THE IMPACT OF DAY CARE ON MATERNAL LABOR SUPPLY AND CHILD DEVELOPMENT IN MEXICO

FINAL DATA ANALYSIS REPORT

August, 2012

Technical Briefing

Various countries around the world have implemented daycare programs to support working mothers and improve the wellbeing of their children. However, a lack of evidence exists regarding the impact of such programs in developing countries. The aim of this study was to evaluate the impact of one such program in Mexico, the *Programa de Estancias Infantiles para Apoyar a Madres Trabajadoras* (PEI). Specifically, the study was designed to evaluate the impact of the program on the labor market participation and use of time among female beneficiaries, and the wellbeing of their children.

The evaluation design followed a *pipeline* approach in which we compared a group of children on waiting lists for daycare (controls) with those attending daycare (beneficiaries). Our sample comprised 1,573 households (1,255 beneficiaries, 318 controls) from seven Mexican states.

The evaluation showed that mothers who benefitted from the PEI increased their proportion of employment (18%), short-term job tenure (15%) and hours worked per month (24 hours). However, no significant impacts of the PEI were found on income, possibly because beneficiary respondents underreported their income for fear of losing the benefits of the program. As for the use of time, beneficiary mothers spent on average 83 minutes less per day caring for children under 5 years of age and other household members spent more time on childcare (72 minutes per day) to compensate for this change. No significant effects were found on the mental health of beneficiary mothers. The evaluation revealed heterogeneous effects within the sample. For instance, mothers who reported not having worked before entering the program had a higher proportion of employment upon entering the program (21%), whilst mothers who had worked before PEI had a higher level of empowerment (6% above the mean), indicating improvements in self-esteem and personal recognition.

Concerning child wellbeing, no significant effects were found for the full sample on child development and dietary diversity. Although, the prevalence of disease (15 days before survey) rose by 17% for children in the program, this effect decreased with age and level of exposure. Regarding heterogeneous effects on child development, children under 30 months of age with less than six months of exposure to the program increased personal-social behavior z-scores (0.36 S.D.) whilst children older than 30 months with more than six months of exposure demonstrated increased communication z-scores (0.30 S.D.). This latter effect was larger for children with mothers who worked before the program (0.38 S.D.).

Our evaluation of quality of care at daycares (through videotaped observation) showed that working in small groups increased both personal-social behavior and communication z-scores in 0.22 S.D and 0.14 S.D., respectively. The evidence suggests that girls, and children who live in better home environments, are more likely to have better z-scores. Unexpectedly, the teacher characteristics did not contribute to improve the children's development scores.

The analysis on the costs of providing daycare services suggests that the average cost per child is equivalent to US$83.5 per month and the income received through government subsidies and parents' fees is enough to cover the costs. That said, the estimated profit is low (US$52 per month) and any variation in the costs of operation could put the sustainability of daycares at risk.

Finally, the results suggest that the program effectiveness could be improved with greater targeting on mothers not working before entering the program and with a more intensive promotion of child development in daycares. Regarding the financial viability of the program, increasing either the government subsidies or parents' fees should be explored.

INDEX

Intervention, evaluation questions, and policy relevance

Various countries around the world have implemented daycare programs to provide support for working mothers and improve children's wellbeing. Daycare programs offer alternative care options to a growing number of women who seek to balance childcare with work or education. In addition, programs that promote adequate nutrition and early stimulation are shown to have a positive impact on children's health, nutrition and development. This two-fold justification for such daycare programs accounts for their growing popularity and widespread implementation.

Nevertheless, the impact of daycare programs, particularly in developing countries, is an under-researched area. The aim of the study was to respond to this research gap by carrying out a rigorous impact evaluation of the Mexican daycare program *Programa de Estancias Infantiles para Apoyar a Madres Trabajadoras* (henceforth referred to as PEI, the Spanish acronym of the program).This study evaluates the impact of this program on the labor market participation and time allocation of beneficiary mothers, as well as the health, nutrition and development of their children. In this way, this evaluation report will assess the effectiveness of the program, identify potential areas for improvement, and contribute to the accumulating evidence on the effectiveness of such programs in developing countries.

1.1 Intervention

The PEI provides subsidized care and childcare services (of a value of up to USD$55 per child or USD$111 dollars per child with disabilities[1]) to mothers and single fathers who are working, seeking employment or studying, thereby enabling them to enter or remain in the labor market or in education. In addition, the program provides financial support to those willing to create and operate daycare centers in order to increase childcare availability for low income families[2].

Potential and target population

The PEI was established in January 2007 with a target population of low income mothers[3] aged fourteen or older, with at least one child between 1 and 3 years 11 months of age or from 1 to 5 years 11 months old for children with disabilities. The program specifically aims to target households, in which a lack of access to childcare through public social security institutions or other means prevents productive household members from working, job-seeking or studying (ROP, 2010).

By May 2011, the PEI had expanded to benefit 249,282 mothers[4] and had received 265,415 children in 9,255 daycare centers throughout the country[5]. This expansion is illustrated in Graph1 below.

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[1]The average exchange rate in 2010 was 12.63 pesos = 1USD (Central Bank of Mexico)
[2]See Annex A for a detailed description of each type of support and main changes in eligibility criteria of the program.
[3]Low income is set at households with a monthly income of up to 1.5 minimum wages per capita (USD$202)
[4]Only 3% of parents registered onto the program reported themselves as single fathers, so that in the document we refer to *mothers* also in reference to single fathers or guardians registered in the program.
[5]The National Survey of Occupation and Employment (ENOE) in the first quarter of 2009 showed an estimated target population of nearly 1.5 million women interested in working, without taking into account the number of other families with a potential interest in the program.

Graph1. Beneficiaries and daycare centers (January 2007-May 2011)
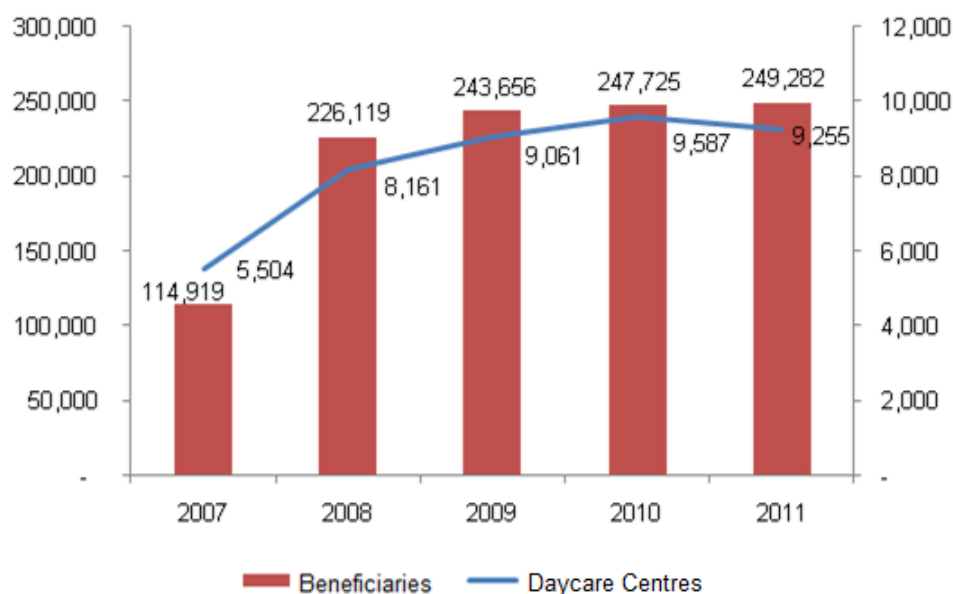
Source: Prepared by INSP with data provided by PEI.

1.2 Evaluation questions and literature review

This report aims to present the findings of a rigorous impact evaluation of the PEI in the areas of maternal employment, income and use of time, as well as the health, nutrition and development of their children.

In carrying out the impact evaluation, we started with the following hypotheses:

- The PEI has a positive impact on labor market participation by beneficiaries both in terms of the permanence of their employment and their incorporation into the labor market.
- The PEI has a positive impact on beneficiaries' household income.
- The PEI has an impact on decisions made around beneficiaries' use of time.
- The PEI has an impact on the health, nutrition and development of beneficiary children.

Table 1 sets out the associated research questions and evidence from the literature for each of the impact indicators.

Table 1. Topics, research questions and evidence from the existing literature

Topics of study	Research questions	Evidence	Results from the literature
Income	What is the program's impact on household income? What is the program's impact on the income of the mother?	Positive	In Brazil (Deutsch, 1998), through the impact analysis of child care services on female labor participation and final earnings, it was found that the use of private childcare services increased household income from full time work by 11.9%. In Mexico (Calderon, 2012) it was found that the *Estancias Infantiles* Program (PEI) increased the income of women with at least high school education. According to the qualitative evaluation of the PEI (INSP, 2009), the beneficiaries' perception indicates that household income increases due to the increase in the mother's income.
Labor market participation	What is the program's impact on the labor market participation of mothers involved in the program?	Positive	In Colombia (Attanasio & Vera-Hernández, 2004) it was found that the Community Homes (HC) program increased the probability of the mother being employed by 25%and the average hours worked by over 36 hours per month. In Mexico (Calderon, 2012) the PEI increased the probability of beneficiary women entering work to 5.17% above the national

Topics of study	Research questions	Evidence	Results from the literature
			average.
	What is the program's impact on the participation of beneficiary mothers in the formal and informal labor markets?	Mixed in the informal sector	Research in Mexico (Calderon, 2012) found that PEI reduced 0.66% the probability of mothers working in the informal sector. In the qualitative evaluation of the PEI (INSP, 2009), beneficiary mothers reported an increase of their participation in the labor market, mainly in the informal sector.
	What is the program's impact on the permanency of the job by the beneficiary mothers?	Positive	In Mexico (Calderon, 2012), it was shown that for the group of mothers already working before entering the PEI, the probability of switching jobs decreased by 17.6% compared to the mean.
	What is the program's impact on labor participation of other household members who cared for children (e.g. grandparents or siblings over 12 years)?	N/A (Not Available)	We did not find evidence in the literature about the impact of daycare programs on labor market participation of household members besides the mother.
	What is the program's impact on the number of jobs held by the mother?	N/A	We found no evidence on the number of jobs held.
Use of time (not working)	What is the program's impact on the time spent on non-work activities by beneficiary mothers caring for children of under five years old? What is the program's impact on the time spent on non-work activities by other household members caring for children of under five years?	N/A	We found no evidence on the use of time on non-work activities.
Health	What is the program's impact on the health status (morbidity in the last 2 weeks) of beneficiary children?	Mixed	According to a systematic literature review on the impact of daycare programs on child health, nutrition and development in developing countries (Leroy, Gadsden, & Guijarro, 2011), only one study was found that analyzed health outcomes. The impact evaluation of the *Programa Hogares Comunitarios de Bienestar* (HCB) in Colombia (Bernal, Fernández, Flores, & Gaviria, 2009) found that children who attended the program had a 3.6% higher incidence of acute diarrheal disease (ADD) and 0.09% more acute respiratory infections (ARI). Differentiated by age, children from 0 to 24 months of age who attended the program for more than 16 months had a lower prevalence of ADD (6.9%) and ARI (3.4%). A study in Canada of the Quebec's Universal Daycare Plan (Baker, Gruber, & Milligan, 2008) with regard to the health effects of daycare programs found these effects to be negative, significant and relevant in magnitude. The chance of having excellent health was reduced by 5.3% for children who attended daycare centers and the probability of not having infections was also reduced. A study from the United States of the Influence of attendance at day care on the common cold (Ball, Holberg, Aldous, Martinez, & Wright, 2002) found that attendance at large daycare centers was associated with more common colds during preschool years, yet was found to protect against the common cold during the early school years. This protection waned by 13 years of age. A separate study also in the United States of the Risk of respiratory illness associated with day-care attendance, (Hurwitz, Gunn, Pinsky, & Schonberger, 1991) found that older siblings of children aged between 6 weeks and 17 months who attended daycare centers had increased risk of respiratory illness through exposure to this, whilst the older siblings of children aged between 36 and 59 months were protected against respiratory illness. In addition,

Topics of study	Research questions	Evidence	Results from the literature
			children with past exposure to daycare in each age group attending daycare demonstrated a decreased risk of respiratory illness.
Nutrition	What is the program's impact on nutritional status (dietary diversity, height for age, weight for height and prevalence of anemia) of children in the program?	Mixed	The qualitative analysis of the PEI (INSP, 2009) indicates that beneficiary mothers see an improvement in their children's diet diversity. According to the previously mentioned systematic literature review (Leroy, Gadsden, & Guijarro, 2011), four studies were found that analyzed nutritional outcomes, the results were mixed. 1) In the Evaluation of a Community Nursery Program in Rural Colombia, called *Hogares Comunitarios de Bienestar Familiar (HCB)* (Attanasio & Vera-Hernández, 2004) estimated a positive impact of 0.45 SD and 0.94 SD on height for age z-scores (HAZ) for rural and urban areas respectively for children less than 6 years old. The same estimations were carried out by child height quintiles and the authors found larger effects for younger children, assuming a hypothetical scenario were children attended HCB during the first 72 months of age. 2) (Bernal, Fernández, Flores, & Gaviria, 2009) evaluated the same HCB Program in Colombia and they found different effects in nutrition: the prevalence of being underweight decreased for only two age groups and with different time of exposure. Also, they found an increase of 6 percentage points (pp) in stunting for children less than 2 years old and from 2 to 4 months of exposure to the program. 3) A study from Bolivia on the effectiveness of an early childhood development program called *Proyecto Integral de Desarrollo Infantil* (PIDI) (Behrman, Cheng, & Todd, 2004) found a negative effect between 7 to 9 pp on weight-for-age for an exposure of less than 12 months for children in areas not served by the program. The authors argue that this effect is probably due to residual selection bias. In this evaluation, no impacts were found on child growth. 4) In a study of the *Programa de Hogares Comunitarios* (HC) in Guatemala (Ruel & Quisumbing, 2006), where the authors assessed the impact of daycare on child dietary intake it was found that the diet of children attending the program contained 12% more energy, 26% more protein, 22% more iron and 85% more vitamins.
Child development	What is the program's impact on the development of beneficiary children?	Mixed	The qualitative analysis of the PEI (INSP, 2009) indicates that beneficiary mothers perceive improvements in language and expression skills of their children, better color recognition, nursery rhymes and sphincter control as well. According to the systematic literature review (Leroy, Gadsden, & Guijarro, 2011), four studies were found to have a positive effect on child development outcomes. 1) In Colombia, (Bernal, Fernández, Flores, & Gaviria, 2009) an improvement was found on language and cognitive skills of 10% and 34% depending on the exposure (2-15 months and more than 16 months, respectively). In vocabulary, positive impacts were found for children with an exposure over 16 months (2.4% for children between 3-4 years old and 5% for children older than 4 years old). Also verbal ability (4%); mathematical reasoning (5%) and general knowledge (3%) for children over 3 years old and more than 16 months of exposure. 2) In Bolivia (Behrman, Cheng, & Todd, 2004), positive impacts were found in gross and fine motor, language and psycho-social skills varying from 2% to 6% only in children between the age of 37 and 58 months. 3) In Argentina (Berlinski & Galiani, 2005), it was found an

| Topics of study	Research questions	Evidence	Results from the literature
			increase of 4.69 points and 4.76 points in mathematics and Spanish test scores respectively.
			4) In Uruguay (Berlinski, Galiani, & Manacorda, 2008), it was found that one year of preschool had a positive effect on school attendance from 4.3 pp to 27.4 pp at the age of 7 and 15 years old respectively. Also, an increase in years of schooling was found, from -0.341 years to 0.788 years at the age of 7 and 15 years old respectively.
			Additional evidence reviewed by Engle, et al. found positive effects on child development (Engle, et al., 2011):
			1) In Bangladesh (Aboud, Hossain, & O'Gara, 2008), it was found that preschool graduates scored higher in oral, reading and writing skills than non-attendees.
			2) In Kenya, Uganda and Zanzibar (Mwaura, Sylva, & Malmberg, 2008), significant improvements were found for treatment children versus children with no preschool in scores on British Ability Scales (0.50 to 0.79) and African Child Intelligence Test (0.86 to 0.95).
			3) In Chile (Urzúa & Veramendi, 2010), significantly higher scores were found in motor skill subscales, scored through the TEPSI test, specifically on coordination (0.19 s.d.), language (0.18 s.d) and overall score (0.17 s.d.). However, no significant differences were found between children attending daycares and those not attending in the following tests: Peabody Picture Vocabulary Test, child behavior checklist and child behavior questionnaire.
			Additional evidence from developed countries shows that in Canada (Baker, Gruber, & Milligan, 2008) it was found an increase of 0.10 points in the score of hyperactivity and increased aggressiveness in children of 2 and 3 years in the program.

Source: Prepared by the INSP

Theory of Change

Figure 1 shows the mechanisms through which a childcare program such as the PEI may have effects on labor market variables, time-use and children's well-being. The figure is based on the conceptual framework presented by Leroy et al (2011) in a systematic review of literature on the impact of daycare programs on child health, nutrition and development in developing countries (Leroy, Gadsden, & Guijarro, 2011). The authors put forward the argument that childcare provision could facilitate the labor market participation of women through an established daycare program. The consequent increase in household income brought about by the mother's employment would allow for the purchase of higher quality meals, thereby improving children's dietary intake. At the same time, mothers' use of childcare services could negatively affect the time they spend taking care of the children at home. Regarding the program components, the provision of meals to children while attending daycare may directly affect the child dietary intake and their nutritional status. Daycare levels of hygiene, cleanliness and safety might lead to changes in childhood health (e.g. infectious diseases, accidents). The quality of the psycho-pedagogical and educational activities provided may directly affect child development. Social interaction may have a positive impact on child development as well, but may also lead to more exposure to communicable diseases through the contact between children. Finally, the services provided at daycare might affect the level of care provided at home. For instance, the meals offered to children in daycare might lead parents to offer less (or lower quality) foods to children at home. Alternatively, parents might learn from the services provided at daycare and improve the care environment and practices at home[6].

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[6] A detailed description of the mechanisms through which child care services have effects in different variables can be consulted in (Leroy, Gadsden, & Guijarro, 2011).

Figure 1. Conceptual Framework
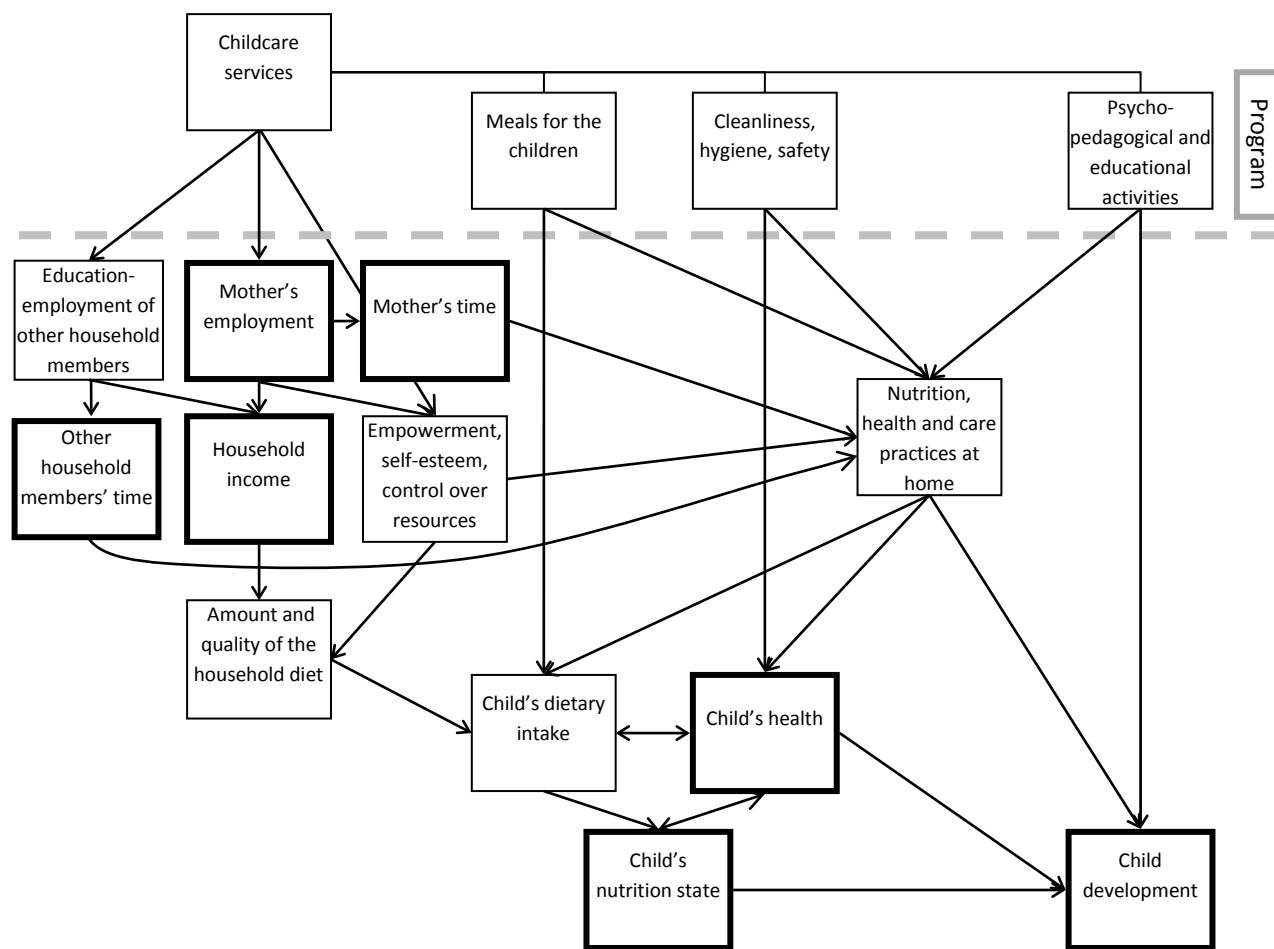
Source: Prepared by the INSP based on Leroy et al's conceptual framework (Leroy, Gadsden, & Guijarro, 2011) and complemented with the scheme of the 2009 Methodology Design and Survey (INSP, 2009).

Evaluation Design
3.1 Methodology

The main questions that we are concerned with in this evaluation are: What is the impact of the PEI on mothers' labor force participation and time-use (and that of primary caregivers), overall household income and child development for children in the program? To answer these questions it is necessary to examine the counterfactual question: what would have happened to these variables in the absence of the program? Examining this question is essential in establishing whether a certain result observed is indeed an effect of the program. This counterfactual estimate is not trivial, since we only observe what actually happened and not what "would have happened".

Comparing the same person before and after being enrolled in the program to estimate its impact is problematic, since it is possible that other unrelated factors to the program (but related to the outcome variable) exist that could change the results of the outcome variable. Equally, comparing mothers who received support with those that did not raises problems because: (a) the selection process for the program itself means that only mothers meeting certain criteria are enrolled and (b) within the eligible group, different factors lead some mothers to request support and others not. Comparing mothers with and without support will generally produce biased estimates of the actual effect, given that it attributes the intrinsic differences between mothers (selection effect) to the program. In order to carry out a rigorous evaluation that can establish the true causal effect of the program, it is necessary to build a control group with observable and unobservable characteristics[7] identical to those of the group receiving the support. This can be achieved by selecting the groups of mothers receiving the support and those that do not, through a random process. The randomization procedure ensures that the estimated effect is causal, since by construction it eliminates the selection effect.

In the Methodology Design and Survey conducted between 2007 and 2009 (hereinafter Report 2009), an experimental design was considered as the first choice for the impact evaluation of the PEI (INSP, 2009). As mentioned in that report, to achieve randomization between groups it was necessary to have an excess of demand for the program services. Unfortunately, despite intensive dissemination of the program in the locations selected for evaluation, the excess demand required to use the experimental design was not generated[8], so this initial alternative design for the evaluation was discarded. The second best alternative was a pipeline design.

The pipeline design is a good alternative method, as it has the following advantages: (i) it does not require researchers to wait until the treatment is given, but can be carried out using existing information from children already enrolled in the program, (ii) it exploits the natural process of program enrolment (iii) it allows comparison of beneficiaries and non-beneficiaries of the same locality and who are interested in the same daycare, thus increasing the likelihood of having an appropriate comparison group and (iv) it allows for the use of matching techniques in the case of not having a perfectly balanced sample.

This design considers the natural process of enrolment of children to daycares where beneficiary children make up the treatment group and those on the waiting list the comparison/control group. This strategy has the advantage that the control and treatment groups already expressed interest of being in the same daycare, with the only difference between the groups being the fact that the treatment group showed this interest at an earlier stage. If this difference in the time of application is small, we believe that may be due to factors independent of the program results. Under this scenario, the pipeline approach must meet the identification assumption, for which it must be proved

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[7] Observable characteristics refers to factors such as years of schooling, work experience, etc., whilst unobservable characteristics would be unseen factors such as motivation to work, employment alternatives, etc

[8] We estimate that this was due mainly to the effect of economic crisis, which reduced employment opportunities for the potential beneficiaries and therefore the need for childcare services. Other possible explanations are the epidemic outbreak of AH1N1 which increased caution of the parents in sending their children to daycares for the risks of infection, and finally the ABC Nursery incident in Sonora which also contributed to the decline in demand for childcare services. Overall, only 10% of the 1931 households that had originally showed interest in joining the program did so.

that children already receiving the support are not different in observable variables to those on the waiting list. In this case, both groups can be considered to be comparable and likely to have the same potential outcomes.

In order to ensure a rigorous impact evaluation of the PEI, we demonstrated the reliability of this assumption through the following procedures. First, we analyzed program enrolment data at different points in time using historical information from the Socioeconomic Information Charter (CIS based on the initials in Spanish)[9] of the beneficiaries and found that the characteristics of enrolled households were similar, regardless of entry time, indicating that is possible to make a valid comparison between households registered on the program and on waiting lists[10].

Secondly, in order to obtain similar information for the control group and to verify that treatment and control households are similar in observable variables, it was necessary to design a waiting list format with variables common to the CIS, to ensure that the information collected in the two groups was homogeneous and could be used to test statistical balance. To do so, we provided comprehensive training for daycare providers on how to collect the required information, and then supervised a sub-sample of daycares to make sure that the relevant information was being collected correctly and was of good quality.

Once we had the comparative information collected in the CIS and the waiting list formats, the evaluation sample was selected by matching beneficiary and children on waiting lists of the same ages in daycares that were full or at most with three available spaces.

Table 2. Pipeline strategy

	TREATMENT (In the program)	CONTROL (Waiting list)
Impact evaluation survey	Have received the program's benefits	Have not received the program's benefits

Source: Prepared by the INSP

As shown in Table 2, program beneficiaries are considered the treatment group and those found on the waiting list form the control group. The formation of these groups is made based on the natural process of daycares registration to the PEI.

3.1.1 Pipeline Strategy

Once the pipeline identification assumption had been tested, the next step was to quantify the difference in the variables of interest for the group of beneficiaries with respect to the group of controls. According to the statistical notation introduced by Rubin, we have that $Y_{i,1}$ is the outcome[11] of the mother (or child) i for having access to the support, and $Y_{i,0}$ is the outcome without the support (Rubin, 1974). For the purposes of the impact evaluation, we were principally interested in estimating the Effect i:

$$Effect_i \equiv Y_{i,1} - Y_{i,0}$$

Thus, through Ordinary Least Squares (OLS), we used the following regression model to estimate the impact of the program with the pipeline strategy:

$$Y_i = \alpha + \beta With_i + \theta X_i + \delta_j + \varepsilon$$

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[9] This information is collected before entering the program as part of the selection process to identify the eligible households.
[10] For a complete discussion of the similarities between enrolled and waiting list households, please consult section 2.5 of (INSP, 2011) available at:
http://www.sedesol.gob.mx/es/SEDESOL/Evaluacion_de_Impacto_Programa_de_Estancias_Infantiles_para_Apoyar_a_Mad res_Trabajadoras
[11] The outcomes may be: employment, income, main activity of the mother, hours worked, hours spent caring for children less than 5 years of household, health and child development, etc.

Where:

Y_i ; is the outcome for mother or child i

α is the constant

$With_i = 1$; if person i reports to be a PEI beneficiary

$With_i = 0$; if person i is on the waiting list of a PEI daycare center

β measures the average effect of the program on outcome Y

X_i denotes control variables[12]

δ_j denotes fixed effects at daycare level

$\mathcal{E}$ is the error term

In a pipeline design such as the one proposed for this evaluation, it is not possible to collect baseline survey data, since households in the treatment group are selected when they have already received the benefits of the program. Therefore, in the survey for the evaluation, retrospective sections were included to be answered by both beneficiaries and mothers on waiting list.

3.1.2 Measuring Child Development

Communication skills and personal-social behavior were evaluated with the Mexican context adaptation of the Ages and Stages Questionnaire (Ages and Stages Questionnaire (ASQ)) (Bricker & Squires, 1999). The ASQ consists of scales completed by the child's parents, which are specific for age and detect developmental delays in children of less than 60 months of age[13]. The scales are divided into six age groups and each group assigned a number of questions based on the activities that children can per format different ages[14].

ASQ scale of communication

The communication scale includes sections on the child's ability to understand language and communicate with words and gestures in the context of everyday life. In some questions the child is asked to follow simple instructions of their parents or to express needs or desires.

ASQ scale of personal-social behavior

The scale of personal-social behavior assesses the child's emerging skills to be independent, and to engage with others. The sections cover the child's self-care skills (eating, dressing), sense of self (recognition in the mirror) and facility to get along with others (sharing)[15].

For both scales the possible answers are "Yes", "Sometimes", "No" and "Not yet." We assigned a value to each of these and generated scores accordingly, taking into account the age range of the children in question.

Previous studies have shown the skills of communication and personal-social behavior to be: 1) influenced by the quality of child care setting at an early age, 2) important for school readiness and 3) relatively easy to measure based on the parental report. (Currie & Thomas, 2000; Yoshikawa, et al., 2007). This measure was adapted by psychologists in child development of the National Institute of

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[12] The control variables we included were (a) regarding the mother: age, years of schooling and whether they were working or looking for work in November 2006, (b); regarding the household: household size, households with at least one child under five not attending a daycare and gender of the household head and (c) regarding the child: age, weight-height ratio at birth, height to age ratio at birth, if they were being or had been breast-fed, the mother's subjective assessment of their intelligence and health as compared to children of the same age and the number of objects that they had at one year of age to stimulate their development.

[13] For this analysis we only use the questions corresponding to the age ranges of children benefiting from the PEI, i.e.12-48 months. The number of observations for each group of ages can be consulted in Annex B.

[14] The instrument was designed to include one additional question or two in each age group that do not yet have the ability to perform. This serves to identify a possible reporting bias among the mothers.

[15] A detailed summary of the questions that are performed by age group to measure the communication and personal-social scale can be consulted in Annex B.

Perinatology in Mexico for use in the Report 2009. During adaptation, all sections were evaluated and tested with a small sample of children[16].

There was concern that the variability in the results gathered in our study would be too low to detect differences in development between age groups, given that the ASQ is an identification test that assesses a limited range of skills by group. To address this problem, we added sections designed for slightly older children[17].

The evaluation of adapted ASQ shows that the results in the scales of communication and personal-social behavior are associated with the child's height, mother's education, mother's mental health depression and environmental household factors in the directions expected. This suggests that the measure is sensitive enough to detect differences in development between groups.

Impact Evaluation Results

4.1 Sampling design and power calculations

In the design stage of a study, the minimum effect of the difference between study groups should be considered, along with the desired statistical power. According to this, one should calculate the required sample size. To estimate the minimum detectable effect (MDE) we used the following formula (Duflo, Glennerster, & Kremer, 2006):

$$MDE = \left(t_{(1-k)} + t_{(\alpha)}\right) * \sqrt{\frac{1}{P(1-P)}} \sqrt{\frac{\sigma^2}{N}}$$

Where:

$t_{(1-k)}$ denotes statistical value with a significance level of 1 minus power k

t_{α} denotes statistical value with a significance level of 5%

P denotes the proportion of individuals in the treatment group

σ^2 denotes variance

N denotes number of observations

Pipeline strategy: beneficiaries vs. waiting list

Table 3 shows the sample size (N), mean, standard deviation (s.d.) and minimum detectable effect with a power of 80% (MDE) of the main variables of interest for sample of analysis[18].

The following table shows that the average monthly income of the mothers is $3,036 pesos (US$251 dollars)[19] with a standard deviation of $1,804 pesos (US$149). In the sample of 1,184 individuals, the minimum detectable effect is about $325 pesos per month (US$27), representing a variation of 10% with respect to the mean. For the variable monthly household income, the minimal effect that can be detected is $681 (US$56) which corresponds to a variation of 11%. As for the main activity carried out by the mother, the minimum detectable effect is 6% for the mothers who have a job and 14% for those seeking employment; accounting for a change of 7.5% in the number of mothers who are employed and 63% of those who are looking for a job. Given the large size of the minimum detectable effect, it will be difficult to identify effects of the program on job seeking.

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[16] Some sections were modified to make them appropriate to the cultural context. For instance, in the section of games, changes were made to include relevant games for Mexican families (e.g. *peek-a-boo*).

[17] For instance, parents with children of 24 months of age were also asked to complete the sections aimed at children of 26 to 27 months of age.

[18] The original power calculations are included in Annex C. For these estimations we used a sample of 1,241 households either eligible for or interested in participating in the PEI according to the survey collected in 2009.

[19] The average rate change reported by the Central Bank of Mexico during the survey collection was 12.08 pesos/1USD.

Table 3. Minimum detectable effect for the pipeline strategy

Variable (unit of measure)	N	Mean	S.D.	MDE (80%)
Income and employment				
Monthly wage of the mother (pesos)	1184	3036.22	1804.45	$ 324.77
Monthly wage of the household (pesos)	1501	6092.94	4261.77	$ 681.24
Mother has a job (%)	1570	79%	0.40	6%
Mother looks for a job and does not work (%)	323	22%	0.42	14%
Monthly hours spent working by the mother (hrs)	1246	150.97	73.43	12.88
Mother has a written contract (%)	968	34%	0.47	9%
Mother has access to social security (%)	1246	22%	0.42	7%
Use of time				
Hours of daily childcare while performing other activities (mother) (hrs)	1445	5.29	3.22	0.52
Hours of daily exclusive childcare (mother) (hrs)	1444	2.84	1.71	0.28
Hours of daily childcare while performing other activities (main caregiver in the household) (hrs)	629	3.51	2.75	0.68
Hours of daily exclusive childcare provided (main caregiver in the household) (hrs)	769	2.19	1.43	0.32
Children				
Child diet diversity at home[1] (number of food groups)	1573	6.51	1.49	0.23
Prevalence of illness 15 days prior to the interview (%)	1573	48%	0.50	8%
Child's communication scale (z-score)	1418	-0.01	0.99	0.16
Child's personal-social scale (z-score)	1418	-0.04	1.01	0.17
Mental health of mothers				
Empowerment of the mother (score)	1572	32.01	5.53	0.86
Perceived stress[20] (score)	1572	15.60	5.02	0.78
Depression[21](score)	1570	11.88	7.71	1.21

[1] 9 groups of meals considered: cereals, roots, tubers, fruits fortified with vitamin A, vegetables, other fruits, other vegetables, legumes, vegetables and dried fruits, oils and fats, dairy, egg, meat, poultry and fish.

Source: Prepared by INSP

The data collected show that on average mothers spend 150 hours per month at work and the minimal effect that can be detected is approximately 13 hours. In terms of the status (formal/informal) of the mother's job, the minimum detectable effect of these two variables is 9% and 7% respectively. In terms of use of time, on average mothers spend 5.3 hours a day at home taking care of children under 5 years old while doing other activities, with a minimum detectable effect of 0.52 hours (around 30 minutes). For time exclusively spent on childcare, the minimal detectable effect is 0.28 hours (17 minutes).

Regarding child outcomes, it is possible to detect an effect of at least 8% on the prevalence of disease; at least 0.17 and 0.16 standard deviations on ASQ personal-social and communication z-scores respectively. Moreover, according to the conceptual framework described above, the type of job held by the mother may also have effects on empowerment, self-esteem (depression) and stress. For the empowerment and perceived stress it is possible to detect an effect of at least 0.86 and 0.78 points in the respective scales, while for the depression, the minimum detectable effect is 1.2 points.

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[20] It is the most used psychological instrument for measuring perceived stress (Cohen, Kamarck, & Mermelstein, 1983)
[21] It is a self-report instrument to assess depression (Radloff, 1977).

4.2 Data Collection

During February and March 2011 the data for the impact evaluation survey were collected in seven states of Mexico: Chiapas, Hidalgo, Jalisco, State of Mexico, Puebla, Sonora and Tlaxcala[22]. The following table shows the pipeline sample of analysis. It included a total of 2,843 households of which 45% (1,273) were already PEI beneficiaries, whilst the remaining 55% (1,570) were on the waiting list (Table 4).

Table 4.Sample of households for the pipeline analysis by state

State	Beneficiary households	Waiting List households	Total households
Chiapas	192	259	451
Hidalgo	167	159	326
Jalisco	124	117	241
State of Mexico	512	727	1239
Puebla	75	87	162
Sonora	138	152	290
Tlaxcala	65	69	134
Total	**1273**	**1570**	**2843**

Source: Prepared by INSP

However, despite all fieldwork efforts, there is no data for 1,084 selected households (39%)[23] ; primarily due to the poor quality of information provided in the waiting list formats[24].

Once the households were found, the survey response rate was positive in 89% of households (918 beneficiary households and 655 control households) and in 100% of the daycare centers (236). However, 337 households registered to be on the waiting list reported to be beneficiaries of PEI in the survey which led us to a final sample of 1,573 households: 1,255 beneficiaries and 318 on waiting lists (Table 5).

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[22] We have selected this sample of states to capture cultural differences in the use of daycares and women labor participation between the north, central and south regions. Even though our sample is not representative at the national level, similar impact results can be found in the national analysis carried out by (Calderon, 2012). The Calderon study evaluated the same Mexican daycare program (PEI) as we did. The main differences between the studies are the data sources and the evaluation design. Calderon used representative data on a national level. The data sources used by Calderon are the Mexican National Survey of Employment (2000-2004), Mexican National Survey of Occupation and Employment (2005-2010), the Mexican Population Census (2005-2010), administrative data provided by the Ministry of Social Development (SEDESOL) and the Mexican Institute of Social Security (IMSS). Unlike our pipeline approach, Calderon's evaluation design follows a difference-in-difference-in-differences approach (DDD), adapting the Synthetic Control Method to repeated cross-section data to ensure that the control group has the same mix of skills and preferences as the eligible group. We believe that Calderon's study can be considered a rigorous impact evaluation.

[23] 815 households of the control sample and 269 of the beneficiaries sample.

[24] We believe this attrition bias does not cause large bias; however, we cannot prove it and it remains a limitation of our study. Attrition was mainly due to errors in the addresses on waiting lists, and it is not obvious that these are correlated with potential outcomes. In fact: 1) for beneficiaries, using their baseline information (CIS) we compared households found and not found. The groups are balanced in the available variables (number of persons living in the household; mother's income and mother's main activity: if she was working, looking for work, studying or dedicated to house work); 2) for households on the waiting list, we compared the data collected in the waiting list formats for those households found and not found in the survey. Even though we found balance in some mother and household characteristics (years of schooling, if she was dedicated to housework and household income) we found significant differences in the gender of the household head; if the mother was working and if the mother was studying. However, it is more important to prove that surveyed beneficiaries and controls are balanced in a broad list of observable variables, which is what we have done in this report.

Table 5. Final sample of daycare centers and households by state

State	Daycare centers	Beneficiary households	Waiting list households	Total households
Chiapas	39	250	47	297
Hidalgo	25	129	23	152
Jalisco	22	131	36	167
State of Mexico	102	475	136	611
Puebla	18	84	11	95
Sonora	21	128	50	178
Tlaxcala	9	58	15	73
Total	**236**	**1255**	**318**	**1573**

Source: Prepared by INSP

4.3 Descriptive Statistics[25]

In this section we describe the main characteristics of the households surveyed, both PEI beneficiary households and those on the waiting list. Most of the program beneficiaries are women (96.6%) who are on average 28 years old with eleven years of schooling. Twenty three percent of the beneficiaries are heads of households and 84% work on average seven hours and twenty minutes per day receiving a monthly salary of $3,095 (USD$256). In terms of job security, 34% of beneficiaries have a written contract and 23% have social security. Twenty eight percent have access today cares through a public institution and the average amount of time spent per day on exclusive care for children under 5 years of age is two hours and 48 minutes.

As for the mental health of the mothers surveyed, it was found that mothers had, on average, 32 points out of a maximum of 39 on the empowerment scale (in which higher scores indicate higher self-esteem and personal recognition). On the perceived stress scale (PSS) (in which higher scores indicate higher stress levels), the average score was 15.6 points out of a maximum 40 and on the depression scale the average score was 11.9 points out of 80. Seventeen points on this scale indicates the cut off point for depression, therefore we can observe that in our sample on average, mothers are some way far from the point indicating symptoms of depression.

The surveyed households comprise on average 4.2 persons with 1.3 children less than five years of age, and have 1.9 members working and a per capita monthly income of $1,478 pesos (USD$122). 39% of respondents own their homes, with 52% of the sample households reporting cement floors, 47% tiled floors, and 1% dirt floors. The homes have 2.7 rooms, 82% have refrigerators and 46% have microwaves. 30% of the sample households own a vehicle and 85% have at least one cell phone.

As regards to children's health, 30% were born with wasting (low weight to age ratio) and 8% with stunting (low height to age ratio); 89% of children were given or are given breast milk and 74% had vaccination cards. The average age of children in the survey was 2.5 years, 47% had been ill in the two weeks preceding the survey, with coughs being the most common ailment (80%). In terms of dietary diversity, children consumed 6.5 of a possible 9 food groups considered[26].

Concerning the choice of daycare 55% of sample beneficiaries considered that these were located close to home, with the average distance to daycare being 15 minutes from home. Ninety four percent of beneficiaries considered that the treatment shown by teachers in the daycares was good or excellent, whilst 91%considered the food given at daycare to be good or excellent. The average length of time spent in daycare by the children represented in the sample was five months. In table 6 we present the distribution of principal caregivers of children before enrolling onto the program or registering on the waiting list. It can be seen that 58% of children in the control group are cared by

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[25] The table of the variables' description can be consulted in Annex D.
[26]Cereals, roots, tubers; fruits and vegetables fortified with vitamin A, other fruits, other vegetables, legumes, vegetables and dried fruits, oils and fats, dairy, egg, meat, poultry and fish.

their parents, 38% by other persons (mainly maternal grandparents) and only 4% were reported to be attending daycare.

Table 6. Main child caregivers of children in waiting list

	Total		Waiting list		Beneficiaries	
Principal caregiver of children	**obs**	**%**	**obs**	**%**	**obs**	**%**
Total	1573	100.0%	318	20.2%	1255	79.8%
Mother, father or guardian	708	45.0%	184	57.9%	524	41.8%
Daycare	521	33.1%	13	4.1%	508	40.5%
Other	344	21.9%	121	38.1%	223	17.8%
Child's father	9	2.6%	4	3.3%	5	2.2%
Paternal grandparents	46	13.4%	14	11.6%	32	14.3%
Maternal grandparents	180	52.3%	64	52.9%	116	52.0%
Child's siblings	15	4.4%	4	3.3%	11	4.9%
Paternal uncle/aunt	13	3.8%	6	5.0%	7	3.1%
Maternal uncle/aunt	48	14.0%	19	15.7%	29	13.0%
Other relatives	11	3.2%	4	3.3%	7	3.1%
Neighbors	10	2.9%	3	2.5%	7	3.1%
Baby sitters	5	1.5%	0	0.0%	5	2.2%
Friends	6	1.7%	3	2.5%	3	1.3%
Other	1	0.3%	0	0.0%	1	0.4%

Source: Prepared by INSP

To confirm the validity of the pipeline strategy it is necessary to verify the identification assumption of the pipeline approach with a balance test (mean difference) in the predetermined or baseline variables between the study groups. If the mean differences in these variables are not statistically significant, then we can be sure that the households on the waiting list in our control group are an appropriate comparison group and therefore, any differences we observe in the outcome variables can be attributed to the program.

In order to ensure comparability between groups, it was verified that the age distribution of children was similar. As shown in Graph 2, four of the children on the waiting list were outside of the range of ages of beneficiary children and were therefore excluded from the analysis[27].

Graph 2. Distribution of children's ages between groups
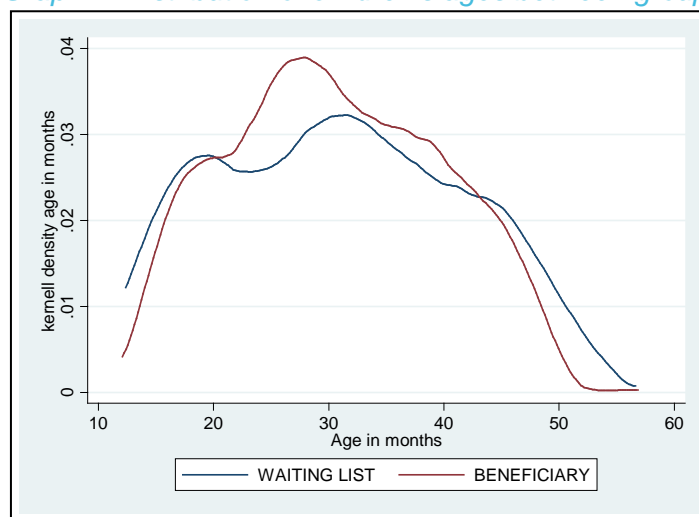
Source: Prepared by INSP

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[27]The final test sample for the group of beneficiaries was 1,232 with a further 314 households on a waiting list. Children younger than 12 months or older than 57 months were not considered. For ROP the age range of children who attend the daycares is 12-47 months. However, in the survey 39 children (2.5%) were reported to be more than 47 months old and receiving benefits from the PEI. Therefore, they were included in the analysis.

The following sections present the results of the balance tests and the estimated impacts first for the full sample and then for subgroups of mothers who worked and did not work before entering the PEI[28]. First, we present the variables of labor market variables and mother's use of time, then mother's mental health and finally the results in health, nutrition and child development.

4.3.1 Labor market and use of time
Characteristics and balance tests[29]

Table 7 presents the descriptive statistics of the mothers registered in the program. On average, mothers who receive the benefits of the PEI are one year older than those registered on the waiting list, at the 1% statistical significance level. In terms of years of schooling, the differences between beneficiary mothers and those on the waiting list are also significant, the latter having on average one year less of schooling. These differences are economically small, and we believe they will not mean large biases in the estimation of causal effects of the program. Using different propensity score matching (PSM) methods (Nearest Neighbor, Kernel and Radius) we estimated the average treatment effect on the treated (ATT) and compared these results with the OLS estimations presented in this evaluation. We used 2 different specifications for the PSM estimations: (1) only including the unbalanced variables as the covariates for the PSM estimations (mother's age, mother's education, whether or not the head of the household is male and the logarithm of the mother's income in 2007 and (2) including four additional variables: whether or not the mother was working or looking for a job in 2007 and 2006, which are lags of important dependent variables).Yet, the results are robust to inclusion for various covariates[30].

Regarding their main activity, mothers were asked if they were working or looking for work at different points in time. Table 7 shows the percentage of mothers who were working or looking for work in late 2006 and late 2007. Overall, no significant differences were observed between beneficiaries and those on the waiting list who reported working in 2006 (33% vs. 31%) nor in 2007 (37% vs. 34%). 4.1% of the beneficiary mothers and 3.8% on the waiting list groups reported looking for work in late 2006, but this difference was not statistically significant.

Finally, 3.6% and 3.8% of the beneficiaries and mothers on the waiting list were looking for work in 2007. On average beneficiary mothers earned $150 pesos less in late 2006 ($USD14) but the difference is not significant[31]. In late 2007, the beneficiary mothers received $305 pesos less than the mothers on the waiting list (USD$28) and this difference is significant.

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[28] Annex D shows the results of the balance test in all the predetermined or baseline variables for the full sample and subsample results of mothers who worked and did not work before the entering the PEI.

[29] Each table of the Balance Tests shows the number of observations (N), the mean and standard deviation for each group: beneficiaries and those on the waiting list. To test the identification assumption, in the case of continuous variables a t test was estimated comparing the mean of the two populations; while for the categorical or dichotomous variables a Chi-square test was estimated which compares the distribution of the variables indifferent categories and between the two test groups. These results are shown in the column 'p' and indicate whether differences between groups are statistically significant. The previous result corrects fixed effects at daycare level by comparing each variable between groups of beneficiaries and non-beneficiaries and indicating if the difference is significant by adjusting the specific characteristics of each daycare center. It is important to adjust at daycare level since the beneficiaries in different daycares are more heterogeneous than the beneficiaries of the same daycare.

[30] Annex D2 includes a more detailed explanation of the PSM estimations.

[31] The average exchange rate in 2006 and 2007 was 10.9 and 10.93 pesos = 1USD, respectively (Central Bank of Mexico).

Table 7. Balance test: Mother's characteristics

| Variable (unit of measure) | Beneficiaries | | | Waiting List | | | |
	N	Mean	Standard deviation	N	Mean	Standard deviation	p
Age of mother (years)	1232	28.33	6.67	313	27.2	6.66	0.008***
Years of mother's schooling (years)	1225	11.53	3.31	311	10.43	3.18	0.000***
Worked in November2007 (%)	1226	37.11%	0.48	312	33.97%	0.47	0.143
Worked in November2006 (%)	1229	32.95%	0.47	312	31.09%	0.46	0.937
Was looking for work in November 2007 (%)	1226	3.59%	0.19	312	3.85%	0.19	0.658
Was looking for work in November 2006 (%)	1229	4.15%	0.2	312	3.85%	0.19	0.523
Mother's income in November 2007 (pesos)	443	2669.06	1648.9	105	2974.48	1985.57	0.011***
Mother's income in November 2006 (pesos)	398	2692.03	1723.85	95	2842.42	1786.31	0.492
Had a written contract in November 2007 (%)	454	36.56%	0.48	106	37.74%	0.49	0.667
Had a written contract in November 2006 (%)	404	38.37%	0.49	97	38.14%	0.49	0.458
* P< 0.10, **P<0.05, *** P<0.01							

Source: Prepared by INSP

It should be noted that the number of observations in both groups considers only the mothers who reported working in each period. The mothers who reported working in late 2006 and 2007 were asked if they had a written contract for their work. As shown in Table 7, in late 2006 the same percentage (38%) of beneficiary mothers and those on the waiting list had a written contract. Similarly, in late 2007 an almost equal percentage of beneficiaries and mothers on the waiting list had a written contract (36% vs. 37%). Table 8 shows the balance tests for household variables. 70% of beneficiary households and 78% of non-beneficiary households are male-headed. This difference is statistically significant.

Table 8. Balance test: Household characteristics

| Variable (unit of measure) | Beneficiaries | | | Waiting list | | | |
	N	Mean	Standard deviation	N	Mean	Standard deviation	p
Head of household is male (%)	1223	69.99%	0.46	312	78.85%	0.41	0.017**
Own house (%)	1232	39.12%	0.49	313	39.94%	0.49	0.817
Household members (number)	1232	4.23	1.48	314	4.35	1.46	0.392
Children under 5 years old in the household (number)	1232	1.31	0.53	314	1.33	0.55	0.949
* P< 0.10, **P<0.05, ***P<0.01							

Source: Prepared by the INSP

39% of beneficiaries reported the house in which they lived to be their own[32]; compared with 40% reported by those on the waiting list. This difference is not statistically significant, indicating that in terms of housing both groups are under the same conditions. Regarding the number of people living in the household, there were no significant differences between groups, so that on average, beneficiary households and those on the waiting list had 4 members (4.23 and 4.35 respectively). Similarly, there is no difference in the number of children under 5 years living in the two groups of households.

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[32]We considered also the households that reported the house as their own, but still were paying it.

Results: Labor market and use of time[33]

Here we present the results of the program's impact, using the pipeline analysis strategy that compares beneficiary households with households on the waiting list (Table 9). First we present the results of labor market variables and use of time, followed by those related to the mother's mental health.

Table 9. Impact of the Program on the labor market and the use of time

Impact in:	Variable (unit of measure)	N	Mean	Impact	Standard error
Mother's labor participation	Working (%)	1,172	84%	0.178***	(0.0416)
	Looking for work (%)	1,173	3.9%	-0.0149	(0.0223)
	Studying (%)	1,173	2.1%	0.00461	(0.0157)
	Time of work per week (hours)	1,174	34.97	6.863***	(2.116)
Labor participation of the main caregiver in the household (different to the mother)	Working (%)	212	52%	0.188	(0.181)
	Looking for work (%)	212	6%	0.0548	(0.0752)
	Studying (%)	212	9%	-0.129*	(0.0740)
	Time of work per week (hours)	212	35.63	1.517	(8.663)
Income	Mother's income (logs)	889	8.03	0.276	(0.189)
	Household income (logs)	1,125	8.75	0.0590	(0.204)
Labor stability	Times of work changed (number)	1,074	0.25	-0.0486	(0.0788)
	Work experience (years)	705	1.90	0.308	(0.497)
	Written contract (%)	727	34.8%	0.0081	(0.0711)
	Social security (%)	927	23%	0.0093	(0.0519)
Use of time	Time of daily childcare while performing other activities (mother) (hours)	1,174	4.97	-1.388***	(0.338)
	Time of daily exclusive childcare (mother) (hours)	1,090	2.79	-0.306*	(0.175)
	Time of daily childcare while performing other activities (main care giver at the household) (hours)	212	3.72	0.163	(1.398)
	Time of daily exclusive childcare (main care giver at the household) (hours)	195	2.98	1.200*	(0.679)

1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.

* P< 0.10, **P<0.05, *** P<0.01

Source: Prepared by the INSP

It was found that the program increases the proportion of beneficiary mothers who have a job by 18%, accompanied by an increase in hours worked of almost 6 hours per week, representing an average increase of 24 hours work per month. There are no detectable changes in the proportion of mothers looking for work or studying among beneficiaries and those on the waiting list. This may imply that beneficiaries find a job quickly or that they have identified it earlier. As for the primary caregivers in the household, we find an effect that reduces the proportion by 13% of those studying, which is consistent with the increase in hours spent on childcare as explained later. There are no significant effects found on job stability measured by variables concerning the number of times job change, the mother's work experience and if mothers have a written contract for social security in their current jobs (Table 9).

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[33]In all the estimated models, we included robust standard errors that control for potential problems of heteroskedasticity.

We also developed a retrospective analysis using information on whether or not the mother had worked in November of previous years. As shown in Table 10, we found that the proportion of beneficiary mothers staying in the same job for the period 2010-2011[34] was positive and statistically significant (15%). It can be seen that the effect size is similar, but not significant in the other periods analyzed (2009-2011 and 2008-2011).

Table 10. Job tenure for the mother from 2008-2011

	permanence_10to11	permanence_09to11	permanence_08to11
Beneficiary (%)	15.6**	15.1	15.8

Source: Prepared by the INSP

On income, there are no statistically significant impacts of the program (Table 9). The following graph shows the distribution of monthly wages of the household head and between groups. It is clear that the difference between the income of the beneficiaries and mothers on the waiting list is concentrated between 1,000 and 3,000 pesos and between 4,500 and 7,000 pesos.

Graph 3. Distribution of mother's monthly income between groups
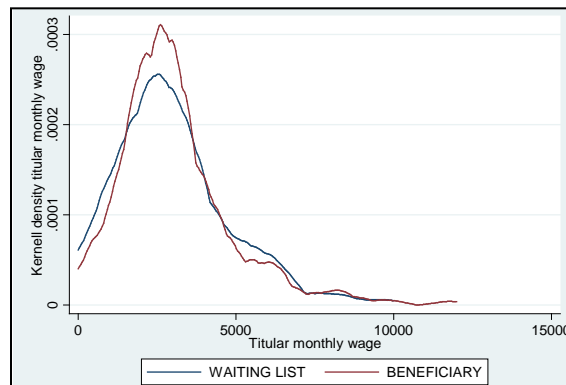
Source: Prepared by the INSP

At the household level, we observe that the differences between groups are common for different levels of monthly income.

Graph 4. Distribution of household monthly income between groups
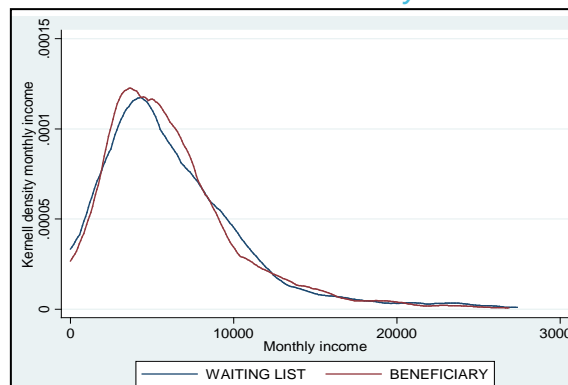
Source: Prepared by the INSP

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[34] This period includes November 2010 to February 2011. The other periods are from November 2009 to November 2011 and November 2008 to November 2011.

As mentioned, no income effects were found and we believe there are three possible explanations: 1) beneficiary respondents underreported their income for fear of losing the benefits of the program (measurement error); 2) not enough power to measure impacts below 10%[35]; and 3) no balance at baseline. To explore the first hypothesis, we carried out further analyses being aware that there are greater incentives for the beneficiaries to underreport current income than historical income, as their participation in the program depends on the former. As shown in Table 11, we found that the only income gap between groups that was statistically significant was in 2007 when the income reportedly received by beneficiaries was 175 pesos (USD$16) lower than that received by non-beneficiaries. The reported income of beneficiaries was also lower in 2006 and 2011 (by $101 pesos (USD$9.3) and $54 pesos (USD$4.5) respectively although these decreases are not significant). For the period from 2008 to 2010 the income reported by the beneficiaries was higher than that reported by mothers on the waiting list, but this was not statistically significant. With these results, it is not possible to conclude if the beneficiary mothers under reported their current income.

Given the statistical differences in some baseline characteristics between the control and treatment groups (age, years of schooling and income in 2007), we addressed the third hypothesis by estimating the average treatment effect on the treated (ATT) on the mother's labor income with three methodologies of propensity score matching (Nearest Neighbor, Kernel and Radius) and using four different sets of control variables, which included the unbalanced characteristics and historical data on mothers' labor income. After the matching, the balancing property was fulfilled and the ATT on the mother's labor income was positive but not statistically significant. Tables can be consulted in Annex D3.

Table 11. Consistency of reported income 2006-2011

	Current income	Income 2010	Income 2009	Income 2008	Income 2007	Income 2006
Beneficiary (%)	-$54.58pesos (-USD$4.5)	$66.86pesos (USD$5.3)	$15.32pesos (USD$1.1)	$0.173pesos (USD$0.01)	-$175.4pesos*** (-USD$16)	-$101.1pesos (-USD$9.3)
Not including the top 99 percentile of income. Income variables included are not conditioned to work. ***$P<0.01$						

Source: Prepared by the INSP

Finally, we see in Table 9 that beneficiary mothers spend less time in childcare while doing other things. The effect is one hour and 23 minutes less per day, and 18 minutes less in terms of exclusive care. This is consistent with the increase of 6 hours of work per week. The decrease in hours of care results in an increase of 1 hour and 12 minutes of exclusive care by the primary caregiver who lives in the home. This may be due to daycare schedules that do not necessarily cover the hours the mother is working.

Employment condition of the mother before entering the PEI

It is plausible to assume that the results and effectiveness of daycares differ for mothers more likely to have a job while applying to access the program. The likely reason for this is that women who work already have someone to care for their children. In these cases, the program may help them find a better job, or access better childcare, whilst for non-working mothers one of the main benefits, in addition to those enjoyed by working mothers, is having time to find a job. For this reason we differentiate the results for mothers by their work histories, approximated by the variable 'had a job in 2008', that is 24 months prior to the survey being carried out. This cut-off point was chosen in line with the maximum exposure of 24 months to the PEI that we have recorded in the sample[36].

Annexes D.1.2 and D.1.3 show the balance tests for the subgroup of mothers who worked before entering the program or signing up in the waiting list. For working mothers in 2008, we find

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[35] See Table 3: Minimum detectable effects for the pipeline strategy.
[36] This variable is correct for several reasons: (i) it is determined prior to program participation by the beneficiaries surveyed. (ii) it has persistence: the correlation between working in 2007 and 2008 is over 50%. Also we tested with the variable works in 2006 and 2007 and the results are similar. In contrast, using the variable "working a month before the application to the daycare" implies different calendar months for different people, which limits comparability.

equivalence between the beneficiary and waiting list groups in the areas of education, employment status and formality of employment in 2006 and 2007. However, we found some significant differences in the characteristics of the mothers in terms of age (where the beneficiary mothers were two years older), their income in 2007 (where the income of the beneficiaries were $280pesos less) and marital status (where 12% more of the beneficiaries were single), whilst the characteristics of beneficiary and waiting list children showed only a small difference in age (where beneficiary children were one month older).

As for the subsample of mothers who did not work in 2008, we found equivalence between beneficiaries and those on the waiting list in employment status, income and job status in 2006 and 2007. Equivalence was also found in the child-level variables of interest. However, we found some significant differences in the characteristics of the mothers in terms of age (where beneficiaries were a year older), education (where beneficiaries had one year more schooling) and marital status (where 9% more beneficiary mothers were single). Furthermore, we found that beneficiary households were slightly smaller in terms of number of members than households on the waiting list (comprising 4.29 and 4.33 members respectively).

For both subsamples we found some significant differences between the beneficiary group and those on the waiting list, but in general we believe these differences are economically small. However, the impact estimation models for these subsamples include predetermined variables that control for these pre-existing differences to avoid potential bias in the results.

Results: mothers that worked before the PEI
In this subgroup there were no significant effects found on labor outcomes or time-use for the primary caregiver in the household. As shown in Table 12 the only effects found were in the mother's time-use, through a reduction of 35 minutes in the daily number of hours spent by the mother on exclusive care.

Table 12. Impact of the program on labor market and time-use for mothers that worked before PEI

Impact in:	Variable (unit of measure)	N	Mean	Impact	Standard error
Mother's labor participation	Working (%)	464	90.3%	0.0959	(0.0632)
	Looking for work (%)	464	3.17%	0.0339	(0.0388)
	Studying (%)	464	0.4%	0	(0)
	Time of work per week (hours)	464	35.46	2.713	(3.694)
Labor participation of the main caregiver in the household (different to the mother)	Working (%)	83	53%	-0.148	(0.607)
	Looking for work (%)	83	7%	-0.334	(0.282)
	Studying (%)	83	8%	0.0286	(0.213)
	Time of work per week (hours)	83	34.39	12.99	(31.65)
Income	Mother's income (logs)	464	35.49	2.713	(3.694)
	Household income (logs)	390	7.63	0.0545	(0.333)
Labor stability	Times of work changed (number)	451	8.39	0.101	(0.366)
	Work experience (years)	453	0.21	0.0002	(0.126)
	Written contract (%)	305	3.98	0.126	(1.060)
	Social security (%)	406	39.6%	0.077	(0.0963)
Use of time	Time of daily childcare while performing other activities (mother) (hours)	406	29.61%	-0.819	(0.598)
	Time of daily exclusive childcare (mother) (hours)	464	4.92	-0.585*	(0.314)
	Time of daily childcare while performing other activities (main care giver at the household) (hours)	435	2.79	6.717	(3.881)
	Time of daily exclusive childcare (main care giver at the household) (hours)	83	3.58	-0.355	(1.573)

1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects. For income variables, the mother and household are excluded from the values above the 99th percentile to allow for outliers.

* P< 0.10, **P<0.05, *** P<0.01

Results: Mothers that did not work before the PEI

Unlike the group of mothers who already worked before entering the program, the PEI has seen an impact of 21% in mothers gaining employment since entering the program (November 2008), accompanied by an increase in the number of hours worked per week (7 hours and 28 minutes), which equates to almost one additional day of work per week. As for the primary caregiver in the household, the PEI has an impact of 56% in their proportion of employment (Table 13).

Table 13. Impact of the program on labor market and time-use for mothers that did not work before PEI

Impact in:	Variable (unit of measure)	N	Mean	Impact	Standard error
Mother's labor participation	Working (%)	707	79.78%	0.211***	(0.0646)
	Looking for work (%)	708	4.47%	-0.0496	(0.0333)
	Studying (%)	708	3.39%	0.0044	(0.0278)
	Time of work per week (hours)	709	34.52	7.481**	(3.060)
Labor participation of the main caregiver in the household (different to the mother)	Working (%)	128	51.00%	0.563*	(0.297)
	Looking for work (%)	128	6.00%	0.188	(0.123)
	Studying (%)	128	9.00%	-0.279	(0.172)
	Time of work per week (hours)	128	36.90	23.27	(16.44)
Income	Mother's income (logs)	498	7.34	0.306	(0.287)
	Household income (logs)	673	8.33	-0.0296	(0.301)
Labor stability	Times of work changed (number)	620	0.28	-0.0684	(0.127)
	Work experience (years)	399	1.15	-0.125	(0.491)
	Written contract (%)	409	31.49%	-0.0419	(0.120)
	Social security (%)	520	18.37%	0.0201	(0.0781)
Use of time	Time of daily childcare while performing other activities (mother) (hours)	709	5	-1.737***	(0.493)
	Time of daily exclusive childcare (mother) (hours)	654	2.81	-0.255	(0.250)
	Time of daily childcare while performing other activities (main care giver at the household) (hours)	128	3.78	-2.528	(2.822)
	Time of daily exclusive childcare (main care giver at the household) (hours)	118	3	0.940	(1.889)

1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.

* $P < 0.10$, **$P < 0.05$, *** $P < 0.01$

Source: Prepared by the INSP

Regarding the impact of the PEI on the use of time, it is clear that there is a reduction in the number of 1 hour and 44 minutes per day devoted to childcare while the mother performs other activities. In this sub-sample we found no changes in the number of hours of care from the primary caregivers living in the household.

The facts listed above lead us to conclude that the mothers who did not work before entering the program show greater impact upon the labor market than the mothers who were already working before entering the program. To contextualize the effect of the PEI in employment and the impact

documented in other similar programs[37], we present the following results that are available in the literature review of this study. In the program that promoted the expansion of the supply of pre-primary schools in Argentina, a 12.4% increase in the probability of employment of the mother was found (Berlinski & Galiani, 2005). While in the Community Homes program (HC) of Colombia it was found that the probability of employment of mothers increased by 25 percentage points. In the same study, an increase of 36 hours worked per month by beneficiary mothers was reported. As can be seen, the magnitude of the impact of the PEI upon employment is within the range of what has been found through studies of other programs in Latin America.

4.3.2 Mothers' Mental Health
Characteristics and balance tests

As shown in the table below, there are no significant differences between groups in the variables of the mothers' mental health (Table 14). On average in both groups they score 32 points on the empowering scale, 15 points in the perceived stress scale and 12 points on the depression scale. With no differences between the groups, we can be assured of no bias in estimating causal effects of the PEI.

Table 14. Balance Test: Mental health of mothers

Variables (unit of measure)	Beneficiaries			Waiting List			P
	N	Mean	Standard deviation	N	Mean	Standard deviation	
Empowerment scale for the mother (score)	1231	32.06	5.52	314	31.83	5.6	0.333
Perceived stress scale (score)	1231	15.54	4.9	314	15.82	5.51	0.865
Depression scale (score)	1230	11.73	7.63	313	12.6	8.14	0.520
* P< 0.10, **P<0.05, ***P<0.01							

Results: Mothers' Mental Health

No significant effects are found on mental health indicators for mothers, as measured by psychological scales of empowerment, stress or depression (Table 15). This reveals a slight contrast with expectations and maybe due to the possibility that any resulting peace of mind from daycare provision is counter-balanced by the stress of more work. Furthermore, the reported effects are rather short-term. That no significant effects on the levels of maternal depression have been noted in this evaluation is important due to the fact that studies of similar programs in developed countries have reported that the depression score of mothers increased by 10.2% compared to the average (Baker, Gruber, & Milligan, 2008).

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[37] Comparisons within the document are used as a framework to contextualize the scale of the results. However, we recognize the limitations of such comparisons due to the fact that the studies have been performed in different contexts and typically use different evaluation methodologies.

Table 15. *Impact of the program on the mental health of mothers*

Impact on:	Variable (unit of measure)	N	Mean	Impact	Standard error
Mental health	Depression scale (score)	1,172	11.71	-0.165	(0.771)
	Stress scale (score)	1,174	15.58	0.0415	(0.517)
	Empowerment scale (score)	1,174	32.13	0.134	(0.565)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.					
* P< 0.10, **P<0.05, *** P<0.01					

Source: Prepared by the INSP

Mental health of mothers before entering the program

The subsample of mothers who worked in 2008 revealed only positive effects upon the empowerment of the mother. This effect is equivalent to a 6% increase in the level of empowerment relative to the mean, which makes it significant economically. This effect indicates an improvement in self-esteem and personal recognition. This is consistent with the results of the qualitative evaluation of this program (INSP, 2009), where it was found that one of the reasons why working women enrolled their children in daycare is to retain their children's affection and control over their education. Women have to delegate the caring to the children's grandmother, in order to work. Nevertheless, in doing so, the mothers lose control over the children's education and fear the child would develop greater affection for the grandmother. Therefore, subsidized daycare services can have positive effects on women's empowerment even if they were already working. This pathway of impact was not originally included in the theory of change presented in Figure 1; however, it was added after analyzing these findings.

On the contrary, as shown in the table below, there are no effects on the subgroup of mothers who did not work before 2008 (Table 16).

Table 16. *Impact of the program on the mental health of mothers regarding their work condition prior to the program*

Impact on:	Variable (unit of measure)	Mother did not work in 2008				Mother worked in 2008			
		N	Mean	Impact	Standard error	N	Mean	Impact	Standard error
Mental health	Depression scale (score)	707	12.08	-0.563	(1.107)	464	11.16	0.116	(1.402)
	Stress scale (score)	709	15.76	0.229	(0.724)	464	15.76	-0.723	(0.990)
	Empowerment scale (score)	709	31.91	-0.427	(0.785)	464	32.25	1.928*	(1.115)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.									
* P< 0.10, **P<0.05, *** P<0.01									

Source: Prepared by the INSP

4.3.3 Child development, health and nutrition
Characteristics and balance tests

As mentioned before, children in both groups and within the same age range were considered for this analysis. The following table shows that the beneficiary children are approximately 0.33 months younger than children who are on the waiting list (30.61 months versus 30.94 months), but the difference is not statistically significant.

Table 17. Balance test: Characteristics of children

Variable (unit of measure)	Beneficiaries			Waiting List			
	N	Mean	Standard deviation	N	Mean	Standard deviation	p
Age of child (months)	1232	30.61	9.16	314	30.94	10.53	0.847
At birth							
Weight for height of child at birth (z-score)	959	-1.14	1.80	241	-1.10	1.67	0.201
Height for age ratio of child at birth (z-score)	1052	0.63	1.72	268	0.68	1.72	0.608
Child with low weight[1] (%)	1201	6%	0.25	304	7%	0.26	0.687
Child with low height[2] (%)	1095	1%	0.1	276	0%	0.06	0.208
Child with wasting[3] at birth (%)	959	30%	0.46	241	27%	0.44	0.108
Child with stunting[4] at birth (%)	1052	8%	0.27	268	6%	0.24	0.858
First year of life							
Considered their child healthier compared with other children by one year of age (%)	1229	66%	0.47	314	68%	47%	0.890
Considered their child more intelligent compared with other children by one year of age (%)	1227	77%	0.42	314	75%	43%	0.661
Retrospective variables							
Age at which the child said other words besides Mother and Father (months)	644	12.69	2.75	158	12.59	2.61	0.315
Age at which the child took their first steps (months)	835	13.27	2.36	194	13.19	2.42	0.963
The child was or is breast-fed (%)	1232	89%	0.32	314	88%	0.33	0.971

* P< 0.10, **P<0.05, *** P<0.01
1 Children are considered low weighted if they are less than 2.3kg (WHO, 2006).
2 If the girls are under 44.8 cm and boys under 45.5 cm (WHO, 2006).
3 Wasting refers to acute malnutrition
4 Stunting refers to chronic malnutrition

Source: Prepared by the INSP

The survey contains a section dedicated to the analysis of the state of health, nutrition and child development during the first year of the child's life. Table 17 presents the descriptive statistics of the main results. In terms of the perception of child health, a higher percentage of children on the waiting list were considered healthier than other children of the same age (66% vs. 68%). It was reported that 77% and 75% of the beneficiary children and children on the waiting list were considered more intelligent than other children the same age respectively. The above table shows that these differences are not statistically significant between groups (Table 17).Concerning the children's nutrition, the child in question was asked whether they had been or are still being given breast milk and the majority of both groups answered yes (89% and 88%).

From the information gathered regarding the sex, weight and height of the children at birth, variables of underweight, stunting and wasting could be generated according to the World Health Organization´s child growth standards (WHO, 2006)[38]. In this way, 6% of the beneficiary children and 7% of the children on the waiting list were born with a low birth weight. The weight for height z-score at birth is -1.14 standard deviations for the beneficiary children and -1.10 deviations for children on the waiting list, the mean of the height for age z-score is 0.63 for beneficiary children and 0.68 standard deviations for their counterparts on waiting lists. In addition, 8% and 6% respectively, were diagnosed with stunting at birth and 30% of the beneficiary children and 27% of children on the waiting list were diagnosed with wasting at birth. None of these differences are significant.

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[38] A child weighting less than 2.3 kg is considered a low birth weight; a girl measuring fewer than 44.8 cm is considered to be stunted and 45.5 cm for a boy. Children are diagnosed with wasting if their weight to height ratio is below -2 (standard deviations from the international reference) and would be diagnosed with stunting if their size to age ratio is below -2 (standard deviations from the international reference).

In terms of child development, the age of the child when s/he uttered their first words (besides mom/dad) was taken into consideration, along with their age when they took their first steps. To encourage consistency in reporting these results, plausible age ranges were considered[39], which accounts for why some observations were excluded in both groups. As shown in the table, no significant differences exist between beneficiary children and children on the waiting list in terms of their age when they said their first word (12.7 vs.12.6 months) and took their first steps (13.3 vs.13.2 months). Children in the comparison groups are similar since none of the variables of interest were found statistically different, showing that the two groups are comparable.

Results: Health, Nutrition and Child Development

Below, we present the average effects noted amongst the children and an estimation of how these effects could change over time.

The program leads to an increase of 17.1% in the prevalence of disease amongst the children. This result may be accounted for by the increased contact with a greater number of children at the daycare center, whose immune systems are still developing and are therefore more likely to get sick. The results collated according to the age and times of exposure are presented below and reflect this conclusion. These results are consistent with those found in the study for Colombia (Attanasio & Vera-Hernández, 2004). Furthermore, evidence from the United States shows that attendance at large daycare centers can be associated with an increased susceptibility to common colds during the pre-school years. However, attendance at large daycare centers was also found to protect children from the common cold in the early school years, presumably by means of acquired immunity (Ball, Holberg, Aldous, Martinez, & Wright, 2002). In addition, increased duration of daycare exposure was associated with a decreased risk of respiratory illness in a nationwide study (Hurwitz, Gunn, Pinsky, & Schonberger, 1991).

We found no significant effects on dietary diversity and child development. The fact that the diversity of the diet at home does not change is positive, for it shows that the food provided at the daycare does not displace or compromise the diet provided at home (Table 18).

It is worth mentioning that no detrimental effects on the children were discovered, which is of paramount importance in the light of certain research indicating that such effects do in fact take place (Baker, Gruber, & Milligan, 2008).

Table 18. Impact of the program on health, nutrition and child development

Impact on:	Variable (unit of measure)	N	Mean	Impact	Standard error
Child health	Prevalence of illness 15 days prior to the interview (%)	1,174	49%	0.171***	(0.0509)
Child diet diversity	Food groups the child eats at home (number)	1,174	6.46	-0.148	(0.150)
Child development	Communication scale (z-score)	1,071	0.03	0.0716	(0.105)
	Personal-social behavior scale (z-score)	1,071	0.03	0.0928	(0.107)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.					
* P< 0.10, **P<0.05, *** P<0.01					

Source: Prepared by INSP

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[39] According to child development experts, the age range in which children are likely to say their first word is between 8-24 months. In general, the most common time frame is between 12 and 17 months, but it is equally possible that the child utters their first words before (between 8-12 months) or after (18-24 months). According to WHO standards, the first steps occur within the time frame of 8 to 18 months old (WHO, 2006).

Heterogeneous effects by age of the children[40]

The development of children proceeds at different rates and in different directions according to their age. Therefore, it is important to carry out separate studies according to each age range. There is evidence to suggest that the impact of child care is particularly effective in the early years (Engle & Black, 2007), so we would expect that the effects ought to be more significant for children less than 30 months (corresponding to the mean age in our sample).

We found that when analyzing the prevalence of disease in the 15 days prior to the interview there was no effect among the children over 30 months old. However, when analyzed by exposure dummies, we observed that those with more than 6 months of exposure to the program showed a reduction of 17.4% in the prevalence of illness in this age group. This is not so for children under 30 months, for whom the prevalence of disease did increase by 30% for all minors and by 14% for those who had spent the least amount of time in the program (Table 19).

Table 19. Impact of the program on the health of children by age range

Prevalence of illness 15 days prior to the interview					
Age range	**Exposure time**	**N**	**Mean**	**Impact**	**Standard error**
Older than 30 months	Total (months)	595	44%	0.0614	(0.0778)
	Exposure 1 to 6 months (%)	223	49%	-0.0727	(0.0687)
	Exposure more than 6 months (%)	269	38%	-0.174***	(0.0664)
Younger than 30 months	Total (months)	594	55%	0.298***	(0.0869)
	Exposure 1 to 6 months (%)	311	59%	0.140**	(0.0621)
	Exposure more than 6 months (%)	118	42%	0.0299	(0.0787)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.					
* P< 0.10, **P<0.05, *** P<0.01					

Source: Prepared by the INSP

As shown in Table 20, there are no effects on dietary diversity for any age group.

Table 20. Impact of the program on child nutrition by age range

Number of food groups the child eats at home					
Age range	**Exposure time**	**N**	**Mean**	**Impact**	**Standard error**
Older than 30 months	Total (months)	567	6.44	-0.0604	(0.238)
	Exposure 1 to 6 months (%)	223	6.52	0.197	(0.212)
	Exposure more than 6 months (%)	269	6.34	0.180	(0.205)
Younger than 30 months	Total (months)	567	6.49	0.0235	(0.234)
	Exposure 1 to 6 months (%)	311	6.61	0.0952	(0.166)
	Exposure more than 6 months (%)	118	6.51	-0.0526	(0.211)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.					

Source: Prepared by the INSP

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[40] Note that in this analysis we are carrying out stratification by age group, thus the statistical power to detect effects is reduced because the sample analysis of each subgroup is smaller than the total sample of children. The power calculations for these sub groups are presented in Annex C.

As for the communication scale for children older than 30 months with exposure of more than six months, the program has a positive average impact of 0.301 s.d. The impact of the program upon child development obtained a magnitude in the range between small and medium[41]. These results are consistent with the findings reported in a study for Colombia, whose intervention was based on feeding and stimulation of underweight children between 42-75 months who attended a daycare center, in which higher effects were registered on children with longer exposure time (Engle & Black, 2007). Amongst the group of younger children, no significant effect on the communication scale was detected (Table 21)[42].

Table 21. Impact of the program on the communication scale of children by age range

Communication scale (ASQ)					
Age range	**Exposure time**	**N**	**Mean**	**Impact**	**Standard error**
Older than 30 months	Total (months)	507	.04	0.178	(0.168)
	Exposure 1 to 6 months (%)	204	-0.11	0.110	(0.142)
	Exposure more than 6 months (%)	243	0.21	0.301*	(0.138)
Younger than 30 months	Total (months)	527	.03	0.0546	(0.173)
	Exposure 1 to 6 months (%)	286	-0.04	-0.0643	(0.127)
	Exposure more than 6 months (%)	108	0.21	0.0958	(0.157)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.					
* P< 0.10, **P<0.05, *** P<0.01					

Source: Prepared by the INSP

Finally, with regard to the scale of personal-social behavior, as shown in the following table, it is found that effects cannot be attributed to the PEI (Table 23).

Table 22. Impact of the program on the scale of personal-social behavior of the children by age

Personal-Social Behavior Scale (ASQ)					
Age range	**Exposure time**	**N**	**Mean**	**Impact**	**Standard error**
Older than 30 months	Total (months)	507	.01	0.0170	(0.170)
	Exposure 1 to 6 months (%)	204	-0.11	0.0829	(0.144)
	Exposure more than 6 months (%)	243	0.21	0.216	(0.140)
Younger than 30 months	Total (months)	527	.04	0.268	(0.179)
	Exposure 1 to 6 months (%)	286	-0.04	0.166	(0.131)
	Exposure more than 6 months (%)	108	0.21	0.0787	(0.163)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.					
* P< 0.10, **P<0.05, *** P<0.01					

Source: Prepared by the INSP

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[41] To interpret the size of the effect reported in terms of standard deviations, the economic rule that classifies the size of effects in broad terms is: an effect of 0.2 standard deviations is considered small, 0.5 medium and 0.8 large (Cohen J. , 1988).

[42] After undertaking a more detailed analysis of the ASQ Communication scale, we found that when asked if the child in question (between 31 and 42 months) knew any nursery rhymes or children's songs, the answer given by the beneficiaries and the women on the waiting list was significantly different. This is consistent with the impact noted in the communication z-scores (increase of 0.30SD), and leads us to conclude that the effect is directly linked to this particular question, seeing as it is more likely that the children who are beneficiaries would sing at the daycare compared with those who do not attend.

Results: Children of mothers who worked before the PEI

Regarding the impact of the results mentioned above, we found that the effects upon labor and use of time increased when the mother had not worked prior to the PEI. This may also be true for indicators measuring the impact upon children, due to the fact that the home care may differ depending on whether or not the mother works.

When we analyzed the effects on children, taking all variables into account and considering only those households where the beneficiary mother worked before entering the program, we found that the program does indeed have an effect on the prevalence of disease, both in the full sample and when stratifying by age (Table 23).

Table 23. Impact of the program in the health of children whose mother worked before PEI

Prevalence of illness 15 days prior to interview				
Exposure time	**N**	**Mean**	**Impact**	**Standard error**
Total (months)	466	48.32%	0.265***	(0.0937)
Exposure 1 to 6 months (%)	226	54%	0.110	(0.0717)
Exposure more than 6 months (%)	104	41%	-0.0176	(0.0787)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.				
* P< 0.10, **P<0.05, *** P<0.01				

Source: Prepared by the INSP

In addition, we found positive effects on dietary diversity amongst the children who have an exposure of 6 months or less to the program. The daily diet at home for these children increased from 6.5 to 7of 9 groups of possible foods (Table 24).

Table 24. Impact of the program on the nutrition of children whose mother worked before PEI

Dietary diversity				
Exposure time	**N**	**Mean**	**Impact**	**Standard error**
Total (months)	605	6.47	-0.180	(0.281)
Exposure 1 to 6 months (%)	239	6.51	0.476**	(0.211)
Exposure more than 6 months (%)	185	6.51	0.271	(0.232)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.				
* P< 0.10, **P<0.05, *** P<0.01				

Source: Prepared by the INSP

Finally, out of this subsample of children with mothers who worked prior to the PEI, positive effects on the communication scale of 0.33 standard deviations were recorded for children who had more than six months of exposure to the program (Table 25).

Table 25. Impact of the program on the nutrition of children whose mother worked before PEI

Communication scale ASQ				
Exposure time	**N**	**Mean**	**Impact**	**Standard error**
Total (months)	425	0.01	-0.0706	(0.200)
Exposure 1 to 6 months (%)	210	-0.07	0.0867	(0.147)
Exposure more than 6 months (%)	149	0.22	0.328**	(0.160)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.				
* P< 0.10, **P<0.05, *** P<0.01				

Source: Prepared by the INSP

Results: Children of mothers who did not work before the PEI

In the sample of mothers who did not work prior to the PEI, a significant 14.4% was recorded concerning the prevalence of disease amongst the children in question.

Table 26. Impact of the program on child's health whose mother did not work before the PEI

Prevalence of illness 15 days prior to interview				
Exposure time	**N**	**Mean**	**Impact**	**Standard error**
Total (months)	709	51%	0.144**	(0.0724)
Exposure 1 to 6 months (%)	327	56%	0.0579	(0.0562)
Exposure more than 6 months (%)	240	38%	-0.0931	(0.0614)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.				
* P< 0.10, **P<0.05, *** P<0.01				

Source: Prepared by the INSP

From analyzing this group, we found a positive effect in terms of personal-social behavior, which seemed to be enhanced by greater exposure to the program. For example, amongst the sample of children who had less than 6 months of exposure to the program, an increase in the z-score by 0.2 standard deviations could be noted whereas those with more than 6 months exposure to the program saw this score increased by 0.29 s.d. (Table 27). When differentiating by age, we found a greater effect on behavior was noted amongst the children under 30 months old. In this subgroup, with no differentiation by exposure, we found an effect of 0.59 standard deviations in the scale of personal-social behavior, and of 0.37s.d. on the same scale for children who had six months or less exposure to the PEI.

The discovery of such positive effects on the personal-social behavior of children is very significant due to the fact that there is little information to provide evidence of the positive effects of daycare centers on these behaviors. For instance, in a study with non-experimental data in Chile, there were no clear effects to be found concerning the effects of daycare attendance on socio-emotional scores (Urzúa & Veramendi, 2010). The results on this scale are comparable, and even more positive, than those found in an observational study in Rio de Janeiro, where it was reported that children in high quality daycares (the top 20%) had cognitive and social scores of 0.30 standard deviations higher than children in lower quality daycares (the bottom 20%) (Barros, 2010).

Table 27. Impact of the program on the development of children whose mothers did not work before the PEI by age group

Personal-Social Behavior Scale (ASQ)					
Age range	**Exposure time**	**N**	**Mean**	**Impact**	**Standard error**
Total	Total (months)	645	0.05	0.145	(0.149)
	Exposure 1 to 6 months (%)	297	-0.05	0.203*	(0.115)
	Exposure more than 6 months (%)	216	0.19	0.291**	(0.127)
Older than 30 months	Total (months)	312	0.08	-0.204	(0.247)
	Exposure 1 to 6 months (%)	127	-0.01	0.154	(0.222)
	Exposure more than 6 months (%)	141	0.24	0.269	(0.216)
Younger than 30 months	Total (months)	308	0.07	0.597**	(0.271)
	Exposure 1 to 6 months (%)	163	0.06	0.367*	(0.203)
	Exposure more than 6 months (%)	63	0.08	0.370	(0.251)
1 All models controlled by: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. In addition, all models were controlled by daycare fixed effects.					
* P< 0.10, **P<0.05, *** P<0.01					

Source: Prepared by the INSP

In these last analyses, we carried out a double stratification (according to the mother's employment status in 2008 and the age of the child in question) but the statistical power to detect effects was lost because the sample of each group analyzed ended up being 70% lower than the full sample of children.

Nevertheless, the most substantial effects upon child development can be observed amongst the younger children of mothers who did not work before entering the program.

4.4 Summary of findings

The impact evaluation presented in this study reveals that the program is effective in promoting participation of low-income women with young children within the labor market, but the effect derived from the full sample is almost exclusively the result of findings for mothers who did not work before entering the program. In addition, the PEI contributes to the development of the beneficiary children, although the effects are only observed in certain subgroups of children and not in the entire sample.

In particular, the results show that the program increases the mothers' employment proportion; the number of hours worked and job tenure at least in the short term. We also found that the mother spends less time caring for children under 5 years, but this decrease was compensated by an increase in the hours of care for the child's primary caregiver (other than the mother) living at home. Through a subgroup analysis we found that mothers who benefit most from the program in terms of labor market variables are those who were reported as not having worked prior to entering the program.

It is also worth noting that the program´s impact on the mother´s participation within the labor market is particularly significant because it occurs during a period of economic crisis and high unemployment rates. Taking this context into consideration, the program's impact could be even greater if analyzed in a context of economic growth.

Regarding the mental health of the mother, we did not find any effects of statistical significance. Such a result was contrary to findings from developed countries, where evidence has been found to suggest that mothers who take their children to daycare centers obtain higher depression scores compared to the average (Baker, Gruber, & Milligan, 2008).

Similarly, no significant results were found as to the development of children or dietary diversity in the full sample, an equally important finding owing to the fact that other studies have found adverse effects in the short term in these areas (Baker, Gruber, & Milligan, 2008). However, positive effects were reported in some subgroups of children. For instance, in terms of child development the program was found to have improved the communication scale scores in the subgroup of children with more exposure to the PEI. Another factor that was identified concerned the children of the mothers who did not work before entering the program, and it was found that these children benefited most in terms of developing personal-social behaviors, and this outcome increased with higher exposure. On the other hand, only positive effects were found in terms of the dietary diversity for the subgroup of children whose mothers had worked prior to entering the PEI, especially amongst those who had had little exposure to the program.

Regarding child health outcomes, when analyzing the prevalence of disease in the 15 days prior to conducting the survey, we identified a greater likelihood of disease in the full sample of children. However, when analyzing the results by subgroups of age and time of exposure to the program, the increase in the prevalence of disease occurred only in the group of younger children (under 30 months) and this effect diminished as the age and exposure of time to the program increased, which is consistent with results from other studies in Colombia and the United States.

Quality of care at Daycare Centers

Evidence from the United States suggests that the quality of early childcare provision is related to developmental outcomes (Currie & Thomas, 2000). Quality is generally characterized by structural aspects (i.e. space, cleanliness, teacher's education, class size) and observable processes (i.e. the responsiveness of the caregiver, child-adult interactions, opportunities for cognitive stimulation and verbal engagement with children), (National Institute of Child Health and Human Development NICHD, 2002). While both are necessary in order to ensure good provision for early childhood care, the processes that occur within the classroom are more significant in terms of developing the cognitive and language outcomes necessary to prepare the child for the learning environment at primary school (National Institute of Child Health and Human Development NICHD, 2002). Based on these findings, efforts have been made to improve the quality of provision for early childhood care in Mexico (Yoshikawa, et al., 2007) and in other parts of the world (Organisation for Economic Co-operation and Development, 2010). However, there are very few impact evaluation studies that focus on developing countries by analyzing the pathways through which daycare programs exert their impact upon child outcomes. The impact evaluation of the Mexican Daycare Program offers a unique opportunity to analyze these pathways and furthermore, simultaneously analyzes the two most important aspects of the quality of care at the daycare centers and the impact upon child development outcomes.

For this evaluation, we selected a wide range of daycare quality factors that have been identified in the literature for having had a significant impact upon child development. The measures we used included process and structural variables with theoretical and empirical underpinnings. For example, the process variables[43] reflect theories put forward by prominent child development theorists (Bronfenbrenner, 1979; Daniels, 2005; Rogoff, 2003) who suggest that young children's capacities are developed through their relationships and social engagements with adults and other children in their families and communities (Woodhead, 2006). According to these theorists, children are active, participatory agents in their own development and not merely passive recipients of what occurs around them. Programs emphasizing warm teacher-child relationships and child-centered learning activities that are supported by teachers are believed to more effectively promote child development. Structural variables -- such as the organization of the daycare center, the amount of space provided in the classroom, the teacher-child ratio, teacher training, experience and income -- help facilitate high

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[43] Focused on various types of teachers' interactions with young children.

quality care and positive child outcomes (Bradley & Vandell, 2007). We attempted to measure these process and structural aspects of the daycare centers through our assessments.

It should be noted that this has been the first time that quality has been measured in such a way within a Mexican context. With this in mind, some of the variables may not comply with the expected results to come out of the US daycare centers. Moreover, we have limited data to ensure our findings are representative of all daycare centers in the Program and so the effects in their entirety may not have been fully captured. We also lacked baseline measures to control their influence upon follow-up measures.

The following section is organized into two parts. In the first part, the methodology is presented and we describe the quality of care variables and other socio-demographic components of the daycare centers collected in the survey, the ethical considerations surrounding the study, and the proposed model of child development, measured through the child personal-social behavior and communication scores. In the second part of this section, we present the results and a summary of findings.

5.1 Methodology
5.1.1 Mother, child and household variables
While it is clear that attendance at a high quality early childhood care program can benefit children's development, it is widely recognized that other factors relating to the child's background and home environment have an even greater impact upon child outcomes. Among these are the child's age and nutritional status (Grantham-McGregor, et al., 2007), maternal education and mental health, the household's economic status and the availability of home stimulation for language, cognitive and emotional development (Bradley & Corwyn, 2005; Fernald, Weber, Galasso, & Ratsifandrihamanana, 2011; Grantham-McGregor, et al., 2007; Walker, et al., 2007; Walker, et al., 2011).

The influence of family environment on child development outcomes has been documented worldwide (Bradley, Corwyn, & Whiteside-Mansell, 1996; Bradley & Corwyn, 2005). Elements of family environment that are particularly important for language and emotional child development include parental sensitivity and stimulation for learning (Walker, et al., 2007). Measuring the quality of the home environment helps to control the variability in child outcomes that may be wrongly attributed to the quality of the daycare center. The Home Observation for Measurement of the Environment (HOME) (Caldwell & Bradley, 1984) measures the environment of the child's caregiver through structured interviews and observations in the child's home. HOME scales include sections that determine the sensitivity and interactions of the home caregivers towards the children, the availability of materials and activities that encourage parental involvement in child-care. Higher scores on the HOME scale have been associated with better social and language outcomes in the United States (Bradley R. , Corwyn, McAdoo, & Garcia, 2001; Fuligni, Han, & Brooks-Gunn, 2004; Leventhal, Martin, & Brooks-Gunn, 2004) and in other countries (Bradley & Corwyn, 2005; Bradley, Corwyn, & Whiteside-Mansell, 1996). The HOME scores predict developmental test performance even when socioeconomic factors and maternal education are taken into account, indicating that the quality of home care behaviors themselves affect child outcomes. To assess the home environment, we used a short version of the HOME (Bradley R. , Corwyn, McAdoo, & Garcia, 2001), items from an adapted inventory for low-income households (Ertem, Forsyth, Avni-Singer, Damour, & Cicchetti, 1997), along with adult-child activities from UNICEF's MICS surveys (UNICEF, 2012).

5.1.2 Quality of processes
The quality of processes within the daycare centers was measured using codes adapted from the Observational Ratings of the Caregiving Environment (ORCE) scale which evaluates the quality of child-caregiver interaction during a longitudinal study of how early childhood care is associated with child outcomes (National Institute of Child Health and Human Development (NICHD), 2010). The measure also served to forecast reading and math outcomes for low-income children (Dearing, McCartney, & Taylor, 2009). While the measure was intended to be used to track and follow a child, we have adapted it so that the caregiver is the subject of observation. That is, observers encoded the

caregiver's interactions with one or more children. Rather than make live observations of classrooms -- which would require extensive training of multiple workers -- we video-recorded 2 caregivers per daycare center in 101 centers, selected at random[44].

Codes for assessing caregiver-child interactions (objective variables)[45]
Video recordings were encoded as to how often the caregiver displayed the following interactions[46]:

Behavioral codes: event codes with duration

- Responds to child's vocalization
- Reads aloud to child
- Gives directions/explanations/instructions to child
- Expresses positive affection
- Speaks negatively to child
- Stimulates cognitive development

- Stimulates academic development
- Stimulates social development
- Playful exchange
- Watching/unoccupied/transition periods
- Activity with children only

Qualitative ratings of child to caregiver interactions (subjective variables)
In addition to the behavioral codes, the over-all quality of the caregiver's interactions with children was assessed. The qualitative scales recorded the caregiver's behaviors and were rated after the behavioral coding of the video recordings was completed. These can be considered subjective variables, as they are based on overall impressions from the entire session recorded.

 Ratings for most of these scales were based on both the quality and quantity of the behaviors. Thus, evaluations were made taking into account the quality of the observed behaviors in relation to the proportion of time over which they were observed. Ratings of 1 and 4 were reserved for those observations which could be considered either problematic or exceptionally advantageous, depending on the specific scale[47].

- Sensitivity/responsiveness to non-distress
- Intrusiveness
- Detachment/disengagement
- Stimulation of development
- Positive regard for the child

- Negative regard for the child
- Child-centeredness of care
- Small groups
- Supervision

 Since the video-recording activity is considered to involve a minimal risk to participants, we followed an explicit procedure according to the Ethics Committee of INSP, which is explained in Annex E1 of this document.

5.1.3 Quality of daycare variables
The Early Childhood Environment Rating Scale-Revised (ECERS-R) is a popular tool for evaluating the quality of daycare centers in the US and abroad (Harms, Clifford, & Cryer, 1998; Clifford & Rezska, 2010)[48].The scale is completed via observation, and includes items assessing both structural (e.g. availability of age-appropriate toys; established routine; smaller class size etc.) and process variables (e.g. affection demonstrated towards the child; provision of opportunities to enhance learning through activities etc.)[49]. In addition, we also gathered information on teacher characteristics that have

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[44] A detailed description of the process undertaken by the camera crew can be found in Annex E3.
[45] Adaptation based on the study of the National Institute of Child Health and Human Development on early childhood care and development of young people (National Institute of Child Health and Human Development, 1991)
[46] The detailed description of each code can be found in Annex E4.
[47] A detailed description of the qualitative ratings can be found in Annex E5
[48] The measure has been translated into Spanish and similar measures based on the ECERS-R have been carried out in Mexico (Martínez, JF, Myers, & Linares, 2004).
[49] For this analysis, the structural quality of the daycare centers was assessed through questionnaires and observations. The daycare provider was asked questions regarding the education and training of the employees, facility characteristics, etc. In

been associated with higher quality centers, including teacher education, experience and salary (Burchinal, Cryer, Clifford, & Howes, 2002; Phillips, Mekos, Scarr, Mccartney, & Abbott, 2000; Phillipsen, Burchinal, Howes, & Cryer, 1997; Weikart, Olmsted, & Montie, 2003).

5.1.4 Reliability of the coding

The encoding of the videos was developed with the software *Noldus The Observer XT 2010*. This program is a tool for the collection and presentation of observational data. It allows analysis of data visually in one or more videos, in the form of horizontal bars that represent a continuous series of events observed, or by points to identify these events. Moreover, through the analysis of reliability/standardization it is possible to compare the different encoders record by record, allowing for the detection of a possible bias between observers, which is most important when reviewing the quality of the encodings[50]. During the training, different topics were addressed that were useful for the basic operation of the software, from the creation of a project for the coding, definition of codes to the analysis of reliability (standardization) between encoders and the export of the results to Excel. After the training, the encoders practiced individually for one week using the codes and the program. Once a week they tested for an overall consistency to ensure that their results synchronized codified within as close a margin as possible. The average proportion of agreements reached was 71%[51].

5.1.5 Empirical model: quality of care and child development

We have mentioned before that the ASQ scales evaluate child-communication and personal-social skills. In this section, we will present an empirical model considering the different variables that may have an effect on these skills.

The first component of variables is represented by the characteristics that are consistently related to child development outcomes[52], such as the maternal education and depression; the gender, age and height for age of the child; the score of the HOME scale and socioeconomic status of the household. The second component is formed by the quality of process variables (objective and subjective), such as teacher responsivity, engagement in small groups and the frequency of cognitively stimulating activities.

The third component is comprised of structural variables of the daycare including the size of classrooms and literacy areas; and a group of demographic characteristics of the teacher in the daycare center such as education, monthly wage, and years of experience working on childcare and the teacher/student ratio.

It is important to note that for those daycare centers where we had more than one classroom encoded, we estimated an average of each of the variables encoded in order to generate summary variables at the level of the daycare center. The same process was followed for the characteristics of the teachers recorded. Therefore, the process quality variables used in the model are a proxy of the overall quality of care at the daycare centers.

The proposed model for both ASQ scales is the following:

$$Y_i = \beta_1 L_i + \beta_2 P_j + \beta_3 Q_j + \beta_4 \alpha_k + \mathcal{E}$$

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addition, observation items drawn from the ECCP and ECERS-R were also used. The description of each of the included items is detailed in Annex E2.

[50]The training of the Noldus software was carried out from March 28th to April 1st in the premises of the INSP Cuernavaca by a child development expert from the University of Berkeley who offered training sessions to two psychologists who were previously selected for their experience in coding observational study.

[51] The detailed proportion of agreements in the 13 days of standardization can be consulted in Annex E6.

[52] See (LaFreniere, et al., 2010; Wallentin, 2009; Richman, Miller, & LeVine, 1992; Fernald, Weber, Galasso, & Ratsifandrihamanana, 2011; Black, Hess, & Howard, 2000; Mashburn A. , et al., 2008; Peisner-Feinberg & Burchinal, 1997; Peisner-Feinberg E. , et al., 2001).

Where:

Y_i ASQ Communication or Personal Social z-score for children i
L_i Component of mother, child and household variables related to development outcomes of children i
P_j Component of quality of processes variables in the daycare center j
Q_j Component of quality variables in the daycare center j
α_k Component of dummies for municipality k
ε Error term

5.2 Results
5.2.1 Sample of daycare centers with videos

The allocation of the videos encoded was completely random. For the daycare centers that had video recordings in two classrooms, one was assigned randomly to each encoder. For the rest of the daycare centers that had only one video, the videos were randomized so that each one encoded a similar number of videos. Finally the video assignment was as follows:

Table 28. Distribution of videos for encoding

Encoder	Room 1	Room 2	Total
1	65	29	94
2	36	58	94
Total	101	87	188

Source: Prepared by the INSP

The sample of analysis consists of 82 daycare centers with 2 classrooms video recorded, and 19 daycare centers with only one classroom recorded. This constitutes our sample of 101 daycare centers and 183 classrooms (92 were analyzed by the encoder 1 and 91 by the encoder 2)[53].The videos were recorded during the leisure and recreational activity times at the day-car centers, because it was more likely to observe at the stimulation of the child's development by the teachers at this time.

As shown in Table 29, on average, teachers are 27 years old, are women, have 13 years of schooling, 64% of them have received training in the past year, have 3 years of experience in child care, and on average 1.4 years of experience in the daycare center they are working on currently, where they receive an average salary of $2,687pesos (US$222 dollars) per month[54]. In the daycares where videos were recorded there are 7.5 children per teacher on average.

Table 29. Teacher's characteristics

Description	Observations	Mean	Standard deviation
Age (years)	177	27.35	7.20
Female (%)	177	0.99	0.02
Years of schooling of the daycare centers' staff (years)	177	13.06	2.44
Received training in the past 12 months (%)	177	0.64	0.48
Specialist child-care studies (%)	99	0.77	0.42
Years of experience in child care (in any daycare center) (years)	172	3.28	3.91
Years working in current daycare center (years)	171	1.36	0.88
Monthly income (pesos)	175	2687.26	2250.04
Student/teacher ratio	183	7.57	1.07

Source: Prepared by the INSP

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[53] 5 rooms could not be encoded because the videos were damaged.
[54]The average rate change reported by the Central Bank of Mexico during the survey collection was 12.08 pesos/1USD.

5.2.5 Results: quality of care and child development

As previously mentioned on section 5.1.5, child development outcomes such as communication and personal-social skills can be evaluated through the ASQ scales. It has been widely noted in most studies (mainly emanating from the United States or Europe) that outcomes are associated with the following measures of quality (Yoshikawa, et al., 2007).

In the methodology section, we presented a model which includes 3 components regarding the quality of care that could explain child development outcomes. In the first component, we include mother, child and household variables that have been highlighted in the literature as relevant on child development. The second component represents both the objective and subjective quality of processes variables at daycare centers. The third includes structural variables of the daycare and teacher's socio-demographic variables. The specific variables included in each component, were measured based on their relevance to quality and child outcomes. For both ASQ scales, we present a regression that includes all the variables that according to the evidence presented, are related to children development outcomes.

In the third column of Table 30, we present the results for the Personal Social ASQ scale regression, where the variables in the model explain around 18% of the variability in this scale.

In the first component of variables, the coefficient of child's gender variable indicates that being a girl increased the personal-social z-score in 0.48 s.d.; this result has also been found cross-culturally (LaFreniere, et al., 2010). We also found a positive and significant effect of the HOME score on this ASQ scale. The regression results show that an increase in 1 standard deviation (s.d.) of the HOME scale increased the personal-social z-score in 0.07 s.d. This suggests that children living in better home environments are more likely to have better personal-social skills. This finding is consistent with literature, where higher scores on the HOME scale have been associated with better social and linguistic outcomes (Bradley R. , Corwyn, McAdoo, & Garcia, 2001; Fuligni, Han, & Brooks-Gunn, 2004; Leventhal, Martin, & Brooks-Gunn, 2004; Bradley & Corwyn, 2005; Bradley, Corwyn, & Whiteside-Mansell, 1996).

Maternal characteristics, age and height for age of children, and household income variables were not associated with the personal-social z-scores.

For the component of process variables, results show that the presence of small group activities increased the personal social z-scores in about 0.22 s.d. Based on a large review of pre-schools around the world that found working in small groups benefited children's development (Montie, Xiang, & Schweinhart, 2006), we can speculate that working in smaller groups may help children develop social skills by encouraging child-child interactions that can be easily supervised and supported by teachers. Thus, there is some evidence to support the idea that in such centers, some types of teacher-child interactions do in fact contribute to children's social and personal development.

In the third component of structural aspects in the daycare, the results suggest than an increase of 1 s.d. in the years of education received by the teacher, the personal-social z score is reduced in -0.06 s.d. It is unclear why this may be, but we suspect this effect is due to 3 possibilities: 1) teachers with higher education are assigned to the most complicated children; 2) the teachers are more educated to compensate probable teaching weaknesses or 3) the education received is not quite adequate to stimulate child development.

The results of the ASQ communication z-score regression are presented in the last column of Table 30 and it can be seen that the variables explain around the 14% of the communication z-score variability. The results suggest that being a girl increases the ASQ communication z-score in 0.45 s.d. This early advantage amongst females relating to communication skills has been documented, but gender differences in language ability tend to disappear in later childhood (Wallentin, 2009). Also, compared to the youngest, children above 36 months of age have higher communication z-scores in average 0.26 s.d. Consistent with the literature, an increase of 1 s.d. in the HOME scale (better quality of care at home), increases the communication z-score in about 0.04 s.d.

Table 30. ASQ Personal Social and Communication z-scores

Components	Description of variables	Personal-Social z-score	Communication z-score
Component 1: mother, child and household variables	Mother's education (years)	0.0129	0.0263
		(0.0178)	(0.0191)
	Mother's depression (score)	-0.00280	-0.00896
		(0.00724)	(0.00776)
	Child's gender (=1 boys)	-0.488***	-0.452***
		(0.115)	(0.123)
	The child is 36 months or older (=1)	0.105	0.256*
		(0.130)	(0.139)
	Height for age (z-score)	-0.0680	-0.00603
		(0.0592)	(0.0635)
	HOME score	0.0750***	0.0375**
		(0.0176)	(0.0188)
	Household monthly income (pesos)	-3.32e-07	2.84e-06
		(1.12e-05)	(1.20e-05)
Component 2: quality of process variables	Frequency of cognitive development stimulation by the teacher (number)	-0.00236	-0.00216
		(0.00160)	(0.00171)
	Small group activities (=2 there were small group activities and all the children took part ; =1 there were small group activities and NOT all the children took part; =0 there were no small group activities)	0.222***	0.135**
		(0.0567)	(0.0608)
	Sensitivity/responsiveness to nondistress (1 = Not at all characteristic; 2 = Minimally characteristic; 3 = Moderately characteristic; 4 = Highly characteristic)	0.0378	-0.0729
		(0.0870)	(0.0932)
Component 3: daycare variables	The classroom has space where children and adults can move about easily for the activities to be properly effective (=0 if inadequate, basic and =1 if good or excellent)	-0.0894	0.157
		(0.146)	(0.156)
	Books and literacy areas (=0 if inadequate; minimum, good, and =1 if excellent)	-0.144	-0.262
		(0.166)	(0.178)
	Teacher's salary (pesos)	0.000141	2.20e-05
		(0.000114)	(0.000122)
	Teacher's education (years)	-0.0654**	-0.0780**
		(0.0313)	(0.0335)
	Teacher's experience on childcare (years)	0.0156	0.0178
		(0.0215)	(0.0230)
	Student/teacher ratio (number)	-0.00568	0.0486
		(0.0591)	(0.0634)
	Observations	**320**	**320**
	R-squared	**0.177**	**0.136**

Source: Prepared by the INSP

For the second component, again, the existence of small group activities that involved whole group participation increase the ASQ communication z-scores in 0.13 s.d.

Also in the third component, we found a small reduction of 0.08 s.d. in the communication z-scores for each increase of 1 s.d. in the years of teacher's education.

5.3 Summary of findings

According to the rules of operation of the program, the National System for Integral Development of the Family (known by its Spanish initials as the DIF) is responsible for carrying out supervision of the quality of care provided in childcare facilities and offers training to daycare providers on child care issues[55]. The schedule of daily activities suggested by the DIF proposed the following plan for the allocation of time during the 8 hours of service: 1 and a half hours should be allocated to welcoming and receiving the children (19% of the time allocated), 40 minutes for naps (8%), 2 hours for leisure or

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[55]The daycare providers should pass the evaluations and take the training, courses and workshops offered by the Ministry of Social Development (known by its Spanish initials as SEDESOL) and the DIF. Furthermore, an assistant should partake in the initial training of the program and in any additional training as determined by the DIF and SEDESOL to obtain the Technical Standard Certification of Competency.

recreational activities (25%), while the children's personal hygiene (washing hands, changing diapers, etc.) and feeding should take approximately 3 hours and 15 minutes (40%).

From what we observed, of the two hours spent in leisure or recreational activities, teachers were encoded as stimulating the development of the children by only 45% of the time available, i.e. for approximately 54 minutes during the whole day. The rest of the time, teachers left children to play by themselves, gave instructions or explanations or left children waiting while they set up the next activity.

We showed that most of the process quality behaviors do positively correlate with the number of years of education of the caregiver. This suggests that the level of interaction amongst the children in the classrooms is improved by the presence of teachers who have a higher level of education. However, as the regression analyses suggest, the teacher characteristics did not contribute to the children's development scores. Regarding the treatment of the children at the daycare centers, teachers showed an interest in getting involved with the children either physically or through encouraging them, they offered suggestions when the children performed activities and, most of the time, provided adequate supervision.

From the regression analyses, we found that the sex of the child is an important predictor to explain both ASQ scales. Specifically, girls are more likely to get higher ASQ communication and personal social z-scores. This is consistent with previous research (LaFreniere, et al., 2010; Wallentin, 2009). As expected, the home environment was related to ASQ scores (Bradley R. , Corwyn, McAdoo, & Garcia, 2001; Fuligni, Han, & Brooks-Gunn, 2004; Leventhal, Martin, & Brooks-Gunn, 2004; Bradley & Corwyn, 2005; Bradley, Corwyn, & Whiteside-Mansell, 1996). Children living in homes with higher HOME scores also had higher z-scores on the two ASQ scales. No statistical evidence was found for the socioeconomic status as important predictor of higher ASQ z-scores.

In addition to this, we found some evidence that process variables were related to better child outcomes. For both communication and personal-social behavior working in small groups may be a proxy for different kinds of interactions that were not captured by our coding, such as more child-oriented interactions and activities, less 'group response' or repetition type activities, more 'hands-on' activities and more responsive teacher-child interactions.

The correlations between the teachers' characteristics and the structural quality variables suggest teacher age, experience in child care and the time worked in the current daycare center predicted better structural quality.

Despite the number of observations and the size of the effects, we consider that these results represent a good assessment of the quality of care in the daycare centers analyzed. On the one hand, we found that the daycare centers met the program's rules of operation by providing the minimum requirement of quality standards and provided a caring, safe and hygienic service where children were looked after while their mothers worked. On the other hand, this analysis allowed us to identify areas of opportunity to improve the program in terms of the children's early stimulation. The children's stimulation is not currently an explicit goal of the program, but more advantage could be taken of the time spent in the daycare center to enhance the child's development as early learning programs are designed to improve survival, growth and development of the child concerned and should seek to manage the level of potential risk and minimize the negative effects of such risks (Engle & Black, 2007). In particular, in the sample of daycare centers that were video recorded we were able to identify a set of strengths concerning the positive treatment of the teachers towards the children, suitable for carrying out activities that stimulate the essential cognitive, social and linguistic development of the children during this stage. However, it was observed that the teachers did not take advantage of 100% of the time devoted to stimulating the child's development and activities often focused rather more on entertaining the children than in stimulating their development.

Similarly, we observed some structural barriers that limited the optimal development of activities such as reduced spaces, poor lighting and overcrowding. Among the areas for further improvement was the need for more training of the teachers and teaching assistants at the daycare centers, with the aim to provide the necessary knowledge and tools in order to promote the proper development of the children attending the daycare center and capitalizing on the time available. On

the whole, our findings echo those put forward by (Martínez, JF, Myers, & Linares, 2004). In their quality assessment conducted in 40 different Mexican pre-schools, they found the majority of centers were structurally adequate but were lacking in terms of adequate teaching practices. (Yoshikawa, et al., 2007) noted that pre-schools participating in the PEC (*Programa de Escuelas de Calidad*) used the majority of funds received in the first two years to improve the infrastructure of the schools rather than to improve teaching practices. Historically, there may not have been sufficient emphasis on the training of pre-school and daycare workers.

For future studies, we need to conduct more careful observations and codlings of the interactions between the children and the teachers. This was difficult due to the large age range covered by the children in this analysis, and the fact that many of the quality measures are geared towards more structured pre-school settings rather than daycare centers.

Finally, it is important to continue to monitor the number of children per teacher (currently limited to 8 children for every teacher). Smaller class sizes have also been attributed to improved child language and cognitive outcomes (Yoshikawa, et al., 2007).

Conclusions and recommendations

6.1 Conclusions

Impact evaluation is an essential tool for measuring the effects that a program has on the target population; it allows identifying the extent to which the program is achieving its objectives and also pinpointing areas of opportunity for improving program effectiveness. This is particularly relevant when it comes to programs that operate with public funds, where it is important not only to be accountable for the use of resources but also show the effects obtained through the allocation of resources.

It is particularly important to measure the impact of PEI given the scarce evidence regarding the effectiveness of such programs in developing countries. Several countries in the world have implemented childcare programs to support working mothers and improve the welfare of their children. However, the impact of these programs shows mixed effects, with positive impacts on labor force participation of mothers and some indicators of child development, but negative effects in a few child-level variables, such as prevalence of illness.

This study assesses the impact of the PEI on employment and income of the beneficiary population, as well as health status, nutrition and development of their children. The methodology used for the evaluation consisted of a pipeline analysis in which we compared the children/households on the waiting list (controls) and those already attending the daycare (beneficiaries). We ensured the validity of this method by showing that the groups are statistically similar and thus comparable in observable characteristics. Therefore, the impacts found can be attributable to the program.

We did not find a substitution effect of childcare, as less than 0.05% of beneficiaries reported using childcare services before entering the program or signed up for the waiting list. This implies that the PEI, most likely, represents a new alternative of childcare for low income families. This result is consistent with the evidence for Canada, which suggests that an increase in participation and childcare use is reflected primarily on reduced use of informal child care services (as provided by grandparents or other relatives), which is replaced by childcare subsidized by the government (Baker, Gruber, & Milligan, 2008).

The impact evaluation presented in this study reveals that the PEI is effective in promoting participation in the labor market of low-income women with young children, but the effect derived from the full sample is almost exclusively a result for mothers who did not work before entering the program. We did not find income effects probably due to one of the following reasons: (a) measurement error given that the measure is self-reported and beneficiaries had incentives to underreport; (b) not enough power to measure impacts below 10%. In addition, the PEI contributes to the development of beneficiary children, although the effects are only observed in some subgroups of children and not in the entire sample. Particularly, the results show that the program increases the proportion of mothers' employed; the number of hours worked and job tenure, at least in the short

term. We also found that the mother spends less time caring for children under 5 years, but this decrease was compensated by an increase in hours of care for the child's primary caregiver (other than the mother) who lives at home. We found positive effects in some subgroups of children. For instance, in terms of child development the program improves the score of the scale of communication in the subgroup of children with more exposure to PEI. It was found that the children of the mothers who did not work before entering the program are those who benefit the most in terms of developing individual-social behavior and this effect is greater with higher exposure. On the other hand, we only found positive effects on the diet diversity for the subgroup of children with mothers who worked prior to entering PEI, especially those who had little exposure to the program. As regards to child health outcomes, when analyzing the results by subgroups of age and time of exposure to the program, the increase in the disease prevalence during the last 15 days (prior to the survey) occurs only in the group of younger children (under 30 months) and this effect decreases as the age and exposure to the program increases, which is consistent with results from other studies of similar programs. The mixed effects found on the welfare of children suggest opportunity areas that may allow maximizing the impact of the program through a more intensive promotion of child development, as well as health promotion in daycares.

Regarding the quality of care at daycares, results represent a good assessment of the daycares since they are offering a caring, safe, hygienic service of quality where children are cared for while the mother works or looks for a job. And also we identified some opportunity areas to improve the program in terms of instruction style (e.g., small groups) that could be offered to children.

Finally, we conducted a simple variable cost analysis (included in Annex F) of running a daycare by state and country region by which we described the main cost categories and estimated an average cost per child of $1,009 pesos per month, equivalent to US$83.5[56]. The main cost categories are: salaries (which represent 50% of the variable cost), meals (22%) and rent (12%). With respect to income, the daycares receive in average $692 pesos of subsidy per child per month and around $335 pesos of *correspondibility* fee that is paid by parents each month. Therefore, daycares receive around $1,027 pesos (equivalent to US$85) per child per month, which is slightly above the average cost per child. Our results suggests that daycares' profit is around $630 pesos per month (equivalent to US$52), which is low but one should consider that it already discounts the daycare provider salary, which is around $4,095 pesos (US$339); therefore if any improvements in quality of services are required, they should come with increased amounts of subsidies or *correspondibility* fees in order to make it financially viable. Our results are similar to a previous study of the PEI in 2009 with a national sample of daycares, the authors estimated an average monthly profit of $5,074 pesos, equivalent to US$391 dollars[57], but this revenue did not include the salary of the daycare provider (Flacso & C230-Consultores, 2009).

In terms of the cost to the government of providing affordable child care services to low income population, we compared similar daycare programs in Latin America and found that Mexico is the country that allocates the highest amount of resources per child for daycare services. According to the Mexican Ministry of Finance, in 2010 the government allocated $2,615 millions of pesos to the PEI that would allow 9,100 daycares to provide services to about 272,122 children and their mothers; this means an annually cost per child of $9,610 pesos, equivalent to approximately US$66 per month per child (SHCP, 2010). In Bolivia, the *Proyecto Integral de Desarrollo Infantil* (PIDI) estimated cost per child is USD$43 per month (Behrman, Cheng, & Todd, 2004). In Colombia, the *Hogares Comunitarios* (HC) Program has an estimated cost per child of USD$21 per month (Attanasio & Vera-Hernández, 2004).

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[56]The average rate change reported by the Central Bank of Mexico during the survey collection was 12.08 pesos/1USD.
[57] The average rate change reported by the Central Bank of Mexico during the survey collected for that study (November to December, 2009) was 12.98 pesos/1USD.

6.2 Policy Implication and Recommendations

The main short-term benefits found in this study are focused on the group of mothers who did not work before entering the PEI and their children. However, a follow up survey directed to a representative sample of PEI beneficiaries in 2010 suggests that this group of mothers is the minority of the beneficiaries. It is therefore recommended that a wider dissemination of the program is directed to this group in particular, and even consider giving priority to these women to enter the program.

The increase in disease prevalence in younger children has been found elsewhere, and is believed to be an artifact of contact with other children. To decrease the prevalence of disease, especially in younger children with less exposure, it is recommended that PEI stress the importance of regular and thorough hand washing, as well as daily cleaning of toys and objects that may transfer disease. Establishing mechanisms for collaboration with the Mexican Ministry of Health to implement vaccination and disease prevention campaigns aimed at this population are also recommended.

Although there were some positive effects found on child development, most of these were of moderate magnitude and only identified for certain sub-groups. It is important to note that our study measures short term impacts, since the average exposure to the program was around 6 months. It could be the case that the moderate effects found in some subgroups of children with such a short exposition to the program are an indication of potential larger effects in the longer term. Future evaluations of the program should address this question. Many characteristics of daycares that are theoretically and empirically linked to daycare quality were tested for their influence on child outcomes, but we found only one aspect –engagement in small group activities- positively related to both communication and personal-social ASQ scores. Based on this finding, it is recommended that the PEI encourages more use of small group activities in their curriculum. On average, the centers were rated as basic to good on presence of language-promoting materials, but the evidence does not support that these were used to benefit children's communication development.

Additionally, an analysis by socioeconomic status is recommended to explore differential effects of the program on this dimension, particularly among the most economically disadvantaged. It also could be proved, through an experimental study, if variation in the grant amount of the program has heterogeneous effects on the population. This would help to identify the type of households that benefit more from the program and would provide relevant information for the program targeting.

Finally, we identified low profitability of daycares enrolled in the PEI, which could put at risk the sustainability of the program in the long run. Future studies of the program should explore in more detail the most cost-effective solutions to this potential problem. From our perspective, one alternative that could be explored is to increase the amount of the subsidy paid by the government or the amount paid by parents as *corresponsibility* fee, or a combination of both. Another way to increase profitability, however, since the great majority of costs are semi fixed, is to increase the number of children in daycares. This is feasible since a large percentage of daycare centers are operating below full capacity[58]. One should be careful, however, that the increase in the number of children does not reduce the quality of care. Nevertheless, to increase take-up an increase on the subsidy may be needed. Our take-up analysis, carried out in 2009, showed that a weekly intensive promotion is not very effective at increasing take-up. One reason may be that the amount of the subsidy is not enough to induce take-up, hence increasing the subsidy may be a solution to raise both take-up and the profitability of daycares without affecting the quality. However, another reason why daycares are not operating at full capacity is because of low demand due to cultural barriers (INSP, 2011). In a qualitative study of daycares conducted in 2007 in Mexico, we found that in the south and central regions of the country there is a strong belief that women's role is to take care of children and thus that they should not be working; and even among those who do work, there is a belief that other family members should take care of the children before considering sending them to a daycare (INSP, 2009). In this sense, changing the amount of the subsidy might not induce take-up in this type of population; and perhaps a longer promotion of the program with an emphasis on changing cultural barriers might

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[58] According to administrative data of the PEI, on average, the daycares have 13 available spaces.

be more effective. In any case, to answer these questions we will need to know the price elasticity of take-up, which could be learned by conducting a randomized experiment.

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Annexes

Annex A: Description of the types of support and main changes in eligibility criteria of PEI

In the first type of support <u>for working mothers and single fathers</u>, people who meet the eligibility criteria and requirements receive the services in any of the daycares affiliated to the Network, whose cost will be covered partially or totally by the Federal Government and the beneficiary, to a maximum of $700 pesos per month for no more than three children per household. The mother or father makes a monthly contribution under the concept of shared responsibility to cover the difference between the support given by the Federal Government and the fee set by the daycare provider. Since its creation to date, the main changes of eligibility criteria and amounts of support have changed

Support for working mothers and single fathers

Year	Criteria	Amounts
2007	Support for working parents, in households living in poverty, with income less than or equal to 6 times the monthly minimum wage with at least one child from 1 to 2 years 11 months old. With a maximum of 3 children per household.	• Maximum $ 700 pesos per month
2008	Compared to 2007, the eligibility of children changes to households with at least one child from 1 to 3 years 11 months and 1 to 5 years 11 months in case of disability.	• $ 700 pesos per month to households with a monthly income of up to 4 minimum wages • $ 600 pesos per month to households with a monthly income of 4.1 to 5 minimum wages • $ 450 pesos per month to households with a monthly income of 5.1 to 6 minimum wages
2009	Unchanged since 2008.	• $ 700 pesos per month to households with a monthly income of up to 4 minimum wages • $450 pesos per month to households with a monthly income of 4.1 to 6 minimum wages
2010	Regarding 2009, the eligibility criteria for households changes to households living in poverty with a monthly income of up to 1.5 minimum wages per capita.	• $ 700 pesos per month to households with monthly per capita income of up to 1.25 minimum wages • $ 450 pesos per month to households with monthly per capita income of 1.26 to 1.5 minimum wages
2011	The eligibility criteria of households changes to: households that exceed the patrimonial poverty situation and income below or equal to1.5 minimum wages per capita per month.	• Maximum $ 700 pesos per month per child from 1 to 3 years 11 months • Maximum $ 1400 per month for children with disabilities
Source: Prepared by the INSP, based on the Program of Operation Rules 2007-2011		

In the second type of impulse to care and childcare services, individuals or groups who wish to establish and operate a newly created daycare for at least a period of one calendar year, according to the membership criteria, receive a maximum support of $61,000 pesos for the adaptation and equipment of the facilities, and the development or acquisition of materials to work with the children.

Impulse to care and childcare services

Year	Criteria	Amounts
2007	Individuals, groups of individuals or legal entities, including civil society organizations, willing and able to provide care services and childcare for the population living in poverty according to the rules of operation. With a minimum of 5 children per daycare.	Maximum $35,000 pesos and a maximum of two occasions
2008	Compared to 2007 is established that must operate a daycare centre affiliated to the Network for a minimum period of one calendar year, must be a minimum of 10 children per daycare and 2m2 of floor space per child.	Maximum $35,000 pesos, and a maximum of $ 20,000 pesos the second occasion
2009	It is added that the daycare provider[59] must have at least junior high school schooling or equivalent compared to 2008.	Maximum $35,000 pesos
2010	Cannot attend more than 60 children per daycare.	Maximum $55,000 pesos
2011	Unchanged from 2010.	Maximum $61,000 pesos
Source: Prepared by the INSP, based on the Program of Operation Rules 2007-2011		

Finally, in the form of enrolment in the network of daycare centers, financial support is granted up to $41,000 pesos to daycare providers for existing facilities or spaces in which the service of child care is offered, so that they make the minimum necessary adjustments to allow the building and equipment to fulfill with the requirements of the current Rules of Operation and attend the target population of the program.

Enrolment in the network of daycare centres

Year	Criteria	Amounts
2007	Any Nursery and daycare that meets the membership criteria can be incorporated into the network for a given period. Membership is open to any person or entity, including civil society organizations that offer or may offer child care to the target population of the program.	Maximum $1,000 pesos
2008	Compared to 2007 is set they must be operating a daycare centre affiliated to the Network for a minimum period of one calendar year, must have a minimum of 10 children per daycare and 2 m^2 of floor space per child.	Maximum $15,000 pesos
2009	It is added that the daycare provider must have at least junior high school schooling or equivalent compared to 2008.	Maximum $15,000 pesos
2010	Cannot attend more than 60 children per daycare.	Maximum $35,000 pesos
2011	Unchanged from 2010.	Maximum $41,000 pesos
Source: Prepared by the INSP, based on the Program of Operation Rules 2007-2011		

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[59] A daycare provider (or responsible in Spanish) is the person that owns the daycare or is in charge of its operation.

Annex B: Child development scales and sample by age group

Table B1. Skills evaluated by age range in the communication scale of ASQ

Age group	Type of skill evaluated
12 - 18 months	Without receiving instructions is capable of playing games, follow simple commands, saying words to refer to something, can identify or recognize objects, imitates simple words they hear, says more than 8 words (besides mom and dad), etc.
19-24 months	If asked they can identify some drawings, are able to follow simple instructions, identifies parts of their body, can say more than 15 words, correctly uses words like "mine" "yours" and so on. Builds sentences of 4 words or more, is able to say what happens when shown a picture.
25-30 months	Besides the above, they can answer their first and last name, if asked they can follow more elaborate instructions "put the toy on the table"
31-36 months	Besides the above, they answer if asked about the functionality of an object (e.g.: Knife); knows children's songs, knows what to answer if you ask questions like what do you do if you're hungry / thirsty, etc.; can name three objects in a common category (fruits, animals, etc.)
37-42 months	Besides the above, correctly uses words to indicate plural, uses complete sentences with the correct tenses (e.g.: I am in the house), use words that indicate the past tense.
43-48 months	Besides the above, knows the antonym of some words, can say at least two things to describe something (e.g. is small, is blue etc.).

Source: Prepared by the INSP. Based on the ASQ instrument

Table B2. Skills evaluated by age range in the personal-social scale of ASQ

Age group	Type of skill evaluated
12 -18 months	If asked, the child offers an object or gives it in the hand, helps getting dressed or undressing (e.g.: pushes their arm to put on a sweater, lifts their foot to put on shoes, etc.) Throws one ball to have it sent back, plays hugging stuffed animals, feeds alone a spoon, tries to attract attention by pulling the hand or clothing of an adult, if they look in the mirror offers objects, goes to an adult to ask for something, imitates activities they observe adults do, can drink from a cup without spilling all, plays with dolls on eating, sleeping, etc..
19-24 months	Besides the above, they can eat with a fork, recognize themselves in the mirror, shares their toys with other children, once they have the pants on the feet can pull them up alone; can tell if they are a boy or girl.
25-30 months	Besides the above, they can put a jacket or a sweater or wash their face and dry it alone.
31-36 months	Besides the above, they can serve food from one container to another using a utensil.
37-42 months	Besides the above, they brush their teeth without help; can say the names of their classmates or neighbors without help.
43-48 months	Besides the above, they can say at least 4 of the following: name, surname, age, sex, where they live or the name of siblings. Goes to the bathroom, wipes and wash their hands alone. Dresses and undresses without help from an adult.

Source: Prepared by the INSP. Based on the ASQ instrument

Table B3. ASQ sample by ages

Age group	Total	Beneficiaries	Waiting list
12-18 months	201	151	50
19-24 months	256	212	44
25-30 months	357	301	56
31-36 months	302	241	61
37-42 months	244	200	44
43-48 months	167	130	37
Total	**1527**	**1235**	**288**

Source: Prepared by the INSP. Based on the ASQ instrument

Annex C. Power Calculations

Table C1. Estimated Power Calculations before fieldwork[60]

Variables	Mean	S.D.	ICC	Sample size	EMD Response rate= 90%	EMD Response rate= 80%
Household income(pesos)	5541	4708	0.11	5000	$ 496.64	$ 479.29
Mother has a job (%)	46.9	49.9	0.05		4.80%	4.59%
Mother looks for a job and does not work (%)	39.4	48.9	0.06		4.82%	4.62%
Child development (z-scores)*	0.08	1.02	0.05		0.098 SD	0.093 SD
Height (cm)	89.8	5.6	0.05	2500	0.721 cm	0.685 cm
Height per age (z-scores)	-0.9	1.03	0.01		0.129 SD	0.122 SD
Haemoglobin[1] (g/dL)	12.5	1.4	0.1		0.186 SD	0.178 SD
Anemia (%)	26.8	44.4	0.04		0.056 SD	0.053 SD

[1]Children below 11 grams of hemoglobin per deciliter (g/dL) are diagnosed with anemia.

Source: Prepared by the INSP.

Table C2. Power Calculations for children outcomes: by ages and exposure time

Prevalence of illness 15 days prior to the interview (%)				
Age range	**Exposure time**	**N**	**Mean**	**MDE (80%)**
Older than 30 months	Total (months)	755	42%	26.8%
	Exposure 1 to 6 months (%)	255	46%	54.4%
	Exposure more than 6 months (%)	317	37%	53.3%
Younger than 30 months	Total (months)	738	53%	22.7%
	Exposure 1 to 6 months (%)	338	57%	47.4%
	Exposure more than 6 months (%)	123	42%	149.2%
Food groups the child eats at home (number)				
Age range	**Exposure time**	**N**	**Mean**	**MDE (80%)**
Older than 30 months	Total (months)	755	6.53	0.054
	Exposure 1 to 6 months (%)	255	6.55	0.121
	Exposure more than 6 months (%)	317	6.42	0.099
Younger than 30 months	Total (months)	738	6.52	0.052
	Exposure 1 to 6 months (%)	338	6.59	0.117
	Exposure more than 6 months (%)	123	6.53	0.296
ASQ-Communication z-score (Standard Deviations)				
Age range	**Exposure time**	**N**	**Mean**	**MDE (80%)**
Older than 30 months	Total (months)	672	0.01	0.25
	Exposure 1 to 6 months (%)	232	-0.14	0.53
	Exposure more than 6 months (%)	278	0.19	0.48
Younger than 30 months	Total (months)	681	-0.01	0.25
	Exposure 1 to 6 months (%)	312	-0.04	0.55
	Exposure more than 6 months (%)	112	0.21	1.4
ASQ-Personal-Social z-score (Standard Deviations)				
Age range	**Exposure time**	**N**	**Mean**	**MDE (80%)**
Older than 30 months	Total (months)	672	0.01	0.25
	Exposure 1 to 6 months (%)	232	-0.14	0.53
	Exposure more than 6 months (%)	278	0.19	0.48
Younger than 30 months	Total (months)	681	-0.02	0.25
	Exposure 1 to 6 months (%)	312	0.02	0.55
	Exposure more than 6 months (%)	112	0.07	1.4

Source: Prepared by the INSP

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[60] For these estimations we used a sample of 1,241 eligible and interested households in participating in the Program from the survey collected in 2009.

Annex D: Descriptive Statistics, Balance Tests and Propensity Score Matching results
Table D1. Descriptive statistics

Characteristics	Survey 2011
Mother characteristics	
Women (%)	96.6%
Schooling:	
High school	52.14%
Junior High school	36.2%
Head of family	23%
Single	30%
Age (years)	28.37
Household characteristics	
Household members (number)	4.23
Household members working (number)	1.9
Children less than 5 year old (number)	1.3
Per capita household income (pesos)	1,478.56
Owns the house (%)	39.12%
The household has cement floor (%)	52%
The household has tiled floor (%)	46.9%
The household has dirt floor basement (%)	1.06%
Rooms in the household (number)	2.78
Owns a refrigerator (%)	82.6%
Owns a microwave (%)	47.7%
Owns a vehicle (%)	30.2%
Owns a cell phone (%)	85.4%
Head of household	
Male (%)	71.8%
Average age (years)	35 years
Junior High school (years)	78%
High school (years)	44%
Children characteristics	
Was sick in the past 15 days (%)	49%
Child had diarrhea (%)	21%
Child had a respiratory illness (%)	80%
Low weight for age (%)	30%
Low height for age (%)	8%
Is or was being breast fed (%)	89%
Has vaccination card (%)	74%
Children age (years)	2.5
Diet diversity (food groups consumed)	6.46

Source: Prepared by INSP

Annex D.1: Balance tests: 1232 beneficiaries and 314 on waiting list

Mother's characteristics

	Beneficiaries			Waiting List			P value	
	N	Mean	S.D.	N	Mean	S.D.	p simple	p adjusted
Age of mother (years)	1232	28.33	6.67	313	27.2	6.66	0.008**	0.008**
Years of mother's schooling (years)	1225	11.53	3.31	311	10.43	3.18	0.000**	0.000**
Worked in November 2007 (%)	1226	37.11%	0.48	312	33.97%	0.47	0.530	0.304
Worked in November 2006 (%)	1229	32.95%	0.47	312	31.09%	0.46	0.304	0.530
Was looking for work in November 2007 (%)	1226	3.59%	0.19	312	3.85%	0.19	0.829	0.829
Was looking for work in November 2006 (%)	1229	4.15%	0.2	312	3.85%	0.19	0.809	0.809
Mother's income in November 2007 (pesos)	443	2669.06	1648.9	105	2974.48	1985.57	0.102	0.102
Mother's income in November 2006 (pesos)	398	2692.03	1723.85	95	2842.42	1786.31	0.448	0.448
Had a written contract in November 2007 (%)	454	36.56%	0.48	106	37.74%	0.49	0.822	0.822
Had a written contract in November 2006 (%)	404	38.37%	0.49	97	38.14%	0.49	0.968	0.968

[1] **To avoid outliers, we do not consider the upper percentile 1 of the income. *Significance level of 5% ** Significance level of 1%**

Household characteristics

	Beneficiaries			Waiting list			P value	
	N	Mean	S.D.	N	Mean	S.D.	p simple	p adjusted
Head of household is male	1223	69.99%	0.46	312	78.85%	0.41	0.002**	0.017**
Own house	1232	39.1%	0.49	313	39.9%	0.49	0.793	0.817
Number of people in the household	1232	4.23	1.48	314	4.35	1.46	0.193	0.392
Number is children under 5 years old in the household	1232	1.31	0.53	314	1.33	0.55	0.486	0.949
*Significance level of 5% ** Significance level of 1%								

Children's characteristics

	Beneficiaries			Waiting List			P value	
	N	Mean	S.D.	N	Mean	S.D.	p simple	p adjusted
Age of child	1232	30.61	9.16	314	30.94	10.53	0.587	0.847
Weight for height of child of interest at birth (z-score)	959	-1.14	1.80	241	-1.10	1.67	0.754	0.201
Height for of child of interest at birth (z-score)	1052	0.63	1.72	268	0.68	1.72	0.698	0.608
Child with low weight (=1 if <2.3kg)	1201	6%	0.25	304	7%	0.26	0.604	0.687
Child with low height	1095	1%	0.1	276	0%	0.06	0.359	0.208
Child with wasting[1] diagnosis at birth (%)	959	30%	0.46	241	27%	0.44	0.237	0.108
Child with stunting[2] diagnosis at birth (%)	1052	8%	0.27	268	6%	0.24	0.342	0.858
Considered their child healthier compared with other children by one year of age (%)	1229	66%	0.47	314	68%	0.47	0.609	0.890
Considered their child smarter compared with other children by one year of age (%)	1227	77%	0.42	314	75%	0.43	0.673	0.661
Months at which they said other words besides Mother and Father	644	12.69	2.75	158	12.59	2.61	0.691	0.315
Months at which they took their first steps	835	13.27	2.36	194	13.19	2.42	0.666	0.963
Was or is being given mother's milk (%)	1232	89%	0.32	314	88%	0.33	0.630	0.971
*Significance level of 5% ** Significance level of 1% 1 Wasting refers to acute malnutrition 2 Stunting refers to chronic malnutrition								

Annex D.1.2: Balance tests for mothers that worked before entering the program: 495 beneficiaries and 110 on waiting list

Mother's characteristics

	Beneficiaries			Waiting List			P value	
	N	Mean	S.D.	N	Mean	S.D.	p simple	p adjusted
Age of mother (years)	495	30.04	6.85	110	28.69	6.66	0.06	0.046*
Years of mother's schooling (years)	493	11.76	3.44	108	10.29	3.28	0.00	0.252
Worked in November 2007 (%)	491	74%	0.44	110	74%	0.44	0.949	0.702
Worked in November 2006 (%)	494	60%	0.49	110	60%	0.49	0.95	0.310
Was looking for work in November 2007 (%)	491	0.02	0.14	110	0.01	0.1	0.425	0.382
Was looking for work in November 2006 (%)	494	0.03	0.18	110	0.01	0.1	0.158	0.118
Mother's income in November 2007	354	2601.35	1611.82	80	2879.63	1948.31	0.181	0.061
Mother's income in November 2006	291	2644.27	1687.8	64	2589.84	1758.28	0.817	0.799
Had a written contract in November 2007 (%)	362	0.36	0.48	81	0.37	0.49	0.923	0.622
Had a written contract in November 2006 (%)	298	0.38	0.49	66	0.36	0.48	0.813	0.278
[1] To avoid outliers, we do not consider the upper percentile 1 of the income *Significance level of 5% ** Significance level of 1%								

Household characteristics

	Beneficiaries			Waiting list			P value	
	N	Mean	S.D.	N	Mean	S.D.	p simple	p adjusted
Head of household is male	493	0.68	0.47	110	0.77	0.42	0.06	0.146
Own house	495	0.39	0.49	109	0.39	0.49	0.929	0.516
Number of people in the household	495	4.15	1.4	110	4.41	1.44	0.082	0.409
Number is children under 5 years old in the household	495	1.32	0.54	110	1.45	0.64	0.038*	0.058*
*Significance level of 5% ** Significance level of 1%								

Children's characteristics

	Beneficiaries			Waiting List			P value	
	N	Mean	S.D.	N	Mean	S.D.	p simple	p adjusted
Age of child	495	30.57	9.58	110	29.69	10.81	0.396	0.018**
Weight for height of child of interest at birth (z-score)	385	-1.03	1.82	87	-1.01	1.87	0.903	0.436
Height for of child of interest at birth (z-score)	422	0.51	1.69	93	0.65	1.73	0.464	0.911
Child with low weight (=1 if <2.3kg)	481	7%	0.25	105	7%	0.25	0.943	0.267
Child with low height	437	1%	0.1	95	0%	0	0.349	0.440
Child with wasting[1] diagnosis at birth (%)	385	29%	0.45	87	28%	0.45	0.854	0.647
Child with stunting[2] diagnosis at birth (%)	422	9%	0.29	93	6%	0.25	0.388	0.577
Considered their child healthier compared with other children by one year of age (%)	494	65%	0.48	110	66%	0.47	0.722	0.811
Considered their child smarter compared with other children by one year of age (%)	493	77%	0.42	110	75%	0.44	0.57	0.960
Months at which they said other words besides Mother and Father	256	12.58	2.7	57	12.21	2.56	0.344	0.462
Months at which they took their first steps	343	13.17	2.19	65	13.18	2.34	0.966	0.466
Was or is being given mother's milk (%)	495	88%	0.33	110	85%	0.35	0.527	0.712

*Significance level of 5% ** Significance level of 1%
 1 Wasting refers to acute malnutrition   2 Stunting refers to chronic malnutrition

Annex D.1.3: Balance tests for mothers that did not work before entering the program: 735 beneficiaries and 203 on waiting list

Mother's characteristics

	Beneficiaries			Waiting List			P value	
	N	Mean	S.D.	N	Mean	S.D.	p simple	p adjusted
Age of mother (years)	735	27.17	6.29	202	26.39	6.55	0.121	0.087*
Years of mother's schooling (years)	730	11.38	3.23	202	10.51	3.14	0.001	0.011**
Worked in November 2007 (%)	734	13%	0.33	202	12%	0.33	0.952	0.410
Worked in November 2006 (%)	734	14%	0.35	202	15%	0.36	0.747	0.698
Was looking for work in November 2007 (%)	734	5%	0.21	202	5%	0.23	0.632	0.974
Was looking for work in November 2006 (%)	734	5%	0.21	202	5%	0.23	0.632	0.829
Mother's income in November 2007	89	2938.36	1772.85	25	3278	2112.65	0.419	0.399
Mother's income in November 2006	106	2825.89	1828.29	31	3363.87	1757.52	0.148	0.486
Had a written contract in November 2007 (%)	92	37%	0.49	25	40%	0.5	0.781	0.292
Had a written contract in November 2006 (%)	106	40%	0.49	31	42%	0.5	0.817	0.138

[1] To avoid outliers, we do not consider the upper percentile 1 of the income *Significance level of 5%   ** Significance level of 1%

Household characteristics

	Beneficiaries			Waiting list			P value	
	N	Mean	S.D.	N	Mean	S.D.	p simple	p adjusted
Head of household is male	728	0.71	0.45	201	0.8	0.4	0.021	0.158
Own house	735	0.39	0.49	203	0.4	0.49	0.825	0.593
Number of people in the household	735	4.29	1.53	203	4.33	1.47	0.721	0.058*
Number is children under 5 years old in the household	735	1.3	0.53	203	1.27	0.48	0.554	0.220

*Significance level of 5%   ** Significance level of 1%

Children's characteristics

	Beneficiaries			Waiting List			P value	
	N	Mean	S.D.	N	Mean	S.D.	p simple	p adjusted
Age of child	735	30.62	8.87	203	31.64	10.35	0.161	0.404
Weight for height of child of interest at birth (z-score)	573	-1.21	1.78	153	-1.14	1.54	0.625	0.529
Height for of child of interest at birth (z-score)	629	0.71	1.75	174	0.69	1.72	0.877	0.567
Child with low weight (=1 if <2.3kg)	718	6%	0.24	198	8%	0.27	0.463	0.728
Child with low height	657	1%	0.1	180	1%	0.07	0.641	0.395
Child with wasting[1] diagnosis at birth (%)	573	32%	0.47	153	25%	0.44	0.134	0.329
Child with stunting[2] diagnosis at birth (%)	629	7%	0.26	174	6%	0.24	0.652	0.935
Considered their child healthier compared with other children by one year of age (%)	733	67%	0.47	203	68%	0.47	0.789	0.145
Considered their child smarter compared with other children by one year of age (%)	732	76%	0.43	203	76%	0.43	0.97	0.889
Months at which they said other words besides Mother and Father	388	12.76	2.79	101	12.81	2.62	0.874	0.153
Months at which they took their first steps	490	13.32	2.47	128	13.14	2.42	0.451	0.712
Was or is being given mother's milk (%)	735	89%	0.31	203	89%	0.32	0.857	0.473
Significance level of 5% ** Significance level of 1%* 1 Wasting refers to acute malnutrition 2 Stunting refers to chronic malnutrition								

Annex D2. Propensity Score Matching estimations (PSM)

The Propensity Score Matching (PSM) estimations were carried out using the STATA command "*psmatch2*". Using different matching methods (Nearest Neighbor, Kernel and Radius) we estimated the average treatment effect on the treated (ATT) and compared these results with the OLS estimations presented in this evaluation.

We used 2 different specifications for the propensity score. The first specification included only the unbalanced variables as the covariates for the PSM estimations (mother's age, mother's education, whether or not the head of the household is male and the logarithm of the mother's income in 2007), and the outcomes that were statistically significant in our OLS regressions: if the mother has a job, weekly hours spent working by the mother, time of daily mother's childcare while performing other activities, time of daily mother's exclusive childcare, the prevalence of child illness, time of daily main caregiver exclusive childcare and if the main caregiver studies (=1). The second specification includes four additional variables: whether the mother was working or looking for a job in 2007 and 2006, which are lags of important dependent variables.

It is worthwhile mentioning that the outcome variables related to the main caregiver (other than the mother): "Time of daily exclusive childcare" and "main caregiver studies", are missing for a significant part of the sample, and thus the sample in which these two impacts are estimated is different from the whole sample (for both OLS and PSM methods).

It can be seen in the following Table, that in general the OLS and PSM are strikingly similar in terms of magnitude and significance, except for the main caregiver outcome variables (which is a much smaller sample).

D2. A) First Specification: using the more parsimonius pscore specification

Table D2.1 Ordinary Least Square and Propensity Score Matching Estimations

VARIABLES	OLS ESTIMATIONS[1]			psmatch2: Nearest Neighbor				psmatch2 : KERNEL				psmatch2 : RADIUS			
	Obs	Mean	Impact	Ctrl	Treat	ATT	t	Ctrl	Treat	ATT	t	Ctrl	Treat	ATT	t
Mother has a job (%)	1172	0.84	0.178***	279	1096	0.18***	3.93	279	1096	0.21***	6.35	279	1096	0.20***	5.57
Weekly hours spent working by the mother (hrs)	1174	34.97	6.863***	279	1096	8.22***	3.95	279	1096	7.65***	4.94	279	1096	8.04***	4.93
Time of daily childcare while performing other activities (mother) (hrs)	1174	4.97	-1.388***	279	1096	-1.40***	-4.75	279	1096	-1.51***	-6.65	279	1096	-1.49***	-6.21
Time of daily exclusive childcare (mother) (hrs)	1090	2.79	-0.306*	279	1096	-0.18	-1.04	279	1096	-0.25*	-1.89	279	1096	-0.26*	-1.88
Prevalence of illness 15 days prior to the interview (%)	1174	0.49	0.171***	279	1096	0.06	1.26	279	1096	0.14***	4.02	279	1096	0.16***	4.33
Time of daily exclusive childcare (main caregiver) (hrs)	195	2.98	1.200*	39	179	-0.24	-0.49	39	179	-0.17	-0.46	39	177	-0.20	-0.52
The main caregiver studies (%)	212	0.09	-0.129*	39	179	0.09***	4.32	39	179	0.09***	4.32	39	177	0.10***	4.32

1 The difference in the number of observations between OLS and PSM estimations is attributed to the number of covariates included in the regressions. For instance, the OLS controls for: mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. Whilst the PSM only included the unbalanced variables: mother's age, mother's education, whether or not the head of the household is male and the logarithm of the mother's income in 2007.

*Significance level of 10%; **Significance level of 5%; *** Significance level of 1%

Source: Prepared by INSP

Common support

As explained before, sample size is smaller for the main caregiver's outcome variables. So in the following table, we report common support regions for these samples separately.

Table D2.2 Common Support

psmatch2: Nearest Neighbor, Kernel and Radius Matching			
Treatment assignment	**Off support**	**On support**	**Total**
Mother and child variables			
Untreated	0	279	279
Treated	11	1096	1107
Total	11	1375	1386
Main caregiver variables			
Untreated	0	39	39
Treated	15	179	194
Total	15	218	233

For the mother and children variables, the PSM estimates include a total of 1,386 observations (279 controls and 1,107 treatments) and only 11 observations fall outside the common support. Whilst for the variables of the main caregiver in the household, 15 observations out of 233 fall outside the common support of the PSM estimates.

Balancing Property

In order to ensure the balancing property is fulfilled, after performing the matching, we estimated the t-tests for equality of means in the two samples (before and after matching) for the variables used as covariates that were unbalanced, through the command "*pstest*". For each variable, it can be seen in the following table that unmatched/matched rows represent the difference of means before and after the matching respectively[61].

Table D2.3 Balancing Property

Variables		pstest: Nearest Neighbor					pstest: Kernel					pstest: Radius			
		Mean		**t-test**			**Mean**		**t-test**			**Mean**		**t-test**	
		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|
Mother's age (years)	Unmatched	28.32	27.15	2.65	0.01	Unmatched	28.32	27.15	2.65	0.01	Unmatched	28.32	27.15	2.65	0.01
	Matched	28.32	28.73	-1.32	**0.19**	Matched	28.32	28.26	0.20	**0.84**	Matched	28.32	28.42	-0.32	**0.75**
		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|
Mother's education (years)	Unmatched	11.51	10.39	5.07	0.00	Unmatched	11.51	10.39	5.07	0.00	Unmatched	11.51	10.39	5.07	0.00
	Matched	11.56	11.54	0.17	**0.86**	Matched	11.56	11.37	1.42	**0.16**	Matched	11.56	11.46	0.74	**0.46**
		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|
The head of the household is male (%)	Unmatched	0.70	0.79	-3.04	0.00	Unmatched	0.70	0.79	-3.04	0.00	Unmatched	0.70	0.79	-3.04	0.00
	Matched	0.70	0.71	-0.61	**0.54**	Matched	0.70	0.72	-0.78	**0.43**	Matched	0.70	0.69	0.73	**0.47**
		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|
Income in 2007 (log)	Unmatched	2.91	2.59	1.27	0.21	Unmatched	2.91	2.59	1.27	0.21	Unmatched	2.91	2.59	1.27	0.21
	Matched	2.91	3.07	-0.94	**0.35**	Matched	2.91	2.88	0.21	**0.83**	Matched	2.91	2.94	-0.17	**0.87**

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[61] The balancing property was also tested for the variables of the main caregiver. The results are consistent, and the balancing property is fulfilled at the 5% of significance for the unbalanced variables.

For instance, the existing difference between controls and treatments for the unbalanced variables before the matching was statistically significant at 1%. After the matching, the t-test suggests there are not statistically differences between groups.

D2. B) Second Especification: using the pscore specification with more covariates

After the exercise of including the unbalanced variables as covariates, we added more covariates of the mother's retrospective information for 2006 and 2007. Yet, the results are robust to inclusion for various covariates:

Table D2.4 Ordinary Least Square and Propensity Score Matching Estimations

VARIABLES	OLS estimations[1]			psmatch2: Nearest Neighbor				psmatch2 : KERNEL				psmatch2 : RADIUS			
	Obs	Mean	Impact	Ctrl	Treat	ATT	t	Ctrl	Treat	ATT	t	Ctrl	Treat	ATT	t
Mother has a job (%)	1172	0.84	0.178***	279	1095	0.20***	4.20	279	1095	0.21***	6.26	279	1086	0.21***	5.83
Weekly hours spent working by the mother (hrs)	1174	34.97	6.863***	279	1095	7.76***	3.62	279	1095	7.63***	4.93	279	1086	7.98***	4.97
Time of daily childcare while performing other activities (mother) (hrs)	1174	4.97	-1.388***	279	1095	-1.34***	-4.29	279	1095	-1.51***	-6.64	279	1086	-1.57***	-6.67
Time of daily exclusive childcare (mother) (hrs)	1090	2.79	-0.306*	279	1095	-0.34*	-1.82	279	1095	-0.26**	-1.98	279	1086	-0.27**	-2.02
Prevalence of illness 15 days prior to the interview (%)	1174	0.49	0.171***	279	1095	0.05	1.01	279	1095	0.14***	4.06	279	1086	0.16***	4.42
Time of daily exclusive childcare (main caregiver) (hrs)	195	2.98	1.200*	39	167	-0.59	-1.21	39	167	-0.28	-0.73	39	154	-0.40	-0.95
The main caregiver studies (%)	212	0.09	-0.129*	39	167	0.08***	3.90	39	167	0.08***	3.90	39	154	0.08***	3.76

1 The difference in the number of observations between OLS and PSM estimations is attributed to the number of covariates included in the regressions. For instance, the OLS controls for : mother's age, mother's education, whether or not the mother worked or looked for work in 2006, whether or not the head of the household is male, the number of people in the household, the presence of children under 5 who do not attend any form of day-care, the child's age, weight to height ratio at birth, height to age ratio at birth, whether or not the child was breast-fed, whether the mother considered the child healthier or more intelligent at the age of one compared with other children of the same age and the number of objects designed to stimulate development owned by the child by the age of one. Whilst the PSM only included the unbalanced variables: mother's age, mother's education, whether or not the head of the household is male, the logarithm of the mother's income in 2007, whether the mother was working or looking for a job in 2007 and 2006.
*Significance level of 10%; **Significance level of 5% ; *** Significance level of 1%

Source: Prepared by INSP

Common support

In contrast to the previous PSM, the following table shows that the number of observations for control and treatment groups in the Radius matching methodology differs to NN and Kernel. For the latter, only 11 and 26 observations fall outside the common support for the mother and main caregiver variables respectively. The Radius Matching methodology excludes more observations 20 and 39 for each group of variables.

Table D2.5 Common Support

psmatch2: Nearest Neighbor & Kernel				psmatch2: Radius Matching			
Treatment assignment	Off support	On support	Total	Treatment assignment	Off support	On support	Total
Mother and child variables				**Mother and child variables**			
Untreated	0	279	279	Untreated	0	279	279
Treated	11	1095	1106	Treated	20	1086	1106
Total	11	1374	1385	Total	20	1365	1385
Main caregiver variables				**Main caregiver variables**			
Untreated	0	39	39	Untreated	0	39	39
Treated	26	167	193	Treated	39	54	193
Total	26	206	232	Total	39	193	232

Balancing Property

In the following table, the t-test for equality of means is presented for all the unbalanced variables. Alike the previous results, after including 4 more covariates, the results suggest than both control and treatment groups are balanced in those predetermined characteristics after the matching[62].

Table D2.6 Balancing Property

Variables		pstest: Nearest Neighbor				pstest: Kernel				pstest: Radius			
		Mean		t-test		Mean		t-test		Mean		t-test	
		Control	Treatment	t	p>|t|	Control	Treatment	t	p>|t|	Control	Treatment	t	p>|t|
Mother's age (years)	Unmatched	28.31	27.15	2.64	0.01	28.31	27.15	2.64	0.01	28.31	27.15	2.64	0.01
	Matched	28.31	27.99	1.02	**0.31**	28.31	28.29	0.05	**0.96**	28.29	28.37	-0.28	**0.78**
Mother's education (years)	Unmatched	11.52	10.39	5.08	0.00	11.52	10.39	5.08	0.00	11.52	10.39	5.08	0.00
	Matched	11.55	11.43	0.89	**0.37**	11.55	11.35	1.44	**0.15**	11.52	11.41	0.77	**0.44**
The head of the household is male (%)	Unmatched	0.70	0.79	-3.04	0.00	0.70	0.79	-3.04	0.00	0.70	0.79	-3.04	0.00
	Matched	0.70	0.66	1.88	**0.06**	0.70	0.72	-0.87	**0.38**	0.71	0.69	0.82	**0.41**
Income in 2007 (log)	Unmatched	2.91	2.59	1.25	0.21	2.91	2.59	1.25	0.21	2.91	2.59	1.25	0.21
	Matched	2.92	2.70	1.33	**0.18**	2.92	2.86	0.31	**0.76**	2.90	2.80	0.62	**0.54**
Mother had a job 2007 (%)	Unmatched	0.38	0.34	1.24	0.22	0.38	0.34	1.24	0.22	0.38	0.34	1.24	0.22
	Matched	0.38	0.36	1.15	**0.25**	0.38	0.37	0.34	**0.73**	0.38	0.37	0.59	**0.56**
Mother was looking for a job 2007 (%)	Unmatched	0.03	0.03	0.18	0.86	0.03	0.03	0.18	0.86	0.03	0.03	0.18	0.86

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[62] The balancing property was also tested for the variables of the main caregiver. The results are consistent and the balancing property is fulfilled.

Variables	pstest: Nearest Neighbor				pstest: Kernel				pstest: Radius			
		Mean		t-test		Mean		t-test		Mean		t-test
	Matched	0.03	0.02	2.25	**0.03**	Matched	0.03	0.03	-0.11	**0.91**	Matched	0.03	0.03	0.05	**0.96**
Mother had a job 2006 (%)		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|
	Unmatched	0.34	0.29	1.52	0.13	Unmatched	0.34	0.29	1.52	0.13	Unmatched	0.34	0.29	1.52	0.13
	Matched	0.34	0.33	0.54	**0.59**	Matched	0.34	0.34	0.23	**0.82**	Matched	0.34	0.35	-0.44	**0.66**
Mother was looking for a job 2006 (%)		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|		Control	Treatment	t	p>|t|
	Unmatched	0.04	0.03	0.32	0.75	Unmatched	0.04	0.03	0.32	0.75	Unmatched	0.04	0.03	0.32	0.75
	Matched	0.04	0.01	3.15	0.00	Matched	0.04	0.03	0.47	**0.64**	Matched	0.04	0.03	0.81	**0.42**

Annex D3. Mother's income: Propensity Score Matching estimations (PSM)

We beleive one of the reasons we did not find effects on mother's income is due to the fact that there is no balance in some variables at baseline (mother's age, mother's education and mother's income in 2007) and the effects cannot be captured. For these reason, we estimated the average treatment effect (on the treated) on the mother's salary with three different methodologies of propensity score matching (Nearest Neighbor, Kernel and Radius) and using four different sets of control variables. As it can be seen in the following table, after the matching the balancing property is fulfilled and the results were positive but –in most of all estimations- not statistically significant:

CONTROL VARIABLES	psmatch2: Nearest Neighbor				psmatch2 : KERNEL				psmatch2 : RADIUS			
	Ctrl	Treat	ATT	t	Ctrl	Treat	ATT	t	Ctrl	Treat	ATT	t
1. Mother's age (years); mother's education (years); household head is male (%); mother's income in 2010 and 2009 (pesos)	297	1147	290.23	1.16	297	1147	312.2	1.56	297	1143	230.6	1.12
2. Mother's age (years); mother's education (years); household head is male (%); mother's income in 2010; 2009 and 2008 (pesos)	295	1145	**484.04**	2.23	295	1145	309.64	1.54	295	1139	215.97	1.04
3. Mother's age (years); mother's education (years); household head is male (%); mother's income in 2010; 2009, 2008 and 2007 (pesos)	294	1140	386.83	1.46	294	1140	300.34	1.48	294	1140	199.36	0.94
4. Mother's age (years); mother's education (years); household head is male (%); mother's income in 2010; 2009, 2008, 2007 and 2006 (pesos)	294	1139	298.35	1.14	294	1139	300.61	1.48	294	1139	193.93	0.92

Annex E. Quality of care at Daycare Centers
Annex E1. Ethical considerations of videotaping teachers/assistants of the daycares

On the subject of direct observation through the videotape, the videotape can be considered to involve minimal risk to participants. According to the guidelines of the Ethics Committee of the INSP, the consent process was informed in writing. First, they requested permission from the daycare provider for video-recording two teachers/assistants performing child care activities for a period of 1 hour each. Second, it was made known to the teachers/assistants the purpose of the videotape, the voluntary nature of their participation and the complete confidentiality of the videos. They also requested permission to use the videos in future trainings as examples of "positive" interactions between the teacher and children (never used to show negative interactions). Finally, it was emphasized that the videos would not be used for purposes other than those mentioned. The letter must have been signed by the teacher/assistant (as applicable) and two witnesses. Participants also were left with a copy of the consent form, which contained data from project managers and the Ethics Commission for questions related to the rights of participants. In the event that any teacher/assistant has refused to be video-recorded, we selected another teacher/assistant in the daycare. If the provider of the daycare refused to have any of her teachers/assistants participate in the study, then another daycare was selected.

We considered that it was only necessary the informed consent of the teachers/assistants because they, in particular, and the environment in which the class is given, were the subject of study and not the children. In the encoding of videos, no individual child was identified and no child in the videotape was followed specifically. The observation points were given at the level of the teacher / assistant; each was assigned with a code number and was not identified by name in the video.

The videos were coded during the months of April to June by two psychologists trained for this activity. As for data management and safety issues, there is a backup of the videos, which is kept locked by the project manager and will be used only in case of damage to any of the original videos. The videos will be retained for a period of 5 years, after this period will only be kept the material that may be useful for trainings and the rest will be destroyed.

Annex E2. Items included of ECCP and ECER-S scales

From the ECCP scale we included the following 4 observational items, which were rated in a scale from 1 to 5 (1=inadequate, 2=incipient, 3=basic, 4=good, 5=excellent):
- The classroom is safe, clean, has maintenance, natural light and ventilation and has an aesthetic proposal in the overall settlement.
- The classroom has space where children and adults can move easily for the development of activities.
- The classroom has furniture and teaching materials appropriate for the age.
- The classroom has enough, mixed, organized, presented, accessible and age-appropriate materials for children.

From the ECERS-R scale we included the following 2 observational items, which were rated in a scale from 1 to 7 (1=inadequate, 3=basic, 5=good, 7=excellent):
- Book and literacy areas.
- Print in the environment.

Additional to these scales, we included the following two yes/no questions regarding open spaces and the availability of certain objects that promote gross motor skills.
- The daycare has a yard, garden or any open space where children can go out and play
- The daycare has games or objects for climbing or riding such as swings, slides, cars, etc.

Annex E.3. Procedures of video recordings

Conducting observations directly or through videotapes of teachers in their groups can generate some "reactivity", i.e. that participants change their behavior when being observed or videotaped. On the one hand, it has been documented that most people who are observed for a period of time (e.g. 60 minutes) after the first few minutes tend to forget or get used to being observed. On the other hand, when there is reactivity, which is usually found is that people show their best behavior, which might be very revealing and relevant to the study.

To minimize the reactivity and behavior that disrupts the normal activity in the room, the following measures were taken: spend some time in the daycare, in the classroom with a video camera set up, but not recording. During this time, the interviewer in charge of video interviewed the daycare provider or simply observed the classroom (sitting on the floor, unnoticed, without talking or interacting with children or caregivers). After a period of time - say 10 minutes - it is likely that the children and the teacher have forgotten that the interviewer in charge of the video is present and then the camera was activated. The field team visited the daycare a day before recording, to leave the letters of consent for teachers and parents to accept, that they or their children (for parents), participate in the study. Also during this first visit, the video recorder made a sensitizing activity with a toy camera, simulating the recording. So the next day, once the teachers/assistants and parents gave their consent, the teacher and the children were already familiar with the recorder and the observation would be more neutral. In this procedure, we relied on the guidance and recommendations developed in a study by the National Institute of Child Health and Human Development United States (NICHD) to make direct observations of children using the Rating Scale Observation Care Environment (ORCE) (National Institute of Child Health and Human Development (NICHD), 2010).

The interviewer was asked to comment the teachers / assistants who would participate in the videotape: "As you know, I'll be watching your classroom this morning. I want to see how a typical morning in the classroom is. So that the observations are accurate, it is important that everyone act as naturally as possible and just do what they were doing as if I was not here. I know this is easier said than done, but you should try to do what you normally do. The purpose of these observations is only to find out how children spend their time in child care. I will follow your activities with the children, and could, therefore, have to enter and exit the room. I'll try not to interrupt. I ask you to ignore me and I hope the children do too."

Video recorders advice: Try to keep your conversation with adults and interaction with children to a minimum. Ask the teacher if there is a place where you can sit or stand with the camera, but is "out of the way" as much as possible and have a good view of the class (and all activities). Preferably wait 5 to 10 minutes before beginning the observation. This will allow time to resume normal classroom routine and that both the teacher and the children become accustomed to your presence. During recording you should be as neutral as possible; this does not mean rejecting the child, but not too encouraging.

Annex E.4. Codes for assessing caregiver-child interactions
Behavioral codes: event codes with duration

Responds to child's vocalization: Caregiver/adult listens to child/ren's words and/or vocalizations and then responds vocally. This can be in response to a question asked by child, or responding to a child's "answer" to a question or repetition that the teacher has asked for. This does not include non-verbal responses (nodding head, performing activity in response to what child says) by the caregiver in response to the child's words or vocalizations.

Reads aloud to child: Caregiver/adult reads from book, magazine, paper, or any other written material to the child/ren. This can be reading single sentences or a complete story, but it is definitely reading and is not just pointing at pictures in a book. The child may or may not be listening and learning; the point is only that the caregiver is reading.

Gives directions/explanations/instructions to child: Caregiver/adult explains what they are going to do next, either an activity (music time) or event (potty time, lunch time); instructs children in an activity ("Put the glue on the paper"; "Paint here" "Remember to match the picture I am holding in my hand"),

or gives directions on how to do something that is part of an activity ("Sit and wait your turn" "Put the fruit in the basket" "Climb the ladder with one foot and then the other" "Use this (instrument) to look in the patient's ear"). There is no elaboration that provides further exploration or teaching.

Expresses positive affect: The caregiver express positive affect (verbally) toward children. This includes making general statements about the children or group's appearances or behaviors, but these statements are not specific to a particular activity. The interaction does not have to be one-to-one; it may involve more than one child or more than one adult.

Speaks negatively to child: Caregiver/adult says something negative to child. Uses word that may make the child feel shame or guilt. Either the caregiver's words or her intonation is negative. This category goes beyond a simple "no" (restricts activity); it must be a criticism or a derogatory (insulting) statement.

Stimulates cognitive development: Caregiver/adult stimulates child/ren's non-academic cognitive development -- teaches, sings songs, encourages a skill; gives child instruction of some sort with some elaboration. Tries to give the child a new idea or experience. The stimulation must be directed toward the children and must be clearly aimed at improving their knowledge or understanding of something. This should be coded even if the activity is not necessarily appropriate or effective.

Stimulates academic development: (Do not code for children under 3 years of age). Caregiver teaches, encourages academic skill. This includes activities that teach about letters, numbers, counting, math, geometric shapes, words, nature, sorting and categorizing objects, learning sizes or amounts. The stimulation must be directed toward the children and must be clearly aimed at improving their knowledge or understanding of something. This should be coded even if the activity is not necessarily appropriate or effective.

Stimulates social development/interaction: Caregiver/adult stimulates the children's social or moral development. In general, these teachings help children get along in the world learn about how to interact and get along with other people as is expected in society. She provides opportunity for children to interact socially with other children. She encourages children to share, cooperate, and take turns with her or with each other. She forbids child to hit another child, take his toys away, etc. She teaches social skills, rules. She explains reasons for rules/expected behavior.

Playful Exchange: Child/ren and caregiver are engaged in a playful interaction that has not already been coded as higher level stimulation (academic, social or cognitive). This is not just any old interaction – it is joyful and both child/ren and caregiver are clearly enjoying the activity. It does not include any teaching or stimulation. Some examples: They laugh or giggle together. They play a game or sing a song together (that does not promote cognitive/social/academic stimulation).

Watching/unoccupied/transition: The children are awake, but not engaged in any observable activity; they may be waiting for the next activity to start (before eating, before going out to play, etc.), or he may be watching other people (adults or children) but not interacting with them. The other caregiver and other adults are ignoring the children; they may be across the room or close up, but they are clearly not interacting with the children. The children are not doing anything else at the same time (using or exploring a toy, interacting with anyone, being held). Also includes: TV is on and the child is looking at it.

Activity with child(ren) only: The children in the classroom are playing with or close to other children. The caregiver may or may not be supervising the children but she is not participating. The children may be playing in parallel, interactively, or cooperatively.

Behavioral codes: point codes

Responds to negative affect: Caregiver/adult responds to the child/ren's negative affection. Negative affect includes fussing, fretting, crying, screaming. It must be clearly negative and audible, not just a frown or whimper. It may be prolonged. It should demand a response. The response may be verbal or nonverbal (e.g., picks up and comforts).

Positive physical contact: The caregiver and children have positive physical contact. The caregiver holds or touches the child/ren -- warmly and comfortingly, or affectionately, or playfully.

Facilitates child's behavior: Caregiver/adult helps, assists, redirects or entertains child/ren in some way. Caregiver may be responding to the child's need, bid, or signal (vocal or gestural) for help, or initiating the action on her own.

Restricts child's activities: Caregiver restricts child/ren's activities, either verbally or physically. Verbally, caregiver prohibits the child's action, whether the action is appropriate or not. Physically, caregiver restricts child's actions with a physical barrier to block the child's movement, taking away a toy the child is playing with, or removing the child from an activity he is enjoying. Also includes: restricting the child's mobility or activity by putting him/her or keeping him/her in a physical container.

Physical care: Caregiver is providing physical care to child/ren. These activities are those necessary to take care of the child's physical needs. Examples: dressing, diapering, washing, going to bathroom, feeding, burping, bouncing to relieve gas, rocking child to sleep, putting on a sweat.

Activity (stimulation/language) includes less than half of children at one time: code this when activities are not all-inclusive at one time. That is, they require half or more of children to sit or wait for their turns and during this waiting time, the children do not have anything to do (e.g., they are sitting against a wall waiting for their turn on the ball or on the slide, etc.)

Annex E5. Qualitative ratings of child-caregiver interactions

Sensitivity/responsiveness to nondistress: This scale focuses on how the caregiver observes and responds to the child's social gestures, expressions, and signals. The key defining characteristic of sensitive interaction is that it is child centered. The sensitive caregiver is tuned to the child and manifests awareness of the child's needs, moods, interests, and capabilities, and allows this awareness to guide his/her interaction (Fish, 1990). Markers of sensitivity include (a) acknowledging the child's affect; (b) contingent vocalizations/verbal responsiveness by the caregiver; (c) facilitating the manipulation of an object or child movement; (d) appropriate attention focusing; (e) evidence of good timing paced to the child's interest and arousal level; (f) slowing the pace when the child appears over stimulated or tired (e.g., demonstrates gaze aversion, fussiness); (g) picking up on the child's interest in toys or games; (h) shared positive affect; (i) encouragement of the child's efforts; (j) providing an appropriate level of stimulation when needed; (k) sitting on floor or low seat, at the child's level, to interact (l) removing from crib within a few minutes after awakening, and putting to bed when obviously tired (m) timely discipline that matches the nature of the violation under consideration and the child's ability to understand and benefit from whatever reprimand is offered.

Intrusiveness: Prototypically, intrusive caregivers impose their agenda on the child despite signals that a different activity, level, or pace of interaction is needed (Fish, 1990). High arousal, vigorous physical interaction, or a rapid pace are not, by themselves, indicative of intrusive overstimulation—if the child responds positively with sustained interest and is not engaging in defensive behaviors. It is when the child averts his/her gaze, turns away, or expresses negative affect and the caregiver continues or escalates her/his activity that intrusive behavior is evident. Intrusiveness is also apparent when the caregiver does not allow the child a "turn" or an opportunity to respond at his/her pace.

Detachment/disengagement; the detached caregiver appears emotionally uninvolved or disengaged, and unaware of the child's needs for appropriate interaction to facilitate involvement with objects or people (Arnett, 1989) (Fish, 1990)

Stimulation of development: This scale measures the degree to which the caregiver tries to foster the child's cognitive and mental development. A stimulating caregiver may take advantage of even routine activities (snack, playground, walks, clean-up) to stimulate development, and will consistently engage in a variety of explicit activities with the intent to facilitate learning. The caregiver will make deliberate attempts to encourage the child's development, achievement, and learning.

Positive regard for the child: This scale rates the caregiver's positive feelings toward the child, expressed during interaction with him/her. Positive feelings are shown by (a) speaking in a warm tone of voice; (b) hugging or other expressions of physical affection; (c) an expressive face; (d) smiling; (e) laughing with the child; (f) enthusiasm about the child; (g) praising the child; and (h) general enjoyment of the child. Positive regard is evident when the caregiver listens, watches attentively, looks into the child's face when talking to him/her, has affectionate physical contact, and is playful.

Negative regard for the child: This scale rates the caregiver's negative regard for the child. Both frequency and intensity of negative affect toward the child are considered. Some markers of negative regard include (a) disapproval; (b) tense body; (c) negative voice when correcting; (d) abruptness; (e) tense facial muscles and strained expression; (f) harshness; (g) threatening the child or punishing without explanation; and (h) roughness in wiping the child's face, changing his/her diapers, or burping.

Child-centeredness of care -- This is an overall rating of how available and engaged the caregiver is for providing care to the children in her classroom. The codes are:

1= care is inadequate or barely adequate; what matters is the convenience of the staff. Caregiver is not devoting her full attention to making the lives of the children better.

2= care is adult centered: infants may receive adequate care, be responded to promptly, but this is largely in the service of adult goals. Care is never hostile, rejecting, or inappropriate, but it is also not marked by any special gentleness, respect, appreciation, interest in particular children, etc.

3= care is somewhat/sometimes child centered.

4= care is consistently child centered: when caregiver engages with the children it is with the goal of maintaining or improving their comfort, contentment, interest, etc., rather than with making the adult's experience more interesting. There is marked gentleness in handling, marked pride and affection in tone of voice, marked concern with children's well-being, and clear, concerted efforts to provide children with nurturing, stimulating experiences

Small groups:

1= activity was planned and organized in small groups and the caregiver attended equally to all.

2= the activity was planned or not planned in small groups, but the caregiver does not give equal attention to all groups.

3= there was no activity in small groups.

Supervision:

1= Inadequate. Children are at risk because the caregiver is not on the lookout for the children.

2= Poor supervision of children by the caregiver.

3= Rarely the children were left unattended by the caregiver, leaving them unwatched, etc.

4= Adequate. The caregiver is always aware of the children, watching them, preventing accidents, and so on.

Annex E6. Reliabilty of the coding

The following table shows the results for 13 days when standardization exercises were carried out by the encoders (Table E6.1). For instance, on April 25th both codified Group 1 of a daycare and obtained 66% of agreements, or behaviors coded in the same proportion, with a margin of 20 seconds. This means that after comparing the observations record by record of the encoder, the program identified that for 66% of cases the codes matched within ± 20 seconds.

Table E6.1. Record of standardization exercises

Date	Group	Proportion of agreements
April 25th	1	0.66
April 25th	1	0.79
April 25th	1	0.75
April 26th	1	0.59
April 26th	1	0.51
April 27th	2	0.69
April 27th	1	0.79
April 28th	1	0.79
May 3rd	1	0.82
May 3rd	1	0.82
May 10th	2	0.66
May 10th	1	0.72
May 12th	1	0.76
May 12th	1	0.73
May 17th	2	0.7
May 19th	1	0.61
May 19th	1	0.79
May 24th	1	0.52
May 24th	1	0.73
May 26th	2	0.59
May 26th	2	0.64
June 7th	2	0.85
June 7th	1	0.78
June 9th	1	0.69
June 9th	1	0.77
Average		**0.71**

Source: Prepared by the INSP

Annex E7. Descriptive Statistics: Quality of care

Table E7.1.Description of coded behaviors (frequency)

Description	Observations	Mean	Standard deviation	Min	Max
"Expresses positive affect"	183	2.43	3.97	0	33
"Nothing is being codified"	183	2.87	2.53	1	12
"Responds to child's vocalization"	183	81.28	50.24	0	270
"Reads aloud to child"	183	0.25	1.33	0	10
"Speaks positively to child/ren"	183	24.77	19.24	0	93
"Stimulates cognitive development"	183	102.39	49.97	6	264
"Stimulates social development/ interaction"	183	9.36	7.59	0	43
"Speaks negatively to child"	183	0.08	0.89	0	12
"Activity with child(ren) only"	183	36.99	31.63	0	217
"Watching/unoccupied/transition"	183	14.20	14.12	0	85
"Gives directions/ explanations/ instructions to child"	183	86.74	45.00	6	236
"Playful Exchange"	183	6.71	13.98	0	120
"Stimulates academic development"	183	2.08	12.09	0	115
"Responds to negative affect"	183	1.31	2.12	0	15
"Positive physical contact"	183	1.68	2.39	0	16
"Activity includes less than half of children at one time"	183	1.34	1.44	0	6
"Facilitates child's behavior"	183	9.14	8.15	0	38
"Restricts child's activities	183	81.97	55.09	5	374
"Physical care"	183	4.20	3.93	0	19

Table E7.2. Description of observed behaviors' duration (minutes)

Description	Observations	Mean	Standard deviation	Min	Max
"Expresses positive affect"	183	0.12	0.32	0.00	3.65
"Nothing is being codified"	183	11.89	26.29	0.00	105.47
"Responds to child's vocalization"	183	1.77	1.49	0.00	11.23
"Reads aloud to child"	183	0.05	0.31	0.00	2.97
"Speaks positively to child/ren"	183	0.70	1.39	0.00	18.28
"Stimulates cognitive development"	183	18.85	8.50	0.83	54.25
"Stimulates social development/ interaction"	183	0.70	1.02	0.00	10.82
"Speaks negatively to child"	151	0.01	0.07	0.00	0.85
"Activity with child(ren) only"	183	7.09	7.12	0.00	47.67
"Watching/unoccupied/transition"	183	2.57	3.63	0.00	28.12
"Gives directions/ explanations/ instructions to child"	183	10.03	5.43	0.77	42.28
"Playful Exchange"	183	1.66	3.26	0.00	19.53
"Stimulates academic development"	183	0.27	1.61	0.00	17.22

Table E7.3. Proportion of time for each behavior with respect to the total coded time

Description	Observations	Mean	Standard deviation	Min	Max
Duration of Expresses positive affect / Total duration of coding	183	0%	0.01	0.00	0.08
Duration of Nothing is being codified / Total duration of coding	183	29%	0.63	0.00	2.01
Duration of Responds to child's vocalization/ Total duration of coding	183	4%	0.03	0.00	0.25
Duration of Reads aloud to child / Total duration of coding	183	0%	0.01	0.00	0.07
Duration of Speaks positively to children / Total duration of coding	183	2%	0.03	0.00	0.40
Duration of cognitive development / Total duration of coding	183	45%	0.18	0.02	1.20

Description	Observations	Mean	Standard deviation	Min	Max
Duration of social development/interaction / Total duration of coding	183	2%	0.03	0.00	0.36
Duration of Speaks negatively to child / Total duration of coding	151	0%	0.00	0.00	0.02
Duration of Activity with children only / Total duration of coding	183	17%	0.16	0.00	1.03
Duration of Watching/unoccupied/transition / Total duration of coding	183	6%	0.08	0.00	0.62
Duration of Gives directions-instructions to child / Total duration of coding	183	24%	0.12	0.05	0.94
Duration of Playful Exchange / Total duration of coding	183	4%	0.09	0.00	0.64
Duration of Stimulates academic development / Total duration of coding	183	1%	0.04	0.00	0.38

Source: Prepared by the INSP

Table E7.4. Descriptive statistics of subjective variables

Variable	Description	Observations	Mean	S.d.
Child-centeredness of care: how available and involved is the caregiver to provide care for the children	1 Uncharacteristic attention; 2 minimally characteristic attention; 3 moderately characteristic attention; 4 very characteristic attention	183	3.22	0.74
Detachment: caregiver is not involved or aware of the needs of the children for proper interaction	1 Uncharacteristic; 2 minimally characteristic; 3 moderately characteristic; 4 very characteristic	183	1.05	0.27
Stimulation of development: the caregiver seeks to promote the development of the children	1 Uncharacteristic; 2 minimally characteristic; 3 moderately characteristic; 4 very characteristic	183	2.80	0.90
Intrusiveness: the caregiver imposes its agenda on children even though there are signs on the need for a change in activity level or pace of interaction	1 Uncharacteristic; 2 minimally characteristic; 3 moderately characteristic; 4 very characteristic	183	1.95	0.88
Negative regard for the child: It is considered both the frequency and intensity of negative affect toward children	1 Uncharacteristic; 2 minimally characteristic; 3 moderately characteristic; 4 very characteristic	183	1.10	0.36
Positive regard for the child: positive feelings of the caregiver to children, expressed during the interaction with them	1 Uncharacteristic; 2 minimally characteristic; 3 moderately characteristic; 4 very characteristic	183	2.84	0.69
Sensitivity: the caregiver observes and responds to the children's social gestures, expressions and signs	1 Uncharacteristic; 2 minimally characteristic; 3 moderately characteristic; 4 very characteristic	183	2.93	0.73
Small groups	1 planed and attended all children; 2 planed or not planed and attended all children; 3 no small groups.	183	2.57	0.61
2 or more caregivers in the classroom (%)	0=(no additional caregiver) 1= (other caregiver)	183	0.52	0.50
Supervision	1= Inadequate, 2=Little supervision, 3= Rarely left unattended, 4= Adequate	183	2.95	0.66
Children's age group	1= (1 a 2 years), 2=(3 a 4 years)	183	1.43	0.50
Number of children	Number of children in the coded room	182	8.71	3.29

Source: Prepared by the INSP

Annex E8. Analysis of correlation: tables of correlations

Table E8.1 Correlation of teacher characteristics and coded behaviors

Teacher characteristics / Coded behaviors	Teacher's Age	Monthly wage	Received training the last 12 months (=1)	Has specialized studies on child care(=1)	Years of education	Years of experience on child care	Years in current daycare
Responds to child's vocalization	-0.1121	-0.0031	-0.0369	0.0784	0.3356	-0.0897	-0.0498
Speaks positively to children	0.1256	0.0939	0.0362	0.0290	0.4011	0.1204	0.1857
Stimulates cognitive development	-0.0235	-0.0037	-0.0932	0.1050	0.3408	0.0179	0.0110
Stimulates social development	0.0360	0.0014	-0.0138	-0.0509	0.1609	-0.1043	-0.0940
Activity with children only	-0.0213	-0.1454	-0.0560	-0.2471	0.0090	-0.0593	0.0177
Watching/unoccupied/transition	0.1055	0.0598	-0.0183	-0.1889	0.1410	0.1760	0.0358
Gives directions/instructions	-0.0437	-0.0856	-0.2336	-0.0746	0.2256	-0.0732	-0.1264
Playful Exchange	-0.0320	-0.0193	0.0993	-0.2298	-0.0114	-0.1155	0.2166

Table E8.2. Correlation of subjective variables and ASQ z-scores

ASQ z-scores / Subjective variables	ASQ-Communication (z-score)	ASQ-Personal Social (z-score)
Sensitivity/responsiveness to nondistress	-0.0706	-0.0279
Stimulation of development	-0.0500	-0.0114
Positive regard for the child	-0.0414	-0.0615
Child-centeredness of care	-0.0542	-0.0514
Supervision	-0.0057	-0.0090
Intrusiveness (more points, less intrusive)	-0.0528	-0.0969
Detachment/disengagement	-0.0039	-0.0411
Negative regard for the child	-0.0424	-0.0222
Small group activities	0.0453	0.0847
2 or more caregivers in the classroom (%)	0.0854	0.0744
Child age: =0 older children >2y & =1 younger children <=2y	-0.0136	-0.0422
Number of children in the classroom	0.0949	0.0328

Table E8.3. Descriptive statistics of daycare structural quality variables

Structural items	Obs.	Mean	Std. Dev.	Min	Max
The classroom is safe, clean, has maintenance, natural light and ventilation and has an aesthetic proposal in the overall settlement (ECCP)	565	3.79	0.92	1	5
The classroom has space where children and adults can move easily for the development of activities (ECCP)	565	3.99	0.84	2	5
The classroom has furniture and teaching materials appropriate for the age (ECCP)	565	3.70	1.07	1	5
The classroom has enough, mixed, organized, presented, accessible and age-appropriate materials for children (ECCP)	565	3.62	0.97	2	5
Books and literacy areas (ECERS)	565	4.52	1.54	1	7
Print in the environment (ECERS)	565	4.72	1.44	1	7
The daycare has a yard, garden or any open space where children can go out and play (=1)	565	0.83	0.37	0	1
The daycare has games or objects for climbing or riding such as swings, slides, cars, etc. (=1)	565	0.78	0.41	0	1
Sum of all structural items	565	25.95	5.72	13	36

Table E8.4 Correlation of daycare structural quality and teacher characteristics

Structural items \ Teacher characteristics	Teacher's Age	Monthly wage	Received training the last 12 months	Specialized studies on child care(=1)	Years of education	Years of experience on child care	Years in current daycare
ECCP combined variable	0.2184	-0.0284	0.0184	-0.0094	0.0379	0.1678	0.0524
ECERS combined variable	0.207	-0.0552	-0.101	-0.0014	-0.002	0.2873	0.1595
The daycare has a yard, garden or any open space where children can go out and play (=1)	-0.2386	0.0209	0.0505	0.1101	0.1699	-0.1599	-0.0973
The daycare has games or objects for climbing or riding such as swings, slides, cars, etc. (=1)	-0.2349	0.0385	0.0917	0.1848	-0.003	-0.0608	-0.122
Sum of all structural items	0.1885	-0.0382	-0.0282	0.015	0.0311	0.2166	0.0904

Table E8.5 Total HOME score

Total HOME score	Obs.	Mean	Std. Dev.	Min	Max
For all children	565	27.67	4.01	12	38
For children <=36 months	190	27.80	4.06	12	37
For children >36 months	375	27.61	3.99	14	38

Table E8.6 Correlation of HOME score and ASQ z-scores

HOME score \ ASQ z-scores	ASQ-Communication z-score	ASQ-Personal Social z-score
For all children	0.17	0.20
For children <=36 months	0.20	0.22
For children >36 months	0.15	0.18

Annex F. Cost analysis of daycares enrolled in PEI

The objective of this analysis is, on the one hand to explore if the subsidy granted per child by the government is enough to guarantee the provision of childcare with minimum quality standards, and on the other hand, to explore if this scheme of childcare provision -through privately owned daycares- is sustainable in the future as business model.

Methodology

To analyse the variable costs of daycares, we considered the following items: (a) monthly expenditure on building maintenance, equipment and materials; b) monthly expenditure on services like electricity, water, gas, telephone and mobile phone; c) monthly expenditure on meals for the children and staff; d) monthly expenditure on stationery (including advertising material and paper work related to PEI procedures); e) monthly expenditure on staff training (including transportation costs); f) monthly expenditure on toys and educational materials (such as books, videos, cd's, etc.); g) monthly expenses for hygiene and cleansing; h) monthly expenditure on safety (first aid kit, fire extinguishers and health insurances); i) monthly expenditure on taxes; j) monthly expenditure of the rent and (k) monthly expenditure on staff salaries.

To deal with missing and outlier observations we used the following procedure: all missing or outlier (below and above the percentile 1 y 99, respectively) observations were replaced by the average cost of the item in the state where the daycare was located. Only for the following items we only replaced the upper 1 percentile: building maintenance, training, educational materials, safety and taxes. We did not replaced the lower 1 percentaile for these items since these are low frequency costs and it is reasonable to believe that the expenditure per month could be a small amount or even zero.

Regarding rent costs, we identified some daycares (37%) that did not report paying a monthly rent for the property, therefore we used the monthly expense in rent reported by all daycares, and through an Ordinary Least Squares (OLS) regression for panel data, we "projected" the monthly expense in rent taking into account some variables. The estimated model is the following:

$$Y_i = \alpha_i + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_5 X_{5i} + \varepsilon_i$$

Where Y_i is the monthly rent for the daycare i; X_{1i} is a variable equals to one if the daycare provider had a higher education level (high school to post-graduate), or zero if otherwise; X_{2i} represents the monthly expenditure on services by the daycare i; X_{3i} is a variable that takes the value of one if the daycare was funded by an external source besides SEDESOL, and zero otherwise; X_{4i} represents the total capacity of children who can be enrolled in the daycare (capacity); and finally X_{5i} represents the number of children currently enrolled in the daycare.

The average income that daycares received per month was calculated considering both the subsidy received by the Program and the *correspondibility* fee paid by parents[63]. Since the subsidies and *correspondibility* fees could vary across children, we included a section in the survey where we asked daycare providers to report the different amounts of subsidies and *correspondibility* fees and the number of children that received each one. Therefore, the estimation of the average subsidy and *correspondibility* fee per child per daycare was calculated by multiplying the subsidy (or *correspondibility*) by the number of children that received (or paid for) it and divided it among the total number of children in the daycare. We then added the average subsidy and the average *correspondibility* per child to estimate the total income per child per daycare.

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[63] It is important to clarify that the subsidy granted per child was not designated to cover the full cost of daycare. In the operation rules of the Program it is specified that the beneficiaries must complete the difference between the total daycare cost and the subsidy they are receiving. This difference is what we refer to *correspondibility.*

As for the fixed costs analysis, we present the descriptive statistics and the distribution of the initial investment costs incurred by daycare providers in order to meet the PEI requirements. For the estimation of the fixed costs, we only considered the reported investment costs directly incurred by daycare providers, which was additional to the subsidy that the program offered for this purpose.

Data collection

The costing section of the daycare survey was collected by the INSP between February and March 2011 in seven states from three regions of the country: north (Sonora), central (Hidalgo, Jalisco, State of Mexico, Puebla and Tlaxcala) and south (Chiapas). The survey was conducted in 704 daycares and the daycare provider of the facility reported information on the following topics: characteristics of the staff (age, sex, education, main functions in the daycare, monthly salary, experience in child care, etc.), structural quality of the facility (infrastructure, equipment, material, space, luminosity, etc.), cost of operation, diversity of the diet provided to the children, schedules of activities and number of children per teacher.

Results
Characteristics of the daycares

In Table F1, we present the main characteristics of the daycare provider of the 704 daycares in the sample.

Table F1. Characteristics of the daycare provider and the daycares

Daycare provider characteristics	Obs.	Mean	S.D.
Sex (=1 women)	704	96.0%	0.1
Age (years)	703	38.5	8.9
Schooling (years)	704	15.0	2.3
Monthly salary (pesos)	704	4095.5	2903.9
Children enrolled in daycare (number)	704	35.1	13.5
Proportion of children supported by the PEI (%)	704	97.7%	12.9
Daycare staff (number)	704	6.5	2.4
Average number of children per teacher in the classrooms	704	7.5	1.4
Daycare has parental meetings (%)	704	68.9%	46.3%
Average *correspID ...* paid in daycares (pesos)	704	335.48	189.1
Average amount of subsidies received in daycares per child (pesos)	704	691.9	152.7

Source: Prepared by INSP

Most of daycare providers are women (96%), have 38 years old with an average of 15 years of schooling and a monthly salary of \$4,096 pesos[64]. As for the daycares, on average they have 35 children enrolled of which 98% receive support from the Program. The mean number of children per teacher is 7.5, and 70% of daycares organize meetings with the parents. The average amount of the *correspID ...* fee that parents pay is \$335 pesos and the average subsidy received is \$692 pesos per child per month. Therefore, the total income that daycares receive per child per month is \$1,027 pesos.

Variable Costs

The following table shows the number of daycares and the average number of enrolled children by state and geographic region (Table F2).

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[64] Not all daycare providers reported their monthly salary or reported a salary equal to zero, to complete the missing information we imputed the average monthly salary of daycare providers in the state where the daycare is located (78 daycare providers reported zero salary and 52 have missing value in this variable).

Table F2. Average number of children enrolled by daycare, state and region

State/Region	Daycares (number)	Children (mean)	S.D.	min	max
Chiapas	57	37.75	14.20	20	84
Hidalgo	55	32.05	12.13	12	60
Jalisco	145	34.98	13.29	10	60
State of Mexico	249	37.50	14.33	2	90
Puebla	109	32.03	12.30	12	60
Sonora	46	29.80	10.77	10	50
Tlaxcala	43	36.21	11.69	16	60
North region	46	29.80	10.77	10	50
Central region	601	35.31	13.50	2	90
South region	57	37.75	14.20	20	84
Total	704	35.15	13.47	2	90

Source: Prepared by INSP

As one can see, Chiapas has the largest average number of children per daycare with nearly 38 children; Sonora has the least with almost 30 children. The State of Mexico has 35% of the daycares in the sample, while Tlaxcala has only 6%. It is important to note that the State of Mexico is the most populated state in the country with more than 14% of Mexico's total population (INEGI, 2010).

Salary and rent expenses per child

Table F3 reports the average monthly salary paid to staff per child, and it is presented by state and geographic region. This expenditure is the most important component of the variable costs in terms of magnitude.

Table F3. Average monthly expense in salaries per child in the daycares

State	Daycares	Expense in salaries per child (pesos)
Chiapas	57	402.51
Hidalgo	55	467.98
Jalisco	145	517.90
State of Mexico	249	486.54
Puebla	109	430.38
Sonora	46	492.05
Tlaxcala	43	474.04
North region	46	492.05
Central region	601	481.33
South region	57	402.51
Total	**704**	**475.65**

Source: Prepared by INSP

As can be seen, on average the monthly expense on staff salaries is around $477 pesos per child; the highest expense is in the north, followed by the central and then the south region which is close to 20% cheaper than the other two regions.

As for the rent expenses, only 63% of the daycare providers reported paying a monthly rent for property use. In the remaining daycares, they did not report this expenditure because they were either the owners, someone let them use the property with no payment or miss-reported their expenditures in this item. Whatever the case, we face the need to impute a monthly rent for those that had zero or missing values in this variable.

As it was mentioned on the methodology section, we projected the monthly expense in rent taking into account some variables. We found that almost all variables described have a significant (and positive) relation with the monthly rent, with the exception of postgraduate studies and if the daycare was funded by external sources (Table F4). Once we get the projected values, we replaced the non reported costs with this estimation of the monthly rent. Since we used fixed effects, the variation across municipalities is also considered.

Table F4 Projected monthly rent costs

VARIABLES	Monthly Rent
The daycare provider has postgraduate studies (=1)	361.8
	(456.6)
Monthly expenditure on services in the daycare (pesos)	0.337***
	(0.121)
The daycare was funded by an external source (=1)	387.8
	(355.1)
Children that can be attended in the daycare (number)	37.88***
	(10.12)
Children enrolled in the daycare (number)	64.61***
	(13.35)
Constant	-487.7
	(453.0)
Observations	447
R-squared	0.343
Standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

As shown in table F5, on average, the rent cost is $126 pesos per child per month. In contrast to other costs, the central region has the largest cost per child in this item, which could be explained by the high population density of this region.

Table F5. Average monthly expense in rent per child

State	Daycares	Expense in rent per child (pesos)
Chiapas	57	105.65
Hidalgo	55	126.28
Jalisco	145	127.50
State of Mexico	249	132.33
Puebla	109	131.07
Sonora	46	115.48
Tlaxcala	43	112.67
North region	46	115.48
Central region	601	128.98
South region	57	105.65
Total	**704**	126.21

Source: Prepared by INSP.

Summary of variable costs per child

The following table describes all variable costs per child enrolled in the daycares divided by category, state and region. In addition to rent and staff costs, it also includes the costs of building maintenance, services (i.e. water, electricity, telephone, etc.), materials, stationery, trainning expenses (i.e. transportation, materials), educational materials, cleansing, safety and taxes.

Table F6. Average monthly variable costs per child, state and region

	Number of daycares	Building maintenance per child[1]	Services per child[2]	Meals per child[2]	Stationery per child[2]	Staff training per child[1]	Educational materials per child[1]	Cleaning per child[2]	Safety per child[1]	Taxes per child[1]	Staff salary per child[2]	Rent per child	Total per child
	N	Pesos	Pesos	Pesos	Pesos	Pesos	Pesos	Pesos	Pesos	Pesos	Pesos	Pesos	Pesos
Chiapas	57	33.69	41.20	160.94	13.91	6.35	20.96	31.48	4.76	5.04	402.51	105.65	826.48
Hidalgo	55	53.58	57.40	228.47	17.31	7.86	17.59	27.06	5.88	8.56	467.98	126.28	1017.98
Jalisco	145	44.35	47.37	197.83	19.40	5.07	17.69	30.56	10.93	6.19	517.90	127.50	1024.80
State of Mexico	249	43.18	57.29	248.63	16.25	8.13	21.43	29.92	5.44	5.98	486.54	132.33	1055.13
Puebla	109	47.03	55.02	226.24	16.99	7.64	23.76	32.30	9.19	14.05	430.38	131.07	993.68
Sonora	46	55.87	85.92	187.20	19.19	8.51	17.00	34.09	9.33	7.97	492.05	115.48	1032.60
Tlaxcala	43	33.62	45.32	194.84	14.19	4.81	18.22	24.00	6.86	6.19	474.04	112.67	934.75
North region	46	55.87	85.92	187.20	19.19	11.87	17.00	34.09	9.33	7.97	492.05	115.48	1032.60
Central region	601	44.43	53.64	226.62	17.09	7.04	20.37	29.82	7.58	7.75	481.33	128.98	1024.66
South region	57	33.69	41.20	160.94	13.91	6.35	20.96	31.48	5.01	5.04	402.51	105.65	826.48
Total	704	44..31	54.74	218.73	16.97	7.08	20.20	30.23	7.47	7.54	475.65	126.21	1009.13

1 To avoid outliers, we excluded the highest 1 percentile and it was replaced with the average cost of the concept per state.
2 To avoid outliers, we excluded the lowest and the highest 0.1 percentile and they were replaced with the average cost of the concept per state.

Source: Prepared by INSP.

Table F6 shows that the average cost per child is estimated at $1,009 pesos per month. About 50% corresponds to salaries, 22% to meals, 12% to rent, 5% is allocated to services; 4% to maintain the property; 3% to cleansing; 2% to educational material; 2% to stationery; 1% to staff training; 1% to safety and 1% to taxes. Regarding the variability across regions, we find that the total cost in the north and central regions differs in only $8 pesos, which is practically the same; while operating a daycare in the south is around 20% cheaper.

Graph F1. Current expenditure per child, per month and region
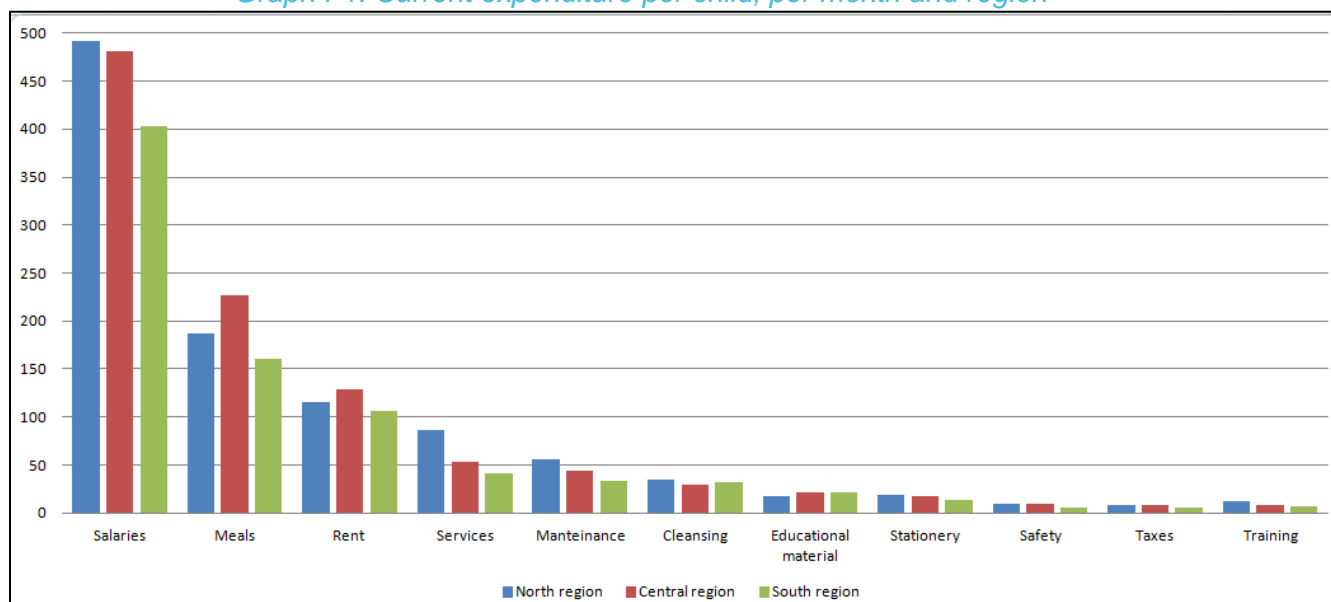
Source: Prepared by INSP

Graph F1 represents the different categories of expenditure and the average expenditure by region. As can be seen, the northern region presents average monthly costs slightly higher than the other two regions for most expenditure categories. The next graph shows that variable costs are normally distributed with a mean value of $1,009 pesos (Graph F2)[65].

Graph F2. Distribution of variable costs per child
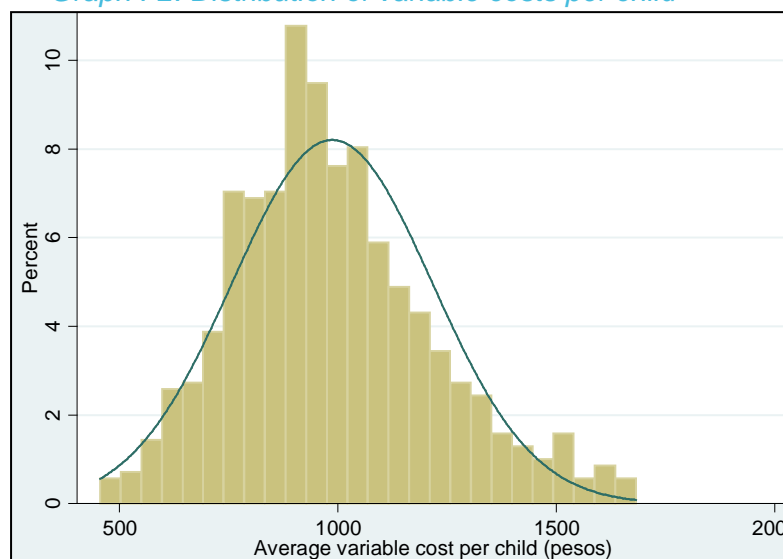
Source: Prepared by INSP

Daycare's income sources per child

We also estimated the monthly average income that daycares received, from the subsidy granted by the PEI and the *corresponsibility* fee paid by parents.

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[65] To avoid outliers, we excluded the highest 1 percentile.

Table F7 shows that, on average, our sample of daycares received a monthly subsidy of $692 pesos per child. The highest average subsidies were received in Chiapas and Jalisco ($706 pesos), followed by Tlaxcala ($695), Puebla ($694), the State of Mexico ($684), Sonora ($681) and Hidalgo ($677). On average, the *correspondibility* fee directly paid by the parents was $335 pesos per month per child. Chiapas was the state with the lowest amount per child ($204) and Jalisco with the highest ($399). The last column of Table F7 shows the average total income received by daycares. The highest average amount per child per month was received in the daycares of Jalisco ($1,105), followed by Sonora ($1,057), the State of Mexico ($1,038), Hidalgo ($1,036), Puebla ($973), Tlaxcala ($952) and Chiapas ($910).

Table F7. Monthly amount received of subsidy and correspondibility per child

State/Region	Daycares	Average subsidy granted per child (pesos)	Average correspondibility per child (pesos)	Average amount received in the daycares per child (pesos)
Chiapas	57	706.69	203.67	910.37
Hidalgo	55	677.88	358.01	1035.90
Jalisco	145	706.74	398.85	1105.59
State of Mexico	249	683.74	354.30	1038.04
Puebla	109	693.82	279.67	973.49
Sonora	46	681.54	375.85	1057.39
Tlaxcala	43	694.61	257.12	951.73
North region	46	681.54	375.85	1057.39
Central region	601	691.36	344.90	1036.26
South region	57	706.69	203.67	910.37
Total	704	691.96	335.49	1027.45

Consistent with the variable costs, the highest amount received in the daycares was in the north ($1,057 pesos), followed by the central ($1,036 pesos) and south ($910 pesos) geographic regions.

The average monthly variable cost per child obtained in this analysis, is above the average subsidy granted per child ($692 pesos). However, the daycares charge an average *correspondibility* fee of $335 pesos per month per child. Therefore, the average total monthly income received per child is $1,027 pesos, which is slightly above the total average variable costs per child ($1,009 pesos). This means that the average utility of daycares per child per month is $18 pesos, considering that daycares have an average of 35 children enrolled this means that the total utility per month is around $630 pesos.

It is important to note that a previous cost analysis of the PEI was carried out in 2009, and the estimated variable costs were larger than the income received by daycares ($1,644 pesos vs. $926 pesos) (INSP, 2009). The methodology used was the same for the variable costs, but for the estimation of the fixed costs, we only considered the reported investment costs directly incurred by daycare providers, which was additional to the subsidy that the program offered for this purpose.

In terms of the sample, the study from 2009 included a national representative sample of daycares, while the present study only includes daycares from seven states. Although the results are quite different in terms of the magnitude of the variable costs, we found a similar pattern in the distribution of costs across items and the highest average monthly cost was also found in the northern region. Nevertheless, for the impact evaluation survey in 2011 we conducted a pilot survey of the questionnaire in several daycares to improve the instrument. We found out that many daycare providers do not have organized administrative records and most questions about costs were answered after a few minutes of helping them to remember the expenditures and to add the costs. Being aware of this, we reinforced the fieldwork training with

strategies to help daycare providers to remember and add the costs, in order to get the most accurate information possible. As far as we know, this type of training was not carried out for the 2009 survey.

Fixed costs in the daycares: initial investment

The second part of the cost analysis is the estimation of the fixed costs of daycares supported by the Program. As stated in the methodology, the only fixed cost included in the analysis is the initial invest on infrastructure adjustment directly incurred by daycare providers, in order to meet the Program requirements.

In Table M8, it is shown that 81% of the daycare providers reported an average initial investment of $29,370 pesos, additional to the subsidy received by the program for infrastructure adaptations (see section 1.1 for more details on these subsidies).

Table F8. Initial Investment for infrastructure adaptation

Daycare provider report	Daycares	Percentage/Amount (pesos)
The subsidy was not enough to adequate the daycare	572	81.25%
If the subsidy was not enough, how much did you have to invest to adequate the daycare?	546	$29,369.01

Source: Prepared by INSP

Table F9 shows the total investment per child reported by the daycare providers, presented by state and region.

Table F9. Investment expense by state and region (pesos)

State	Daycares	Investment costs (pesos)	Investment costs per child (pesos)
Chiapas	47	21,895.74	621.45
Hidalgo	42	41,976.19	1,508.61
Jalisco	100	28,931.1	808.78
State of Mexico	196	30,253.63	1,012.46
Puebla	87	28,787.36	1,022.42
Sonora	36	29,972.22	1,025.08
Tlaxcala	38	22,027.89	658.56
North region	36	29,972.22	1,025.08
Central region	463	30,080.74	986.30
South region	47	21,895.74	621.45
Total	**546**	**29,369.01**	**957.45**

Source: Prepared by INSP

It can be seen that the daycare providers from Hidalgo reported the highest initial investment ($41,980), followed by the State of Mexico ($30,250), Sonora ($29,970), Jalisco ($28,930), Puebla ($28,790), Tlaxcala ($22,000) and Chiapas ($21,895). However, the average cost of investment per child follows the same pattern that was seen in the variable costs, where the north region has the highest costs, followed by the central and south regions.

Summary of findings

In this section we estimated the variable and fixed costs of daycare centers enrolled in the Program. We found that the resources received from both the government and parents are enough to cover the variable costs of providing childcare services with the minimum standards of quality established by the Program. However, the profit that results from subtracting the variable costs from the income received is $18 pesos per child per month on average, which

implies that it will take around 4 years of operation to recover the initial investment incurred by the daycare provider (assuming that 35 children will be enrolled during that period).

Since the average profit is very low, any variation in the costs of operation could affect the sustainability of daycares as microenterprises. Furthermore, if the Program wants to raise the standards of quality, it should be accompanied by an increase on either the subsidy or the *corresponsibility* fee to guarantee the financial viability of daycares.

Annex G: Dissemination activities

The following table summarizes the dissemination activities carried out during 2011 and the first semester of 2012.

Month	Description
January, 2011	The evaluation team presented the objectives, evaluation design and fieldwork strategy of the impact evaluation to Program Officials at the Ministry of Social Development (SEDESOL) in Mexico City.
April, 2011	The evaluation team presented and got feedback of the impact evaluation preliminary results from SEDESOL and the Program in Mexico City.
May, 2011	The evaluation team presented and got feedback about the impact evaluation preliminary results from the Steering Committee of the National Council of Social Policy Evaluation (CONEVAL for its initials in Spanish) in Mexico City.
August, 2011	The evaluation team presented the impact evaluation final results to Program Officials at SEDESOL facilities in Mexico City.
December, 2011	SEDESOL published the impact evaluation final results in their website: http://www.sedesol.gob.mx/es/SEDESOL/Evaluacion_de_Impacto_Programa_de_Estancias_Infantiles_para_Apoyar_a_Madres_Trabajadoras.
December, 2011	SEDESOL sent the impact evaluation final report to the Federal Congress and to CONEVAL.
May, 2012	The evaluation team presented the impact evaluation results to researchers of the Centre for Evaluation Research and Surveys at the National Institute of Public Health (INSP) in Cuernavaca, Morelos.

Source: Prepared by INSP