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# **Conditional Cash Transfers and Indigenous People's Health: Is There a Differential Impact of Progresa Between Indigenous and Non-Indigenous Households?**

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**Conditional cash Transfers and Indigenous People's Health:  
Is There a Differential Impact of Progresa Between Indigenous and Non-  
Indigenous Households?**

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**Abstract**

This paper uses panel data for Mexico from 1997 to 2000 in order to analyze the differential impact of a conditional cash transfer programs on health between indigenous and non-indigenous rural households. Building on previous work by Gertler (2000), using data from the conditional cash transfer program, PROGRESA, in Mexico, we investigate the interaction between health and the indigenous status of the household and find that in most cases, indigenous groups have benefited from the program in relatively the same proportion than the non-indigenous counterparts, with some differences for different age groups. There is no robust evidence to support the hypothesis that culture, access, or norms could induce a differential effect of the program among indigenous people.

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**Keywords :** Health, Mexico, Progresa, indigenous, conditional cash transfers.

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## **1. Introduction**

The indigenous peoples of Latin America live in extreme poverty. There are over 40 million indigenous people in Latin America, or about 8 percent of the region's population. Mexico has the largest indigenous population in the Americas, at over 12 million or about 13% of total population. In general, they live in areas that lag behind the rest of the country in terms of social indicators. Among the dimensions related to well-being, health-related aspects have been a special concern about policy-makers in Mexico. Improved health and nutritional status are not only desirable in themselves, but have an indirect impact through enhancing the effectiveness of education programs since, for example, school attendance and performance are often adversely affected by poor health and nutrition. Poor health is therefore both a cause as well as a consequence of poverty (Skoufias, 2001). Additionally, The health status of a child, for example may be an important factor in the child's school attendance rate. Indeed the whole impact of the combined PROGRESA-Oportunidades interventions, the conditional cash transfers program in Mexico, in nutrition, health and schooling is likely to be significantly more than the sum of the parts (Skoufias, 2001).

Policy related to indigenous populations has always been among the main concerns of policy makers in the world. As an example of the world's commitment on the issue of indigenous people's health, a resolution of the 54th World Health Assembly created a framework for a global plan of action that involve improvement of the health conditions of indigenous people, specially in developing countries. One important issue is the feasibility of a unique strategy, although the WHO can generate broadly applicable general principles, it's important that other agents get involved in the process, such as local governments and representatives of the populations among others.

To attain this issue, the agenda on this topic presents five different goals in different areas, as well as some potential activities at national levels. These are health and demographic data and information, health promotion, health systems and access to care, influencing the determinants of health, and political commitment and national capacity building.

In Mexico there is a program since 1998 that aims at eliminating the vicious circle of poverty and, because of the targeting procedure, includes important segments of the indigenous population, though it is not explicitly directed to them. The program, called PROGRESA until 2001 and *Oportunidades* since that year, involves these two key concepts in the struggle against poverty and provides these basic capabilities. It was adopted in 1998, and by 2005 it covered 4.1 million families, about 20% of the families in Mexico. This program is based on the traditional cash transfer programs, but it adds certain characteristics in its design which incentivize the families to invest in human capital, such as health, education and nutrition. To clarify it more, the beneficiaries have to visit public clinics for preventive medical care services in order to receive the money transfers of the program. With this, the program not only increases the income of the families, but also induces and encourages health and nutrition activities.

In this paper, we investigate the impact of the PROGRESA program in Mexico on the health of young indigenous children. PROGRESA activities are aimed at improving the health status of benefited families. The program combines incentives for families to invest in human capital of their children with a traditional cash transfer program. Program benefits include cash transfers conditional on the household meeting the following requirements: (i) every family member accepts preventive health services, (ii) children age 0-5 and lactating mothers attend nutrition monitoring clinics where their growth is measured, they obtain nutrition supplements, and they receive education on nutrition and hygiene; and (iii) pregnant women visit clinics to obtain prenatal care, nutritional supplements, and health education. An additional cash transfer is given to households with school age children if the children are enrolled and attend school.

Our analysis follows Gertler (2000) and complements it. It uses the ENCEL surveys, which consist of one baseline and five follow-up surveys collected approximately every six months from 1998 to 2000. These surveys form a longitudinal or panel data set which follows the same households over a three-year period. The panel consists of approximately 26,000 households on 138,000 individuals from which approximately 36% are indigenous. We define indigenous as a household where the household head speaks a dialect. One of the most innovative characteristics of PROGRESA is its experimental design, since once the selection of eligible communities

took place; villages were chosen randomly to participate in the program. Eligible households in treatment villages received benefits immediately, while benefits for eligible households in control villages were postponed until 2000.

## **2. Conditional Cash Transfers: The Case of Progresa-Oportunidades**

In 1997, the federal government of Mexico introduced the Programa de Educación, Salud y Alimentación (the Education, Health, and Nutrition Program), known by its Spanish acronym, PROGRESA, as part of its renewed effort to break the intergenerational transmission of poverty. The basic approach of PROGRESA is that of preventative health care which enables households to anticipate both the causes and presence of illnesses, with the objective of decreasing the incidence and duration of these illnesses. Former evaluations have shown a positive impact of the program in the living standards by improving opportunities for education, health and food. Specifically, PROGRESA-Oportunidades has the following objectives related to health (Skoufias, 2001):

1. To substantially improve the conditions of education, health and nutrition of poor families, particularly children and their mothers, by providing sufficient quality services in the areas of education and health, as well as providing monetary assistance and nutrition supplements.

2. Integrate these actions so that educational achievement is not affected by poor health or malnutrition in children and young people, or because they carry out work that makes school attendance difficult.

3. Encourage the responsibility and active participation of parents and all family members in improving the education, health and nutrition of children and young people.

4. Promote community participation and support for the actions of PROGRESA-Oportunidades, so that educational and health services benefit all families in the localities where it operates, as well as uniting and promoting community efforts and initiatives in actions that are similar or complementary to the Program. The program is made up of three components that are closely linked to each other:

5. . Basic health care for all members of the family and strengthening the quality of services as well as reorienting individuals and health services towards taking preventive actions towards health care and nutrition.

6. Monetary transfers and nutrition supplements to improve the food consumption and nutritional state of poor families, emphasizing that the purpose of this is to improve the family's food intake, particularly of children and women, who are generally the members of households who are perceived to suffer most from nutritional deficiencies receives the monetary allowance tied to health clinic visits and nutritional supplements.

For mothers, the cash transfer is conditional on participating in four sets of activities to promote family health and nutrition:

- Use of health complements [formula] for children 0 to 2 years of age and for pregnant mothers in their feeding period;
- Periodic weight and height surveillance for children less than 5 years old;
- Preventive health care where prenatal control is included, children care and immunizations, along with regular adult check-ups; and
- Attendance of community workshops on health care, hygiene and eating habits;

The most important actions are related to maternal and child health (e.g., pre- and post-natal health care) and family planning services. A crucial ingredient in the program is the emphasis put on regular visits to health centers and the setting up and monitoring of a schedule of appointments. This includes the setting of appropriate health-center timetables that minimize the inconvenience associated with the making and keeping of appointments. To facilitate this, upon registration at a health clinic beneficiaries are given an appointments booklet containing a specified schedule of appointments for each household member, with particular attention placed on visits by vulnerable members. While the general focus is on improving the health and nutritional status of all household members, special emphasis is placed on the welfare of mothers and children. Some components are more important than others in this regard. The nutrition of preschool children is of considerable importance not only because of concern over their immediate

welfare, but also because their nutrition in the formative stages of life is widely perceived to have substantial and persistent impact on their physical and mental development and on their health status as adults. Stunting - low height-for-age - is a major form of protein-energy malnutrition (Skoufias, 2001)

An underlying assumption in the program is that effective health care requires active community participation and a culture of preventive care. In order to empower individuals and communities to take control over their own health, beneficiaries are required to attend nutrition and health education lectures (*pláticas*). Up to 25 themes are discussed in the lectures, including nutrition, hygiene, infectious diseases, immunization, family planning, and chronic diseases detection and prevention. Because mothers are the primary care takers, the *pláticas* are mainly directed to them, but other members of beneficiary families as well as non-beneficiaries are invited to attend. Participants are trained in various aspects of health and nutrition, with a special emphasis on preventive health care, more specifically they are taught about:

- (a) ways to prevent and reduce health risks (e.g., prenatal care, early detection of malnutrition, childhood immunizations, safe food and water treatment),
- (b) how to recognize signs or symptoms of sickness, and
- (c) how to follow appropriate primary-care procedures (e.g., such as treatment of diarrhea by means of oral rehydration). Participants are also trained in the use of the nutritional supplement provided by the program, as well as in optimal breastfeeding and complementary feeding of young children.

Efforts are also made to broaden the information for adolescents and young people, particularly women, to favor the adoption of appropriate behaviors to protect their health from an early age.

There are relevant questions to be raised in terms of the impact of the program in indigenous people's health indicators. Culture, access, and informal norms could imply a differential effect between indigenous and non-indigenous people. Thus, looking at the impact of the program among the indigenous beneficiaries is a legitimate question to be explored, as is the main theme of this paper.

### 3. Review on Program Design

One of the most innovative characteristics of PROGRESA is its experimental design, since once the selection of eligible communities took place; villages were chosen randomly to participate in the program. Thus, randomization took place at the village level and not at the household level. When selecting villages, the probability of being selected is weighed by population size, this means that data at the household level is auto-weighted (Behrman, J., and P. E. Todd. 1999a). In November 1997 PROGRESA conducted a survey of the socio-economic conditions of rural Mexican households (Encuesta de Características Socioeconómicas de los Hogares or ENCASEH) in the evaluation communities to determine which households would be eligible for benefits. The ENCEL panel survey contains data on 506 villages, 320 of which were randomly selected as the treatment group (63%) and the other 186 as the control group (37%)<sup>1</sup>. Eligible households in treatment villages received benefits immediately, while benefits for eligible households in control villages were postponed until 2000. ENCEL consists of one baseline and five follow-up surveys collected approximately every six months from 1998 to 2000. This empirical study whose objective is to test if the health status of the indigenous households is different from non-indigenous households is based on a panel over a three-year period of 15,787 households on 86,191 individuals from which approximately 36% are indigenous. The rounds of the survey used here were carried out in November 1997, March 1998, November 1998, June 1999, November 1999, April 2000 and November 2000.<sup>2</sup> All questionnaires which were not complete were eliminated.

The data used here are the PROGRESA survey instruments that ask the question whether the person speaks an indigenous language. A number of core questions about the demographic composition of households and their socio-economic status were applied in each round of the survey. These core questions were accompanied by specific questionnaires, focused on collecting information critical to a thorough evaluation of the

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<sup>1</sup> García-Verdú (2002).

<sup>2</sup> Encuesta de Características Socioeconómicas de los Hogares (ENCASEH 97), Encuesta de Evaluación de los Hogares, Cuestionario del Hogar, (ENCEL98M), Encuesta de Evaluación de los Hogares, Cuestionario del Hogar, (ENCEL98O), Encuesta de Evaluación de los Hogares, Cuestionario del Hogar, (ENCEL99M), Encuesta de Evaluación de los Hogares, Cuestionario del Hogar, (ENCEL99N), Encuesta de Evaluación de los Hogares, Cuestionario del Hogar, (ENCEL00M) and Encuesta de Evaluación de los Hogares, Cuestionario del Hogar, (ENCEL00N)



impact of the program. The topics of these modules included collecting information about health status.<sup>3</sup> PROGRESA/OPORTUNIDADES in Mexico is one of the most comprehensive demand-side financing (or conditional cash transfer) programs in the world. The excellent evaluations of PROGRESA have thus far not focused on differential impact on indigenous people.

Therefore, the objective of this article is to analyze the impact of PROGRESA/OPORTUNIDADES on indigenous progress in health. Behrman and Petra (1999). To check the randomization in balancing indigenous and non-indigenous individuals in treatment and control groups, we present descriptive statistics in Table 1. The sample consists of children age 0-5 at baseline. We find a difference of 1.5% more indigenous in the control group. There seems to be little difference between control and treatment groups in illness rates, the number of monitoring visits, and the amount of labor activity carried out by individuals. There is also little difference in the economic status or household demographics. This results show that the randomization did properly balance the control and treatment groups.

**Table 1 - Descriptive Statistics at Baseline for Children Age 0-5**

	Treatment		Control		All	
	<i>Mean</i>	<i>St. Dev.</i>	<i>Mean</i>	<i>St. Dev.</i>	<i>Mean</i>	<i>St. Dev.</i>
Ill last month (=1)	0.215	0.411	0.225	0.418	0.219	0.413
Nutritional Monitoring Visits Last Month	0.276	0.213	0.244	0.200	0.263	0.209
Age	1.909	1.867	1.895	1.866	1.903	1.867
Male (=1)	0.528	0.499	0.518	0.500	0.524	0.499
Father's Years of Schooling	2.969	2.771	2.861	2.685	2.927	2.738
Mother's Year's of Schooling	2.636	2.678	2.580	2.689	2.614	2.682
Number of Siblings	3.664	2.373	3.649	2.317	3.658	2.351
Eldest Child (=1)	0.152	0.359	0.158	0.364	0.154	0.361
Log of Per Capita Income	5.270	0.782	5.273	0.790	5.271	0.785
Indigenous (=1)	0.371	0.483	0.386	0.487	0.377	0.485

<sup>3</sup> Behrman and Petra (1999). International Food Policy Research Institute. <http://www.ifpri.org>

#### 4. Health Outcomes for Children

In general, health services attendance in rural Mexico is extremely low. In average, people who live in rural communities attend medical appointments only 0.65 times per year. In contrast –after controlling for geographical regions– we find a high rate of medical appointment attendance by poor households in health centers placed in treatment areas, as compared to those poor households in control localities.

We examine the indigenous status of the household and the impact of PROGRESA on the probability that a mother reports that her child experienced an illness in the 4 weeks prior to the survey. Table 2 presents the mean child monitoring visits by age and treatment/control, indigenous/non-indigenous groups. The data in this table is pictured in Figure 1.

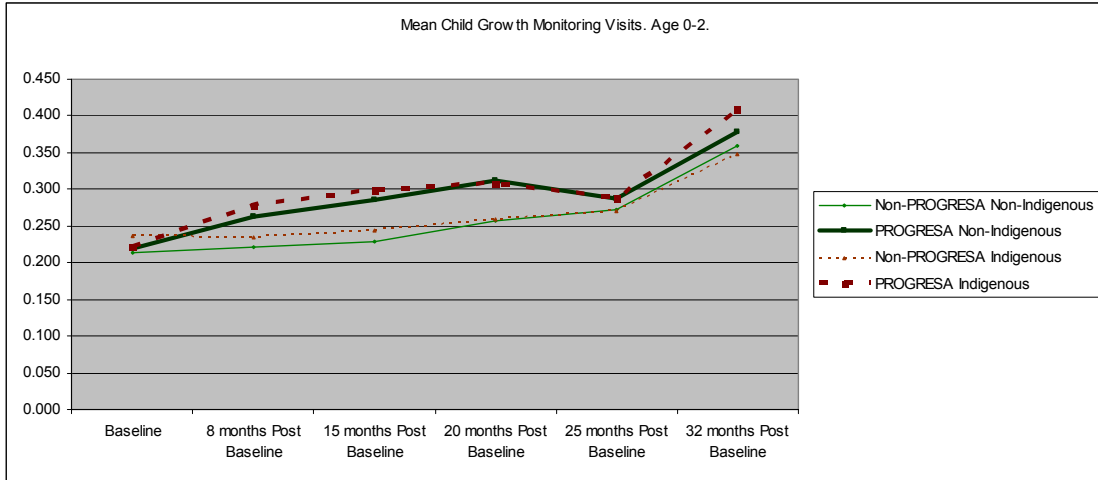
**Table 2 - Mean Child Growth Monitoring Visits**

		Non Indigenous		Indigenous	
		PROGRESA	Non- PROGRESA	PROGRESA	Non- PROGRESA
Age 0-2	Baseline	0.219	0.214	0.220	0.237
		<i>0.213</i>	<i>0.214</i>	<i>0.215</i>	<i>0.196</i>
	8 months Post Baseline	0.263	0.220	0.279	0.235
		<i>0.219</i>	<i>0.203</i>	<i>0.226</i>	<i>0.208</i>
	15 months Post Baseline	0.286	0.230	0.299	0.244
		<i>0.175</i>	<i>0.168</i>	<i>0.175</i>	<i>0.176</i>
	20 months Post Baseline	0.312	0.256	0.309	0.258
		<i>0.172</i>	<i>0.171</i>	<i>0.175</i>	<i>0.163</i>
Age 3-5	25 months Post Baseline	0.288	0.272	0.287	0.269
		<i>0.170</i>	<i>0.165</i>	<i>0.162</i>	<i>0.164</i>
	32 months Post Baseline	0.379	0.360	0.409	0.348
		<i>0.252</i>	<i>0.239</i>	<i>0.252</i>	<i>0.239</i>
	Sample Size	1,230	1,906	763	1,199
	Baseline	0.216	0.200	0.241	0.240
		<i>0.218</i>	<i>0.199</i>	<i>0.234</i>	<i>0.200</i>
	8 months Post Baseline	0.248	0.189	0.258	0.224
	<i>0.221</i>	<i>0.190</i>	<i>0.227</i>	<i>0.208</i>	
15 months Post Baseline	0.258	0.191	0.271	0.229	
	<i>0.182</i>	<i>0.166</i>	<i>0.177</i>	<i>0.179</i>	
20 months Post Baseline	na	na	na	na	
25 months Post Baseline	0.238	0.214	0.252	0.218	
	<i>0.174</i>	<i>0.177</i>	<i>0.171</i>	<i>0.162</i>	
32 months Post Baseline	0.287	0.287	0.330	0.282	
	<i>0.242</i>	<i>0.221</i>	<i>0.243</i>	<i>0.250</i>	

Notes: na data not available

Standard errors in italics.

**Figure 1**



*0-2 year olds:*

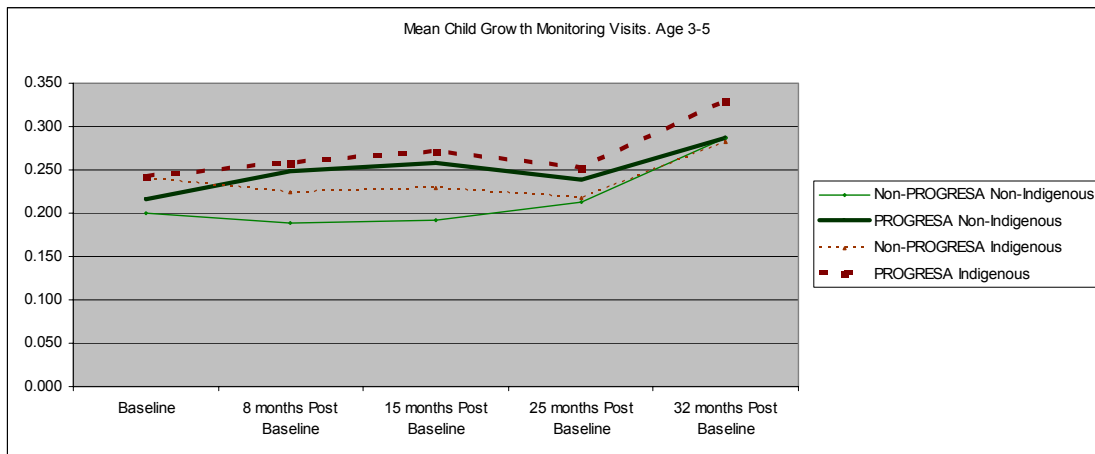
At baseline, there seems to be a slight difference between the Non-PROGRESA indigenous children and the rest of the groups. 8 months post baseline there is an increase in monitoring visits for all PROGRESA groups being the largest increase among indigenous children. This tendency prevails until 20 months post baseline when indigenous and non indigenous groups have no difference in treatment and control areas, although the difference between PROGRESA and non-PROGRESA individuals remains. After 25 months post baseline there is an increase for all groups, being the indigenous-PROGRESA group the one with the largest increase in monitoring visits. For non-indigenous children the gap in the number of medical appointments between children covered by PROGRESA and those who are not, is considerably reduced. For indigenous children this difference not only persists but exhibits an increasing tendency.

*3-5 year olds:*

Figure 2 shows the statistics for 3-5 year old children. Indigenous children have a larger number of monitoring visits at baseline compared to non-indigenous children. Treatment non-indigenous children also have a larger number of monitoring visits at

baseline compared to control non-indigenous children. 8 months post baseline both indigenous and non-indigenous children at PROGRESA localities show more monitoring visits, although PROGRESA children show more monitoring for both the indigenous the non-indigenous groups. In the 25<sup>th</sup> month of the program the number of medical appointments decreased, returning to its previous increasing trend by the following round. 32 months post baseline, there is almost no difference between indigenous and non indigenous children in the control groups and non-indigenous treatment children, but PROGRESA indigenous children have a larger mean child growth monitoring mean.

**Figure 2**



Concerning the group not covered by PROGRESA, two findings are noteworthy. First, indigenous children are those who benefit from more frequent surveillance than non-indigenous. Second, the lack of coverage seems to cause the average number of surveillance visits to fall, until by the 25<sup>th</sup> month, the tendency is reverted and we observe a generalized upward trend.

For both groups within the treatment areas, the number of appointments is notably on the rise. This is in line with the view that households increase use of public health services for two reasons. On the price effect side, other things being equal, PROGRESA makes nutrition –conditional on members of the household attending preventive appointments in public health centers– more feasible relative to all goods. The income effect of the economic support plan, in terms of nutrition given by PROGRESA, allows for a higher level of medical treatment expenditures.

There are other reasons that influence the increase in medical appointments in public clinics that can explain the decrease presented by the round corresponding to 25 months after program induction. First, PROGRESA preventive health actions are successful, there would be fewer illnesses, and in consequence, demand for health services would fall. Another reason is that the number of medical appointments of the beneficiary households in public clinics may have exceeded the number required to obtain the benefits of the program.

The results show an increase in appointments aimed at improving the nutritional status of infants, in a range of 30 to 60% for children 0-2 years old, and, between 25 to 45% for the children 3-5 years old.

Being indigenous has a positive impact on the time trend of preventive appointments, however the corresponding estimators are not significant. Yet when the difference-in-difference variable is considered, being indigenous in the treatment region, has a statistically significant effect on the number of medical consultations for the twenty-month period after the beginning of the program.

We test whether the monitoring visits are higher among PROGRESA indigenous children by comparing monitoring visits across control and treatment regions controlling for socio-economic differences. Behrman and Todd (1999) detected some significant differences on the means of some socio-economic characteristics at the household level, but could not reject the null hypothesis that the means of some socio-economic characteristics were equal across treatment and control localities. Therefore, we control for observed exogenous characteristics using multivariate regression. Following Gertler (2000), we estimate difference-in-difference models of the impact of PROGRESA on the probability of illness. We estimate the following equation on those eligible for PROGRESA benefits in control and treatment communities:

$$Y_i = \alpha + \beta \cdot DT \cdot DI \cdot DRound + \sum_j \phi_j X_{ji} + \varepsilon_i$$

Where,  $Y_i$  is individual  $i$ 's number of visits in the month prior to the survey,  $DT$  indicates if the individual lives in a treatment locality,  $DI$  indicates whether the individual is indigenous and  $X_i$ 's are individual and household controls. The probability

of illness models employ individual fixed effects since the individual is observed in all six rounds. We allow the difference in difference estimate to vary in length of time since the program was introduced. We estimate the model for two age groups: ages 0-2 and ages 3-5. Table 3 reports the difference in difference estimates of the PROGRESA impact on monitoring visits of indigenous children. We find that for both age groups there is a positive significant impact. Therefore, indigenous PROGRESA children increased their monitoring visits more than non-indigenous non-PROGRESA children.

**Table 3 - Difference-in-Difference Estimates of PROGRESA Impact on Monitoring Visits on Indigenous children**

	8 Months Post Baseline	15 Months Post Baseline	20 Months Post Baseline	25 Months Post Baseline	32 Months Post Baseline
Age 0-2 at Baseline	0.048 (3.23)**	0.060 (5.63)**	0.074 (5.58)**	0.040 (3.90)**	0.127 (7.00)**
Age 3-5 at Baseline	0.033 (2.18)*	0.043 (4.19)**	na	0.026 (2.04)*	0.101 (3.02)**

Robust t statistics in parentheses

\* significant at 5%; \*\* significant at 1%

na data not available

### ***Morbidity Rates under PROGRESA***

Children in poor households are less disease-prone and exhibit shorter recovery periods than children from less disadvantaged households. This result exhibits a positive trend among children in poor households belonging to the treatment group. Morbidity rates are the same in the period previous to program implementation in the control and treatment groups.

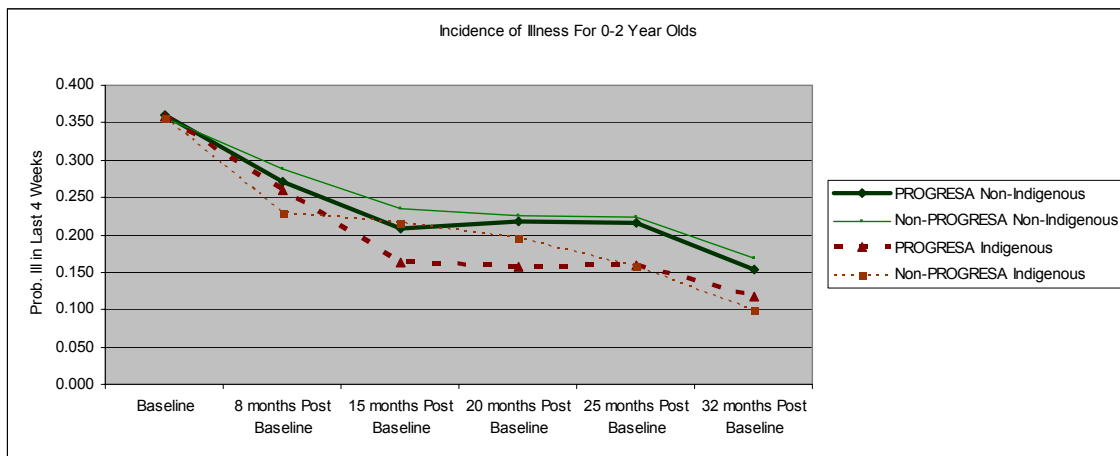
We now consider the hypothesis that PROGRESA lowers illness in indigenous children. Table 4 presents the Child Illness Rates by Age and Treatment/Control, Indigenous/Non-Indigenous groups.

#### *0-2 year olds:*

For 0-2 year old children, we found no difference between the four groups at baseline. 8 months Post Baseline, the incidence of illness decreased for all groups, although it decreased the most for non-PROGRESA Indigenous children and the least for non-PROGRESA Non-Indigenous children. 15 months Post Baseline, the PROGRESA

children incidence of illness was smaller than the Non-PROGRESA children and the incidence on indigenous children was smaller than Non-indigenous children. The impact of the program seems to be larger for indigenous children. From 15 months Post Baseline to 25 months Post Baseline the incidence of illness seems to remain almost constant except from the Non-PROGRESA Indigenous children. Around April of 2000, the control group started to receive the PROGRESA benefits. As a result, we find that after 25 months Post Baseline, the illness incidence decreased for all groups.

**Figure 3**



**Table 4 - Child Illness Rates by Age and Treatment/Control**

		Non Indigenous		Indigenous	
		Non-PROGRESA	PROGRESA	Non-PROGRESA	PROGRESA
Age 0-2	Baseline	0.359	0.356	0.359	0.356
	8 months Post Baseline	0.271	0.289	0.261	0.230
	15 months Post Baseline	0.209	0.236	0.162	0.216
	20 months Post Baseline	0.218	0.226	0.157	0.195
	25 months Post Baseline	0.216	0.224	0.160	0.157
	32 months Post Baseline	0.154	0.170	0.118	0.099
	Sample Size	1,895	1,207	1,202	770
Age 3-5	Baseline	0.265	0.258	0.246	0.241
	8 months Post Baseline	0.210	0.219	0.199	0.208
	15 months Post Baseline	0.172	0.187	0.132	0.176
	20 months Post Baseline	0.160	0.195	0.128	0.114
	25 months Post Baseline	0.150	0.225	0.130	0.134
	32 months Post Baseline	0.029	0.093	0.132	0.105
	Sample Size	1,939	1,230	1,227	798

With the exception of an momentary slow down by the indigenous control group during the eight month follow-up round, indigenous children in both subgroups saw their incidence decline more rapidly throughout the whole evaluation period. The same can be said within the non-indigenous subgroup for PROGRESA infants.

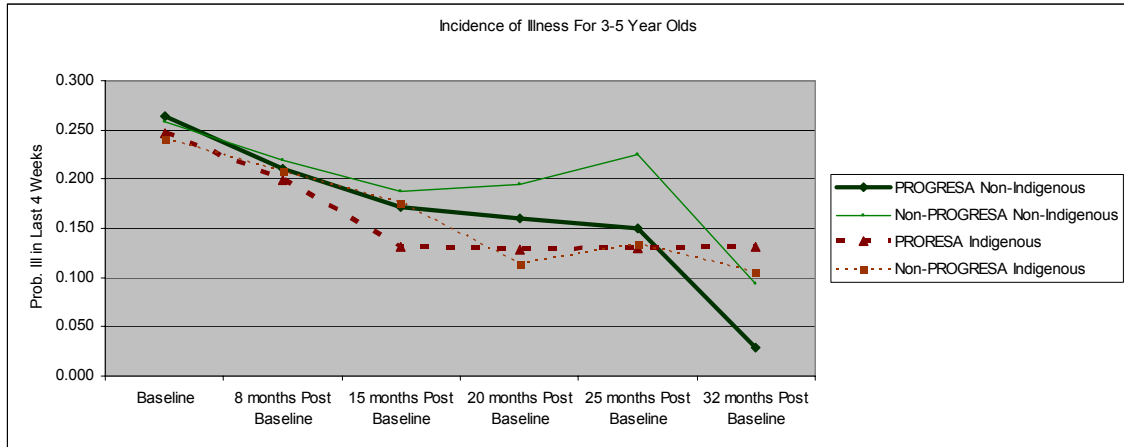
*3-5 year olds:*

Figure 4 displays the statistics for 3-5 year old children. We find a slightly larger incidence of illness in Non-indigenous children at baseline. As we would expect we find a decrease 8 months post baseline for both groups, although the decrease in treatment children is larger than in non-treatment children. 15 months post baseline we find a clear difference between treatment and control groups being the larger difference among the indigenous. There is an increase in the incidence of illness for non-indigenous children in the non-PROGRESA localities between 20 and 25 months post baseline. After the control group starts receiving the PROGRESA benefits, the Non-indigenous children have the largest decrease between rounds. The Indigenous PROGRESA children have a slight increase and the Non-PROGRESA Indigenous children have a small decrease compared to the Non-indigenous children.

Within the non-indigenous subgroup, children in control areas show slightly lower ex-ante morbidity rates, nevertheless PROGRESA children perform better throughout the exercise to end up with a substantially lower probability of illness on the 32<sup>nd</sup> month. In this regard, it is noteworthy how the differential effect on the rate of decrease of the morbidity rate across non-indigenous groups is almost zero. Yet the differential decrease between indigenous and non-indigenous infants is considerable. That is, the effect of the benefits granted to the control group seems unequivocally stronger for non-indigenous 3-5 year olds.



**Figure 4**



We test whether the probability of illness is higher among PROGRESA indigenous children in treatment areas. We estimate equation (1), being  $Y_i$  whether the mother reported the child was sick 4 months prior to the survey. Table 5 reports our findings. We find that being an indigenous child in a PROGRESA locality decreases the probability of illness in indigenous children when comparing to non-indigenous children in non-PROGRESA localities. Moreover the impact on health has been increasing as time passes by for indigenous children. Therefore, PROGRESA had a positive impact on the health status of indigenous children compared to non-indigenous non-PROGRESA children.

**Table 5 - Difference-in-Difference Estimates of PROGRESA Impact on Indigenous Children’s Incidence of Illness**

	8 Months Post Baseline	15 Months Post Baseline	20 Months Post Baseline	25 Months Post Baseline	32 Months Post Baseline
Age 0-2 at Baseline	-0.05	-0.127	-0.13	-0.125	-0.144
		(8.15)**	(6.21)**	(7.71)**	(10.85)**
Age 3-5 at Baseline	-0.04	-0.095	-0.096	-0.11	-0.112
	(2.16)*	(5.67)**	(4.28)**	(4.77)**	(2.36)*

Robust t statistics in parentheses

\* significant at 5%; \*\* significant at 1%

### The program’s Net Effect

In general we can say that preventive health actions effectively improve children’s health, as shown by the corresponding decreases in morbidity rates. As described by

Gertler (2000), the number of hospitalizations decreased as a result of the program, which is consistent with the hypothesis that PROGRESA has contributed to a decline in the incidence of severe illnesses. Such is the case for both indigenous and non-indigenous.

Additionally, cash transfers can effectively improve infant health, assuming the main cause for deficiencies is the economic constraints faced by the parents. It can be concluded that the impact of PROGRESA in the probability of a child getting sick is negative and significantly different from zero. PROGRESA, decreased the morbidity rates of children in the 0-2 years age range by 4.7 percentage points, a 12 percent ex-post decline. In the case of infants in the 3-5 years range, the decrease was of 3.2 percentage points or an 11% ex-post reduction.

From the previous analysis we may also conclude the impact of PROGRESA in the incidence of indigenous children's illness to be consistent with the effect for non-indigenous, i.e., the results are in line with in Gertler (2000). In some cases, the parameters are not significant. The difference-in-difference estimators are negative, yet not significant until the 32<sup>nd</sup> month after program implementation second for the case of indigenous children in the 3-5 years age group.

### **Adolescent and Adult Health Status**

PROGRESA conditioned cash transfers on one preventive health care visit per year for adults. Nutritional intake and health status are directly related. Additionally, 70 percent of the income transfer was used to increase food availability in the household both in terms of quantity and quality (Hoddinott and Skoufias, 2004).

In the last four rounds of the survey, individuals 6 years old and above were asked the following questions:

i) In the past 4 weeks, how many days did you have difficulty performing daily tasks (such as going to work, doing housework, going to school, caring for your children) due to illness?

ii) In the past 4 weeks, how many days were you not able to perform daily tasks (such as going to work, doing housework, going to school, caring for your children) due to illness?

iii) In the past 4 weeks, how many days were you in bed due to illness?

Additionally for those 18 years old or older were asked:

*i) How long are you able to walk without getting tired?*

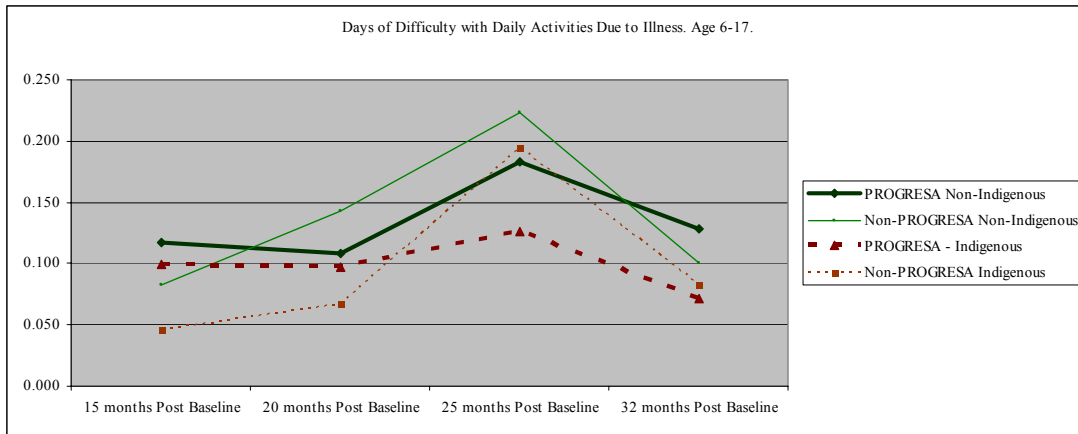
These questions were not asked in the baseline. We here show the means and standard deviations for indigenous and non-indigenous individuals for these variables in Tables 6 through 9 and picture them in figures 5 through 12. We find that the treatment groups have a less difficulty performing daily tasks than control groups after baseline. For ages 6 to 17 and 51+ we find less difficulty performing daily tasks in indigenous individuals. Individuals 18+ from PROGRESA areas reported fewer days not being able to perform daily tasks due to illness.

**Table 6 - Days of Difficulty with Daily Activities Due to Illness**

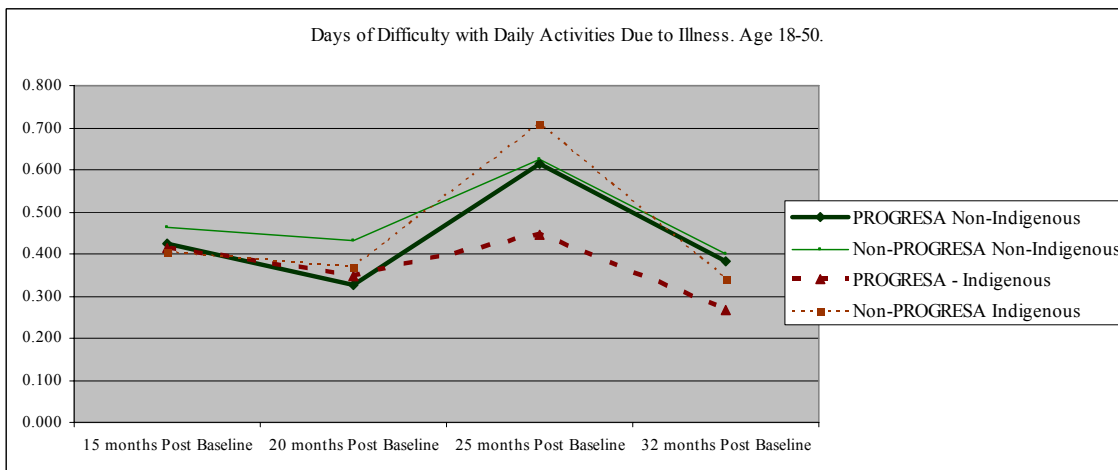
	Non-Indigenous		Indigenous	
	PROGRESA	Non-PROGRESA	PROGRESA	Non-PROGRESA
<i>Age 6-17</i>				
15 months Post Baseline	0.118 <i>1.656</i>	0.083 <i>1.176</i>	0.100 <i>1.525</i>	0.046 <i>0.702</i>
20 months Post Baseline	0.108 <i>1.383</i>	0.143 <i>1.564</i>	0.097 <i>1.424</i>	0.067 <i>1.113</i>
25 months Post Baseline	0.184 <i>1.922</i>	0.223 <i>2.151</i>	0.127 <i>1.469</i>	0.194 <i>1.983</i>
32 months Post Baseline	0.128 <i>1.618</i>	0.100 <i>1.284</i>	0.072 <i>1.152</i>	0.083 <i>1.182</i>
<i>Age 18-50</i>				
15 months Post Baseline	0.423 <i>3.076</i>	0.464 <i>3.199</i>	0.414 <i>3.024</i>	0.402 <i>3.059</i>
20 months Post Baseline	0.326 <i>2.624</i>	0.430 <i>3.072</i>	0.347 <i>2.855</i>	0.369 <i>2.772</i>
25 months Post Baseline	0.614 <i>3.684</i>	0.625 <i>3.707</i>	0.446 <i>3.122</i>	0.707 <i>4.010</i>
32 months Post Baseline	0.383 <i>2.890</i>	0.400 <i>2.954</i>	0.268 <i>2.493</i>	0.339 <i>2.835</i>
<i>Age 51+</i>				
15 months Post Baseline	2.118 <i>7.088</i>	2.273 <i>7.390</i>	1.594 <i>6.155</i>	1.250 <i>5.462</i>
20 months Post Baseline	2.165 <i>7.144</i>	2.736 <i>7.979</i>	1.656 <i>6.091</i>	2.284 <i>7.143</i>
25 months Post Baseline	2.894 <i>8.103</i>	3.270 <i>8.740</i>	2.291 <i>7.307</i>	2.801 <i>8.198</i>
32 months Post Baseline	2.100 <i>7.032</i>	2.383 <i>7.461</i>	1.786 <i>6.474</i>	1.997 <i>6.962</i>

Standard errors in italics.

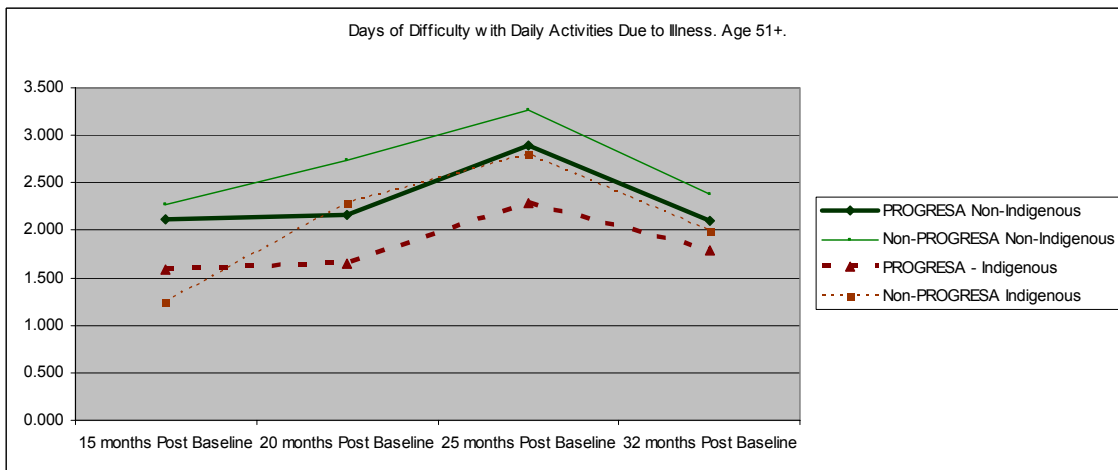
**Figure 5**



**Figure 6**

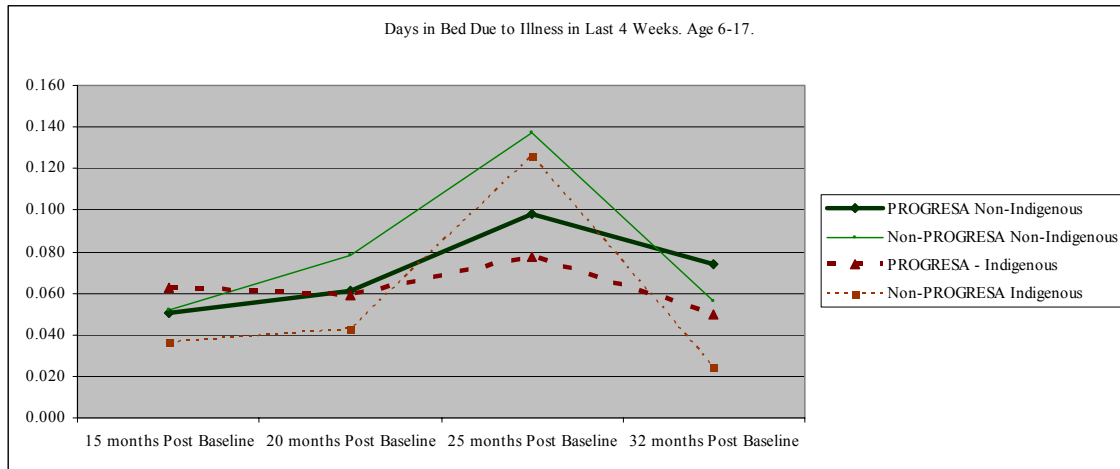


**Figure 7**

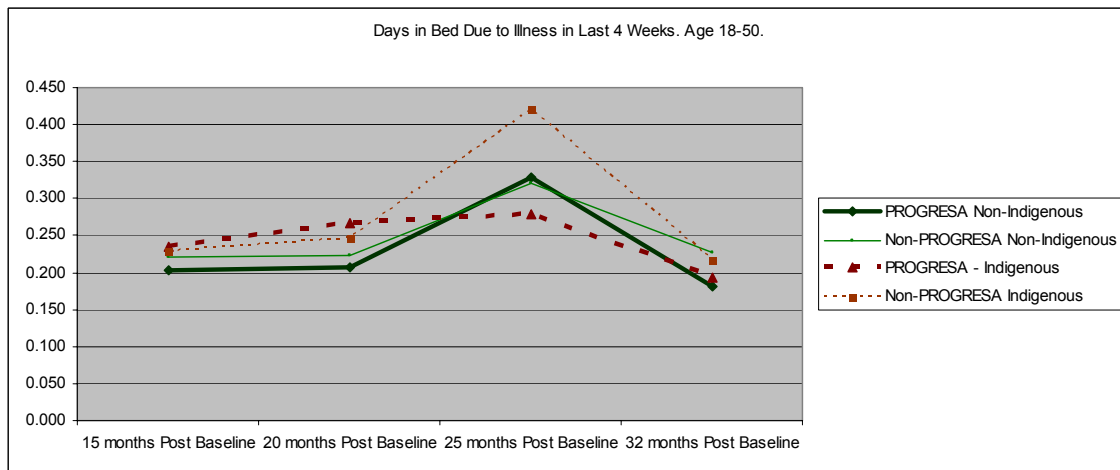


Again, indigenous from ages 6 to 17 and 51+ report fewer days than non indigenous. PROGRESA indigenous individuals 51+ report having fewer days in bed due to illness compared to other individuals in the same age range. According to these tables for all age groups, indigenous individuals in PROGRESA areas have a better health status than non-indigenous individuals in non-PROGRESA areas.

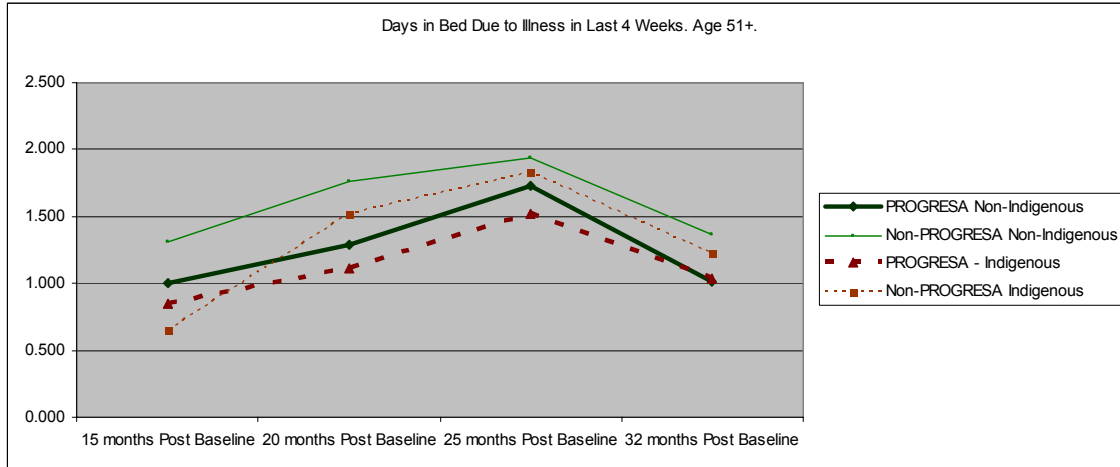
**Figure 8**



**Figure 9**



**Figure 10**



According to Figures 11 and 12, the number of kilometers an individual can walk without getting tired does not seem to be changed by the program. Moreover, it seems to be that the number of kilometers decreased after the program started for all groups.

**Table 8 - Days in Bed Due to Illness in Last 4 Weeks**

	Non-Indigenous		Indigenous	
	PROGRESA	Non-PROGRESA	PROGRESA	Non-PROGRESA
<i>Age 6-17</i>				
15 months Post Baseline	0.051	0.052	0.063	0.037
	<i>0.996</i>	<i>1.049</i>	<i>1.266</i>	<i>0.636</i>
20 months Post Baseline	0.061	0.078	0.059	0.043
	<i>1.129</i>	<i>1.307</i>	<i>1.118</i>	<i>0.921</i>
25 months Post Baseline	0.098	0.137	0.077	0.126
	<i>1.394</i>	<i>1.704</i>	<i>1.191</i>	<i>1.609</i>
32 months Post Baseline	0.074	0.056	0.049	0.024
	<i>1.282</i>	<i>0.979</i>	<i>0.979</i>	<i>0.742</i>
<i>Age 18-50</i>				
15 months Post Baseline	0.203	0.220	0.235	0.229
	<i>2.057</i>	<i>2.134</i>	<i>2.126</i>	<i>2.244</i>
20 months Post Baseline	0.207	0.224	0.266	0.246
	<i>2.149</i>	<i>2.229</i>	<i>2.539</i>	<i>2.199</i>
25 months Post Baseline	0.329	0.320	0.278	0.420
	<i>2.659</i>	<i>2.599</i>	<i>2.407</i>	<i>3.043</i>
32 months Post Baseline	0.181	0.228	0.193	0.216
	<i>1.984</i>	<i>2.218</i>	<i>2.153</i>	<i>2.288</i>
<i>Age 51+</i>				
15 months Post Baseline	0.997	1.307	0.853	0.646
	<i>4.911</i>	<i>5.708</i>	<i>4.552</i>	<i>3.762</i>
20 months Post Baseline	1.293	1.766	1.115	1.515
	<i>5.576</i>	<i>6.499</i>	<i>5.054</i>	<i>5.762</i>
25 months Post Baseline	1.732	1.935	1.516	1.824
	<i>6.432</i>	<i>6.932</i>	<i>6.021</i>	<i>6.706</i>
32 months Post Baseline	1.010	1.370	1.036	1.217
	<i>4.919</i>	<i>5.822</i>	<i>4.995</i>	<i>5.451</i>

Standard errors in italics.

Since we do not have this health status information available at baseline, we are not able to estimate the model by differences-in-differences. We follow the methodology of Gertler (2000), by estimating the following equation:

$$Y_i = \alpha + \beta \cdot DT \cdot DI + \sum_j \phi_j X_{ji} + \varepsilon_i$$

Where  $Y_i$  is individual  $i$ 's health status measures,  $DT$  indicates if the individual lives in a treatment locality,  $DI$  indicates whether the individual is indigenous and  $X_i$ 's are individual and household controls. We also include age, sex and education of the individual. We report the coefficients of the interaction term in table 10 by age groups. These coefficients show the differential impact on the dependent variable of the program in indigenous households. We find that for indigenous individuals 51 years old or above, the program has a positive impact on the health status, except on the number of kilometers an individual can walk without getting tired or the days in bed due to illness. For indigenous 18 and 50 year olds individuals we find a negative impact on the days of difficulty with daily activities due to illness. We do not find a difference on the impact of the program on adult health for other age groups.

**Table 9 - Estimates of Impact on PROGRESA Program Impact on Indigenous Adult Health by Age**

	<b>Age 6-17</b>	<b>Age 18-50</b>	<b>Age 51+</b>
<b>Days of Difficulty with Daily Activities Due to Illness</b>	-0.034 (2.04)*	-0.103 (3.79)**	-0.397 (3.16)**
<b>Days Incapacitated Due to Illness in Last 4 Weeks</b>	-0.004 (.025)	-0.046 (.174)	-0.326 (2.78)**
<b>Days in Bed Due to Illness in Last 4 Weeks</b>	-0.012 (.098)	-0.01 (.042)	-0.194 (.193)
<b>Kilometers Can Walk Without Getting Tired</b>		0.112 (.131)	0.002 (.003)
<b>Sample Size</b>	10,883	93,764	28,059

Robust t statistics in parentheses  
 \* significant at 5%; \*\* significant at 1%

## **5. Concluding Remarks**

In this paper, we test whether there is a differential effect of the conditional cash-transfers program in Mexico, PROGRESA-Oportunidades, when we compare indigenous versus non-indigenous beneficiaries. Using the same indicators used in Gertler (2000), the monitoring visits are higher among PROGRESA indigenous children by comparing monitoring visits across control and treatment regions controlling for socio-economic differences. We find that indigenous PROGRESA children increased their monitoring visits more than non-indigenous non-PROGRESA children. We also test whether the probability of illness is higher among PROGRESA indigenous children in treatment areas by comparing illness rates across control and treatment regions. We find that there is a negative significant impact for indigenous PROGRESA children on illness rates.

PROGRESA conditioned cash transfers on one preventive health care visit per year for adults. We find that for indigenous individuals 51 years old or above, the program has a positive impact on the health status. We find that for indigenous individuals 51 years old or above, the program has a positive impact on the health status, except on the number of kilometers an individual can walk without getting tired or the days in bed due to illness. For indigenous 18 and 50 year olds individuals we find a negative impact on the days of difficulty with daily activities due to illness. We do not find a difference on the impact of the program on adult health for other age groups. There is no robust evidence to support the hypothesis that culture, access, or norms could induce a differential effect of the program among adult indigenous people.



## 6. References

Adato, Michelle. 2000 “El impacto de Progresa sobre las relaciones sociales en la comunidad”, en *Evaluación de resultados del Programa de Educación, Salud y Alimentación*. Mexico: Progresa

Behrman, J., and P. E. Todd. 1999a. Randomness in the Experimental Samples of PROGRESA (Education, Health, and Nutrition Program). March. International Food Policy Research Institute, Washington, D.C.

Deaton Angus, 1997. "The Analysis of Household Surveys: A Microeconomic Approach to Development Policy" World Bank Publications.

Escobar Latapí, Agustín, 2000. “ Logros y retos: Una evaluación cualitativa de Progresa en México”, en *Evaluación de resultados del Programa de Educación, Salud y Alimentación*. Mexico: Progresa

García-Verdú, R., 2002. “Risk and Insurance in Rural Mexico”, mimeo, University of Chicago.

Gertler, P. J., 2000. Final Report: The Impact of PROGRESA on Health. November. International Food Policy Research Institute, Washington, D.C.

González de la Rocha, Mercedes y Agustín Escobar Latapí. 2003. *Evaluación cualitativa del programa Oportunidades*, Serie Investigación, number 2. Mexico: Sedesol

Hoddinott J. and Skoufias E., 2004. "The Impact of PROGRESA on Food Consumption", *Economic Development and Cultural Change*, volume 53, pages 37–61.

Skoufias, E., 2001. PROGRESA and its Impacts on the Human Capital and Welfare of Households in Rural Mexico: A Synthesis of the Results of an Evaluation by IFPRI. December. International Food Policy Research Institute, Washington, D.C.