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## Children living with disabilities and mother's labor supply in developing countries: Evidence from Argentina

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# Children living with disabilities and mother's labor supply in developing countries: evidence from Argentina

Laura Carella\* Cecilia Velázquez† Natalia Porto‡ Ana Clara Rucci§

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## Abstract

A child's disability increases childcare demands causing two opposing effects on the mother's labor supply: while some types of disability require additional time spent reducing labor supply, others require additional expenses increasing labor supply. This paper studies the effect of a child's disability on mothers' labor supply using data from the 2019-20 IPUMS MICS of Argentina. Four measures of disability are used: children with a functional disability (based on Washington Group criteria); children with functional difficulties for seeing, hearing, or walking; children with difficulties in the remaining functional domains; and children with a disability certificate or pension. The results suggest that having a child with disability certificate or pension reduces a mother's probability of participating in the labor force. No significant effect is found for mothers of a child with a functional disability. However, this arises from two opposing effects: a negative effect on mother's labor supply of children with difficulties for seeing, hearing, or walking and a positive effect on mothers of children with difficulties in the remaining functional domains. The evidence also shows heterogeneous effects depending on the mother's education. The (dis)incentive to participate is present for non-graduated mothers, while the effect is not statistically significant for graduated ones.

**Key words: disability, child, female labor force participation**

**JEL Classification: I14, J16, J22**

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## 1. Introduction

One in ten children worldwide lives with disabilities (nearly 240 million) according to UNICEF (2021). Latin America and the Caribbean are not the exception, being more than 19 million children in the region (10%). In Argentina, the proportion of children with disabilities reaches 11% (UNICEF, 2021). Children with disabilities are considered one of the population groups who require intensive care (Bango & Cossani, 2021). Due to strongly rooted cultural norms, the responsibility of care relies mostly on the female members of the household, especially mothers (Carpenter, 1980; Razavi, 2007), which may affect their labor supply.<sup>1</sup> On the one hand, the child's disability may reduce the mother's labor supply because of the extra time she must spend caring for the child. On the other hand, it may force the mother to increase her labor supply to meet the financial burden of the child's educational and health care. The context determines the role in care arrangements of the family/household, markets, the public sector, and the not-for-profit sector.<sup>2</sup> While women with resources -mostly with formal jobs- can outsource care by hiring other people, for poor women the public and non-for-profit dimension plays a key role in their possibility of working. Ultimately, the extent to which -or the direction in which- a child's disability affects the labor supply of the mother remains an empirical question. This paper aims to answer this question by estimating the effect of a child's disability on mothers' labor supply for Argentina.

Several studies provide evidence on the effect of various child health problems. Most of these studies suggest that poor child health generally has a negative effect on maternal employment and, to a lesser extent, on hours worked (Salkever, 1982a, 1982b; Breslau et al, 1982; Wolfe and Hill, 1995; Kimmel, 1998; Lukemeyer et al, 2000; Powers, 2001, 2003; Corman et al, 2005; Frijters et al, 2009; Lu and Zuo, 2010, 2017; Hatzmann et al, 2014). There is also some evidence to support the hypothesis of a positive effect on labor supply (Gould, 2004; Gupta et al, 2013). However, most literature refers to developed countries (except Gupta et al, 2013 for India) and has failed to account for some aspects such as different types of childhood disability that require different supports (e.g., for self-care, mobility, etc.) or mothers' level of education which implies dissimilar labor market attachment, resources to outsource childcare or level of information about social protection programs and the rights granted for people with disabilities. Noteworthy is the research for Cameroon by Fotso (2017) which addresses these issues and concludes that having a child whose disability requires high healthcare expenditures increases the probability that a non-graduated mother will be employed by 12% and having a child whose disability

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<sup>1</sup> Within the framework of the household production model (Mincer, 1962; Becker, 1965), a child's disabilities increase time and money needs which may drive specialization within the family, usually affecting mothers' labor supply.

<sup>2</sup> The four dimensions of the "care diamond" according to Razavi (2007).

imposes time constraints reduces the probability that a non-graduated mother will be employed by 14%; whereas no effect is found for graduated mothers.

We estimate the effect of a child's disability on mothers' labor supply using data from the sixth round of the IPUMS Multiple Indicator Cluster Survey (MICS) for Argentina 2019-20. Four measures of disability are used: children with a functional disability (based on Washington Group criteria); children with difficulties for seeing, hearing or walking; children with difficulties in the remaining functional domains; and children with a disability certificate or pension (legal definition). Following Fotso (2017), we distinguish two groups by mothers' level of education.

A child's disability increases childcare demands causing two opposing effects on the mother's labor supply; some types of disability require additional time spent, reducing labor supply, while other types require additional expenses, increasing labor supply. Our results suggest that having a child with disability certificate or pension, reduces a mother's probability of participating in the labor force by 13.5 percentage points. No significant effect is found for mothers of a child with a functional disability. However, this arises from two opposing effects: a negative effect on mother's labor supply of children with difficulties for seeing, hearing or walking of 8.3 percentage points and a positive effect of 3.1 percentage points on mothers of children with difficulties in the remaining functional domains. The evidence also shows heterogeneous effects depending on the mother's education. The (dis)incentive to participate in the labor force is present for non-graduated mothers, while the effect is not statistically significant for graduated ones.

Since 2023 marks the midpoint of the UN's 2030 Agenda for Sustainable Development, this paper aims to contribute to breaking the statistical silence to achieve gender equality by 2030 by transforming data into information, information into knowledge, and knowledge into policy decisions (UN, 2015). The contribution of our paper is threefold: (i) it allows for analyses that distinguish types of disability; (ii) it addresses the potential heterogeneous effect according to mothers' level of education; (iii) it places the analysis in a developing country, Argentina, where the social protection system differs from those of developed countries and substantial progress needs still to be made.

The rest of the paper is organized as follows. Section 2 describes the data and lays out the methodology. Section 3 presents the main findings and robustness analysis, and section 4 concludes with discussion, limitations and future research.

## 2. Empirical strategy

### 2.1. Data and methodology

This study aims to assess the effect of a child's disability on the mother's labor force participation, using data from the sixth round of IPUMS MICS for Argentina (Bolgrien et al., 2024). IPUMS MICS processes the Multiple Indicator Cluster Survey (MICS) data series to provide harmonized variables on well-being of children and women. The latest MICS in Argentina was run by the National Institute of Statistics and Census (INDEC) and UNICEF between September 2019 and February 2020 (INDEC & UNICEF, 2021).

The MICS collects information about children in two different questionnaires (one for children aged 0 to 4 and one for children aged 5 to 17)<sup>3</sup> and another questionnaire collects information on women aged 15 to 49. In addition, there are two more questionnaires on the household and the characteristics of its members. Since our observation unit is the mother, we merged each child with his mother. We then built mother-specific variables (a binary variable indicating if she has at least one disabled child and the number of children by age group) and household-specific variables (such as the number of adult men working and the number of non-working adult women). Finally, we included other mother-specific variables (such as age, education, marital status, region, wealth, and if the household receives the conditional cash transfer "*Asignación Universal por Hijo AUH*").

We closely follow the research of Fotso (2017) and estimate the following equation:

$$LFP_i = \alpha_0 + \alpha_1 * DisabledChild_i + \alpha_2 * X_i + \mu_i \quad (1)$$

Where  $LFP_i$  (labor force participation) is a dummy variable taking the value 1 if the mother  $i$  currently works or actively seeks employment and 0 otherwise;  $DisabledChild_i$  is a binary variable indicating if the mother  $i$  has at least one disabled child;  $X_i$  includes control variables; and  $\mu_i$  is clustered standard error.

The estimation is carried out by Ordinary Least Squares (OLS)<sup>4</sup> since the linear probability model generates results that do not differ substantially from probit or logit regressions (Angrist & Pischke, 2009) and the coefficient of interest in a linear model has a straightforward interpretation, unlike the same parameter in a non-linear specification. Notwithstanding this, we show in the robustness section the average marginal effects of logit regressions.

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<sup>3</sup> The first questionnaire collects information about all children aged 0 to 4. For children aged 5 to 17, the survey randomly selects only one child in each interviewed household. Both questionnaires are administered to the mother or primary caregiver.

<sup>4</sup> Estimates do not account for survey's weights to avoid a decrease in efficiency (Bollen et al, 2016).

We use four disability measurements. First, we distinguish between functional and legal disability. In order to explore whether there are differences according to the type of difficulty, we distinguish between difficulties for seeing, hearing or walking (functional-SHW) from difficulties in the remaining functional domains (functional-other).

The functional difficulty measure is based on the WG-Washington Group's Child Functioning Module (CFM) provided in the MICS survey (WG, 2017). Functional difficulty for children aged 2-4 years<sup>5</sup> is defined as having responded "A lot of difficulty" or "Cannot at all" to questions within the domains Seeing, Hearing, Walking, Fine motor, Communication, Learning and Playing; and "A lot more" for the domain of Controlling behavior. For children aged 5-17, a functional difficulty is defined as having responded "A lot of difficulty" or "Cannot at all" to questions within the domains of Seeing, Hearing, Walking, Self-Care, Communication, Learning, Remembering, Concentrating, Accepting change, Controlling behavior and Making Friends; and "Daily" for the domains of Anxiety and Depression. Next, we split the functional category into two mutually exclusive groups: children who present difficulty in seeing, hearing, or walking (functional-SHW) and children aged 2-4 who present difficulty in the domains of fine motor, communication, learning, playing and controlling behavior, plus children aged 5-17 who present difficulty in the domains of self-care, communication, learning, remembering, concentrating, accepting change, controlling behavior, making friends, anxiety and depression (functional-other). Finally, the legal disability measurement considers those children receiving a disability pension or certificate<sup>6</sup> (Table A1 in the Appendix presents more detail).

It must be taken into account that, unlike the legal definition, functional measures are built from self-reported disabilities, which might be subject to measurement errors. Fotso (2017) also warns about this potential bias, but argues that the fact that the disability and employment questions are addressed in different questionnaires prevents women from revealing *"a non-existent health condition (false positive) in order to rationalize their poor labor market outcomes"* (Fotso, 2017; pp 33). On the other hand, since *"the probability of false reporting decreases with the intensity of the condition"* (Baker et al, 2004; pp 1090), it is also acceptable to assume that the functional, functional-SHW and functional-other definitions, which consider "A lot of difficulty" or "Cannot at all" to questions within functional domains, are less likely to be subject to measurement errors. Furthermore, measurement error is related to attenuation bias; therefore, it is of concern only in the case of finding null results.

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<sup>5</sup> This measure is not defined for children aged 0 to 1 years old since the MICS does not collect questions on functional disability for this age group.

<sup>6</sup> The disability pension is a monthly non-contributory cash transfer targeted to people with disabilities with no other income sources. The Unique Certificate of Disability (CUD by its acronym in Spanish) is a public document valid throughout the country that allows the exercise of rights and access to the benefits provided for people with disabilities in National Laws 22.431 and 24.901. It can be requested voluntarily and free of charge through the National Agency for Disability (ANDIS by its acronym in Spanish), and the evaluation to obtain it is carried out by an interdisciplinary Evaluation Board.

An additional concern regarding functional measures relates to potential unobservable heterogeneity among mothers. That is, mothers of children with disabilities may differ from their peers (Fotso, 2017; Zimmer, 2007). However, while mothers with certain unobservable characteristics may be more likely to have a child with a disability, the type of disability (SHW or other) is less likely to be associated with these characteristics.

Control variables include mother-specific variables: age and age squared as proxies for work experience; a categorical variable for her maximum educational level as a measure of her human capital; a dummy variable indicating whether she is married or not; and the number of children aged 0 to 1, 2 to 4 and 5 to 17. We also include household-specific variables that might affect the mother's labor force participation decision: the number of adult males within the household who are employed as a proxy of other sources of income, the number of other adult females within the household who do not work indicating the presence of other women who could take care of the child, a dummy variable indicating whether some member of the household receives the conditional cash transfer "*Asignación Universal por Hijo AUH*", and a dummy variable indicating whether the household is within the three highest wealth quintiles. Finally, we include regional dummies to account for differences in characteristics of the labor market related to geographical location. A detailed description of the variables is presented in Table A2 in the Appendix.

Following Fotso (2017), the model is estimated for the full sample of mothers and also considering two subsamples according to their educational level: those who are "graduated" are defined as having achieved at least incomplete tertiary education, and those considered "non-graduated", i.e., those who have attained at the most complete secondary level

The aim is to capture potential heterogeneities between both groups since less educated women could be less attached to the labor market, in irregular and informal jobs, which in turn could lead them to make different decisions regarding labor market participation in the event of having a child with a disability. In addition, more educated mothers could have more resources to outsource childcare and be better informed about social protection programs and the rights granted to people with disabilities.

## **2.2. Descriptive statistics**

The sample consists of 8,558 women aged 15 to 49 who have at least one child under 17 years old living with them. Among those from whom information about disabilities is available, 13.4% have at least one child with a functional disability, while this share drops to 3.2% if we consider the legal definition. Considering the functional definition, the share remains close to the overall rate (11.6%) for the domains other than SHW, and it drops to 1.8% if we consider these domains (Table 1).



Results differ if we distinguish between graduated and non-graduated mothers: overall, the percentage of women with at least one child with disabilities is higher among the less educated group, and this holds for the four definitions considered. The largest gaps are observed for the functional definition and the domains other than SHW (more than 4.6 and 3.3 percentage points, respectively), while it is around 1.3 percentage points for the legal definition and for the domains of SHW.

**Table 1. Mothers with at least one child with a disability, by education level (%).**

	Total	Graduated	Non-graduated
Functional definition	13.4% (7236)	10.0% (2064)	14.6% (5109)
- Functional-SHW	1.8% (7236)	0.8% (2064)	2.1% (5109)
- Functional-other	11.6% (7236)	9.2% (2064)	12.5% (5109)
Legal definition	3.2% (8493)	2.2% (2373)	3.6% (5831)

Source: own elaboration, based on IPUMS MICS Argentina 2019-20. Number of observations in parentheses.

Regarding socio-demographic characteristics showed in Table 2, mothers of children with disability are slightly older than their peers with children without disability. Also, for this group the share of married women is lower, they have more children, the share living in households where at least one adult men works is lower (except for the legal definition), the share of them living in households where there are other adult women who do not work is also lower (except for mother of children with difficulties in the domains other than SHW), the share of them living in households in three highest wealth quintiles is lower, and a higher share of them receive the ‘AUH’ transfer (except for the legal definition). It is noteworthy the differences in the share of graduated mothers, which is lower for mothers of children with disability.

**Table 2. Characteristics of mothers of children with and without disability.**

	Mean age (years)	Graduated (%)	Married (%)	Mean no. of children	At least one adult man working (%)	At least one adult woman not working (%)	Wealth (%)	HH receiving 'AUH' (%)
<u>Functional definition</u>								
Child w/o disability	35.2	27.9	72.2	1.9	76.0	32.5	53.2	37.9
Child w disability	35.9	20.1	68.0	2.1	73.7	31.8	48.2	41.7
<u>Functional-SHW</u>								
Child w/o disability	35.3	27.1	71.7	2.0	75.7	32.5	52.7	38.4
Child w disability	35.9	12.4	68.7	2.2	75.3	23.6	41.5	42.8
<u>Functional-other</u>								
Child w/o disability	35.3	27.6	72.1	1.9	76.0	32.3	53.0	38.0
Child w disability	35.9	21.2	67.9	2.1	73.5	33.1	49.2	41.5
<u>Legal definition</u>								
Child w/o disability	34.5	26.9	70.5	1.9	75.8	33.0	52.2	39.9
Child w disability	36.8	18.1	67.9	2.4	78.3	31.1	49.3	35.3

Source: own elaboration, based on IPUMS MICS Argentina 2019-20. Mothers of children with (w) and without (w/o) disability.

Table 3 shows the labor force participation status of women in our sample. Overall, labor force participation is higher among women with children without disabilities, except for mothers of children with difficulties in the domains other than SHW. The greatest differences are observed for the functional-SHW domains (69.3% for mothers of children without disabilities versus 54.3% for mothers of at least one child with a disability in SHW) and for the legal definition (67.9% versus 54.9%). These differences are statistically significant at 1% level. A similar pattern is observed when restricting the analysis to the subsample of non-graduated mothers, i.e., the participation rates are around 14 percentage points lower for the mothers of at least one child with a functional disability in SHW or legal disability, and these differences are statistically significant at 1% level. Also, the labor force participation rates are systematically lower than for the full sample.

By contrast, a different picture is observed among graduated mothers. For the functional definition, and specifically that related to domains other than SHW, mothers of children with disabilities have higher labor participation rates than their peers. These differences are significant at 5%. Additionally, labor force participation rates among graduated mothers are strongly higher than those of non-graduated, regardless of the disability condition of their children.

The preceding analysis supports the estimation strategy of splitting the sample into graduated and non-graduated mothers, such as Fotso (2017).

**Table 3. Labor force participation rates of mothers, by education level (%).**

	Total	Graduated	Non-graduated
<u>Functional definition</u>			
Child w/o disability (%)	69.1	82.0	64.2
Child w/ disability (%)	68.7	87.5	64.0
Difference (p.p.)	-0.354	5.479**	-0.207
<u>Functional-SHW</u>			
Child w/o disability (%)	69.3	82.6	64.5
Child w/ disability (%)	54.3	80.9	50.6
Difference (p.p.)	-14.97***	-1.728	-13.92***
<u>Functional-other</u>			
Child w/o disability (%)	68.8	82.0	63.9
Child w/ disability (%)	71.0	88.1	66.3
Difference (p.p.)	2.166	6.089**	2.436
<u>Legal definition</u>			
Child w/o disability (%)	67.9	81.6	63.0
Child w/ disability (%)	54.9	83.0	48.7
Difference (p.p.)	-13.03***	1.350	-14.30***

Source: own elaboration, based on IPUMS MICS Argentina 2019-20. Mothers of children with (w) and without (w/o) disability. \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

### 3. Results

#### 3.1. Main results

The estimation of  $\alpha_1$  in equation (1) for the four alternative measures of disability and for the different subsamples is summarized in Table 4. The full results of the OLS estimates can be found in the Appendix.

**Table 4. Models of mother's labor force participation.**

Child w/	Total (1)	Graduated (2)	Non-graduated (3)
<b>Functional disability</b>	0.0123	0.0111	0.00992
<b>Functional-SHW</b>	-0.0827**	0.0339	-0.114***
<b>Functional-other</b>	0.0311*	0.00627	0.0354*
<b>Legal disability</b>	-0.135***	-0.0794	-0.154***

Source: own estimations, based on IPUMS MICS Argentina 2019-20. \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

Considering the functional definition, no statistically significant differences are found in the labor status between women who have at least one child with a disability and their peers. This result is obtained for

the pooled sample of mothers (Column 1) and it persists if we estimate the model for graduated mothers (Column 2) separately from non-graduated mothers (Column 3).

However, we find that those mothers who have at least one child with difficulties in SHW are 8.3 percentage points less likely to participate in the labor force. In contrast, mothers of at least one child with difficulties in the remaining functional domains are 3.1 percentage points more likely to be working or actively seeking employment.<sup>7</sup> Thus, the null effect found for mothers of disabled children according to the functional definition arises from two opposing effects, a negative effect on mother's labor supply of children with difficulties in SHW and a positive effect on mothers of children with difficulties in the remaining functional domains.

Considering the legal definition, mothers who have at least one child receiving a disability pension or holding a disability certificate are 13.5 percentage points less likely to participate in the labor force than other mothers.

The statistically significant effects found hold for the non-graduated (Column 3) but not for the graduated mothers subsample (Column 2). Moreover, coefficients are slightly larger for the less educated than for the pooled sample. This result could be explained by greater resources to hire childcare and by "*greater ability of graduated women to cope with disability without adjusting their labor for market participation, probably because they are more informed about public supports to disabled people*" (Fotso, 2017; pp 38). Thus, the results suggest heterogeneous effects depending on the mother's education. The (dis)incentive to participate in the labor force is present for non-graduated mothers, while the effect is not statistically significant for graduated ones.

Effects of the control variables have the expected sign.<sup>8</sup> Having children under 1 year old or between 2 to 4 years old decreases the mother's labor force participation under all the specifications, reflecting the additional time required for early childhood care. Similar effects are found for mothers of children between 5 to 17 years old.<sup>9</sup>

The labor force participation also decreases for married mothers and, except for the graduated mothers' subsample, for those who live in a household where there are adult men who currently work. A similar effect is found for those who live in a household where a member receives the 'AUH' transfer (in line with Garganta et al., 2017),<sup>10</sup> although the effect is not statistically significant for the non-graduated

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<sup>7</sup> See Table 3 for a benchmark of labor force participation rates.

<sup>8</sup> See Tables A3, A4, A5 and A6 in the Appendix.

<sup>9</sup> Except for the case of the graduated mothers, for which the coefficient -although negative- is not statistically significant when the functional-SHW and legal definition are used.

<sup>10</sup> Garganta et al (2017) also found a negative effect of the program on female labor force participation using Argentina's national household survey (Encuesta Permanente de Hogares, EPH).

mother's subsample.<sup>11</sup> These results might reflect that, overall, mothers have less incentives to participate in the labor force when there are other sources of income in the household.

In turn, the labor force participation rate increases with the age of the mother, but at a decreasing rate. It is also higher for those who are based in the Buenos Aires province and for those who live in wealthier households.<sup>12</sup> As expected, the labor force participation of the mothers also increases with education and this result holds for both the complete sample and the subsamples.

Contrary to our prior, the presence of other adult women who do not work has no effect on the mothers' labor force participation. Fotso (2017) also found a counterintuitive effect of this variable, she explains that *"this could reflect a social capital effect: having employed (...) women in the household increases the chance for a mother in the household to get a job. It could also express an unobserved preference of households in terms of women's labor market participation"* (Fotso, 2017, pp 38).

### 3.2. Robustness

We conduct two exercises to assess the robustness of our results with respect to the model and the control variables included. First, Table 5 presents the average marginal effects resulting from estimating logit models. The sign and statistical significance of all coefficients remains with respect to those resulting from the linear probability model estimated by OLS. Moreover, the magnitude of the coefficients is very similar. Therefore, the results obtained with the linear probability model estimated by OLS also hold under a binary response model like logit regression.

**Table 5. Models of mother's labor force participation. Robustness analysis: OLS estimates and marginal effects of logit regressions.**

Child w/	OLS			Marginal effects of logit regression		
	Total	Graduated	Non-graduated	Total	Graduated	Non-graduated
<b>Functional disability</b>	0.0123	0.0111	0.0092	0.0127	0.0110	0.0104
<b>Functional-SHW</b>	-0.0827**	0.0339	-0.114***	-0.0801**	0.0191	-0.111***
<b>Functional-other</b>	0.0311*	0.00627	0.0354*	0.0320*	0.00911	0.0364*
<b>Legal disability</b>	-0.135***	-0.0794	-0.154***	-0.128***	-0.0714	-0.150***

Source: OLS estimates and average marginal effects of logit regressions, based on IPUMS MICS Argentina 2019-20. \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

<sup>11</sup> This may be due to the fact that they work mostly in informal jobs, which are not in conflict with receiving the cash transfer.

<sup>12</sup> Although the effect is not statistically significant for the graduated mother's subsample, probably because most graduated mothers (almost 80%) live in households within the three highest quintiles.

Second, we analyze the robustness of the conclusions to changes in the set of control variables included in the OLS estimations. For this purpose, we examine how the coefficient of interest (mother having at least one disabled child) and its t-test change in 1024 alternative models.<sup>13</sup> We run the regressions using the global search regression instrument developed in Gluzmann & Panigo (2015). Table 6 summarizes the results, presenting in the first column the results of our main estimations for the four definitions of disability and the three samples used. The following columns present the percentage in which the estimated coefficient of interest is: negative and statistically significant at 5%, not significant, and positive and statistically significant at 5%.

We note that for the functional and legal definitions, whatever the set of control variables, the same result is always reached (the sign and statistical significance of the 100% of the estimated coefficients, out of a total of 1024, coincide with the main estimation). For functional disability in the SHW domains, 79% of the estimated coefficients for the full sample resulted negative and significant, as in the main estimation; and when the sample is divided by educational level, the percentage of coincidence reaches 100%. Finally, for functional disability in domains other than SHW, the positive and statistically significant effect we found for the total sample and for non-graduated mothers is less robust as it belongs to the 19% and 13% of the estimated regressions, respectively.

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<sup>13</sup> The number of possible combinations with the 10 control variables included in our regressions is 1024.

**Table 6. Models of mother’s labor force participation. Robustness analysis: change in the set of control variables.**

Child w/	Main estimation	Robustness: control variables		
		negative coeff (%)	not significant coeff (%)	positive coeff (%)
Functional disability	0.0123	0.0	100.0	0.0
Functional-SHW	-0.0827**	79.0	21.0	0.0
Functional-other	0.0311*	0.0	80.9	19.1
Legal disability	-0.135***	100.0	0.0	0.0
<b><u>Graduated</u></b>				
Functional disability	0.0111	0.0	100.0	0.0
Functional-SHW	0.0339	0.0	100.0	0.0
Functional-other	0.00627	0.0	100.0	0.0
Legal disability	-0.0794	0.0	100.0	0.0
<b><u>Non-graduated</u></b>				
Functional disability	0.00992	0.0	100.0	0.0
Functional-SHW	-0.114***	100.0	0.0	0.0
Functional-other	0.0354*	0.0	87.1	12.9
Legal disability	-0.154***	100.0	0.0	0.0

Source: own estimates, based on IPUMS MICS Argentina 2019-20, using *gsreg* command for Stata. In the main estimation column: \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1. The last three columns present the distribution of the estimated coefficient, considering statistical significance at the 5% level. The cells that coincide with the sign of the coefficient of the main estimation are shaded.

#### 4. Concluding remarks

This research assesses the effect of having a child with disability on female labor force participation in Argentina, considering alternative measures of disability and distinguishing between women’s educational level. On the one hand, our results suggests that mother’s labor supply is reduced when having a child with difficulties in the domains related to SHW and a child with disability certificate or pension. These results are robust to the estimation method and to the set of control variables. On the other hand, mother’s labor supply is increased when having a child with difficulties in the domains other than SHW. This finding is robust to the estimation method, but less robust to the set of control variables. The negative effect of having a child with disability on mother’s labor supply is in line with Salkever (1982a, 1982b), Breslau et al (1982), Wolfe and Hill (1995), Kimmel (1998), Lukemeyer et al (2000), Powers (2001, 2003), Corman et al (2005), Frijters et al (2009), Lu and Zuo (2010, 2017) and Hatzmann et al (2014); while the positive effect is in line with Gould (2004) and Gupta et al (2013).

Therefore, we find evidence supporting that the effect of having a child with disability on mother's labor supply depends on the type of disability, in line with findings from Fotso (2017). On the one hand, the disability related to difficulties in the domains of SHW and the disability attested by a certificate or pension may require additional time spent on caregiving, leading to a reduction in mother's labor supply. Furthermore, this result is in line with the findings of Porto et al (2023) who find that disabled children in Argentina are less likely than their peers to be enrolled in the educational system, imposing a constraint in mother's time use. On the other hand, the disability related to difficulties in the domains other than SHW may carries an additional child's educational and health care resources, which may force the mother to increase her labor supply to meet these costs. The results suggest heterogeneous effects, the (dis)incentive to participate in the labor force is present for non-graduated mothers, while the effect is not statistically significant for graduated ones.

Our results may contribute to the ongoing debate about investment in care policies for achieving higher female employment rates, fostering gender equality. The bill "Cuidar en igualdad" was submitted to the Argentinean Congress in 2022, aimed at creating the Integral System of Care Policies. The bill proposes to expand the supply of care services, adapt working hours, strengthen the community role, formal recognition of informal caregivers, and extend parental leaves.

The study presents certain limitations. First, there are some concerns regarding the dependent variable, labor force participation. The data allows for identifying whether a woman works or is actively seeking employment, but there is no information on weekly hours worked, nor on wages, so we cannot estimate effects on mother's labor supply at the intensive margin. This distinction is not minor, since mothers who must take care of a child with a disability might allocate time to paid and unpaid tasks differently from other mothers. Therefore, our results must be interpreted as the effect of having a child with disability on mother's labor supply at the extensive margin. There is also no information on occupational category, or the type of tasks performed, or type of work (formal or informal). Mothers of children with disabilities could be more likely to work in informal jobs, with shorter hours and flexible schedules to better combine their professional activity with child care.

Second, except for the AUH program, we do not have information on other sources of income (pensions, social transfers, capital income, etc.). It is reasonable to assume that mothers who have non-laboral sources of income could be more encouraged to leave the labor market in the event of having a child with disabilities in order to allocate more time to child care.

Third, the disability measures also present some limitations. The first one is related to the way in which the information is collected. As previously mentioned, for children aged 5-17, the specific questionnaire is referred to only one child per mother, so there is no information on the rest of her children, particularly on whether or not they have any disability. Moreover, for children aged 0-1, no information on



disabilities is collected.<sup>14</sup> The second limitation is particularly relevant for the functional, functional-SHW and functional-other definitions, and it is related to the fact that these difficulties are self-reported. Unlike the legal definition, these measures are built from the answers provided by the mothers in the survey, which might be subject to false positive or false negative biases.<sup>15</sup>

However, to the best of our knowledge, this is the first study that examines the labor force participation of women who have a child with disabilities for a Latin American country, considering heterogeneities by mother's education and based on alternative disability measures. Moreover, since it is based on the use of the MICS survey, the analysis could be extended to other countries for which the survey is also available. Future research agenda is planned to continue in this direction.

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<sup>14</sup> However, the Washington Group together with UNICEF warn that, due to the complexity of measuring disability in the population of children, it is not advisable to disseminate information on the population of 0 and 1 years old and to take precautions in the analysis of information on 2 to 5 years old. The complexity of measuring disability in children is based on the heterogeneity of this population (from young children to adolescents), on the differences in their evolutionary development and on the intermediation of this information by those who answer the questionnaire, who are the parents or guardians (INDEC, 2018).

<sup>15</sup> See Fotso (2017) for a discussion of these potential measurement errors.

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## Appendix

**Table A1. Definition of types of disability**

Type	Domain	Associated questions (2-4)	Associated questions (5-17)	Difficulty	
Functional	SHW	Seeing	Does (name) have difficulty seeing?		"A lot of difficulty" or "Cannot at all"
		Hearing	Does (name) have difficulty hearing sounds such as other people's voices or music?		
		Walking	When (name) does not use the device or receive assistance, does (name) have difficulty walking? When (name) uses the device or receives assistance, does (name) have difficulty walking? Compared to children of the same age, does (name) have difficulty walking?	When (name) does not use the device or receive assistance, does (name) have difficulty walking 100 (or 500) metres on level ground? Compared to children of the same age, does (name) have difficulty walking 100 (or 500) metres on level ground?	
	FM	Fine motor	Compared to children of the same age, does (name) have difficulty picking up small objects with (his/her) hand?	N.a.	"A lot of difficulty" or "Cannot at all" "A lot of difficulty" or "Cannot at all"
	Intellectual	Communication	Does (name) have difficulty understanding you? When (name) speaks, do you have difficulty understanding you?	When (name) speaks, does he/she have difficulty being understood by people within this household (or outside the household)?	"A lot of difficulty" or "Cannot at all" "A lot of difficulty" or "Cannot at all"
		Learning	Compared to children of the same age, does (name) have difficulty learning things?		
		Self-Care	N.a.	Does (name) have difficulty with self-care, e.g. eating or dressing him/herself?	
		Remembering	N.a.	Compared to children of the same age, does (name) have difficulty remembering things?	
		Concentrating	N.a.	Does (name) have difficulty concentrating on activities he/she enjoys?	
	Psychosocial	Controlling behavior	Compared to children of the same age, how often does (name) kick, bite or hit other children or adults?	Compared to children of the same age, does (name) have difficulty controlling his/her behavior?	"A lot more" (2-4) "A lot of difficulty" or "Cannot at all" (5-17)
		Playing	Compared to children of the same age, does (name) have difficulty playing?	N.a.	"A lot of difficulty" or "Cannot at all" "A lot of difficulty" or "Cannot at all"
		Accepting change	N.a.	Does (name) have difficulty in accepting changes in his/her routine?	
		Making Friends	N.a.	Does (name) have difficulty making friends?	"Daily"
		Anxiety	N.a.	I would like to know how often (name) is very anxious, nervous or worried.	
		Depression	N.a.	I would like to know how often (name) is very sad or depressed.	
	Legal: Children receiving a disability pension or a single disability certificate				

Source: own elaboration, based on IPUMS MICS Argentina 2019-20.

**Table A2. Definition of variables**

<b>Variable</b>	<b>Definition</b>
<i>Dependent variable</i>	
Labor force participation	1=currently working or actively seeking; 0=otherwise
<i>Variables of interest: child's disability</i>	
Child w/ functional disability	1=has at least one child with functional disability; 0=otherwise Functional disability: - child aged 2 to 4 with difficulties for seeing, hearing, walking, fine motor, communication, learning, controlling behavior or playing - child aged 5 to 17 with difficulties for seeing, hearing, walking, communication, learning, self-care, remembering, concentrating, controlling behavior, accepting change, making friends, anxiety or depression
Child w/ functional-SHW disability	1=has at least one child with difficulty for seeing, hearing or walking; 0=otherwise
Child w/ functional-other disability	1=has at least one child with functional disability other than seeing, hearing and walking; 0=otherwise
Child w/ legal disability	1=has at least one child with disability pension or certificate; 0=otherwise
<i>Control variables</i>	
Number of children aged 0-1	Number of children aged 0-1
Number of children aged 2-4	Number of children aged 2-4
Number of children aged 5-17	Number of children aged 5-17
Mother's age	Mother's age (years old)
Mother's age squared	Mother's age squared (years old)
Married	1=married or living in couple; 0=otherwise
Education	0=incomplete primary; 1=complete primary or incomplete secondary; 2=complete secondary; 3= incomplete tertiary; 4=complete tertiary
Wealth	1=household is within the three highest wealth quintiles; 0=otherwise
Region	1=CABA and GBA, 2=Buenos Aires province, 3= Cuyo, 4=NOA, 5=NEA, 6=Pampeana, 7=Patagonia
Number of adult men working	Number of adult men working in the household
Number of adult women not working	Number of adult women in the household, other than the considered mother, who are not working
HH receiving 'AUH'	1=some member of the household receives the AUH transfer; 0=otherwise
Graduated	1= education level at least incomplete tertiary education; 0=otherwise

**Table A3. Model of mother's labor force participation. Variable of interest: having at least one child with functional disability**

	Total (1)	Graduated (2)	Non-graduated (3)
<b>Child w/ functional disability</b>	<b>0.0123</b>	<b>0.0111</b>	<b>0.00992</b>
	<b>(0.0156)</b>	<b>(0.0269)</b>	<b>(0.0187)</b>
Number of children aged 0-1	-0.133***	-0.0698***	-0.159***
	(0.0151)	(0.0265)	(0.0179)
Number of children aged 2-4	-0.0614***	-0.0689***	-0.0627***
	(0.0108)	(0.0187)	(0.0131)
Number of children aged 5-17	-0.0336***	-0.0200*	-0.0366***
	(0.00608)	(0.0120)	(0.00722)
Mother's age	0.0529***	0.0750***	0.0494***
	(0.00662)	(0.0127)	(0.00803)
Mother's age squared	-0.000702***	-0.000987***	-0.000667***
	(9.46e-05)	(0.000174)	(0.000116)
Married	-0.208***	-0.125***	-0.239***
	(0.0138)	(0.0244)	(0.0168)
Education level = 1, Incomplete secondary	0.103***		0.0908***
	(0.0273)		(0.0274)
Education level = 2, Complete secondary	0.170***		0.160***
	(0.0281)		(0.0284)
Education level = 3, Incomplete tertiary	0.154***		
	(0.0311)		
Education level = 4, Complete tertiary	0.347***	0.155***	
	(0.0302)	(0.0189)	
Wealth	0.0386***	-0.00438	0.0533***
	(0.0138)	(0.0243)	(0.0161)
Region = 2, Buenos Aires province	0.0675***	0.0638*	0.0648**
	(0.0251)	(0.0332)	(0.0309)
Region = 3, Cuyo	0.0127	0.0436	-0.00218
	(0.0227)	(0.0308)	(0.0280)
Region = 4, NOA	-0.0432**	-0.0356	-0.0430
	(0.0219)	(0.0342)	(0.0268)
Region = 5, NEA	-0.0186	0.0194	-0.0336
	(0.0222)	(0.0325)	(0.0264)
Region = 6, Pampeana	-0.0183	0.0272	-0.0380
	(0.0206)	(0.0304)	(0.0253)
Region = 7, Patagonia	0.0241	0.0614*	0.00589
	(0.0227)	(0.0328)	(0.0271)
Number of adult men working	-0.0278***	-0.0204	-0.0308***
	(0.00880)	(0.0197)	(0.00975)
Number of adult women not working	-0.00625	-0.00411	-0.00428
	(0.00830)	(0.0159)	(0.00948)
HH receiving 'AUH'	-0.0365***	-0.136***	-0.0135
	(0.0129)	(0.0296)	(0.0142)
Constant	-0.173	-0.472**	-0.0639
	(0.115)	(0.230)	(0.136)
Observations	7,132	2,055	5,074
Adjusted R-squared	0.149	0.135	0.123

Source: OLS estimates based on IPUMS MICS Argentina 2019-20. \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1. Clustered standard errors in parentheses.

**Table A4. Model of mother's labor force participation. Variable of interest: having at least one child with functional-SHW disability**

	Total (1)	Graduated (2)	Non-graduated (3)
<b>Child w/ functional-SHW disability</b>	<b>-0.0827**</b> <b>(0.0357)</b>	<b>0.0339</b> <b>(0.0625)</b>	<b>-0.114***</b> <b>(0.0413)</b>
Number of children aged 0-1	-0.134*** (0.0151)	-0.0694*** (0.0265)	-0.160*** (0.0179)
Number of children aged 2-4	-0.0611*** (0.0108)	-0.0691*** (0.0187)	-0.0627*** (0.0131)
Number of children aged 5-17	-0.0331*** (0.00608)	-0.0196 (0.0120)	-0.0360*** (0.00722)
Mother's age	0.0532*** (0.00659)	0.0752*** (0.0126)	0.0494*** (0.00801)
Mother's age squared	-0.000706*** (9.42e-05)	-0.000990*** (0.000173)	-0.000666*** (0.000116)
Married	-0.209*** (0.0138)	-0.125*** (0.0243)	-0.240*** (0.0167)
Education level = 1, Incomplete secondary	0.103*** (0.0273)		0.0916*** (0.0274)
Education level = 2, Complete secondary	0.170*** (0.0281)		0.161*** (0.0284)
Education level = 3, Incomplete tertiary	0.154*** (0.0311)		
Education level = 4, Complete tertiary	0.346*** (0.0302)	0.155*** (0.0189)	
Wealth	0.0379*** (0.0138)	-0.00443 (0.0243)	0.0527*** (0.0162)
Region = 2, Buenos Aires province	0.0684*** (0.0252)	0.0635* (0.0332)	0.0654** (0.0309)
Region = 3, Cuyo	0.0128 (0.0227)	0.0434 (0.0308)	-0.00216 (0.0280)
Region = 4, NOA	-0.0433** (0.0220)	-0.0357 (0.0341)	-0.0435 (0.0269)
Region = 5, NEA	-0.0181 (0.0223)	0.0198 (0.0325)	-0.0330 (0.0266)
Region = 6, Pampeana	-0.0181 (0.0207)	0.0271 (0.0303)	-0.0387 (0.0253)
Region = 7, Patagonia	0.0253 (0.0227)	0.0612* (0.0328)	0.00718 (0.0270)
Number of adult men working	-0.0277*** (0.00880)	-0.0203 (0.0197)	-0.0306*** (0.00973)
Number of adult women not working	-0.00661 (0.00829)	-0.00431 (0.0159)	-0.00486 (0.00947)
HH receiving 'AUH'	-0.0362*** (0.0129)	-0.136*** (0.0296)	-0.0131 (0.0141)
Constant	-0.177 (0.115)	-0.476** (0.229)	-0.0619 (0.136)
Observations	7,132	2,055	5,074
Adjusted R-squared	0.149	0.135	0.125

Source: OLS estimates based on IPUMS MICS Argentina 2019-20. \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1. Clustered standard errors in parentheses.



**Table A5. Model of mother's labor force participation. Variable of interest: having at least one child with functional-other disability**

	Total (1)	Graduated (2)	Non-graduated (3)
<b>Child w/ functional-other disability</b>	<b>0.0311*</b> <b>(0.0171)</b>	<b>0.00627</b> <b>(0.0295)</b>	<b>0.0354*</b> <b>(0.0205)</b>
Number of children aged 0-1	-0.133*** (0.0151)	-0.0696*** (0.0265)	-0.159*** (0.0179)
Number of children aged 2-4	-0.0615*** (0.0108)	-0.0687*** (0.0187)	-0.0629*** (0.0131)
Number of children aged 5-17	-0.0340*** (0.00609)	-0.0198* (0.0120)	-0.0372*** (0.00722)
Mother's age	0.0527*** (0.00661)	0.0753*** (0.0127)	0.0494*** (0.00803)
Mother's age squared	-0.000700*** (9.45e-05)	-0.000990*** (0.000174)	-0.000667*** (0.000116)
Married	-0.207*** (0.0138)	-0.126*** (0.0244)	-0.239*** (0.0168)
Education level = 1, Incomplete secondary	0.102*** (0.0272)		0.0906*** (0.0274)
Education level = 2, Complete secondary	0.170*** (0.0280)		0.161*** (0.0284)
Education level = 3, Incomplete tertiary	0.154*** (0.0310)		
Education level = 4, Complete tertiary	0.347*** (0.0302)	0.155*** (0.0189)	
Wealth	0.0388*** (0.0137)	-0.00463 (0.0243)	0.0537*** (0.0161)
Region = 2, Buenos Aires province	0.0671*** (0.0251)	0.0640* (0.0332)	0.0639** (0.0309)
Region = 3, Cuyo	0.0124 (0.0226)	0.0435 (0.0308)	-0.00302 (0.0279)
Region = 4, NOA	-0.0432** (0.0219)	-0.0355 (0.0342)	-0.0429 (0.0267)
Region = 5, NEA	-0.0190 (0.0221)	0.0195 (0.0325)	-0.0340 (0.0264)
Region = 6, Pampeana	-0.0187 (0.0206)	0.0275 (0.0304)	-0.0386 (0.0252)
Region = 7, Patagonia	0.0236 (0.0227)	0.0615* (0.0328)	0.00480 (0.0270)
Number of adult men working	-0.0279*** (0.00880)	-0.0204 (0.0197)	-0.0309*** (0.00975)
Number of adult women not working	-0.00615 (0.00831)	-0.00415 (0.0159)	-0.00418 (0.00949)
HH receiving 'AUH'	-0.0366*** (0.0129)	-0.136*** (0.0296)	-0.0137 (0.0142)
Constant	-0.172 (0.115)	-0.476** (0.229)	-0.0648 (0.136)
Observations	7,132	2,055	5,074
Adjusted R-squared	0.149	0.134	0.124

Source: OLS estimates based on IPUMS MICS Argentina 2019-20. \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1. Clustered standard errors in parentheses.

**Table A6. Model of mother's labor force participation. Variable of interest: having at least one child with legal disability**

	Total (1)	Graduated (2)	Non-graduated (3)
<b>Child w/ legal disability</b>	<b>-0.135*** (0.0300)</b>	<b>-0.0794 (0.0530)</b>	<b>-0.154*** (0.0361)</b>
Number of children aged 0-1	-0.146*** (0.0135)	-0.0934*** (0.0227)	-0.170*** (0.0162)
Number of children aged 2-4	-0.0588*** (0.0101)	-0.0713*** (0.0178)	-0.0555*** (0.0122)
Number of children aged 5-17	-0.0299*** (0.00587)	-0.0114 (0.0112)	-0.0339*** (0.00702)
Mother's age	0.0587*** (0.00572)	0.0749*** (0.0115)	0.0561*** (0.00685)
Mother's age squared	-0.000781*** (8.29e-05)	-0.00100*** (0.000160)	-0.000749*** (0.000100)
Married	-0.193*** (0.0129)	-0.108*** (0.0235)	-0.223*** (0.0153)
Education level = 1, Incomplete secondary	0.103*** (0.0266)		0.0953*** (0.0268)
Education level = 2, Complete secondary	0.178*** (0.0271)		0.174*** (0.0277)
Education level = 3, Incomplete tertiary	0.160*** (0.0302)		
Education level = 4, Complete tertiary	0.352*** (0.0292)	0.159*** (0.0181)	
Wealth	0.0310** (0.0130)	-0.00788 (0.0230)	0.0441*** (0.0155)
Region = 2, Buenos Aires province	0.0647*** (0.0237)	0.0716** (0.0302)	0.0569* (0.0302)
Region = 3, Cuyo	0.0132 (0.0222)	0.0474* (0.0282)	-0.00232 (0.0281)
Region = 4, NOA	-0.0453** (0.0209)	-0.0534* (0.0319)	-0.0382 (0.0253)
Region = 5, NEA	-0.0316 (0.0213)	-0.00762 (0.0313)	-0.0406 (0.0257)
Region = 6, Pampeana	-0.0153 (0.0197)	0.0341 (0.0280)	-0.0347 (0.0245)
Region = 7, Patagonia	0.0190 (0.0215)	0.0579* (0.0311)	0.00112 (0.0257)
Number of adult men working	-0.0257*** (0.00807)	-0.0248 (0.0185)	-0.0274*** (0.00892)
Number of adult women not working	-0.0119 (0.00806)	-0.00464 (0.0145)	-0.0124 (0.00946)
HH receiving 'AUH'	-0.0346*** (0.0124)	-0.124*** (0.0275)	-0.0130 (0.0136)
Constant	-0.282*** (0.0994)	-0.453** (0.205)	-0.201* (0.115)
Observations	8,120	2,349	5,769
Adjusted R-squared	0.157	0.145	0.128

Source: OLS estimates based on IPUMS MICS Argentina 2019-20. \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1. Clustered standard errors in parentheses.