

## **Child Nutrition in Argentina and Colombia: does family structure play a role?**

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### **Description of the Project**

Investments in child health result from decisions by parents, other family members, governments and other groups. Both family and community environments matter for child well-being and interventions have the potential of changing adulthood outcomes. Family environments differ in the quality and quantity of household resources, child-rearing inputs and attention from parents and other family members. The particular structure of a family affects all these dimensions.

Family structures have strong cultural roots and are shaped by demographic, social and economic changes. In Latin America, the diversification of family structures is ongoing at a very rapid pace.

Several studies have identified links between family structure and child nutrition in Latin American countries. However, their results are hard to compare – and in many cases contradictory- due to their particular characteristics.

For example: (1) paternal absence increases the risk of stunting (low height for age) for rural, low-income Mexican children but has no significant effect for urban Argentine children; (2) children that had grandparents in the home had better height for age outcomes both in Peru and Argentina even though the samples used in both studies were quite different.

The goal of this research is to provide new evidence on the existence of differences in nutritional outcomes by family structure in Latin America.

By building on my earlier work, the proposed project aims at: (1) studying the determinants of young children's nutritional status and evolution in Colombia, especially family structure and stability, (2) comparing the Colombian findings to the ones for Argentina.

The results from this study can be useful in designing policies aimed at improving the nutritional status of young children.

### **I. Motivation/Previous Work**

#### ***Motivation***

Child health has been recognized to influence health and achievement across the life course and to have long term intergenerational consequences. Evidence from the biological and social sciences points to the importance of early childhood conditions as determinants of well-being and economic success later in life (Case and Paxson 2008; Conti and Heckman 2012). Child health affects the acquisition of traits linked to economic success in adulthood and therefore plays a role in the transmission of inequalities (Palloni 2006).

Investments in child health and well-being result from the decisions by parents, other kin, governments and other groups. Family is among the most powerful influences on health as it provides economic, social and psychological resources (and strains) that protect and threaten the health of its members (Carr and Springer 2010). Children from disadvantaged family backgrounds not only start with worse initial conditions but also receive fewer investments from the earlier years of their lives. In the absence of interventions to alter their trajectories, children growing up in disadvantage are at increasing risk – both socioeconomic and biological (Conti and Heckman, 2012).

Research on the health of young children in Latin American countries has traditionally focused on nutritional status although there are recent studies on children's cognitive development (Schott et al. 2013; Schady et al. 2015; Behrman et al. 2017 are examples of recent work).

Malnutrition occurs when either a diet has insufficient nutrients or some gross imbalance/overabundance of certain nutrients so that it causes health problems. Commonly used measures of under-nutrition are stunting (short height-for-age) and wasting (low weight-for-length/height). Overweight and obesity (excessive weight-for-height) are used as indicators and measures of over-nutrition.

Evidence from medical research indicates that there is a “critical period” for anthropometric and cognitive development. Nutritional inputs during pregnancy and the first years of life are crucial to avoid under-nutrition and the window of opportunity to catch up may be closing for some children as early as the age of five (see Outes and Porter 2013).

In Latin America and the Caribbean, the relationship between family structure and young children's nutritional status has been studied by relatively few researchers using datasets of varied size and representation (Bronte-Tinkew and DeJong 2004; Fernald and Neufel 2007). My work with Beatriz Novak (2014, 2017) for the case of Argentina belongs to this group.

The results of these studies are hard to compare due to their particular characteristics. Most of them use a single cross section data set, samples have different degrees of representability and family types are not always comparable.

An interesting study by Crookston et al. (2010) uses longitudinal data on Peruvian children from the Young Lives study to identify factors associated with stunting and catch up growth (or recovery from stunting). They find that children who had grandparents in the home, had less severe stunting in infancy, and were more likely to demonstrate catch-up growth.

The rich dataset of the Encuesta Longitudinal Colombiana de la Universidad de los Andes (ELCA) offers a unique opportunity to advance our knowledge on the role of the family on child nutrition. Specifically, it could shed new light on how children's nutritional status and evolution are affected by family structure and stability.

The proposed project will extend my previous work by comparing the cross section results for Argentina y Colombia. In addition, it will study nutritional catchup and family stability by taking advantage of the longitudinal nature of the ELCA dataset.

This new evidence will contribute to the literature on child nutrition in Latin America and can be useful in designing policies geared towards improving the nutritional status of young children.

## Previous Work

This project builds on my previous work with Beatriz Novak (El Colegio de Mexico) on the relationship between family structure and child health in Argentina.

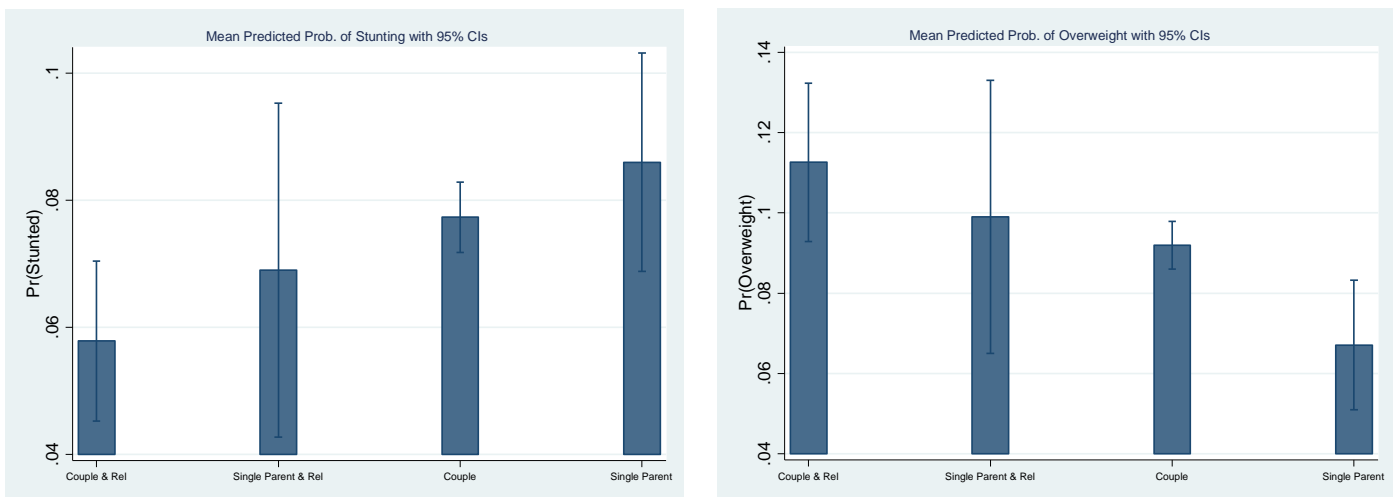
Data on the health of argentine children is very scarce and we were fortunate to have secured access to the 2005 Encuesta Nacional de Nutricion y Salud (ENNyS). This is the first nationally representative survey with anthropometric data and to my knowledge the only one that has been administered in Argentina. The dataset contains information on health status, anthropometry, nutrition and household socioeconomic indicators for about 27,000 children (6 months-5 years) living in cities with at least 5,000 inhabitants. Our work so far has been focused on children 2-5 years of age.

In “Family Structure and Child Health in Argentina” (2014) we explored the influence of family structure on the nutritional status of preschoolers. Working with household information, we were able to construct a wealth index and identify family structure for 11,664 children. We used logistic regressions to model two outcomes: stunting (low height-for-age) and overweight (excessive weight-for-height). In addition to age and gender, we controlled for wealth, head of household schooling, household size and food assistance programs.

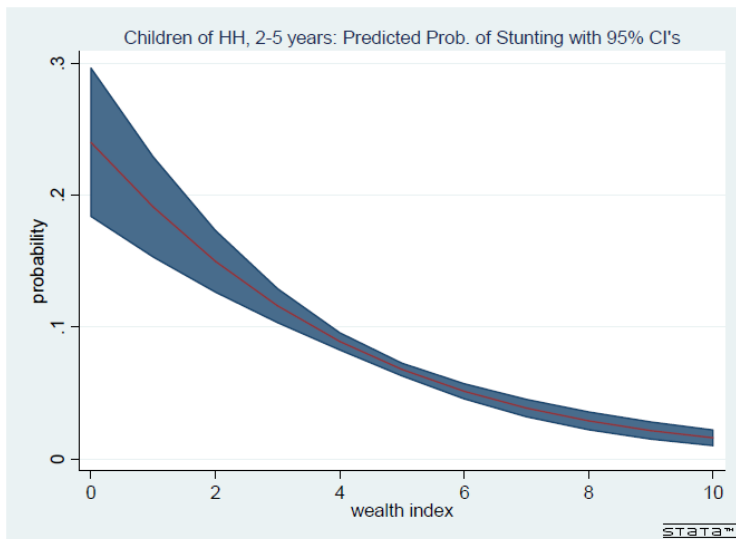
For the stunting model, we found that two-parent families have significantly better outcomes when they have relatives (mostly grandparent/s) living with them and that single parenting per se does not have adverse effects. The beneficial role of relatives is reversed for overweight: children living with one or two parents had significantly higher odds of being overweight when relatives are present in their household.

Single parenting was associated with lower odds of overweight but only if relatives were not part of the residential family.

Our model predicted a family type gradient in stunting and overweight:



We also found a clear wealth gradient in stunting (the wealth index ranges from 0 to 10 and has a mean of 5):



In “El rol de la estructura familiar en el acortamiento de la estatura de preescolares argentinos de dos a cinco años” (2017) we focused only on stunting and included geographic locations (regions) among the controls. Argentina has seven distinct regions and two of them (Northeast or NEA and Norwest or NOA) have significantly worse indicators than the rest of the country: higher poverty, illiteracy, unemployment/under employment and substantially lower access to health services. Results from the logistic regression models showed that, although socioeconomic variables have a significant effect on stunting, family structure also matters. An interesting result is that children living in NEA had significant higher odds of stunting when the logistic regression was run without controlling by wealth and household size but its significance disappeared once these controls were introduced.

## II- Research Questions/Methods

The ELCA follows a representative sample of Colombian urban and rural households. The three currently available waves contain detailed and novel household information (family composition and characteristics, economic/financial status and strategies, responses to shocks, among others) and unique indicators of child well-being. Some of these indicators are anthropometric, cognitive and socioemotional measures, consumption of particular foods, interaction with parents and caregivers (see Bernal et al. 2013).

Anthropometric information is collected for children 0-5 years of age and the urban and rural sample sizes for 2010 and 2013 are respectively: 1,972 and 1,367 (urban), 1,965, and 1,388 (rural). Only 28% of the children in the original sample (ages 0-5 in 2010) remained in that age range in the second wave so the panel sample is much smaller (see Bernal and Quintero 2013).

The proposed project will extend my previous work by comparing the cross section results for Argentina y Colombia. In addition, it will study nutritional catchup and family stability by taking advantage of the longitudinal nature of the ELCA dataset.

I believe that I will be able to construct the same family types I have used in my previous work and a similar wealth index can be computed. Although there are differences between the samples in the two countries (all socioeconomic groups are represented in the Argentine data while the highest one is not in Colombia and

children in rural areas or younger than 6 months are not included in the ENNyS), there is significant overlap to obtain meaningful comparisons.

In addition, the ELCA has many other interesting questions that can be used to sharpen some conjectures we had for Argentina. Specifically, our results for Argentina suggest that grandparents can play an important role in child nutrition. The ELCA question “who takes care of the child” can help shed additional light on the links between child health and resident/ caretakers grandparents/other relatives.

I plan to use HAZ (height-for-age z score) and stunting status (stunting occurs if  $HAZ < - 2$ ) to assess nutrition. I will use two alternative definitions of catch up growth: changing from stunted status to not stunted (following Crookston et al., 2010) and the coefficient on lagged height for-age z-scores (following Behrman et al., 2017). Four family types of families (single, single with relatives, couple, couple with relatives) and several types of family instability will be used. Changing from one type of family to another or changing partners, are two of the options.

My research questions are the following.

Does family structure and/or its changes play a significant role on child health/nutrition in Colombia? Does the presence of grandparents in the home attenuate the effects of lack of resources? Does geographical location matter for nutritional status after controlling for family structure and socioeconomic characteristics? How do these findings compare with the ones for Argentina? Are there wealth/income and family gradients for catch up growth<sup>1</sup>? Are children who experienced less severe stunting more likely to experience catch up growth<sup>2</sup>?

I plan to use multivariate ordinary least squares regressions, logistic regressions and panel data models.

### **III- Data Request**

Children’s database: available waves

### **References**

- Behrman, J. R., Contreras, D., Palma, I. and Puentes, E. 2017. "Wealth Disparities for Early Childhood Anthropometrics and Skills: Evidence from Chilean Longitudinal Data." *University of Pennsylvania Population Center Working Paper (PSC/PARC)WP2017-12*.  
[http://repository.upenn.edu/psc\\_publications/12](http://repository.upenn.edu/psc_publications/12).
- Bernal, R., Cadena, X. Camacho, A., Cárdenas J.C., Fergusson, L, Ibáñez, A.M, Rodriguez, C., Peña, X. and Comité ELCA. 2014. Encuesta Longitudinal Colombiana de la Universidad de los Andes – ELCA 2013. Serie Documentos Cede, 2014-42

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<sup>1</sup>Crookston et al.( 2010) and Lundeen et al.(2014) showed that significant proportions of children in some low-income contexts experienced increases in HAZ between ages 1 and 5 years. Schott et al. (2013) studied what factors are associated with these reversals.

<sup>2</sup> Crookston et al.(2010) find that children with higher HAZ at the initial assessment were more likely to have catch up growth

- Bernal, R and Quintero, C. 2013. Informe de Caracterización de los Niños y Niñas entre los 0 y 5 años de edad en la Encuesta Longitudinal Colombiana (ELCA). Proyecto ELCA-DNP
- Bronte-Tinkew, J. and DeJong, G. 2004. Children's nutrition in Jamaica: do household structure and household economic resources matter? *Social Science and Medicine*;58(3) 499-514.
- Carr, D. and Springer, K. W. 2010. Advances in families and health research in the 21st century. *Journal of Marriage and Family*, 72:743-761.
- Case, A. , Lubotsky D. and Paxson, C. 2002. Economic Status and Health in Childhood: The Origins of the Gradient. *The American Economic Review* 92 (5):1308-1334.
- Case, A., and Paxson, C. 2008. Stature and status: Height, ability, and labor market outcomes. *The Journal of Political Economy*, 116(3), 499–532.
- Conti, G. and Heckman, J. J. 2012. The Economics of Child Well-Being. Paper 18466, Cambridge, MA: National Bureau of Economic Research .
- Crookston, B. T., Penny, M. E., Alder, S. C., et al. 2010. Children who recover from early stunting and children who are not stunted demonstrate similar levels of cognition. *The Journal of Nutrition*, 140(11), 1996–2001. doi:10.3945/jn.109.118927
- Fernald, L.C. and Neufeld, L.M. 2007. Overweight with concurrent stunting in very young children from rural Mexico: prevalence and associated factors. *European Journal of Clinical Nutrition* 61: 623-632.
- Lundeen E.A., Behrman J.R., Crookston B.T., et al. 2014 Growth faltering and recovery in children aged 1–8 years in four low- and middle-income countries: Young Lives. *Public health nutrition*. ;17(9):2131-2137. doi:10.1017/S1368980013003017.
- Muniagurria, M.E. and Novak, B. 2014. Family Structure and Child Health in Argentina, *International Journal of Sociology of the Family*, Vol. 40, No.2, Autumn. [Center for Ecology and Demography \(University of Wisconsin-Madison\) Working Paper 2014-09](#)
- Novak, B. and Muniagurria, M.E. 2017. [El Rol de la Estructura Familiar en el Acortamiento de la Estatura de Preescolares Argentinos](#) de 2 a 5 años, *Papeles de Población*, Vol.23, No. 92.
- Outes, I. and Porter, C. 2013. Catching up from early nutritional deficits? Evidence from rural Ethiopia. *Economics & Human Biology*, Volume 11, Issue 2, 2013, Pages 148-163, ISSN 1570-677X, <https://doi.org/10.1016/j.ehb.2012.03.001>.
- Palloni, A. 2006. Reproducing Inequalities: Luck, Wallets, and the Enduring Effects of Childhood Health. *Demography* 43 (4) :587-615.
- Schady, Norbert, Behrman, J., Araujo, M.C., Azuero, R., Bernal, R., Bravo, D., Lopez-Boo, F., Macours, K., Marshall, D., Paxson, C., and Vakis, R. 2015. "Wealth Disparities in Early Childhood Cognitive Development in Five Latin American Countries." *Journal of Human Resources*, March 31, 2015 50:446-463; doi:10.3368/jhr.50.2.446
- Schott, W. B., Crookston, B. T., Lundeen, E. A., et al. (2013). Periods of child growth up to age 8 years in Ethiopia, India, Peru and Vietnam: Key distal household and community factors. *Social Science and Medicine*, 97, 278–287. doi:10.1016/j.socscimed. 2013.05.016.