



# Household chores and child health: preliminary evidence from six countries

F. Francavilla  
S. Lyon

October 2003



# **Household chores and child health: preliminary evidence from six countries**

**F. Francavilla\***

**S. Lyon\***

**Working Paper  
October 2003**

Understanding Children's Work (UCW) Project  
University of Rome "Tor Vergata"  
Faculty of Economics  
V. Columbia 2  
00133 Rome Tor Vergata

Tel: +39 06.7259.5618

Fax: +39 06.2020.687

Email: [info@ucw-project.org](mailto:info@ucw-project.org)

As part of broader efforts toward durable solutions to child labor, the International Labour Organization (ILO), the United Nations Children's Fund (UNICEF), and the World Bank initiated the interagency Understanding Children's Work (UCW) project in December 2000. The project is guided by the Oslo Agenda for Action, which laid out the priorities for the international community in the fight against child labor. Through a variety of data collection, research, and assessment activities, the UCW project is broadly directed toward improving understanding of child labor, its causes and effects, how it can be measured, and effective policies for addressing it. For further information, see the project website at [www.ucw-project.org](http://www.ucw-project.org).

This paper is part of the research carried out within UCW (Understanding Children's Work), a joint ILO, World Bank and UNICEF project. The views expressed here are those of the authors' and should not be attributed to the ILO, the World Bank, UNICEF or any of these agencies' member countries.

---

\* University of Florence

\*\*UCW-Project and University of Rome "Tor Vergata"

# **Household chores and child health: preliminary evidence from six countries**

**Working Paper  
October 2003**

## **ABSTRACT**

This paper uses survey datasets from six countries in an attempt to shed light on the relationship between involvement in household chores and child health. The descriptive statistics presented in the paper reveal no clear correlation between household chores and health in the six countries. Children spending at least four hours daily on household chores are not clearly worse-off health-wise than children without chores responsibilities, and children spending more time on chores actually appear better-off health-wise than children for whom household chores constitute only a relatively small time burden. Some types of chores appear to have more impact on health status than others, but the variation in reported illness by chore type is generally quite small. It is argued that these results are primarily a reflection of shortcomings in the measurement of the chores-health link. The simple measures of child health employed in the paper – reported illness and Body Mass Index – fail to account for the dynamic nature of the relationship between chores involvement and health, and for the potential endogeneity of chores involvement to health outcomes.

# Household chores and child health: preliminary evidence from six countries

Working Paper  
October 2003

## CONTENTS

1. Introduction.....	1
2. Child involvement in household chores.....	1
3. Household chores and child health .....	3
4. Discussion .....	6
5. Conclusion .....	7
Appendix. Detailed statistical tables .....	8
References .....	12



## 1. INTRODUCTION

1. Should the performance of household chores be considered “child labour”, to be eliminated in accordance with international child labour norms? There is growing consensus among international agencies that this indeed should be the case. The UN Convention on the Rights of the Child and ILO Convention No. 182 (Worst Forms),<sup>1</sup> two of the main international legal standards relating to child labour, both stress children’s right to be protected from forms of work which adversely affect their health and development, even if this work is technically non-economic in nature.<sup>2</sup>

2. But it is not yet clear which forms of household chores, performed above which time thresholds, should be considered as harmful to the child. The impact of household chores on children’s health status is a critical consideration in answering these questions. While the impact of economic activity on children’s health has been subject of a number of recent studies,<sup>3</sup> almost no research has been undertaken on the relationship between household chores and child health, and how this relationship varies by chore type and hours spent on chores.

3. In this paper we offer some preliminary descriptive evidence on these issues. We explore possible correlations between chores and health using survey datasets from six countries - Guatemala, Zambia, Peru, Guinea, Brazil and Kazakhstan. Relatively few survey questionnaires collect data on both health status and chores involvement, and the selection of the six countries for inclusion in the paper was conditioned by this data constraint.

## 2. CHILD INVOLVEMENT IN HOUSEHOLD CHORES

4. A large proportion of children in the six countries spend at least some time each week in household production activities such as collecting firewood, fetching water, food preparation or child care (Figure 1.a). But these activities constitute a major time burden for a much smaller proportion of children. Only around one in ten children in Guatemala, Guinea and Peru, and even fewer in Brazil and Kazakhstan, spend at least 28 hours per week on household chores.<sup>4</sup>

5. Girls’ involvement in household chores significantly outstrips that of boys in all six countries. The variation by sex in “full-time” (i.e., at least 28 hours per week) involvement in household chores is especially large (Figure 1.b). This undoubtedly reflects broader gender-based divisions of household responsibilities, and in particular the greater general likelihood of girls being assigned responsibility for time-consuming chores such as water collection and child care. Boys, on the other hand,

---

<sup>1</sup> The UN Convention on the Rights of the Child (CRC) recognises the children’s right to be protected from forms of work that are likely to be hazardous or to interfere with the child’s education, or to be harmful to the child’s *health* or physical, mental, spiritual, moral or social development. Activities targeted by ILO Convention No. 182 as worst forms include any activity or occupation which, by its nature or type has, or leads to, adverse effects on the child’s safety, *health* (physical or mental), and moral development.

<sup>2</sup> Efforts against child labour, however, have to date focussed primarily on economic activity, or “market work”. Economic activity, as defined by the UN System of National Accounts (1993 Rev. 3), is a broad concept that encompasses most productive activities by children, including unpaid and illegal work, work in the informal sector, and production of goods for own use. Household chores, on the other hand, are non-economic activities, and therefore outside the ‘production boundary’, according the UN System of National Accounts (1993 Rev. 3). But this distinction between work and chores is essentially technical, as both can interfere with school and leisure, and both can pose health risks.

<sup>3</sup> See, for example, O’Donnell and Rosati 2002; O’Donnell, Rosati, and van Doorslaer 2003; Fassa, Facchini, Dall’Agnol and Christiani 2000; and Rosati and Straub 2003

<sup>4</sup> The questionnaire for Zambia did not collect information on the number of hours spent performing household chores.

Guinea and Kazakhstan excepted, are more likely to be assigned responsibility for market work (Table A1.).

6. For both boys and girls, involvement in household chores is greater in rural compared to urban areas (Table A2.) The variation by residence likely partially reflects the better access to basic services such as water and electricity in urban areas, which reduces or eliminates tasks such as water and wood collection. Child care institutions are also frequently more available in urban settings, meaning older children have to spend less time looking after younger siblings.

Figure 1. – (a) Rate of child involvement in household chores for at least one hour per week, by sex

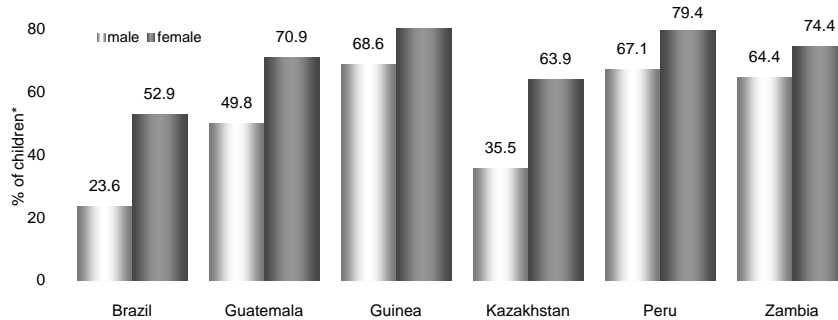
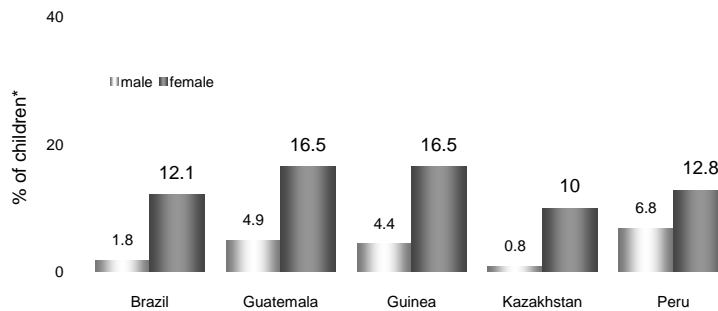


Figure 1. – (b) Rate of child involvement in household chores for at least 28 hours per week, by sex



Notes: \*\*Reference age groups are as follows: 6-14 years (Guatemala, Brazil and Kazakhstan); 7-14 years (Guinea).

Sources: Brazil, *Pesquisa sobre padrões de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; Kazakhstan, *Living Standards Survey*, 1996; Peru, *Encuesta nacional de hogares sobre medición de niveles de vida* (ENNIV), 1994.

7. The type of the chores performed by children differs somewhat across the countries, and by sex and residence within countries. As shown in Table 1, “cleaning” is the most commonly performed chore in Guatemala, “collecting water” is the most common chore in Guinea, and “cooking” in Kazakhstan. The surveys did not, however, include one of the most common chores – child care – as a separate category. Table 1 makes clear that most children in all three countries are charged with performing numerous chores simultaneously. In Guinea, for example, 97 percent of total children performing household chores must collect water, while 80 percent must bring in firewood.

8. Significant gender differences in the assignment of household chores are apparent in all three countries, largely in line with traditional gender roles. In Guatemala, girls performing household chores are more likely than their male counterparts to be charged with cooking and cleaning, and less likely to be assigned responsibility for firewood and water collection. In Guinea, girls doing chores are much more likely to be tasked with cooking and going to the market, less likely to be involved in firewood collection, but equally likely to be responsible for fetching water. In Kazakhstan, girls



performing chores are more likely to be charged with cooking and cleaning, and much more likely to be charged with washing. Differences by residence are also apparent. For all three countries, rural children performing household chores are more likely than their urban counterparts to be involved in water and firewood collection, and less likely to be tasked with going to the market.

Table 1. - Distribution of children performing household chores for at least 28 hours per week, by type of household chore<sup>(1)</sup>

Country	Type of HH chores	Urban			Rural			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Guatemala	Cooking <sup>(2)</sup>	32.6	76.9	66.8	43.3	83.4	73.7	40.5	81.6	71.9
	Cleaning <sup>(3)</sup>	53.5	97.5	87.4	45.6	97.7	85.1	47.6	97.6	85.7
	Collecting water and firewood	66.1	30.2	38.4	88.0	51.2	60.1	82.4	45.6	54.3
	Going to the market	31.6	38.6	37.0	27.9	24.5	25.3	28.8	28.3	28.4
Guinea	Cooking	25.5	83.0	75.3	7.9	86.2	66.2	9.6	85.6	67.7
	Collecting water	93.6	90.9	91.2	96.2	99.1	98.3	96.0	97.5	97.1
	Gathering firewood	54.9	27.8	31.4	99.5	86.3	89.7	95.2	75.2	79.9
	Going to the market	24.9	63.5	58.6	14.4	43.8	36.3	15.4	47.6	40.0
	Other	94.0	97.1	96.7	42.6	95.2	81.6	47.5	95.5	84.2
Kazakhstan	Cooking	66.7	91.3	88.5	100.0	100.0	100.0	83.3	97.1	95.9
	Cleaning	100.0	87.0	88.0	66.7	97.8	95.8	80.0	94.1	93.2
	Washing	0.0	73.9	65.4	33.3	84.1	80.9	16.7	80.6	75.3
	Going to the market	66.7	68.2	68.0	33.3	16.7	17.8	50.0	34.4	35.7

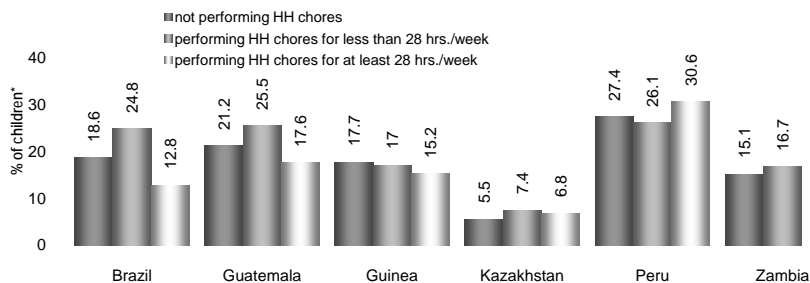
Notes : (1) Columns do not sum to 100 because chores categories are not mutually exclusive ; (2) "Cleaning" refers to cleaning the house, washing dishes, washing and ironing clothing; (3) "Cooking" refers to preparing breakfast, lunch or dinner, and throwing out the trash.

Sources: Guatemala, *Encuesta de Condiciones de Vida (ENCOVI)*, 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; and Kazakhstan, *Living Standards Survey*, 1996;

### 3. HOUSEHOLD CHORES AND CHILD HEALTH

9. Is there a correlation between involvement in household chores and health status? In addressing this question, we first compare the health status of children performing household chores (for at least for hours daily)<sup>5</sup> with that of children without responsibilities for chores. Two proxies for child health are used: incidence of illness in the week preceding the survey (available for all six countries); and Body Mass Index (BMI)<sup>6</sup> (available for Brazil and Guatemala). Both are far from ideal as measures of child health, but they are the only ones that can be constructed from the survey datasets.

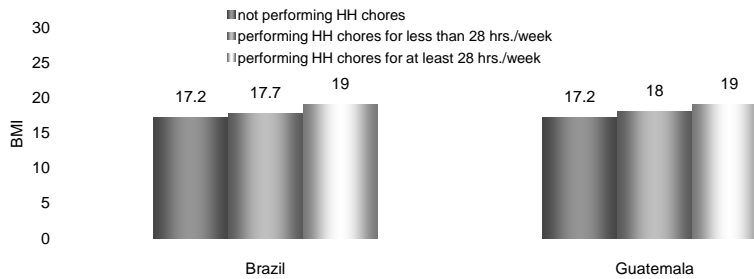
Figure 2. – (a) Rate of reported child illness, by involvement in household chores



<sup>5</sup> Unless otherwise specified, children performing household chores refers to the group of children that perform household chores for at least four hours daily.

<sup>6</sup> An anthropometric measure equal to weight in kilograms divided by height in metres squared.

Figure 2. - (b). Child body mass index (BMI), by involvement in household chores



Notes: \*Reference age groups are as follows: 6-14 years (Guatemala, Brazil and Kazakhstan); 6-11 years (Zambia); and 7-14 years (Guinea).

Sources: Brazil, *Pesquisa sobre padrões de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; Kazakhstan, *Living Standards Survey*, 1996; Peru, *Encuesta nacional de hogares sobre medición de niveles de vida* (ENNIV), 1994; and Zambia, *Living Conditions Monitoring Survey I*, 1996.

10. As shown in Figures 2(a) and (b), neither proxy suggests a clear relationship between chores involvement and health. In terms of reported illness, children not performing household chores fare better than children that do perform household chores in Kazakhstan and Peru. In Brazil, Guatemala and Guinea, however, the opposite pattern holds. In terms of Body Mass Index, in both Brazil and Guatemala, children performing household chores in fact score better than their counterparts not involved in household chores. The use of other anthropometric measures, such as weight-for-age and height-for-age, does not change the results obtained.

11. Figures 2(a) and (b) also suggest little relation between health and the intensity of involvement in household chores. Indeed, in four of the five countries (Brazil, Guatemala, Guinea and Kazakhstan),<sup>7</sup> incidence of reported illness is lower among the group of children that puts in the most time on chores. Similarly, in Brazil and Guatemala, children spending at least four hours daily on chores score better in terms of Body Mass Index than children spending fewer than four hours daily on chores.

12. Different types of household chores undoubtedly have different consequences on child health; a fact not taken into consideration in the aggregate figures presented in Figures 2(a) and (b). It stands to reason, for example, that long hours spent each day carrying water are likely to have more serious immediate and long-term health consequences than the same number of daily hours spent looking after younger siblings. Table 2 looks at reported illness among children performing different types of chores. It shows some variation in illness incidence by chore type, though the effect of chore type on health status appears relatively small and inconsistent across countries. But isolating the health effects of specific chores types is complicated by the fact that most children appear to perform a variety of different chores each day. The figures presented in Table 2, therefore, should be interpreted with caution.

<sup>7</sup> In the sixth country, Zambia, data on hours spent performing household chores are not available.

Table 2. - Rate of reported illness among children performing household chores for at least 28 hours a week, by type of household chore<sup>(1)</sup>

Country	Type of HH chores	Urban			Rural			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Guatemala	Cooking	15.4	16.6	16.2	31.9	22.1	24.4	24.9	20.4	21.7
	Cleaning	24.2	19	21.2	20.2	28.9	26.2	22.2	25	24
	Collecting water and firewood	13.4	15.9	14.7	20.8	27	23.7	19.9	25.3	22.5
	Going to the market	26.7	32.3	29.6	31	22.4	26.4	29	27.1	27.9
	Total	22.5	23.2	22.9	24.9	25	24.9	24	24.4	24.2
Guinea	Cooking	0.0	54.0	54.0	0.0	41.5	41.5	0.0	42.6	42.6
	Collecting water	0.0	0.0	0	18.2	35.2	20.0	18.0	29.0	19.4
	Gathering firewood	-	-	-	-	-	-	-	-	-
	Going to the market	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
	Other	8.6	12.0	11.6	16.1	14.4	14.6	14.7	13.9	14.0
	Total	8.1	12.3	11.7	16.6	15.7	15.9	15.8	15.0	15.2
Kazakhstan	Cooking	11.1	22.2	16.7	0.0	6.3	3.7	5	12	8.9
	Cleaning	11.3	8.4	9.7	4.8	6.3	5.6	7.6	7.3	7.4
	Washing	16.7	7.5	9.6	0.0	1.4	1.3	11.8	3.6	4.7
	Going to the market	9.4	8.7	9	15	3.8	8.7	11	7.4	8.9
	Total	11	9	9.8	5.9	4.3	4.9	8.6	6.6	7.4

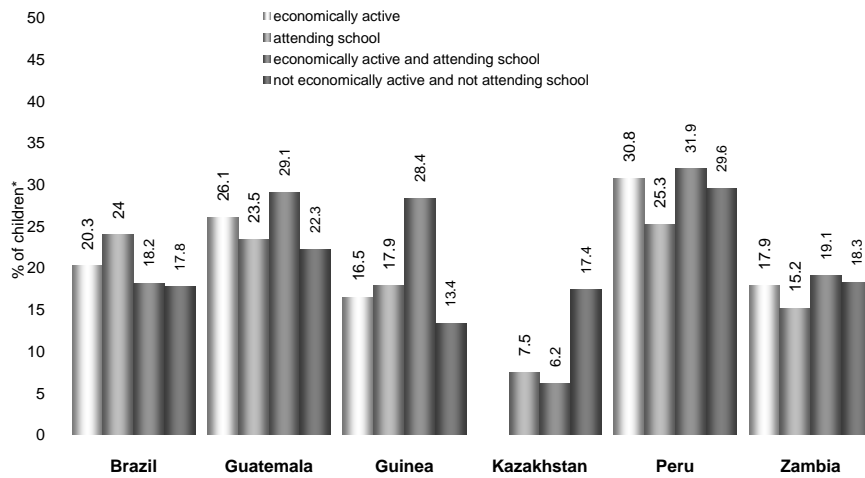
Note: (1) Chore categories are not mutually exclusive, and observations for some chore categories are limited. Results, therefore, should be interpreted with caution.

Sources: Brazil, *Pesquisa sobre padrões de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; Kazakhstan, *Living Standards Survey*, 1996.

13. A final important consideration in investigating the health-chores link is what children are doing in conjunction with chores, i.e., whether they are simultaneously engaged in market work, attending school, both or neither (Figure 3). It would be expected that children facing the largest overall time pressures, i.e., those having to perform market work and attend school in addition to performing household chores, would be most compromised in terms of their health. This is indeed the case in four of the countries (Guatemala, Guinea, Peru and Zambia). But in only one of these countries (Guinea) is the health status of these children markedly worse than that of other children performing chores. And in two other countries, Kazakhstan and Brazil, children working, studying and performing household chores simultaneously are as healthy as or healthier than other children performing chores.

14. By the same reasoning, it might be expected that children facing the smallest time pressures, i.e. those performing household chores but not economically active or attending school, would be least compromised in terms of their health. This holds true in three countries (Brazil, Guatemala and Guinea), but in one (Kazakhstan) the opposite pattern prevails.

Figure 3. - Rate of reported illness among children performing household chores (for at least 28 hours weekly), by work and schooling status



\*Reference age groups are as follows: 6-14 years (Guatemala, Brazil and Kazakhstan); 6-11 years (Zambia); and 7-14 years (Guinea).

Sources: Brazil, *Pesquisa sobre padrões de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; Kazakhstan, *Living Standards Survey*, 1996; Peru, *Encuesta nacional de hogares sobre medición de niveles de vida* (ENNIV), 1994; and Zambia, *Living Conditions Monitoring Survey I*, 1996.

Notes:

#### 4. DISCUSSION

15. The descriptive statistics presented above reveal no clear correlation between household chores and health. Children spending at least four hours daily on household chores are not clearly worse-off health-wise than children without chores responsibilities, and children spending more time on chores actually appear better-off health-wise than children for whom household chores constitute only a relatively small time burden. Some types of chores appear to have more impact on health status than others, but the variation in reported illness by chore type is generally quite small.

16. Can it be concluded then that household chores are benign, or even beneficial, in terms of their health impact on children? In a context in which the alternative to chores is participation in hazardous or unhealthy forms of market work, this may indeed be the case. Intensive involvement in household chores, in other words, might serve to protect children from hazardous work in some contexts. Children's involvement in chores may also yield a positive income effect. By freeing the time of an adult for productive work, children performing household chores might contribute to a higher level of household income. Higher income, in turn, might lead to better levels of nutrition and care, and ultimately to better health.

17. But in many other circumstances the health impact of intensive involvement in household chores is undoubtedly negative. Long hours spent daily on strenuous tasks such as fetching water or collecting firewood can take a significant toll on children's developing bodies. Intensive involvement in household chores also limits children's ability to participate in and benefit from education, indirectly affecting their health. Studies show that less educated persons are generally less informed about the facts that influence their health, less able to interpret medical instructions and more reluctant to go to the doctor. Loss of educational opportunities can also have an indirect negative influence on health outcomes by limiting human capital formation and lifetime income levels.

18. It is probable, therefore, that the inconclusive results presented above are in large part a product of shortcomings in the measurement of the health-chores relationship. The measures used for child health – reported illness and Body Mass Index – do not,

for example, capture the dynamic nature of the chores-health link. Current health is affected by both the household chores performed in the present and in the past, and current household chores affect future as well as present health. Studies suggest that the health effects of involvement in economic activity show up only in the medium or long term, and this may also be the case with household chores.<sup>8</sup>

19. These simple measures also fail to account for the potential endogeneity of household chores to health outcomes. If individuals born with a predisposition to poor health are also those who are most likely to be engaged in household chores as a child, the correlation between chores and health will overstate the impact of the former on the latter. But if, on the other hand, healthy individuals are selected into household chores at a young age, a more plausible scenario, the true health impact of chores will be understated.

## 5. CONCLUSION

20. Determining the extent to which household chores should be targeted as part of broader efforts against child labour requires more detailed information on the nature of the chores-health link. But the relationship between household chores and health is complex, and difficult to disentangle empirically. Simple measures of child health such as reported illness and Body Mass Index are insufficient in this context. New measurement tools and study methodologies are needed, which account for the dynamic nature of the health-chores link, and correct for the potential endogeneity of chores involvement to health outcomes.

---

<sup>8</sup> See, for example, Rosati and Straub, 2003

## APPENDIX. DETAILED STATISTICAL TABLES

Table A1. Children activity status and involvement in household chores, by sex

Countries	Sex	Distribution of children by activity status				% of children performing HH chores $\geq$ 28 hrs./wk.	Child work prevalence (expanded definition) <sup>(a)</sup>
		Work only	Study only	Work and study	Neither work nor study		
Guatemala	Male	8.5	55.2	14.6	21.7	4.9	27.2
	Female	5.2	57.3	7.1	30.4	16.5	26.4
	Total	6.9	56.3	11.0	26	10.6	26.8
Zambia	Male	10.4	42.9	15.1	31.6	-	-
	Female	8.0	48.4	12.6	30.9	-	-
	Total	9.2	45.7	13.8	31.3	-	-
Peru	Male	1.3	80.2	17.5	1.0	6.8	23.1
	Female	1.1	84	13.2	1.7	12.8	24.2
	Total	1.2	82.1	15.3	1.4	9.8	23.6
Guinea	Male	44.9	40.6	2.3	12.2	4.4	16.6
	Female	48.0	27.0	1.5	23.5	16.5	17.7
	Total	46.3	34.3	1.9	17.5	10.1	17.1
Brazil	Male	2.5	77.7	12.7	7.1	1.8	16.6
	Female	1.3	83.9	6	8.8	12.1	17.7
	Total	1.9	80.7	9.4	7.9	6.9	17.1
Kazakhstan	Male	1.2	59.4	26.9	12.5	0.8	27.4
	Female	1.2	61.4	27.2	10.1	10.0	31.1
	Total	1.2	60.4	27	11.4	5.1	29.1

Notes: (a) Expanded definition combines children performing household chores for at least 28 hours per week with those that are economically active (eliminating the overlapping group that fall into both categories).

Sources: Brazil, *Pesquisa sobre padrones de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; Kazakhstan, *Living Standards Survey*, 1996; Peru, *Encuesta nacional de hogares sobre medición de niveles de vida* (ENNIV), 1994; and Zambia, *Living Conditions Monitoring Survey I*, 1996.

Table A2. Children activity status and involvement in household chores, by residence

Countries	Residence	Distribution of children by activity status				% of children performing HH chores $\geq$ 28 hrs./wk.	Child work prevalence (expanded definition) <sup>(a)</sup>
		Work only	Study only	Work and study	Neither work nor study		
Guatemala	Urban	3.8	67.6	8.0	20.7	8.1	18.8
	Rural	8.5	50.3	12.5	28.7	11.9	31.0
	Total	6.9	56.3	11.0	26.0	10.6	26.8
Zambia	Urban	3.3	60.3	8.0	28.3	-	-
	Rural	15.8	29.2	20.4	34.6	-	-
	Total	9.2	45.7	13.8	31.3	-	-
Peru	Urban	0.2	94.6	4.3	0.9	7.9	11.8
	Rural	3.0	59.6	35.2	2.2	13.2	44.5
	Total	1.2	82.1	15.3	1.4	9.8	23.6
Guinea	Urban	10.3	64.5	1.2	24.0	5.5	15.0
	Rural	63.1	20.2	2.3	14.4	12.5	67.7
	Total	46.3	34.3	1.9	17.5	10.2	51.1
Brazil	Urban	0.5	87.9	5.6	6.0	5.3	10.8
	Rural	6.0	60.5	20.2	13.3	11.3	35.2
	Total	1.9	80.7	9.4	7.9	6.9	17.1
Kazakhstan	Urban	1.1	67.5	19.9	11.5	4.0	22.0
	Rural	1.3	54.6	32.9	11.2	6.0	34.9
	Total	1.2	60.3	27.1	11.4	5.1	29.2

Notes: (a) Expanded definition combines children performing household chores for at least 28 hours per week with those that are economically active (eliminating the overlapping group that fall into both categories).

Sources: Brazil, *Pesquisa sobre padrones de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; Kazakhstan, *Living Standards Survey*, 1996; Peru, *Encuesta nacional de hogares sobre medición de niveles de vida* (ENNIV), 1994; and Zambia, *Living Conditions Monitoring Survey I*, 1996.

Table A3. - Incidence of reported illness, by involvement in household chores, residence and sex

Country	Residence	Not involved in HH chores			HH. chores						All children		
					HH. chores for less than 28 hrs./wk.			HH. chores for at least 28 hrs./wk.					
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Guatemala	Urban	18.4	20.8	19.3	21.9	25.6	23.9	24.6	11.9	14.8	20.3	22.3	21.3
	Rural	21.7	23.3	22.3	26.8	26.1	26.4	10.3	21.2	18.6	23.3	24.4	23.8
	Total	20.6	22.4	21.2	25.0	25.9	25.5	13.9	18.7	17.6	22.2	23.7	23.0
Zambia	Urban	18.0	18.8	18.4	17.5	21.1	19.4	-	-	-	17.6	20.6	19.1
	Rural	13.1	12.3	12.8	14.4	14.4	14.4	-	-	-	13.9	13.8	13.9
	Total	15.2	14.9	15.1	15.8	17.5	16.7	-	-	-	15.6	16.8	16.2
Peru	Urban	27.6	24.7	26.4	22.2	23.9	23.1	23.5	25.4	24.8	24.2	24.3	24.2
	Rural	29.0	31.2	29.8	31.3	30.9	31.1	39.0	35.6	36.7	31.4	31.8	31.6
	Total	28.0	26.4	27.4	25.5	26.6	26.1	31.0	30.4	30.6	26.7	27.1	26.9
Guinea	Urban	17.5	18.8	18.0	16.0	17.4	16.8	8.1	12.3	11.7	16.6	17.3	16.9
	Rural	17.8	16.4	17.4	16.4	17.9	17.1	16.6	15.7	15.9	16.7	17.3	17.0
	Total	17.7	17.6	17.7	16.3	17.7	17.0	15.8	15.0	15.2	16.7	17.3	17.0
Brazil	Urban	20.6	14.0	18.1	30.7	24.7	26.6	13.2	10.1	10.6	22.2	17.8	20
	Rural	21.9	18.2	20.7	21.0	21.5	21.3	14.8	15.8	15.7	21.4	19.3	20.4
	Total	20.9	14.7	18.6	26.7	23.7	24.8	13.7	12.6	12.8	22.0	18.2	20.1
Kazakhstan	Urban	10.5	6.9	9.3	11.3	8.9	9.9	0.0	9.1	8.0	10.7	8.3	9.6
	Rural	2.4	4.9	3.2	6.0	3.7	4.6	0.0	6.5	6.1	3.4	4.5	3.9
	Total	5.4	5.7	5.5	8.8	6.4	7.4	0.0	7.4	6.8	6.5	6.3	6.4

Sources: Brazil, *Pesquisa sobre padrones de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; Kazakhstan, *Living Standards Survey*, 1996; Peru, *Encuesta nacional de hogares sobre medición de niveles de vida* (ENNIV), 1994; and Zambia, *Living Conditions Monitoring Survey I*, 1996.

Table A4. Incidence of reported illness, by involvement in household chores, market work and sex

Countries	Sex	Incidence of reported illness			
		Not involved in HH chores	HH chores for < 28 hrs./wk.	HH chores for ≥ 28 hrs./wk.	Involved in market work
Guatemala	Male	20.6	25.0	13.9	24.7
	Female	22.4	25.9	18.7	25.8
	Total	21.2	25.5	17.6	25.1
Zambia	Male	15.2	15.8	-	16.8
	Female	14.9	17.5	-	19.8
	Total	15.1	16.7	-	18.2
Peru	Male	28.0	25.5	31	30.5
	Female	26.4	26.6	30.4	31.6
	Total	27.4	26.1	30.6	31
Guinea	Male	17.6	16.4	15.8	16.5
	Female	17.4	17.7	15.0	17.3
	Total	17.6	17.0	15.2	16.9
Brazil	Male	20.9	26.7	13.7	21.5
	Female	14.7	23.7	12.6	18.3
	Total	18.6	24.8	12.8	20.5
Kazakhstan	Male	5.4	8.8	0.0	5.4
	Female	5.7	6.4	7.4	5.4
	Total	5.5	7.4	6.8	5.4

Sources: Brazil, *Pesquisa sobre padrones de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; Kazakhstan, *Living Standards Survey*, 1996; Peru, *Encuesta nacional de hogares sobre medición de niveles de vida* (ENNIV), 1994; and Zambia, *Living Conditions Monitoring Survey I*, 1996.

Table A5. Incidence of report illness, by activity status and involvement in household chores

Countries	Involved in HH chores?	Incidence of reported illness					
		(a) Market work only	(b) Study only	(c) Market work and study	(d) Neither market work nor study	Not in market work (b) + (d)	In market work (a) + (c)
Guatemala	No	18.8	19.5	21.0	24.1	21.5	19.9
	Yes	26.1	23.5	29.1	22.3	23.2	28.1
	Total	22.9	22.1	26.5	23.3	22.5	25.1
Zambia	No	14.5	14.4	17.1	16.6	14.8	18.7
	Yes	17.9	15.2	19.1	18.3	16.1	18.2
	Total	17.5	14.9	19.0	17.6	15.6	18.2
Peru	No	52.9	27.3	24.0	47.9	27.5	25.8
	Yes	30.8	25.3	31.9	29.6	25.5	31.8
	Total	33.2	25.9	30.8	32.5	26.1	31.0
Guinea	No	16.4	17.9	5.2	19.0	18.2	15.7
	Yes	16.5	17.9	28.4	13.4	16.5	16.9
	Total	16.5	17.9	24.2	15.6	17.1	16.8
Brazil	No	16.7	19.0	24.4	9.3	18.2	22.8
	Yes	20.3	24.0	18.2	17.8	23.4	18.5
	Total	18.2	20.8	20.9	12.7	20.1	20.5
Kazakhstan	No	0	5.4	4.0	8.0	5.9	3.6
	Yes	0	7.5	6.2	17.4	8.4	6.0
	Total	0	6.4	5.4	9.6	6.9	5.1

Sources: Brazil, *Pesquisa sobre padrones de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; Kazakhstan, *Living Standards Survey*, 1996; Peru, *Encuesta nacional de hogares sobre medición de niveles de vida* (ENNIV), 1994; and Zambia, *Living Conditions Monitoring Survey I*, 1996.

Table A6. Body Mass Index, by involvement in household chores and sex

Country	Activity status	Not involved in HH chores			HH chores						All children		
					HH chores for less than 28 hrs./wk.			HH chores for at least 28 hrs./wk.					
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Guatemala	Work only	19.1	21.0	19.5	18.5	20.7	19.4	17.8	22.0	21.3	18.8	21.1	19.7
	Study only	17.7	17.3	17.6	17.9	17.9	17.9	17.2	18.8	18.4	17.8	17.9	17.8
	Work and study	17.9	17.9	17.9	18.1	18.7	18.3	17.6	18.9	18.4	18.0	18.7	18.2
	No activities	16.5	15.9	16.2	17.5	17.4	17.5	16.7	20.6	19.8	16.8	17.2	17.0
	Total	17.5	16.8	17.2	17.9	18.0	18.0	17.2	19.6	19.0	17.7	17.9	17.8
Brazil	Work only	17.0	21.7	17.5	18.2	19.4	18.8	17.7	19.3	19.1	17.3	19.9	18.1
	Study only	17.2	17.2	17.2	17.3	18.0	17.7	17.7	19.2	19.0	17.3	17.7	17.5
	Work and study	18.0	18.7	18.1	17.3	18.4	17.7	17.1	19.2	19.0	17.7	18.7	18.0
	No activities	16.5	15.8	16.2	17.9	17.4	17.6	18.0	19.5	19.4	16.8	17.1	17.0
	Total	17.2	17.1	17.2	17.4	18.0	17.7	17.6	19.2	19.0	17.3	17.8	17.5

Sources: Brazil, *Pesquisa sobre padrones de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000

Table A7. Body Mass Index, by involvement in household chores and residence

Country	Activity status	Not involved in HH chores			HH chores						All children		
					HH chores for less than 28 hrs./wk.			HH chores for at least 28 hrs./wk.					
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Guatemala	Work only	19.7	19.5	19.5	19.5	19.3	19.4	23.0	21.0	21.3	19.9	19.6	19.7
	Study only	18.2	17.0	17.6	18.7	17.4	17.9	19.1	18.0	18.4	18.6	17.3	17.8
	Work and study	19.2	17.6	17.9	19.5	17.9	18.3	18.1	18.5	18.4	19.3	17.8	18.2
	No activities	16.0	16.3	16.2	18.2	17.2	17.5	19.8	19.8	19.8	17.0	17.0	17.0
	Total	17.7	17.0	17.2	18.8	17.5	18.0	19.3	18.9	19.0	18.4	17.5	17.8
Brazil	Work only	19.2	17.4	17.5	21.6	18.3	18.8	22.7	18.5	19.1	20.7	17.8	18.1
	Study only	17.4	16.3	17.2	18.1	16.9	17.7	19.4	18.1	19.0	17.7	16.7	17.5
	Work and study	19.1	17.2	18.1	18.6	17.3	17.7	19.3	18.9	19.0	18.9	17.4	18.0
	No activities	16.4	16.0	16.2	19.1	16.6	17.6	20.8	18.7	19.4	17.4	16.7	17.0
	Total	17.4	16.5	17.2	18.2	17.0	17.7	19.5	18.4	19.0	17.8	16.9	17.5

Sources: Brazil, *Pesquisa sobre padrones de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000



Table A8. Body Mass Index, by involvement in household chores and residence

Country	Daily hours on HH chores	Urban			Rural			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Guatemala	< 4	21.9	25.6	23.9	26.8	26.1	26.4	25	25.9	25.5
	5-6	23.9	13.3	16.1	6.8	16.9	14.7	12.9	15.8	15.1
	7-8	0**	6.9	6.4	18	18.5	18.4	16.5	15.6	15.8
	> 8	0**	13.2*	12.1*	11.6*	26.8	23.4	10.4	23.2	20.7
	Total	21.8	23.7	22.9	25.6	24.8	25.1	24.3	24.4	24.3
Peru	< 4	24.3	24.8	24.5	31.4	31.5	31.4	26.7	27.2	27.0
	5-6	25.5	16.9	18.6	28.3	33.0	31.6	27.3	25.1	25.7
	7-8	0.0	18.0	15.2	50.0	49.6	49.8	38.6	30.4	33.1
	> 8	51.0	0.0	18.5	33.3	38.2	35.6	41.3	14.4	26.2
	Total	24.3	24.3	24.3	31.4	31.8	31.6	26.8	27.1	26.9
Guinea	< 4	16.5	17.2	16.9	16.7	17.2	16.9	16.6	17.2	16.9
	5-6	0.0	15.8	14.0	10.5	8.1	8.9	9.9	9.6	9.7
	7-8	0.0	4.9	4.5	51.2	19.4	25.6	48.2	17.0	22.5
	> 8	10.0	13.4	12.8	10.3	20.5	18.8	10.2	19.1	17.7
	Total	16.2	16.8	16.6	16.6	16.4	16.5	16.5	16.5	16.5
Brazil	< 4	26.9	25	25.6	20.9	19.5	20	24.3	23	23.5
	5-6	20	12.5	13.2	66.7	17.2	21.9	37.5	14.3	16.5
	7-8	-	18.2	18.2	0	22.2	21.1	0	20.7	20
	> 8	0	16.7	14.3	-	0	0	0	10	9.1
	Total	26.7	23.8	24.7	21.4	19.2	20	24.4	22.2	22.9
Kazakhstan	< 4	13.6	14.8	14.2	4.1	8.6	6.0	9.6	12.4	10.8
	5-6	0.0	0.0	0.0	0.0	4.8	4.3	0.0	3.3	3.1
	7-8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	13.4	11.4	12.4	3.9	5.3	4.7	9.3	8.2	8.7

Sources: Brazil, *Pesquisa sobre padronés de vida* (PPV), 1996-97; Guatemala, *Encuesta de Condiciones de Vida* (ENCOVI), 2000; Guinea, *Enquête intégrale sur les conditions de vie des ménages*, 1994; Kazakhstan, *Living Standards Survey*, 1996; and Peru, *Encuesta nacional de hogares sobre medición de niveles de vida* (ENNIV), 1994.

## REFERENCES

- Alderman, Harold. (2000). "Anthropometrics" in M.E. Grosh and P. Glewwe (eds.) "Designing Household Survey Questionnaires for Developing Countries: Lessons from Ten Years of LSMS Experience". Oxford, Oxford University Press.
- Barrera, A. (1990). "The role of maternal schooling and its interaction with public health programs in child health production". *Journal of Development Economics*, 32(1): 69-91
- Behrman, J. (1988). "Intrahousehold Allocation of Nutrients in Rural India: Are Boys Favoured? Do parents exhibit inequality aversion?" *Oxford Economic Papers* 40: 32-54.
- Behrman, J.R. and Lavy, V. (1994). "Child health and school achievement: Causality, association and household allocations". *LSMS Working Paper* 104, Washington D.C., World Bank.
- de Onis, M. and Habicht, J.P. (1996). "Anthropometric reference data for international use: Recommendations from a World Health Organization Expert Committee". *American Journal Of Clinical Nutrition* 64: 650-658.
- Fassa, A.G., Facchini L.A., Dall'Agnol M.M., Christiani D.C. (2000). "Child labor and health: Problems and perspectives", *International Journal of Occupational and Environmental Health*, 6(1): 55-62.
- Fentiman, A. Hall, A. and Bundy, D. (2001). "Health and cultural factors associated with enrolment in basic education: A study in rural Ghana". *Social Science and Medicine*, 52: 429-439.
- Forastieri V. (1997). "Children at Work: Health and Safety Risks". Geneva, ILO.
- Grosh, M.E. and Glewwe, P. (1995). "A guide to Living Standards Measurement Study surveys and their data sets", *LSMS Working Paper* No 120, Washington D.C., World Bank.
- Guiffrida, A., Iunes, R.F. and Savedoff, W.D. (2001). "Health and poverty in Brazil: Estimation by structural equation model with latent variables, preliminary draft October 2001", *Mimeo*, Washington D.C., Inter-American Development Bank.
- Idler, E. L. and Y. Benyamini. (1997). "Self-rated health and mortality: a review of twenty-seven community studies". *Journal of Health and Social Behaviour*, 38 (1): 21-37

- Immink, M.D.C. and Payongayong, E. (1999). "Risk analysis of poor health and growth failure of children in the central highlands of Guatemala". *Social Science and Medicine*, 48: 997-1009.
- International Labour Organisation. (1999). *Convention 182: Convention on the Worst Forms of Child Labour*, Geneva, ILO.
- Kassouf, A.L. McKee, M. and Mossialos, E. (2001). "Early entrance to the job market and its effects on adult health: Evidence from Brazil". *Health Policy and Planning*, 16(1): 21-28.
- O'Donnel, O., Rosati, C. F. and Van Doorslaer, E. (2003). "Health effects of child work: Evidence from Vietnam." *Working Paper at Understanding Child Work Project (UCW)*. Web-site: [http://www.ucw-project.org/resources/report\\_research.html](http://www.ucw-project.org/resources/report_research.html)
- O'Donnel, O. and Rosati, C. F. (2003). "Child labour and health: Evidence and research issue". *Working Paper at Understanding Child Work Project (UCW)*. Web-site: [http://www.ucw-project.org/resources/report\\_research.html](http://www.ucw-project.org/resources/report_research.html)
- Parker, D. (1997). "Health effects of child labor". *The Lancet*, 350 (8): 1395-6.
- Pitt, M.M., Rosenzweig, M.R. and Nazmul Hassan, Md. (1990). "Productivity, health and the intrahousehold distribution of food in the low-income countries". *American Economic Review*, 80, 1139-1156.
- Ralston, H. (1997). "Health as an input to labour: Intrahousehold food distribution in rural Indonesia". *Journal of Policy Modelling*, 19(5): 567-86.
- Rosati, F. C. and Straub, R. (2003). "Does child labour have a deleterious effect on adult's health?" *Working Paper at Understanding Child Work Project (UCW)*
- Satyanarayana, K. Krishna, T.P. and Rao, B.S. (1986). "The effect of early childhood undernutrition and child labour on the growth and adult nutritional status of rural Indian boys around Hyderabad". *Human Nutrition and Clinical Nutrition* 40C: 131-9.
- Sen, A. (1998). "Mortality as an indicator of economic success and failure". *Economic Journal* 108: 1-25.
- Smith, J. (1999). "Healthy bodies and thick wallets: the dual relation between health and economic status". *Journal of Economic Perspectives*, 13(2): 145-166

Strauss, J. and Thomas, D. (1998). "Health, nutrition and economic development". *Journal of Economic Literature*, 36, 766-817.

Understanding Child Work Project (UCW). (2001). Web-site: Country Statistics:  
<http://www.ucw-project.org/cgi-bin/ucw>

Understanding Child Work Project (UCW). Understanding Children's Work in Guatemala, March 2003. *Report* prepared for UCW Project.