilingual interviewers (Spanish and Mayan)

  - We conducted a census of 65,553 households

  - Interviewed 16,195 households
  - Visited 1,987 grocery stores and other establishments

ESCUCHAR

Evaluación Socioeconómica y de Salud de la Población de la Tercera Edad

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- Background of the Current Study
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Program Was Phased into 3 Yucatan Towns with Populations of 20,000+

- Experiment 1 (2008)
  - Treatment: Valladolid
  - Control: Motul

- Experiment 2 (2009)
  - Randomized treatment and control: Merida

- Experiment 3 (2010)
  - Randomized treatment and control: Merida

Program Was Phased into 3 Yucatan Towns with Populations of 20,000+
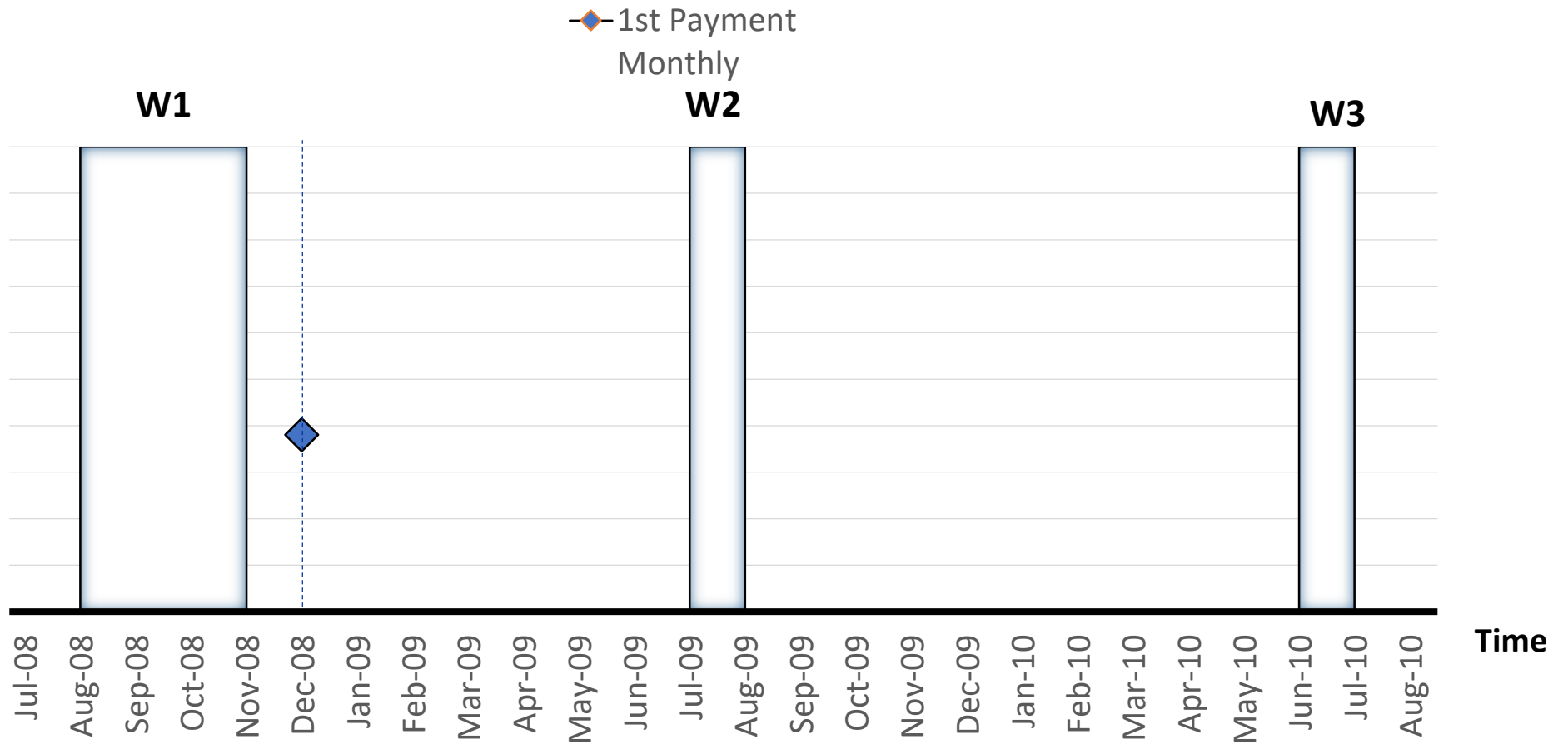
- Experiment 1 (2008)
  - Valladolid and Motul

- Experiment 2 (2009)
  - Randomized treatment and control: Merida

- Experiment 3 (2010)
  - Randomized treatment and control: Merida
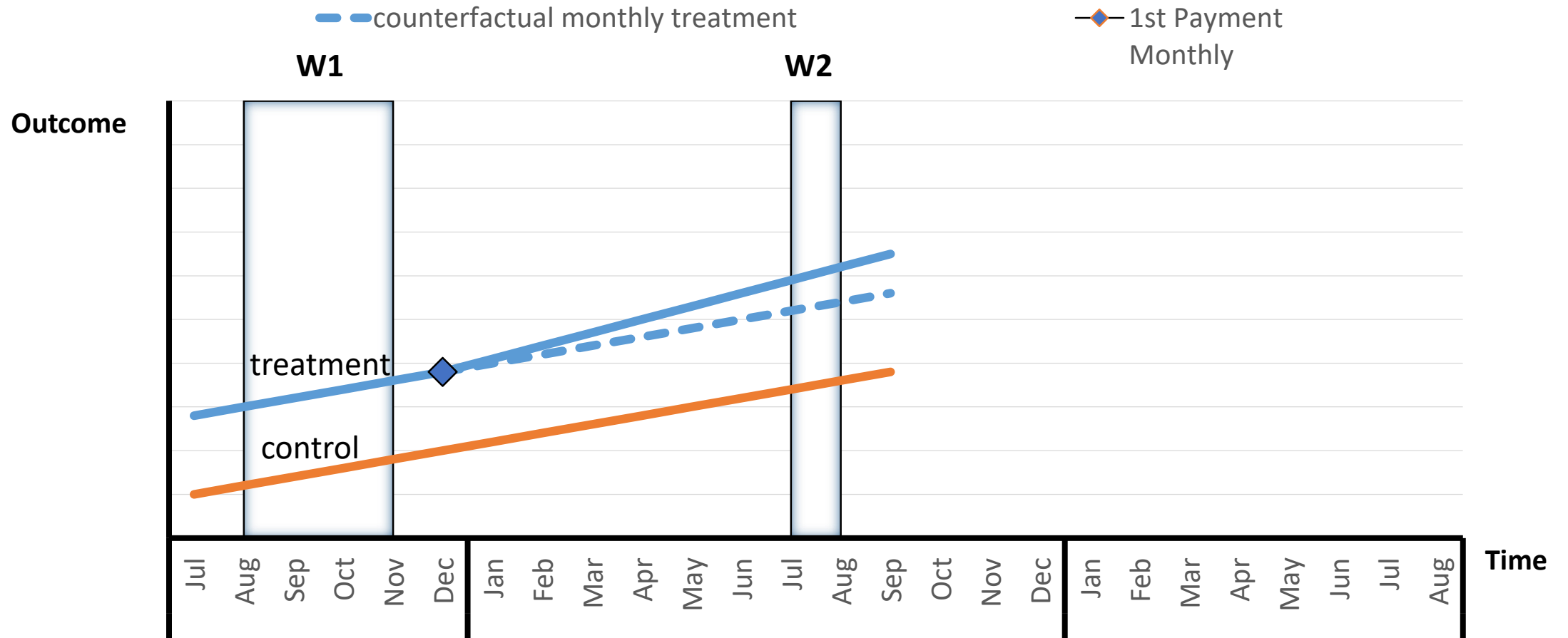
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Experiment 1

- Take-up rate of the program was 94%

Experiment 1: Effects Monthly Program 6 Months after using Difference-in-Differences

Robustness and Potential Sources of Bias

- Linear difference-in-differences OLS methods controlling for demographic characteristics yield virtually the same results as the difference-in-differences of the means:

$$Y_{it} = \alpha + \beta_1 W2_t + \gamma T_i + \theta_1 \left(T_i \times W2_t \right) + \varphi X_{it} + \varepsilon_{it}$$

- We obtain similar results with propensity score matching controlling for the same demographic characteristics and bootstrapping standard errors

- Characteristics of attriters/deceased are similar in both towns

- Aggregate shocks are unlikely to affect the results

- Assumption of common trends holds

 - Income and Expenditure Survey (ENIGH) and Census data

Descriptive Statistics Baseline

	Valladolid (Treatment)	Motul (Control)	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
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 10 percent level.*

- Response rates at W1 were: 91.54% in Valladolid and 95.32% in Motul

Experiment 1
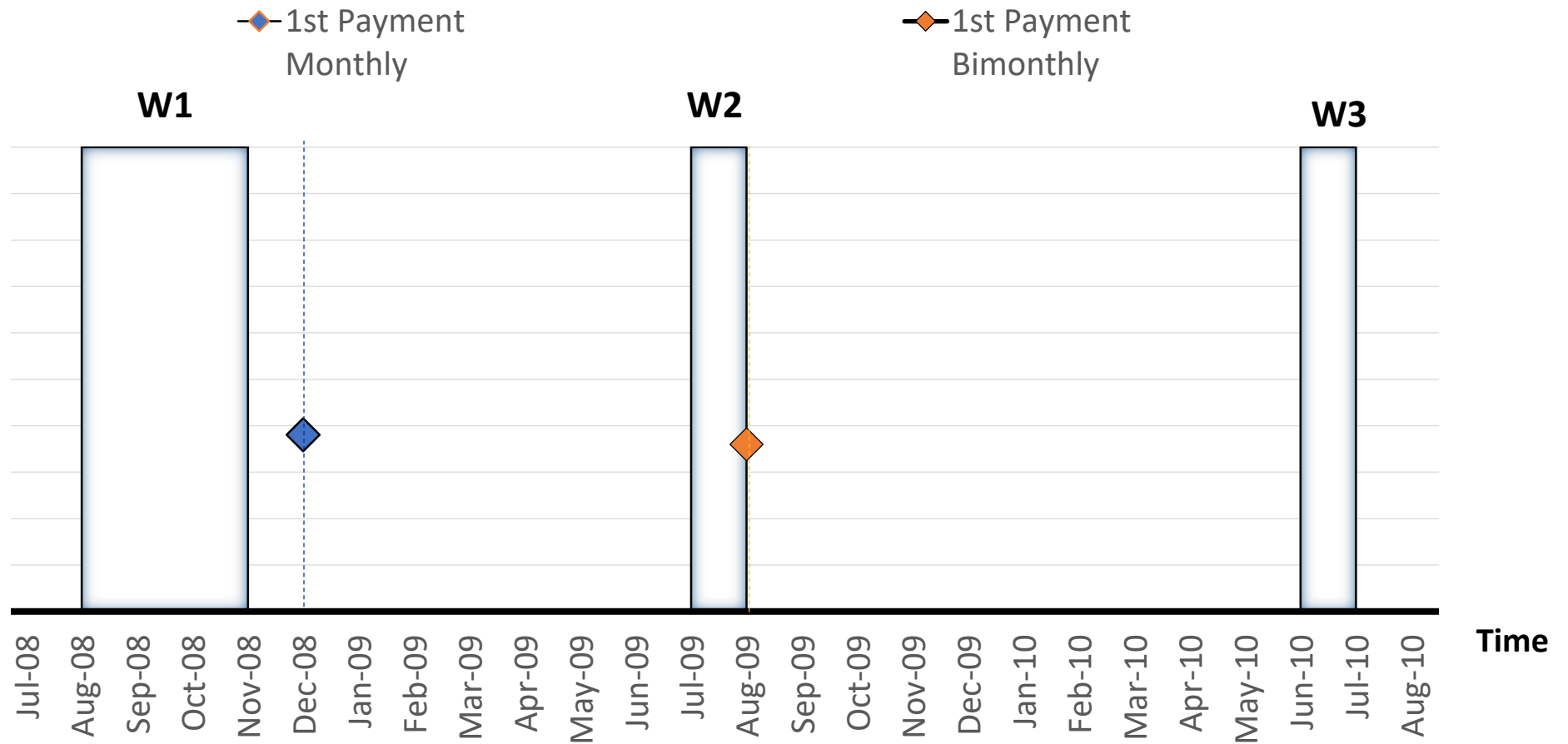
Monthly (State Program) and Bimonthly (Federal Program)

- Monthly Program (State Program): $550 pesos per month ($78 USD PPP) to adults age 70+ in Valladolid
  - Equivalent to 28% of the minimum wage and a 44% increase in average household income

- Bimonthly Program (Federal Program): $1,000 pesos every two months ($142 USD PPP) to adults age 70+ in Motul

- Main difference between programs is the frequency of payment

Do frequency of payments matter?

- According to the Life Cycle Model, individuals smooth marginal utility of consumption across periods to maximize utility during his or her life span

- After an increase on permanent income, individuals adjust their budget constraints to smooth consumption across periods

➢ Frequency of benefits payments should <u>not</u> affect consumption smoothing between paychecks

Do frequency of payments matter for consumption smoothing?

- Previous studies have documented households with little savings do not smooth their consumption between social security checks

[e.g. Stephens 2003; Stephens 2006; Shapiro 2005; Mastrobuoni and Weinberg 2009]

- **Relevance for policy**: many poverty alleviation programs around the world are disbursed every two months

Consumption Smoothing

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

- Y_{it} is expenditures on food and beverages at home and outside the home for household *i* at waves *t=W2* or *W3*

- D_{it} is the number of days elapsed since the last disbursement

- w_t is a dummy variable for wave (W3=1, W2=0)

- X_{it} includes demographic and socioeconomic characteristics (age, age squared, gender, marital status, years of education, lives alone, and household size)

- ε_{it} is a household error term

- Robust and clustered standard errors at the household level

Difference-in-Differences (W3-W1)

$$Y_{it} = \alpha + \beta_1 W3_t + \gamma T_i + \theta_1 (T_i \times W3_t) + \varepsilon_{it}$$

$$E[\widehat{\theta_1}] = E[Y_1^T] - E[Y_0^T] - (E[Y_1^C] - E[Y_0^C])$$
$$= ((\alpha + \beta_1 + \gamma + \theta_1) - (\alpha + \gamma)) - ((\alpha + \beta_1) - (\alpha)) = \theta_1$$

Pre vs Post estimator (W3-W1)

$$E[\widehat{\theta_1}] = E\left[Y_1^{T^{Mo,Bi}}\right] - E\left[Y_0^{T^{Mo,Bi}}\right]$$
$$= (\alpha + \beta_1 + \gamma + \theta_1) - (\alpha + \gamma) = \theta_1 + \beta_1$$

Comparison of the Effects of the Monthly and Bimonthly Programs

$$E\big[\hat{\theta}_1^{Mo}\big] - E\big[\hat{\theta}_1^{Bi}\big] = (\theta_1^{Mo} + \beta_1^{Mo}) - (\theta_1^{Bi} + \beta_1^{Bi})$$

- **Assume common trends**, then

$$\beta_1^{Mo} = \beta_1^{Bi} \text{ then } E\big[\hat{\theta}_1^{Mo}\big] - E\big[\hat{\theta}_1^{Bi}\big] = \theta_1^{Mo} - \theta_1^{Bi}$$

- Obtain **an unbiased estimator** of the effect of the monthly in comparison to the bimonthly program

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Results 6 Months After (W2-W1)

- Food Availability
  - Improvement in food availability
  - Reduction in the incidence of hunger spells

- Health outcomes
  - Improvements in cognitive abilities (memory: immediate recall 15.0%, delayed recall 34.6%)

- Improvement in lung function (8.1%)
- Reduction in the incidence of low hemoglobin levels (anemia) (10.2%)

- Income Sources
  - Reduction in work for pay (27.2%)
  - Family Transfers: there is a reduction in family transfers, but there is not a complete crowding out (51.3%)

Difference-in-Differences of the Means

Variable	Treatment Baseline	Treatment Follow-up	Difference Treatment	Control Baseline	Control Follow-up	Difference Control	Diff-in-Diff of Means	Holm critical value by group
Food Availability								
Often run out of food last three months (never-always [1-4])	1.559	1.370	-0.189	1.446	1.429	-0.017	-0.172***	0.017
Often hungry (never-always [1-4])	1.408	1.168	-0.239	1.275	1.154	-0.121	-0.118***	0.025
Not eat all day (never-always [1-4])	1.253	1.065	-0.188	1.140	1.100	-0.040	-0.148***	0.050
Health Care Utilization								
Visited doctor (yes-no [1-0])	0.415	0.524	0.109	0.456	0.473	0.018	0.092***	0.017
Number of doctor visits	1.077	1.281	0.204	1.183	1.095	-0.089	0.293**	0.025
Bought no medicines since are too expensive (yes-no [1-0])	0.240	0.125	-0.115	0.177	0.142	-0.035	-0.08***	0.013
Health Outcomes								
Hemoglobin level is low	0.537	0.505	-0.033	0.542	0.565	0.022	-0.055*	0.025
Immediate recall (number of words)	2.772	3.056	0.284	2.772	2.639	-0.134	0.418***	0.010
Delayed recall (number of words)	2.652	3.382	0.729	2.759	2.568	-0.191	0.920***	0.013
Maximum peak expiratory flow (l/min)	233	265	32.100	249	262	13.100	19.100***	0.017
Income								
Work for pay last month (yes-no [1-0])	0.165	0.121	-0.045	0.148	0.148	0.000	-0.045**	0.010
Monthly family transfers (pesos)	298.000	242.000	-55.800	154.000	251.000	96.900	-153.000**	0.017
Number of observations	1,146	1,146		510	510			

Notes: *** indicates significance at 1%, ** indicates significance at 5%, and * indicates significance at 10% using p-value for regressions and Propensity Score Matching. These estimates are also significant using the Holm-Bonferroni correction for multiple hypotheses testing (last column).

Frequency of Payments and Consumption Smoothing in W2 and W3

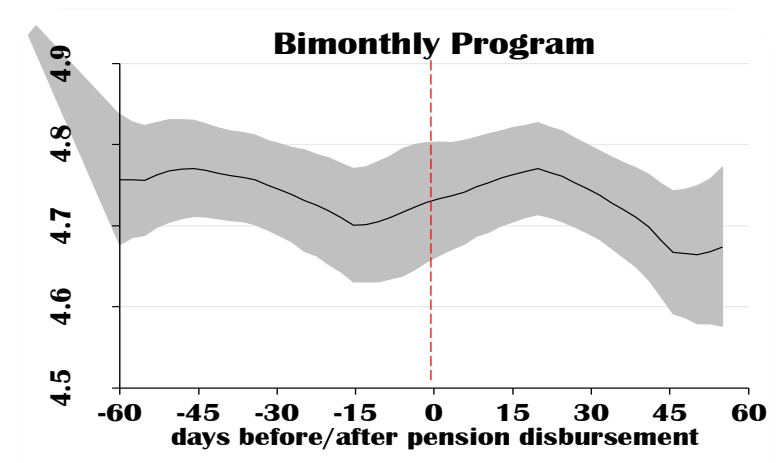**Cyclicality of Expenditures in Monthly and Bimonthly Programs**

Variables	W1 (placebo)		W2 and W3	
	Monthly Program	**Bimonthly Program**	**Monthly Program**	**Bimonthly Program**
	(Valladolid)	(Motul)	(Valladolid)	(Motul)
	(1)	(2)	(3)	(4)
Number of days since last payment	-2.005	0.955	1.146	-3.263***
	(2.547)	(1.740)	(1.155)	(1.138)
Observations	1,290	972	2,344	1,356

Notes: Dependent variable is weekly expenditures on food and beverages in 2010 Mexican Pesos. For W1, columns 1 and 2, corresponds to number days since the first day of the month (placebo payment date). *** Significant at the 1 percent level

- Conducting a one-sided test, we find coefficients of the monthly and bimonthly programs are the <u>same</u> in W1 but <u>differ</u> in W2 and W3

Logarithm of Food Expenditure Per Capita (W2/W3)

- The monthly and bimonthly are <u>not</u> statistically different in W1 but they are statistically different in W2 and W3

- Monthly payments seem to be more effective on smoothing food consumption

Monthly Program

days before/after pension disbursement

Bimonthly Program

days before/after pension disbursement
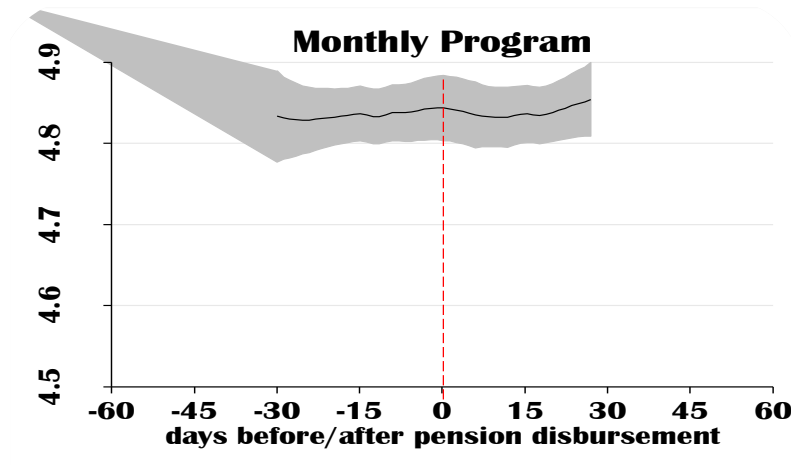
Hypotheses of the Effects of the Programs

1. More frequent payments (monthly program) will be associated with more consistent spending on basic needs, such as food staples and doctor visits

2. Lower frequency of payments (bimonthly program) could facilitate larger purchases of durable goods and investments [e.g. Haushofer and Shapiro, 2013]

➢ We find evidence consistent with our hypotheses

Published: at the *American Economic Review*: Aguila, Emma, Arie Kapteyn, and Francisco Perez-Arce. Consumption Smoothing and Frequency of Benefit Payments of Cash Transfer Programs

Results Varying the Frequency of Payment

	Monthly Payments	**Bimonthly Payments**
Food Availability	Higher reduction in the frequency of running out of food and being hungry	Lower reduction in the frequency of running out of food and being hungry
Health Care Utilization	Elderly are more prone to make doctor visits and to increase the number of visits	No effects
Durable Goods	Lower ownership of durable goods (cell phones, bicycles)	Higher ownership of durable goods (cell phones)

Effects of the Monthly (Valladolid) and Bimonthly (Motul) Programs on Food Availability, Health Care Use, and Purchase of Durable Goods

Variable	Monthly Program (m)		Bimonthly Program (b)		DID Means	DID Regressions	DID Propensity Score Matching
	W1	W3-W1	W1	W3-W1	W3-W1	W3-W1	W3-W1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Food Availability							
Often run out of food	3.491	0.341 **	3.555	0.239 **	0.103 **	0.101*	0.117**
always-never (1-4)	(0.031)	(0.022)	(0.030)	(0.024)	(0.033)	(0.054)	(0.047)
Often hungry	3.697	0.243 **	3.785	0.143 **	0.100 **	0.095*	0.105**
always-never (1-4)	(0.024)	(0.017)	(0.022)	(0.017)	(0.024)	(0.040)	(0.034)
Often not eat for 1 day	3.807	0.156 **	3.881	0.087 **	0.069 **	0.068*	0.069**
always-never (1-4)	(0.018)	(0.013)	(0.016)	(0.013)	(0.018)	(0.031)	(0.026)
Health Care Utilization							
Visited a doctor	0.42	0.111 **	0.462	0.014	0.097 **	0.094**	0.100**
No - Yes (0-1)	(0.016)	(0.015)	(0.020)	(0.017)	(0.023)	(0.034)	(0.033)
Number of doctor visits	1.093	0.253 **	1.252	-0.02	0.273 **	0.269*	0.278**
	(0.058)	(0.062)	(0.100)	(0.084)	(0.105)	(0.154)	(0.147)
Dealt with health problem	0.823	0.104 **	0.873	0.011	0.094 **	0.093**	0.089**
No - Yes (0-1)	(0.012)	(0.010)	(0.013)	(0.012)	(0.016)	(0.024)	(0.023)
Durable Goods							
Owning cellphone	0.179	-0.043 **	0.137	0.107 **	-0.150 **	-0.153**	-0.152**
No - Yes (0-1)	(0.013)	(0.011)	(0.014)	(0.013)	(0.017)	(0.028)	(0.025)
Owning bicycle	0.204	-0.070 **	0.333	-0.003	-0.067 **	-0.062**	-0.073**
No - Yes (0-1)	(0.013)	(0.009)	(0.018)	(0.012)	(0.015)	(0.024)	(0.022)

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

Other Findings: Health Outcomes

Monthly Payments	Bimonthly Payments
More satisfied with their health	Lower increase in their satisfaction with health
Reduction in the incidence of low hemoglobin levels (anemia)	No effects
Similar improvements in lung function	Similar improvements in lung function
Lower decline in hand strength	Higher decline in hand strength
Decline in frailty for women No changes in frailty for men	Increase in frailty for women No changes in frailty for men

Health Outcomes of the Monthly and Bimonthly Programs

Variable	Monthly Program (m)		Bimonthly Program (b)		DID Means
	W1	W3-W1	W1	W3-W1	W3-W1
	(1)	(2)	(3)	(4)	(5)
Satisfied with your health	3.447	0.209 **	3.396	0.131 **	0.078*
(very dissatisfied – very satisfied [1-5])	(0.033)	(0.028)	(0.038)	(0.030)	(0.041)
Homoglobin level is low	0.543	-0.028 *	0.480	0.020	-0.048*
No - Yes (0-1)	(0.020)	(0.017)	(0.023)	(0.020)	(0.026)
Max. peak expiratory flow (l/min)	239.625	32.269 **	254.787	30.232 **	2.037
	(4.954)	(3.237)	(5.033)	(3.296)	(4.620)
Grip strength (kg)	22.835	-1.019***	23.112	-1.618***	0.600***
	(0.323)	(0.157)	(0.362)	(0.199)	(0.253)

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

## Frailty Outcomes for Males of the Monthly and Bimonthly Programs

	Monthly Program (m)		Bimonthly Program (b)		DID Means
	W1	W3-W1	W1	W3-W1	W3-W1
	(1)	(2)	(3)	(4)	(5)
Weight loss	0.115	0.005	0.075	0.028	-0.024
	(0.022)	(0.021)	(0.018)	(0.019)	(0.028)
Weakness	0.157	0.074 **	0.205	0.063 **	0.011
	(0.024)	(0.021)	(0.027)	(0.022)	(0.030)
Exhaustion	0.108	-0.089 **	0.063	-0.024	-0.065 **
	(0.022)	(0.016)	(0.017)	(0.014)	(0.021)
Slow pace	0.189	-0.040	0.148	-0.038	-0.002
	(0.030)	(0.028)	(0.026)	(0.022)	(0.035)
Low physical activity	0.586	-0.025	0.537	0.056	-0.081
	(0.032)	(0.028)	(0.033)	(0.031)	(0.042)
Frailty Index	1.113	-0.033	1.013	0.087	-0.120
[0 to 5]	(0.062)	(0.053)	(0.059)	(0.050)	(0.073)
Frailty Level	0.816	-0.054	0.758	0.009	-0.063
[0=Not frail, 1=pre-frail, and 2=frail]	(0.037)	(0.032)	(0.037)	(0.032)	(0.046)
No. Observations	239		231		

Frailty Outcomes for Females of the Monthly and Bimonthly Programs

	Monthly Program (m)		Bimonthly Program (b)		DID Means
	W1	W3-W1	W1	W3-W1	W3-W1
	(1)	(2)	(3)	(4)	(5)
Weight loss	0.099	0.000	0.077	0.036	-0.036
	(0.018)	(0.017)	(0.021)	(0.022)	(0.028)
Weakness	0.204	-0.008	0.149	0.161 **	-0.168 **
	(0.025)	(0.020)	(0.028)	(0.029)	(0.035)
Exhaustion	0.163	-0.113 **	0.108	-0.012	-0.101 **
	(0.024)	(0.018)	(0.024)	(0.019)	(0.026)
Slow pace	0.177	-0.062 **	0.149	0.014	-0.075 *
	(0.025)	(0.022)	(0.029)	(0.025)	(0.033)
Low physical activity	0.626	-0.052	0.656	0.005	-0.057
	(0.029)	(0.028)	(0.035)	(0.033)	(0.043)
Frailty Index	1.215	-0.211 **	1.113	0.172 **	-0.383 **
[0 to 5]	(0.054)	(0.045)	(0.062)	(0.054)	(0.071)
Frailty Level	0.882	-0.121 **	0.833	0.070	-0.191 **
[0=Not frail, 1=pre-frail, and 2=frail]	(0.032)	(0.028)	(0.038)	(0.033)	(0.043)
No. Observations	289		186		

Alcohol Use for Men (W2/W3)

- The monthly program does not seem to affect alcohol use for men

- In the bimonthly program, we observe an increase by 1 drink first week after pension disbursement
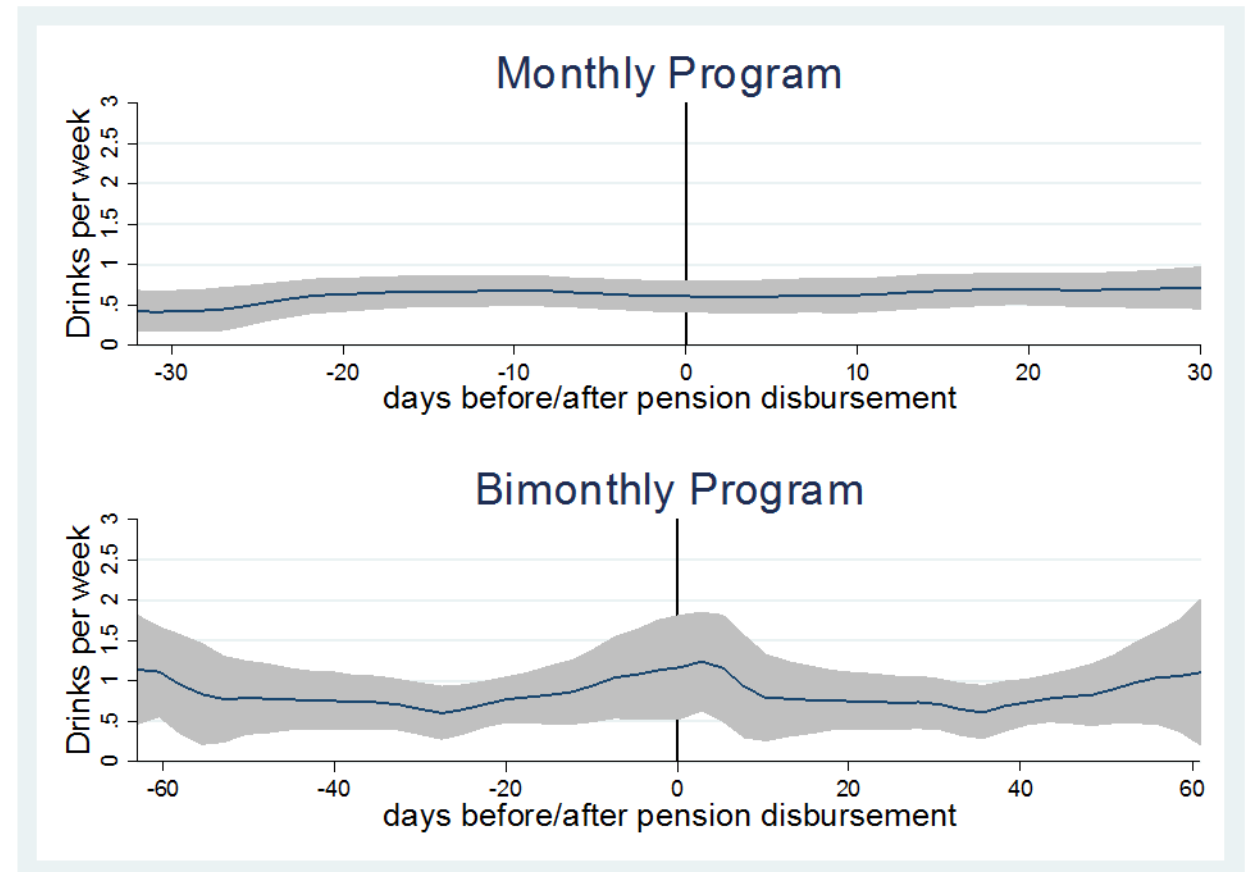
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Conclusions

- We find statistically significant health effects just 6 months after the introduction of the program

- Health effects continue to increase 18 months after

- Frequency of payments matters

- The monthly program appears to improve more health and wellbeing

- Potential mechanisms for the improvement on health are health care utilization and food availability

Appendix

Other Potential Explanations of Consumption Patterns

- Stephens (2003) mentions that grocery stores may adjust increasing their prices in response to a higher demand the days following check receipt

  - We find no statistically significant changes in prices between paychecks (using prices data collected for: tortilla, beans, rice, eggs, milk, tomato, onion, potato, noodle soup, soft drinks, sweet bread, and French bread)

- 95% of households in the monthly and bimonthly program at W1 report not having savings and this is consistent across waves

Why Conduct Different Designs?

- **The experimental set-ups between experiments 1 and 2/3 have different pros and cons:**

  – Experiment 1: quasi-experiment but closer in design to the real universal social security program

  – Experiment 2 and 3: Random assignment but possible spillovers between treatments and controls may affect the measured effects

Why Don't the Poor Save More?

- Previous literature show poor individuals often face difficulties in saving even for moderate goals [e.g. Banerjee and Duflo 2007]

  - External: Lack of access to formal saving mechanisms; fear of money being stolen or family pressure to spend it (Dupas and Robinson 2013)

  - Internal: lack of self-control [e.g. Ashraf et al 2006; Banerjee et al 2015)

- Less frequent but larger disbursements may facilitate investments such as house improvements or durable goods (e.g. Haushofer and Shapiro, 2013)

Definition of Variables for Frailty Index

- Using the information available in the study, we generated a frailty indicator following a slight modification of Fried's frailty phenotype (Fried et al., 2001):

  1. <u>Shrinking</u>: Unintentional weight loss of more than 3 kilograms in prior year or, at follow-up

  2. <u>Weakness</u>: Grip strength in the lowest 20% at baseline, adjusted for gender and body mass index. Stratified by gender and body mass index (BMI): Those in the lowest quartile in the test classified (1)

Definition of Variables for Frailty Index

3. <u>Poor endurance and energy</u>: Exhaustion as indicated by self-report of exhaustion. Classified (1) when respondent answers yes to the question: Did you feel more tired or have less energy than usual?

4. <u>Slowness</u>: The slowest 20% of the population was, based on time to walk 12 feet, adjusting for gender and standing height (gender-specific cutoff at mean height)

5. <u>Low physical activity level</u>: Self-report of exercising or vigorous physical activity, three or more times in a week (No=1)

- **Outcome measures**
  - Summary measure of **number of deficits** (0-5)
  - Summary variable: **Frail** (3+ deficits), **Pre-frail** (1-2 deficits), and **Not Frail** (0 deficits)

# *Preliminary Analysis on Living Arrangements (6 months after)*

- Average household size
  - Increased by 3.3%

- Proportion that lives alone
  - No changes

- Proportion that lives alone with spouse only

  - Decreased by 1.9 percentage points (pp)

- Changes in family composition by groups of age and gender
  - Group 5-9 years old increased by 36.3%: grandchildren

- The effects are in households with older adults 70-79 years old / No effects for 80+

For the South African case Edmonds et al. (2005) found increases in young children (age 5 and below) and women of age-bearing years (age 18-23) living with pension recipients, and a decrease in prime working-age women (age 30-39)

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	**Panel Respondents**	**Difference**	**Attriters**	**Panel Respondents**	**Difference**	**Diff-in-Diff**
	(a)	(b)	(b) - (a) = (c)	(d)	(e)	(e)- (d) = (f)	(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$)	1469.61	1177.39	-292.23	1548.98	1278.67	-270.31	21.91
No. Observations	113	947		122	699		
Panel 2: Deceased vs Panel Respondents							
	Deceased	**Panel Respondents**	**Difference**	**Deceased**	**Panel Respondents**	**Difference**	**Diff-in-Diff**
	(a)	(b)	(b) - (a) = (c)	(d)	(e)	(e)- (d) = (f)	(f) - (c)
Mean age	82.90	77.34	-5.56***	81.57	76.99	-4.58***	0.98
Male (%)	46.09	46.10	0.00	48.70	50.63	1.93	1.93
Marital status (%)							
Single/Divorced/Separated	7.03	9.44	2.41	7.83	8.25	0.42	-1.99
Couple	42.97	53.69	10.73**	45.22	54.29	9.07*	-1.65
Widowed	50.00	36.86	-13.14**	46.96	37.37	-9.59*	3.55
Mean years of Education	1.91	1.79	-0.11	1.64	1.96	0.32*	0.44**
Speaks Mayan (%)	79.69	75.78	-3.91	89.57	76.72	-12.84***	-8.94**
Read and write a message in Spanish (%)	54.69	55.09	0.40	56.52	66.91	10.39**	9.99*
Living alone (%)	8.59	13.30	4.71*	8.70	14.41	5.71**	1.00
Mean number of household residents	3.77	3.42	-0.35*	3.77	3.41	-0.36*	-0.01
Work for pay (%)	4.69	18.00	13.31***	8.70	15.48	6.79**	-6.52**
Monthly household income (MXN$)	881.72	1259.01	377.29	1177.32	1263.08	85.76	-291.53
No. Observations	128	1218		115	958		

Propensity Score Estimates for Valladolid and Motul
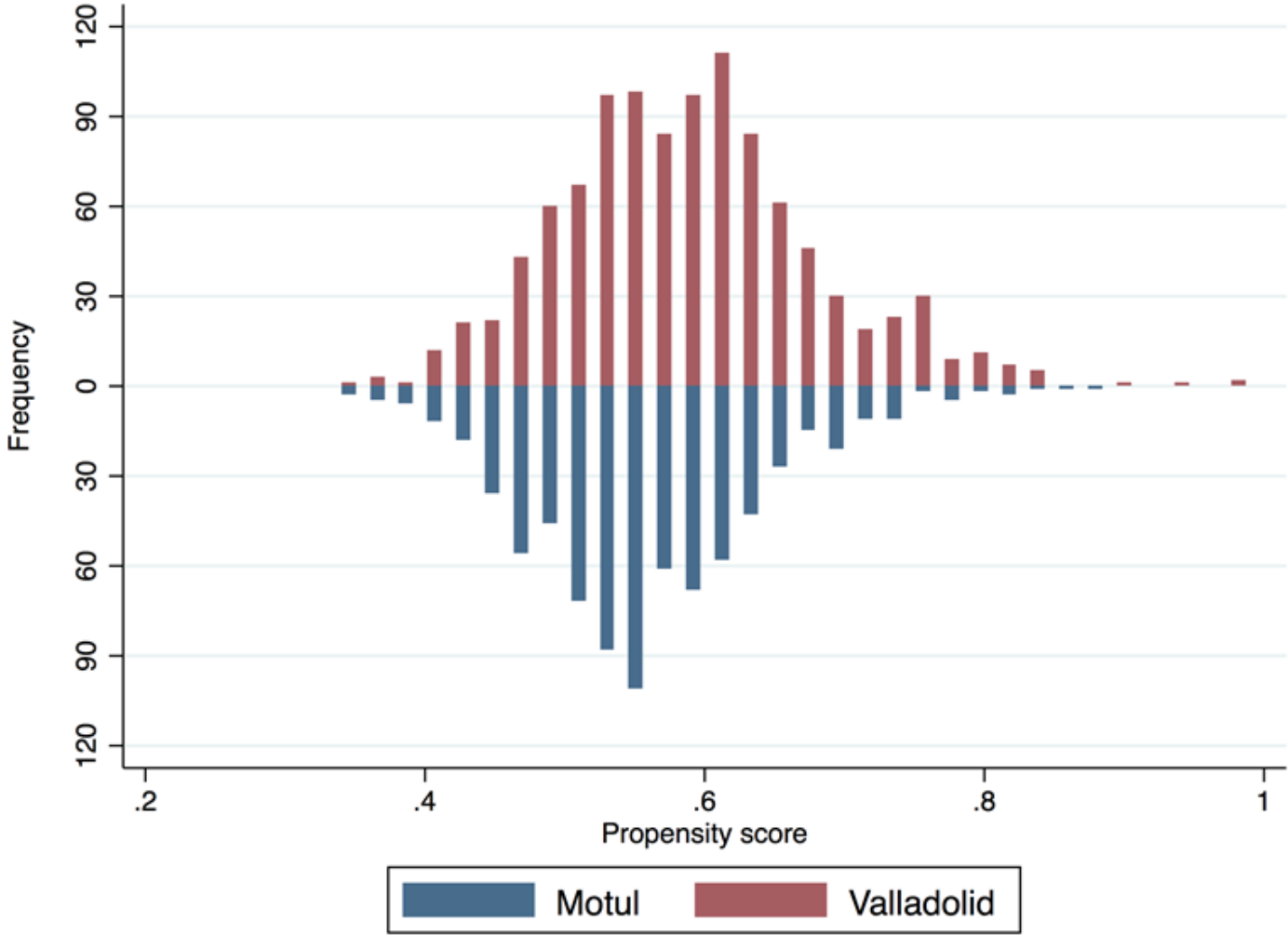
Testing Common Trends Assumption (households with older adults)

	Total Food Expenditure (weekly)	Household expenditures in food and beverages at home (weekly)	Household heath care expenditures (monthly)
Valladolid=1, Motul=0	397.8***	254.2***	296.0**
Interaction Terms			
Valladolid * 2004	-223.7	-120.8	-182.0
Valladolid * 2005	39.74	127.9	16.67
Valladolid * 2006	-199.2	-108.9	-154.3
Valladolid * 2010	-455.7***	-264.8***	-222.9
Year			
2004	74.98	11.50	97.49
2005	40.18	-60.57	86.15
2006	35.16	11.63	38.99
2010	217.0**	101.3	104.3**
Constant	362.1***	337.7***	51.78**
No. Observations	271	271	271
R-squared	0.147	0.131	0.036
F (interaction)	1.950	2.220	0.687
Prob > F (interaction)	0.122	0.087	0.561

Notes: F-test was conducted only for the Interaction of Monthly*2004, Monthly*2005, and Monthly*2006 because the program started in 2008. The reference category is 2008. Consumption expenditures deflated with the Mexican National Consumer Price Index (INEGI) and converted to December 2010 values.