



Understanding Children's Work
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Orphanhood and child vulnerability SENEGAL

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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.

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.

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ABSTRACT

A large proportion of Senegalese children must grow up in the absence of one or both birth parents. In all, nearly one in 10 (nine percent) of children aged 0-14 years of age are orphans. There is also a large group of children, accounting for about 10 percent of total 5-14 year-olds, who are fostered, i.e., children who are not orphans but nonetheless live in a separate household from their parents. This Country Brief explores the effect of orphanhood and fostering on child vulnerability. Evidence is presented indicating that orphanhood increases child vulnerability on one main front: it makes it much more likely that a child is denied schooling. Compared to non-orphans, double orphans are six percentage points less likely to attend school full-time and single orphans are three percentage points less likely to be full-time students. But becoming a single or double orphan does not have a significant effect on the probability that a child is involved full-time in economic activity. Becoming a foster child actually reduces the probability of full-time work, but makes it more likely that a child is “inactive”, a category that includes children performing household chores.

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1. INTRODUCTION

1. A full understanding of child vulnerability in the Sub-Saharan Africa region is not possible without an examination of its links with the HIV/AIDS pandemic. AIDS orphans now number some six million in the region, and for every child orphaned by AIDS, another is caring for a sick relative or is affected by the disease in some other way. The overwhelming majority of these children must perform some form of work to support themselves and/or their families, interfering with or precluding schooling. The worst off are forced onto the street, where they become involved in prostitution or other harmful and exploitative forms of work. AIDS-affected children have fewer opportunities to acquire human capital, meaning that they are also more vulnerable, and have more difficulty securing gainful employment, when they become youths and young adults.
2. Although these general facts are clear, little research exists exploring the concrete links between AIDS orphans, schooling, and child labour, or the implications of these links for policy. This Country Brief for Senegal is one of a four-country series examining links between orphanhood and child vulnerability in specific national contexts. The series forms part of a broader research effort designed to help improve policy responses to the AIDS orphan phenomenon and to child vulnerability issues generally. The Country Brief draws primarily on data from the Multiple Indicator Cluster Survey conducted in Senegal during 2000 (MICS 2000).¹

2. NATIONAL CONTEXT

3. Senegal, with a population of 10.0 million (2002), faces widespread rural poverty, high levels of urban unemployment and the pressures of rapid population growth. A prolonged, low-intensity conflict in southern Casamance, one of the country's most productive agricultural regions, is inflicting severe hardship on the local population and disrupting the delivery of local basic services. Hundreds of children and women have become victims of landmines, large populations have been displaced and child nutritional status has deteriorated as a result of the conflict.
4. Senegal's social development indicators underscore the challenges faced by the country in improving the lives of its people. Live expectancy is only 52 years, and under-five mortality is 138 per 1,000. Over a third of primary school-aged children remain outside school, and less than half of children succeed in completing primary education. The country ranks 156th out of 175 countries in the United Nations Human Development Index (2003). But with an HIV prevalence of 1.4 percent among 15-49 year-olds, Senegal has been hailed as an African success story in controlling the spread of the epidemic. There are relatively few AIDS orphans in Senegal compared to other Sub-Saharan Africa countries; in 2001, the country was host to 15,000 children orphaned due to AIDS.

¹ The Senegal Multiple Indicator Cluster Survey was undertaken as part of the UNICEF global MICS survey programme, and was designed to assess progress on the end-decade goals set at the 1990 United Nations World Summit for Children. These goals related to nutrition, health and education, as well as to birth registration, family environment, knowledge of HIV/AIDS, and child labour. The Cote d'Ivoire MICS survey followed the design, planning and implementation methodologies of the global MICS survey programme. A stratified sample design was employed, building a national probabilistic sample, stratified by geographic area, department and residence (urban-rural). The survey sample comprised 6,383 households (2,305 urban households and 4,078 rural households). The survey questionnaire targeted male and female children under 17 years of age (household questionnaire module), women of child-bearing age (women questionnaire module), and children aged less than five years (child questionnaire).

Table 1. Basic indicators: Senegal

	1998	2001	2002
Population, total	9.0 million	9.8 million	10.0 million
Population growth (annual %)	2.4	2.3	2.3
National poverty rate (% of population)	..	..	..
Life expectancy (years)	..	..	52.3
Fertility rate (births per woman)	..	..	4.9
Under 5 mortality rate (per 1,000 children)	..	..	138.0
Child malnutrition, weight for age (% of under 5)	..	..	..
Prevalence of HIV (female, % ages 15-24)	..	0.5	..
Literacy total (% of ages 15 and above)	35.6	38.3	39.3
Primary completion rate, total (% age group)	..	48.0	48.6
Net primary enrollment (% relevant age group)	57.9	57.9	..
Access to improved water source (% of total pop.)	..	..	..
Access to improved sanitation (% of urban pop.)	..	..	..
GNI per capita, Atlas method (current US\$)	520.0	490.0	470.0
GDP (current \$)	4.7 billion	4.6 billion	5.0 billion
GDP growth (annual %)	5.7	5.6	1.1
Total debt service (% of exports of goods and services)	20.6	12.0	12.6
Aid per capita (current US\$)	55.5	42.2	44.8

Source: World Development Indicators database, April 2004

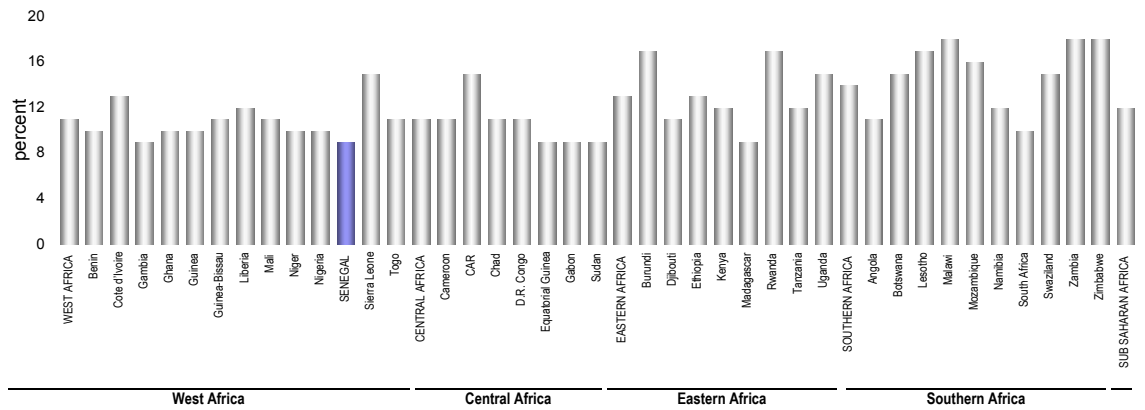
3. EXTENT AND NATURE OF ORPHANHOOD

3.1 Orphan rate

5. A significant proportion of Senegalese children must grow up in the absence of one or both birth parents. In all, nearly one in ten (nine percent) of children aged 0-14 years, 402,000 children in absolute terms, of age are either “single” (i.e., one parent deceased) or “double” (i.e., both parents deceased) orphans. This orphan rate is not high, however, relative to most other Sub-Saharan Africa countries (Figure 1). AIDS is a relatively minor contributor to the orphan phenomenon in Senegal, responsible for only four percent of total orphan cases.

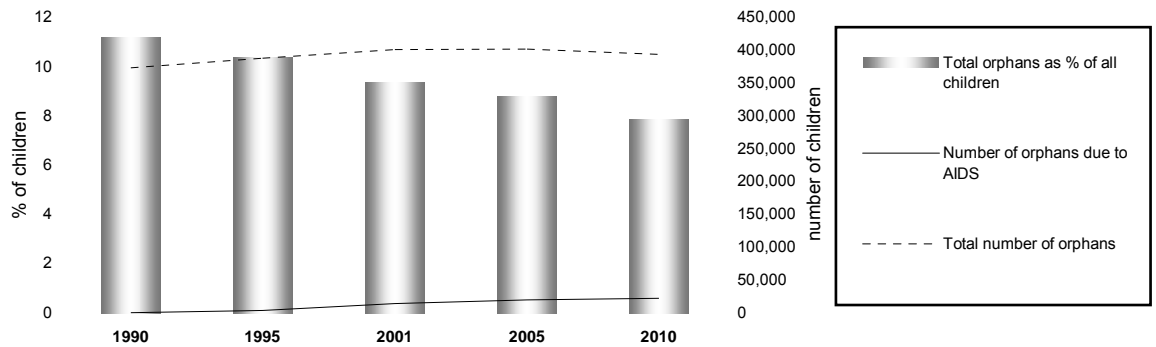
6. Figure 2 illustrates changes in the orphan situation since 1990, both in absolute terms and as a proportion of the overall child population. It shows that orphan rates have fallen since 1990, and are projected to fall further through to 2010, owing largely to the country’s success in controlling the spread of HIV/AIDS. In absolute terms, orphan cases are projected to level off during the 2001-2005 period, and begin to fall thereafter.

Figure 1. Orphans as a percentage of all children under 15, Sub-Saharan Africa region, 2001



Source: UNICEF, *Africa's Orphaned Generations*, November 2003

Figure 2. Orphanhood trends in Senegal, 1990-2010



Source: UNAIDS, UNICEF and USAID, *Children on the Brink 2002: A Joint Report on Orphan Estimates and Program Strategies*, July 2002.

Table 2 provides a breakdown of the child population aged 5-14 years by orphanhood status. About eight percent of children from this age group are orphans. The proportion of children that have lost a father (5.3 percent) is more than two times higher than the proportion of children who have lost a mother (two percent). Less than one percent of 5-14 year-olds have lost both parents. Orphan rates vary little by urban and rural residence. There is also a significant group of children, accounting for almost 10 percent of total 5-14 year-olds, who are fostered, i.e., not orphans but nonetheless living separately from their parents. This group is also vulnerable to abuses and therefore merits policy attention.

Table 2. Orphanhood status, children aged 5-14 years, Senegal

Residence	sex	% of total children aged 5-14 years					Total
		Non-orphans		Single orphans ⁽²⁾		Double orphan ⁽⁵⁾	
		Not fostered	Fostered ⁽¹⁾	Maternal orphan ⁽³⁾	Paternal orphan ⁽⁴⁾		
rural	male	83.4	8.1	2.5	5.4	0.7	100
	female	82.1	10.2	2.1	5.1	0.6	100
	total	82.8	9.1	2.3	5.2	0.6	100
urban	male	84.9	8.6	1.4	4.8	0.3	100
	female	79.9	11.7	1.7	6.1	0.6	100
	total	82.3	10.2	1.5	5.5	0.5	100
total	male	83.9	8.3	2.1	5.2	0.6	100
	female	81.2	10.8	1.9	5.5	0.6	100
	total	82.6	9.5	2.0	5.3	0.6	100

Notes: (1) Parents alive, but child living in a different household from them; (2) Child's mother or father deceased; (3) Child's mother deceased; (4) Child's father deceased; (5) Child's mother and father deceased.

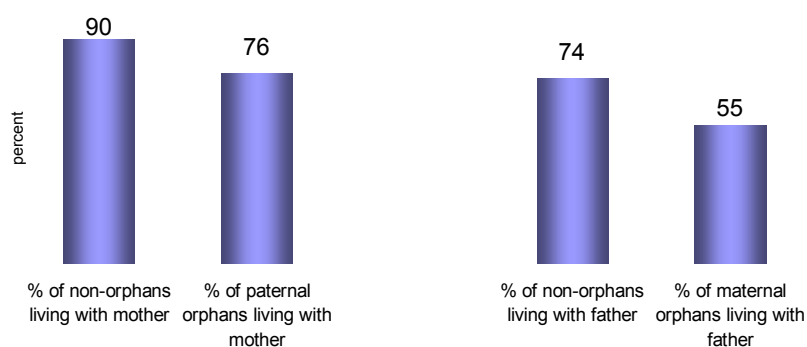
Source: UCW calculations based on Senegal Multiple Indicator Cluster Survey (MICS) 2000.

3.2 Living arrangements

7. Research suggests that orphans' living arrangements can play a critical role in determining their well-being and safety.² Children who lose a parent through death do not necessarily remain in the care of the surviving parent. Traditions of patrilineage, for example, may dictate that paternal orphans remain with paternal relatives rather than their mothers. Living arrangements may also be affected by remarriage and migration of the surviving parent.³

8. In Senegal, it is maternal orphans that are most at risk of becoming *de facto* double orphans by being also separated from their surviving father. Forty-five percent of maternal orphans do not live with their surviving fathers, while 24 percent of paternal orphans do not live with their surviving mothers (Figure 3). By comparison, 90 percent of non-orphans live with their mothers, and 74 percent of non-orphans living with their fathers.

Figure 3. Residence patterns for orphans and non-orphans



Source: UNICEF, *Africa's Orphaned Generations*, November 2003.

² See, for example: Case A., Paxson C., and Ableidinger J. (2002). *Orphans in Africa*. Center for Health and Well-Being, Research Program in Development Studies, Princeton University. This study finds, across a large number of Sub-Saharan Africa countries, that the degree of relatedness between orphans and their adult caregivers is highly predictive of children's outcomes.

³ Foster 1996, Ntozi and Nakayiwa 1999 and Monk 2000, as cited in Case A., Paxson C., and Ableidinger J. (2002). *Orphans in Africa*. Center for Health and Well-Being, Research Program in Development Studies, Princeton University.

9. Unfortunately, the data do not allow identification of the relationship between actual or *de facto* double orphans and their caretakers. We cannot therefore analyze in more detail the effects of relationship with household head on child vulnerability.

10. It should also be stressed that the estimates cited in Figure 3 stem from a household survey, and therefore do not reflect orphaned children not living in formal households. An additional group of Senegalese orphans lives on the street, either because the initial care arrangement was unsustainable, or because the children had no other options. There are unfortunately no meaningful estimates of the size of this unreached group of orphans in Senegal, or how it is changing over time. But HIV/AIDS, a major contributing factor to the growth in the street children population elsewhere in Sub Saharan Africa, is less a factor in Senegal.

4. ORPHANHOOD, CHILD LABOUR AND SCHOOLING: DESCRIPTIVE EVIDENCE

11. Orphanhood can affect the time use patterns of children in many possible ways. The death of a parent may force children to allocate more time to income generation, food production, household chores or caring for other family members. At the same time, a family that has lost an adult member may be less able to afford school costs, or be less willing to lose valuable hours of children's time each day to study. The effects may vary according to whether it is the mother, father or both that are stricken. The loss of the mother may mean that the child must shoulder more of the burden of running the household, while the loss of the father might mean that the child must work outside the home to compensate for the father's lost earnings. Double orphans moving to a new household may be under particular pressure to work to make up for the extra burden that their presence represents.

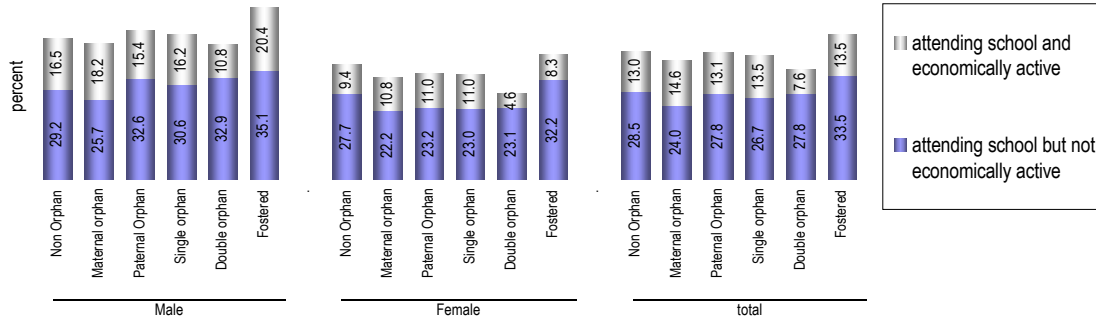
12. To what extent are these effects present in Senegal? Descriptive evidence of associations between orphanhood status and time use is presented below, while Section 5 looks at orphanhood status as a determinant of time use decisions relating to children. It should be stressed that descriptive statistics may offer only limited evidence about the vulnerability of orphans to child labour and school drop out. For reasons that will be discussed below, regression analysis is needed to disentangle the effects of orphanhood on children's activities.

4.1 Orphanhood and schooling

13. Losing the opportunity to attend school may be particularly damaging for orphans, denying them a sense of continuity and security in the short term, and an opportunity to acquire knowledge and skills needed for adult life in the long term. Attendance rates by orphanhood status, presented in Figure 5, suggest that female orphans face a higher risk of lost schooling. Female non-orphans attend school in higher proportion than all categories of orphans, with female double orphans most deprived of schooling opportunities. Patterns are less clear among boys. Male paternal orphans actually attend school in greater proportion than non-orphans, while the attendance rates of male maternal and double orphans are about equal to that of non-orphans. It should again be kept in mind, however, that these figures do not consider the unknown number of double orphans living outside any formal

household, a group not captured by the MICS household survey. Few of these children are reached by the schooling system or other State institutions.

Figure 4. Orphanhood status and school attendance



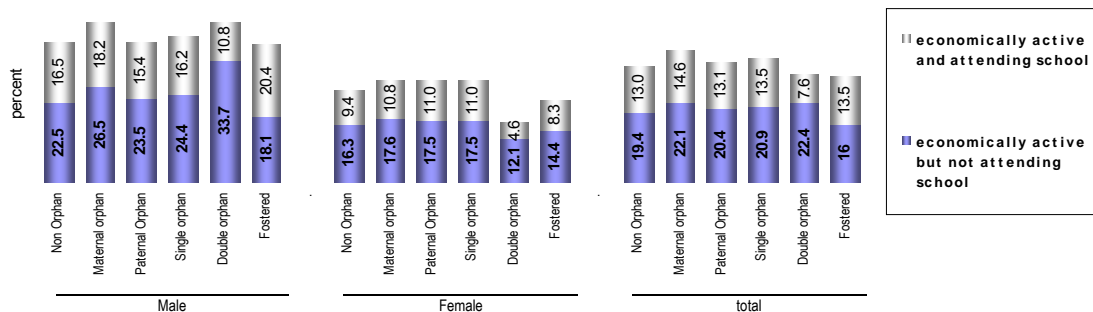
Source: UCW calculations based on Senegal Multiple Indicator Cluster Survey (MICS II), 2000

4.2 Orphanhood and child labour

14. Estimating child labour rates is complicated by the fact that international conventions do not target all children’s work as child labour for elimination.⁴ Child labour is a narrower concept that refers only to negative or undesirable forms of work that should be eliminated. In addition, while there is a general agreement that, at least to a certain extent, household chores should be included in the definition of child labour, as of today there are no internationally accepted measures of child labour that incorporate household chores. For these reasons, estimates are presented below for three different indicators of child labour: economic activity only, household chores, and a composite index that includes as child labourers children performing economic activity (excluding light work) and children performing household chores for more than 28 hours a week.

15. Figure 5 presents the results relative to the economic activity. It indicates that economic activity rates vary relatively little by orphanhood status. For boys, economic activity rates are only slightly higher for maternal and paternal orphans compared to non-orphans. For girls, both maternal and paternal orphans have a higher economic activity rate than non-orphans, but double orphans actually have a lower rate.

Figure 5. Orphanhood status and involvement in economic activity

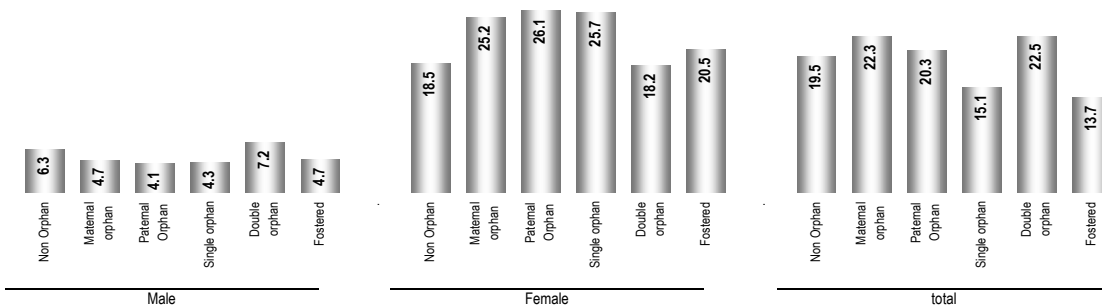


Source: UCW calculations based on Senegal Multiple Indicator Cluster Survey (MICS II), 2000

1. ⁴ For a detailed discussion of this point, see *Child Labour Indicators used by the UCW Project: An Explanatory Note* (www.ucw-project.org) and *Towards an inter-agency consensus on child labour Indicators: A discussion note* (unpublished).

16. Involvement in household chores is presented in Figure 6. It shows a strong association between orphanhood status and chores involvement for girls. Female single orphans (both paternal and maternal) are much more likely to spend at least 28 hours per week performing chores than non-orphans or double orphans, suggesting that female single orphans often must help substitute for the household labour lost when a mother dies or when a mother must take work outside the home. There is no clear association, however, between orphanhood status and household chores among boys.

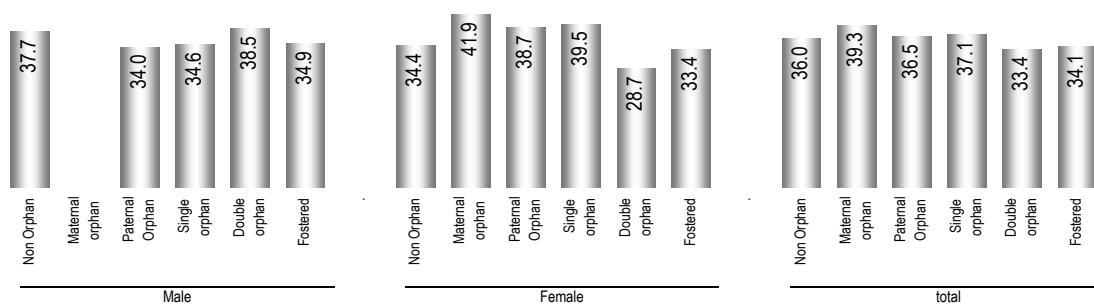
Figure 6. Orphanhood status and involvement in household chores



Source: UCW calculations based on Senegal Multiple Indicator Cluster Survey (MICS II), 2000

17. Involvement in child labour, as measured by a composite index combining economic activity and household chores, is presented in Figure 7. It indicates no clear association between child labour rates and orphanhood status. For boys, both child labour rates are lower for maternal and paternal orphans than for non-orphans, while child labour rates for double orphans are about the same as for non-orphans. For girls, on the hand, child labour rates are higher for maternal and paternal orphans than for non-orphans, but the child labour rate for double orphans is lower than for non-orphans.

Figure 7. Orphanhood status and child labour⁽¹⁾



ote: (1) All economically active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week), in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Source: UCW calculations based on Senegal Multiple Indicator Cluster Survey (MICS II), 2000

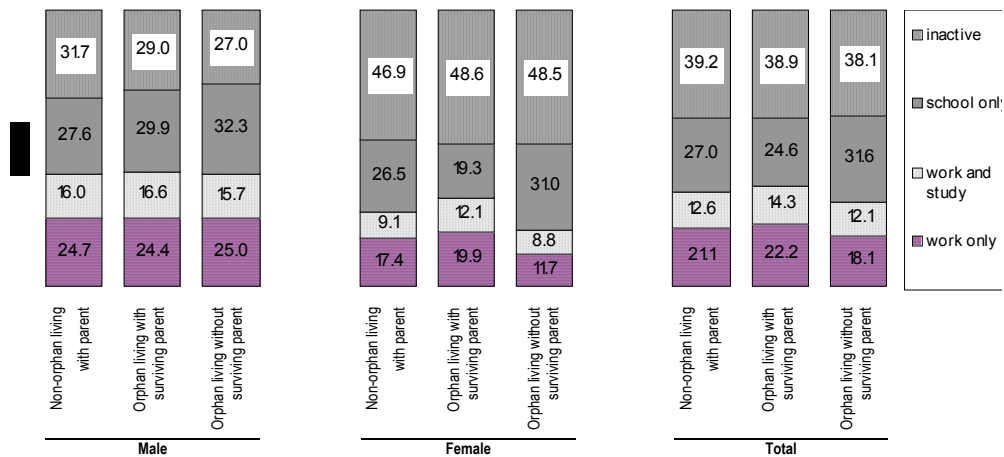
18. Two points should be kept in mind, however, in interpreting these results. First, as noted above, the estimates of economic activity involvement do not include

children living outside any formal household, the group most likely to be forced into work in order to eke out an existence. Second and more importantly, the vulnerability of orphans to child labour might be confounded by the fact that simple averages mix together children characterized by largely different individual and household characteristics, and by the fact that vulnerability and orphanhood status vary significantly with these characteristics. Decisions concerning children's time use depend on numerous individual and household factors that influence both orphans and non orphans. Regression analysis is needed to control for these factors and disentangle causal relationships that determine children's vulnerability. The issue of causality is taken up in Section 5.

4.3 Orphanhood, time use and living arrangement

19. Does an orphan's living arrangement also influence his or her time use? It is easy to imagine circumstances when this would be the case. An external household, for example, obliged to take in an orphan could see the child as an additional burden and put him or her to work in order to ease this burden. A surviving parent, on the other hand, might have greater interest in investing in the child's education and in the longer-run returns that this education will generate. Opposite outcomes are of course also possible. A household in position to take in an outside child may be better off financially and therefore less in need of the returns to a child's labour, while a household that has lost an adult breadwinner may be in greater need of the labour of its child members in order to compensate.

Figure 8. Children's time use by orphanhood status and living arrangement



Source: UCW calculations based on Senegal Multiple Indicator Cluster Survey (MICS II), 2000

20. Data from Senegal suggest that living arrangement is linked with both schooling and economic activity, but only for girls. Female orphans separated from their surviving parent work in lesser proportion and attend school in greater proportion than female orphans not separated from their surviving parent. This finding requires further investigation, but it may be that foster families are in a better position financially and therefore in less need of the returns to children's labour.

5. ORPHANHOOD AS A DETERMINANT OF CHILD LABOUR AND SCHOOLING DECISIONS: ECONOMETRIC EVIDENCE

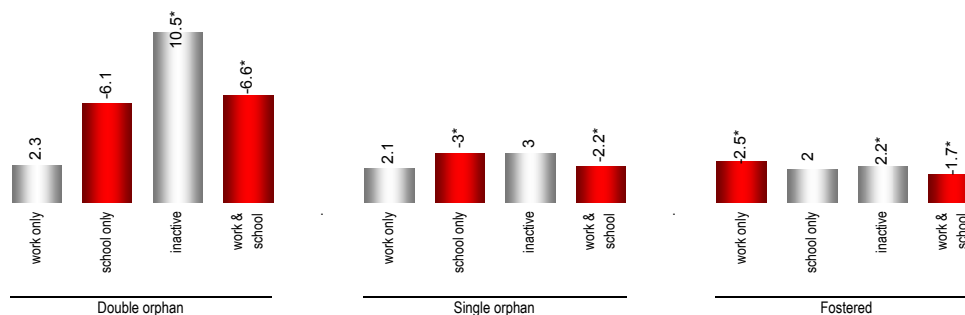
21. This section examines orphanhood as a determinant of child labour and schooling decisions. The results described are derived from a bivariate probit model, whose details are reported in the Appendix. We have estimated the probability of working (both in economic activity and performing household chores⁵) as a function of a set of individual, household and individual characteristics that are well known to be relevant for such decisions.⁶

22. Marginal effects calculated after a bivariate probit suggest a clear causal relationship between orphanhood status and time use in Senegal. Becoming an orphan appears to increase child vulnerability by making it more likely that a child is denied schooling; the effect of orphanhood on the likelihood of full-time involvement in work is insignificant. Becoming a foster child, on the other hand, actually reduces the probability of full-time work.

23. Compared to non-orphans, double orphans are six percentage points less likely to attend school full-time, and seven percentage points less likely to attend school in combination with work. Most of these children leaving school appear to move to the “inactive” category rather than to the category of full-time work. Becoming a double orphan makes it 11 percentage points more likely to be “inactive”, while it has an insignificant effect on the likelihood of full-time involvement in work. It should be kept in mind that the “work” category includes both children performing economic activity and children performing key household chores such as water fetching and fuel wood collection.

24. Losing only one parent has a slightly smaller but still significant effect on time use, decreasing the likelihood of full-time schooling (by three percentage points) and part-time schooling (by two percentage points). The effect of a death of a parent on the probability of full-time work, however, is again insignificant.

Figure 9. Influence of orphanhood status on children’s time use⁽¹⁾ (marginal effects after bivariate probit)⁽²⁾



Notes: (1) Work is defined as children involved in economic activity or household chores (excluding the overlapping category); (2) Detailed results are presented in Annex II

Source: UCW calculations based on Senegal Multiple Indicator Cluster Survey (MICS II), 2000

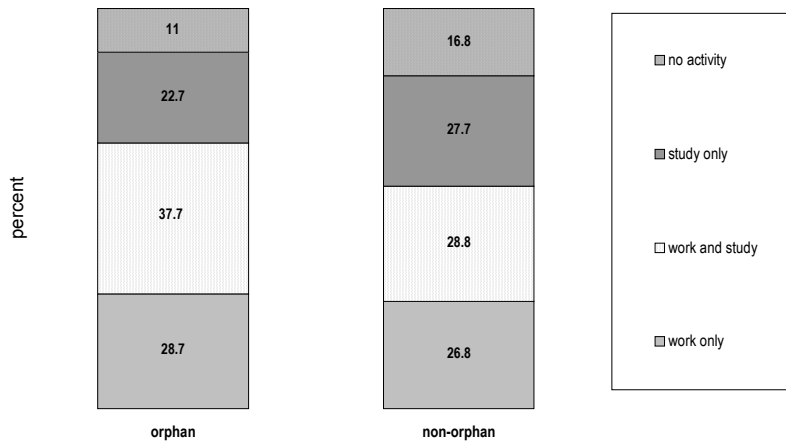
25. Simulated probabilities, shown in Figure 10, are another tool for analyzing the causal relationship between orphanhood status and time-use. Marginal effects provide

⁵ Considering economic activity only brings similar results, with the difference that the effects of orphanhood are larger on the “idle” group (that includes children performing household chores).

⁶ For a more detailed discussion see Cigno et al. [Child Labour Handbook](#), SP 0206, The World Bank

a measure of how a child's time allocation would change if he or she became an orphan (single or double). Simulated probabilities, on the other hand, provide an indication of how much higher on average is orphans' vulnerability to work and lost schooling once individual and household characteristics are controlled for.

Figure 10. Children's activity by orphanhood status: Simulated probabilities



Source: UCW calculations based on Senegal Multiple Indicator Cluster Survey (MICS II), 2000

26. The simulated probabilities highlight the fact that orphans and non-orphans differ greatly in terms of the probable time use. Compared to non-orphans, and controlling for various individual and household characteristics (see full model in Annex II), orphans are more likely to be involved in labour, both full-time and in combination with school, and less likely to attend school full-time or fall into the inactive category.

ANNEX I: DETAILED STATISTICAL TABLES

Table A1. Orphanhood status and time use, children aged 5-14 years, Senegal

Sex	Time use	Non-orphans	Maternal orphan ⁽³⁾	Paternal orphan ⁽⁴⁾	Single orphan	Double orphan ⁽⁵⁾	Fostered ⁽¹⁾
Male	Work only	22.5	26.5	23.5	24.4	33.7	18.1
	Study only	29.2	25.7	32.6	30.6	32.9	35.1
	Work and study	16.5	18.2	15.4	16.2	10.8	20.4
	Inactive	31.8	29.6	28.5	28.8	22.6	26.4
female	Work only	16.3	17.6	17.5	17.5	12.1	14.4
	Study only	27.7	22.2	23.2	23.0	23.1	32.2
	Work and study	9.4	10.8	11.0	11.0	4.6	8.3
	Inactive	46.5	49.4	48.3	48.6	60.2	45.1
Total	Work only	19.4	22.1	20.4	20.9	22.4	16.0
	Study only	28.5	24.0	27.8	26.7	27.8	33.5
	Work and study	13.0	14.6	13.1	13.5	7.6	13.5
	Inactive	39.2	39.2	38.7	38.8	42.1	37.0

Notes: (1) Child living in a different household from biological parents; (2) Child's mother or father deceased; (3) Child's mother deceased; (4) Child's father deceased; (5) Child's mother and father deceased.

Source: UCW calculations based on Senegal Multiple Indicator Cluster Survey (MICS) 2000.

Table A2. Orphanhood status, living arrangement and time use, children aged 5-14 years, Senegal

Sex		Work only	Study only	Work and study	Inactive
Male	Non-orphan living with parent	24.7	27.6	16.0	31.7
	Orphan living with surviving parent	24.4	29.9	16.6	29.0
	Orphan living without surviving parent	25.0	32.3	15.7	27.0
female	Non-orphan living with parent	17.4	26.5	9.1	46.9
	Orphan living with surviving parent	19.9	19.3	12.1	48.6
	Orphan living without surviving parent	11.7	31.0	8.8	48.5
total	Non-orphan living with parent	21.1	27.0	12.6	39.2
	Orphan living with surviving parent	22.2	24.6	14.3	38.9
	Orphan living without surviving parent	18.1	31.6	12.1	38.1

Notes: (1) Child living in a different household from biological parents; (2) Child's mother or father deceased; (3) Child's mother deceased; (4) Child's father deceased; (5) Child's mother and father deceased.

Source: UCW calculations based on Senegal Multiple Indicator Cluster Survey (MICS) 2000.

Table A3. Children's work* 5-14, by sex and residence

Area	Male	Female	Total
Urban	21.85	27.64	24.81
Rural	46.31	39.07	42.72
Total	37.44	34.75	36.09

*Child labour is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A4. Children aged 5-14, carrying out household chores for more than 28 hrs/week, by sex and residence

<i>Area</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
Urban	2.73	12.46	7.71
Rural	8.06	23.02	15.48
Total	6.13	19.03	12.60

Table A5. Children aged 5-14, by sex, type of activity and residence

<i>Area</i>	<i>Type of activity</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
Urban	Work* only	9.41	15.54	12.55
	Study only	46.40	37.97	42.08
	Work* and study	12.44	12.09	12.26
	no activities	31.75	34.40	33.11
Rural	Work* only	30.85	29.55	30.20
	study only	22.76	19.28	21.03
	Work* and study	15.46	9.52	12.51
	no activities	30.94	41.65	36.25
Total	Work* only	23.07	24.26	23.67
	Study only	31.33	26.34	28.82
	Work* and study	14.36	10.49	12.42
	no activities	31.23	38.91	35.09

*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A6. Children aged 5-14, by sex, type of activity and residence**

<i>Area</i>	<i>Type of activity</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
Urban	Work* only	9.75	32.25	24.04
	study only	46.59	22.29	31.16
	Work* and study	12.96	16.27	15.07
	no activity	30.70	29.19	29.74
Rural	Work* only	15.97	31.13	25.35
	study only	38.50	19.11	26.50
	Work* and study	12.62	10.07	11.04
	no activity	32.91	39.68	37.10
Total	Work* only	12.93	31.70	24.70
	study only	42.45	20.72	28.82
	Work* and study	12.79	13.21	13.05
	no activity	31.83	34.38	33.43

*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

**missing values are disregarded

Table A7. Children aged 5-14, by orphanhood status, type of activity and sex

Sex	Type of activity	Total	Non Orphans	Orphans	Maternal Orphan	Paternal Orphan	Double Orphan
Male	Work* only	23.07	23.10	22.80	24.03	21.48	32.81
	study only	31.33	31.06	34.57	31.82	35.47	38.01
	Work* and study	14.36	14.56	12.04	12.83	12.53	5.69
	no activity	31.23	31.29	30.58	31.32	30.51	23.50
Female	Work* only	24.26	23.98	27.49	27.83	27.60	24.84
	study only	26.34	26.69	22.23	19.46	23.19	23.85
	Work* and study	10.49	10.43	11.24	14.06	11.13	3.89
	no activity	38.91	38.90	39.04	38.65	38.07	47.42
Total	Work* only	23.67	23.54	25.18	25.88	24.64	28.67
	study only	28.82	28.87	28.30	25.79	29.15	30.65
	Work* and study	12.42	12.49	11.63	13.43	11.81	4.75
	no activity	35.09	35.10	34.88	34.89	34.40	35.93

*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A8. Children economically active* aged 5-14, by orphanhood status, type of activity and sex

Sex	Type of activity	Total	Non Orphan	Orphan	Maternal Orphan	Paternal Orphan	Double Orphan
Male	Work* only	22.78	22.59	25.03	27.13	23.55	33.71
	Work* and study	16.45	16.51	15.81	18.66	15.40	10.82
	hhchores	6.13	6.27	4.46	4.68	4.13	7.19
Female	Work* only	16.41	16.35	17.12	17.30	17.28	12.05
	Work* and study	9.50	9.42	10.50	11.00	11.04	4.60
	hhchores	19.03	18.50	25.13	25.15	26.07	18.22
Total	Work* only	19.58	19.46	21.01	22.34	20.32	22.45
	Work* and study	12.96	12.95	13.11	14.93	13.15	7.59
	hhchores	12.60	12.40	14.97	14.66	15.42	12.92

* all economic active children aged 5-14, including children aged 12-14 involved in light work (<14hrs/week), excluding children aged 5-14 performing only household chores

Table A9. Children aged 5-14, by orphanhood status, type of activity and residence

Area	Type of activity	Non Orphan	Orphan	Total
Urban	Work* only	12.33	15.37	12.55
	Study only	41.97	43.48	42.08
	Work* and study	12.36	11.00	12.26
	no activities	33.34	30.16	33.11
Rural	Work* only	30.18	30.50	30.20
	study only	21.12	20.08	21.03
	Work* and study	12.56	11.98	12.51
	no activities	36.15	37.44	36.25
Total	Work* only	23.54	25.18	23.67
	Study only	28.87	28.30	28.82
	Work* and study	12.49	11.63	12.42
	no activities	35.10	34.88	35.09

*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A10. Children aged 5-14, by orphanhood status, residence and type of activity

Area	Type of activity	Non Orp living with parent	Orp living with survival parent	Orp living without s. parent
Urban	Work* only	11.93	17.84	10.09
	study only	41.37	42.05	43.61
	Work* and study	12.80	10.46	13.94
	no activities	33.91	29.65	32.35
Rural	Work* only	30.71	31.08	28.57
	Study only	20.66	18.33	24.08
	Work* and study	12.21	12.73	12.85
	no activities	36.41	37.86	34.50
Total	Work* only	23.78	26.20	22.44
	Study only	28.31	27.07	30.57
	Work* and study	12.43	11.89	13.21
	no activities	35.49	34.84	33.78

*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A11. Children aged 5-14, by orphanhood status, sex of the household head and type of activity

<i>Sex Household Head</i>	<i>Type of activity</i>	<i>Non Orphan</i>	<i>Orphan</i>	<i>Total</i>
Male	Work* only	12.50	18.92	13.58
	study only	36.53	34.50	36.19
	Work* and study	10.82	10.91	10.83
	no activities	40.15	35.67	39.40
Female	Work* only	22.56	26.26	22.78
	study only	25.32	23.36	25.20
	Work* and study	11.35	11.12	11.34
	no activities	40.77	39.26	40.68
Total	Work* only	21.27	23.92	21.47
	Study only	26.75	26.92	26.76
	Work* and study	11.28	11.05	11.27
	no activities	40.69	38.11	40.50

*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A12. Orphans aged 5-14, by household expenditure quintile, type of activity and sex

<i>Sex</i>	<i>Type of activity</i>	<i>Household expenditure quintile</i>					<i>Total</i>
		<i>poorest</i>	<i>second</i>	<i>middle</i>	<i>fourth</i>	<i>richest</i>	
Male	Work* only	29.40	35.09	20.43	9.97	4.44	22.80
	study only	20.50	19.04	33.78	60.45	62.74	34.57
	Work* and study	17.07	11.28	12.71	11.80	2.61	12.04
	no activities	33.02	34.58	33.07	17.78	30.21	30.58
Female	Work* only	38.98	31.47	30.53	21.69	9.14	27.49
	Study only	11.50	17.10	21.77	32.11	31.22	22.23
	Work* and study	9.60	10.71	6.72	17.20	12.07	11.24
	no activities	39.92	40.72	40.97	29.01	47.57	39.04
Total	work only	34.01	33.49	25.60	16.74	7.07	25.18
	study only	16.17	18.18	27.64	44.07	45.10	28.30
	work and study	13.47	11.03	9.65	14.92	7.91	11.63
	no activities	36.35	37.30	37.11	24.27	39.92	34.88

*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A13. Non orphans aged 5-14, by household expenditure quintile, type of activity and sex

Sex	Type of activity	Household expenditure quintile					Total
		poorest	second	middle	fourth	richest	
Male	Work* only	36.27	33.11	26.16	12.26	6.70	23.10
	study only	17.67	19.79	27.03	42.57	49.55	31.06
	Work* and study	16.07	15.50	14.55	14.61	11.95	14.56
	no activities	29.99	31.60	32.26	30.56	31.80	31.29
Female	Work* only	33.09	29.49	25.77	18.25	12.95	23.98
	study only	16.24	15.87	22.57	35.44	44.69	26.69
	Work* and study	8.57	9.50	10.36	12.64	10.95	10.43
	no activities	42.10	45.13	41.31	33.68	31.42	38.90
Total	Work* only	34.69	31.30	25.96	15.27	9.84	23.54
	Study only	16.96	17.83	24.78	38.99	47.11	28.87
	Work* and study	12.34	12.50	12.44	13.62	11.45	12.49
	no activities	36.01	38.37	36.83	32.13	31.60	35.10

*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

ANNEX II: RESULTS FROM THE ESTIMATES

Table A14. Marginal effect after bivariate probit estimation (work defined as all economically active children aged 5-14)

<i>Ec. Activity</i>	<i>work only</i>		<i>study only</i>		<i>neither</i>		<i>work and study</i>	
	<i>dy/dx</i>	<i>z</i>	<i>dy/dx</i>	<i>z</i>	<i>dy/dx</i>	<i>z</i>	<i>dy/dx</i>	<i>z</i>
Sex	-0.051	-9.7	-0.004	-0.6	0.156	22.2	-0.102	-23.0
Age	-0.080	-8.8	0.205	17.9	-0.273	-22.1	0.147	19.1
Age2	0.004	9.7	-0.010	-18.0	0.013	20.5	-0.007	-17.4
Hhsize	0.000	0.0	0.005	1.0	-0.011	-2.3	0.006	2.2
Sibling 0-4	0.004	1.1	-0.009	-1.8	0.010	1.8	-0.005	-1.5
Siblings 5-14	-0.005	-1.5	0.002	0.4	0.010	2.1	-0.007	-2.4
Household members 15_65	-0.001	-0.2	-0.004	-0.8	0.011	2.3	-0.007	-2.2
Household Head Male*	0.035	4.6	-0.037	-3.4	-0.014	-1.3	0.016	2.5
Education household head*	-0.052	-8.3	0.110	11.8	-0.130	-15.0	0.072	10.3
Wealth index	-0.044	-14.8	0.067	17.6	-0.036	-8.9	0.013	5.3
reg1*	0.117	7.0	-0.174	-14.3	0.126	6.7	-0.068	-8.2
reg2*	-0.079	-8.4	0.157	9.3	-0.159	-11.2	0.081	6.3
reg3*	0.157	9.4	-0.190	-18.2	0.095	5.3	-0.062	-7.9
reg4*	-0.036	-3.1	-0.034	-2.3	0.147	8.5	-0.076	-10.4
reg5*	0.039	2.8	-0.099	-7.3	0.119	6.7	-0.059	-7.3
reg6*	0.095	6.4	-0.118	-9.3	0.048	2.9	-0.026	-2.8
reg7*	0.220	13.9	-0.205	-20.8	0.008	0.5	-0.023	-2.5
reg8*	0.206	11.8	-0.227	-24.9	0.097	5.3	-0.076	-10.4
reg9*	0.175	11.0	-0.158	-14.1	-0.024	-1.5	0.007	0.7
Urban*	-0.077	-10.5	0.105	9.9	-0.022	-2.0	-0.006	-0.9
Double orphan*	0.023	0.7	-0.076	-2.1	0.105	2.3	-0.052	-2.6
Single orphan*	0.018	1.8	-0.035	-3.0	0.034	2.5	-0.017	-2.2
Fostered*	-0.024	-3.0	0.020	1.8	0.022	1.8	-0.017	-2.5

Table A15. Marginal effect after bivariate probit estimation (work defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

	<i>work only</i>		<i>study only</i>		<i>neither</i>		<i>work and study</i>	
	<i>dy/dx</i>	<i>z</i>	<i>dy/dx</i>	<i>z</i>	<i>dy/dx</i>	<i>z</i>	<i>dy/dx</i>	<i>z</i>
Sex	0.016	2.8	-0.040	-6.5	0.089	13.7	-0.066	-13.6
Age	-0.097	-9.3	0.165	15.3	-0.255	-22.2	0.187	21.8
age2	0.006	11.1	-0.009	-16.4	0.011	19.6	-0.008	-19.2
Hhsize	-0.001	-0.3	0.004	0.9	-0.010	-2.3	0.007	2.3
nch04	0.004	0.9	-0.007	-1.4	0.010	1.9	-0.007	-1.9
nch514	-0.006	-1.6	0.003	0.8	0.011	2.6	-0.008	-2.6
nch15_65	-0.001	-0.3	-0.002	-0.4	0.011	2.6	-0.008	-2.6
hhead*	0.049	5.6	-0.044	-4.3	-0.028	-2.7	0.023	3.3
ceduca~n*	-0.084	-11.7	0.111	12.4	-0.098	-12.3	0.071	9.5
wlthind5	-0.060	-17.4	0.066	18.6	-0.020	-5.2	0.014	4.8
reg1*	0.164	9.0	-0.164	-14.9	0.079	4.4	-0.078	-8.2
reg2*	-0.120	-11.1	0.164	9.9	-0.117	-9.0	0.073	5.5
reg3*	0.202	11.5	-0.178	-18.9	0.050	3.0	-0.074	-8.3
reg4*	-0.028	-2.0	-0.026	-1.8	0.138	8.2	-0.084	-10.1
reg5*	0.070	4.3	-0.094	-7.6	0.089	5.2	-0.064	-6.8
reg6*	0.142	8.6	-0.122	-11.0	0.002	0.1	-0.021	-2.0
reg7*	0.250	15.4	-0.191	-21.4	-0.022	-1.5	-0.036	-3.6
reg8*	0.241	13.4	-0.206	-24.8	0.062	3.6	-0.096	-11.8
reg9*	0.168	10.1	-0.136	-12.8	-0.017	-1.1	-0.014	-1.3
urban1*	-0.103	-12.1	0.110	10.9	0.004	0.4	-0.011	-1.6
orphan*	0.023	0.6	-0.061	-1.8	0.105	2.4	-0.066	-3.0
orphan3*	0.021	1.8	-0.030	-2.7	0.030	2.4	-0.022	-2.5
foster*	-0.025	-2.6	0.020	1.9	0.022	2.0	-0.017	-2.2