IN-DEPTH ANALYSIS OF CHILD WORK AND EDUCATION IN BELIZE

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Funding for this report was provided by the United States Department of Labor.

ISBN: 92-2-114222-1

CHILD LABOUR AND EDUCATION IN BELIZE

A Situational Assessment and In-Depth Analysis

Prepared for The Central Statistical Office

by

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June, 2003

PREFACE

The International Labour Office (ILO), through the International Programme on the Elimination of Child Labour (IPEC), has transformed the process of prevention and gradual elimination of child labour into a universal cause.

Throughout the world, child labour is a widespread, complex and multi-faceted phenomenon. Nevertheless, the lack of reliable information and of quantitative and qualitative analyses hinders finding effective means to confront the problem. For many years, the lack of information regarding its causes, magnitude, nature, and consequences, has been a considerable obstacle to arrive at a course of efficient action to confront, stop and eliminate this phenomenon that affects millions of children worldwide.

Since 1998, the International Programme on the Elimination of Child Labour coordinates the Statistical Information and Monitoring Programme on Child Labour (SIMPOC), with the aim of helping participating countries generate child labour data that is comparable among them. SIMPOC's global objective is to generate, by means of household surveys, quantitative data regarding children's scholastic activities, and regarding those economic and non-economic activities that children perform outside of school. Furthermore, SIMPOC aims to collect qualitative data and establish child labour databases. These data have been used as the base for different studies conducted in the participating countries.

The gathering and analysis of reliable data is the basis for developing effective interventions against the work of children. The data gathered in the different countries and the studies conducted based on these data, are meant to facilitate the development, the implementation and the monitoring of policies and programmes against this phenomenon, as well as to promote social attitudes in favour of the sustainable prevention and progressive eradication of child labour.

I am certain that the information presented in this study about child work in the country will contribute to improve the understanding and increase the sensitivity towards the situation of child workers, and will allow the elaboration of better strategies to combat this phenomenon.

Acquiring an increasingly clearer view of this phenomenon, each of the participating countries can undoubtedly envision a more effective process and a shorter path to achieve a world without child labour.

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EXECUTIVE SUMMARY

Child Labour is not an often discussed nor a well understood phenomenon in Belize. In general people will admit that child labour exists but it does not occupy a high priority on people's minds and not a great deal of importance is attached to it. The extent and consequences of child labour are greatly underestimated. A clear understanding of what constitutes child labour is the first step in appreciating the severity of the problem. Only persons under the age of 18 years who are engaged in some form of economic activity may become victims of child labour. The following classifications specified by ILO Convention 138 clearly identify those persons who are child labourers.

- Any economically active person less than 12 years of age is a victim of child labour.
- A person between the ages of 12 years and 14 years engaged in work other than light work is a child labourer.
- Persons 15 years, 16 years or 17 years of age engaged in hazardous work are also victims of child labour.

In this national study only persons between the ages of 5 years and 17 years were considered. Some summary statistics are presented below to indicate the extent of the child labour problem.

- An estimated 5,061 children and young persons in this age group were victims of child labour.
- This number indicates that 6.4 % of all persons between the ages of 5 years and 17 years were child labourers.
- About three times as many males as females were engaged in child labour at the time of the study with total numbers estimated at 3,735 males and 1,326 females.
- An estimated 79.0% (3,998 persons) of the child labourers reside in rural areas.
- Child Labourers classified by ethnicity number: 583 Creole children (11.5%), 2107 Maya children (41.6%), 2042 Mestizo children (40.3%) and 329 Other children (6.5%).
- Child Labourers Classified by districts number: 471 persons (9.3%) in Belize District, 818 persons (16.2%) in Cayo District, 536 persons (10.6%) in Corozal District, 677 persons (13.4%) in Orange Walk District, 301 persons (5.9%) in Stann Creek District, and 2,258 persons (44.6%) in Toledo District.
- The three economic sectors posted the totals: 2,963 persons (58.5%) in Primary, 565 persons (11.2%) in Secondary, and 1,533 persons (30.3%) in Tertiary.

Children of compulsory school age (ages 5 years to 14 years) contributed most heavily to the child labour force. Almost two thirds of all child labourers should, by law, have been attending some school on a full time basis. In fact about fifteen percent of all child labourers between the ages of 5 years and 14 years were not attending any form of schooling. Evidently, compulsory attendance at school is not being practiced by a significant number of Belizean families.

Analysis of the survey indicates that most child labourers were males outnumbering females by a factor of three. Gender bias becomes progressively more pronounced as the child gets older. In the 15-years to 17-years age group there were approximately five male child labourers for each female child labourer. It was not clear from the analysis of the survey why this difference existed. Some authors suggest that undercounting of females due to the traditional types of work in which females engage (for example housework and caring for children) might be responsible. Nevertheless, young males seem to be at substantial risk of being the victims of child labour. Any program devised to address the issue of child labour must pay special attention to males as an at-risk group.

People of Maya ethnicity are at severe risk of being victimized by child labour. About three out of every four Maya children or young persons engaged in economic activity were involved in child labour. Most of the Maya in Belize live in the Toledo District where most of the risk factors for child labour exist. Indeed the Toledo district is the most rural of all the districts having the lowest rural population density. Furthermore, the main activity for rural people in Toledo was farming geared toward local consumption. Primary schools were not as readily available as in other districts. Hence, not only was access to formal schooling reduced by the relative scarcity of primary schools but induction into economic activity and hence child labour was easily facilitated by the families' economic activities. Of special note is that Maya children between the ages of 5 years and 11 years contribute more child labourers in absolute terms (1,025 persons) and percentage (20.2%) than any other age group and any other ethnic group. It is clear that the Maya, and especially those in the age group 5-years to 11-years, warrant special attention in any form of intervention undertaken by government.

Children living in rural areas are at an elevated risk of being child labourers. In fact they are more than two and a half times as likely as urban children to be child labourers. Reasons for this might include the relative inaccessibility of schools in rural areas and difficulties connected with monitoring truancy, the type of economic activities in which the families are engaged and the economic status of the family. Furthermore, children living in the Toledo District contribute the most to the child labour force. This is closely linked to the fact that the Maya is the heaviest contributor to child labour and that most Maya live in the Toledo District. Clearly, Maya children between the ages of 5 years and 11 years who live in rural Toledo District present a viable target for child labour intervention.

What kind of work were child labourers doing at the time of the study? They were involved in all three sectors of the economy. Most child labourers, however, worked in the primary sector mainly in agriculture and the great majority of these were children of compulsory school age. Agriculture was an excellent incubator for child labourers as

85.4% of the economically active children and young persons who work in this sector are child labourers. Also children 5 years to 14 years constituted a majority of the child labourers in the tertiary sector. Hence, it is clear that access to formal schools for children of compulsory school age and the ability to control induction of members of this age group into any form of economic activity are crucial ingredients in the quest to eliminate child labour in Belize. There is a clear and urgent need to sensitise the employers of Belize to the form and extent of child labour in the country and a campaign along these lines would go a long way to address child labour issues in Belize.

It is reasonable to suppose that child labourers in the age range 12 years to 14 years will grow up to be child labourers in the age group 15 years to 17 years. Similarly, child labourers in the group 5 years to 11 years will most likely remain victims of child labour as they move into the higher age ranges. This argument proves to have some merit when the age at which induction into the child labour force is considered. The average age at which a person becomes a child labourer is 8.7 years. Results indicate that fully 75% of all child labourers were inducted into child labour by the age of 11 years and furthermore 90% of all child labourers became child labourers by their 14^{th} birthday. Of great interest is the observation that children that started working at the age of five contributed the most to total number of child labourers (810 children) when compared with child labourers that started working at any other age. There is, evidently, an unrecognised problem at the Infant I level of schooling because the loss of children to child labour begins in earnest at this early stage.

One strategy, therefore, to greatly reduce child labour in the long term is to insist that all children between the ages 5 years and 11 years must attend formal schools; no exceptions should be allowed. Furthermore, under no circumstances should children in this age group be allowed to participate in any form of economic activity. Of course, this might be easier said than done. A special office to deal with the issue of child labour and to co-ordinate an organized and focused effort of many interlinked agencies, both governmental and non-governmental, might be necessary. One can present a strong argument that adherence to the compulsory education age requirement of the laws of Belize and assistance to those families at risk of forcing their children into child labour have the potential to dramatically reduce the incidence of child labour in the country.

I. INTRODUCTION

The 2001 Child Activity Survey conducted by the Central Statistical Office is designed to provide information on child labour at the national level. Government and non-government agencies will use this information to identify priority categories of children in need and formulate appropriate programs for child labour interventions. This report addresses the social, economic and educational context in which child labour occurs and presents an analysis of child labour based on the data collected by the survey. Recommendations are presented to address the root causes of child labour and to indicate ways in which the current state of child labour can be controlled and rectified.

I.1 Basic underlying assumptions

Child labour is viewed not as a choice of children and young persons but as an act perpetrated against them and this makes the affected persons the victims of this unsolicited activity. Victims of child labour are not responsible for their actions while subjugated to child labour and must be protected from being victimized by competent agencies of the government and society.

It is also accepted that child labour is a stark reality affecting all levels of the Belize society and so must be monitored and eliminated in an expeditious manner. Laws that proscribe against child labour take into consideration the ILO Conventions to which Belize is a signatory and comply with the conditions of these conventions. Accordingly, the Government of Belize is committed to the eradication of child labour in all its forms.

It is also true that concessions are made by government, family and society to accommodate many forms of economic activity of children that could be seen as child labour. These activities are often justified on the grounds of poverty, ethnicity, social and familial imperatives. It is assumed that child labour is an acceptable activity if some justification along these accepted lines is available.

I.2 Hypotheses of the study

Any study in its design phase requires direction. Clearly the investigator wishes to focus attention on specific areas of concern or interest. Developing hypotheses at an early stage is, therefore, an important task in any research project. Accordingly, the following suggestions are being proposed in a post hoc manner to focus attention on areas that might be of interest or areas that might be reasonably addressed by the 2001 Child Activity Survey.

- The causes of child labour are not clear. Possible correlates of child labour are lack of opportunity for education, level of education reached, school attendance, lack of educational infrastructure, gender, ethnicity and geographic location. Accordingly, it is necessary to determine and investigate the factors which correlate with child labour, and to determine the strength of the correlation in each case. This investigation should lead to a composite of the person and the families most likely to engage in child labour.

- It is clear that increased incidence of child labour is correlated with a decreased participation in formal education. Hence, one could propose the strict implementation of the compulsory school age laws as a cure for most of the child labour ills. In fact, the strength of this correlation is not known and it is entirely possible that the implementation of strict monitoring and enforcement of the laws might be doomed to failure.

- Children drop out of the formal education system increasingly more frequently as they progress through primary school. However, this trend seems to be violated at the Infant I to Infant II transition point. It is clear that those children in Infant I this year will in general be the students of Infant II next year. Some dropouts and transfers are expected but the numbers recorded at this early stage far exceeds those of any other transition point. What are the reasons for this large difference in attendance at school? It is useful to be able to explain this apparent loss and to investigate the possibility that children are lost to child labour most heavily in the 5 year to 11year age group.

- Formal education is becoming increasingly more available. However, it is not known whether access to formal education is keeping pace with a growing population. There are many reasons that prevent students from attending some formal schooling including financial, cultural and illiteracy of parents. First induction into economic activity, poverty, culture and access might be important factors in determining child labour.

- What are the effects of working both in non-economic and economic activity and the number of hours worked on the education and health of children and young persons? The price that a child or young person has to pay for economic or non-economic work is to be ascertained. This should be a cost that can be quantified in the long term as a burden to society as a whole.

I.3 What is child labour

A child is defined by the UN Convention on the Rights of The Child as any person below the age of 18 years (UNICEF, 1998). On the other hand, any person under the age of 14 years is, according to The Labour Act (Chapter 297 of the laws of Belize), a child and a young person is one who is 14 years but not yet 18 years old. This formulation in Belize law is based on ILO Convention No. 138 that deals with the employment and work of children and young persons less than 18 years of age. Evidently, there are two standards that exist side by side that have to be accommodated by the laws of Belize. Generally laws pertaining to the rights of children and child abuse use the UNICEF definition and laws that deal with labour use the ILO definition. In keeping with this convention this study will adopt the definitions as suggested by the ILO Convention.

Children or young persons may be either non-economically active or economically active. For clarity, non-economic activity comprises work at home without pay and includes household chores, running of errands, preparing and serving meals, mending, washing and

ironing clothes, shopping and caring for siblings or sick or infirm persons in the household. Other kinds of work at home or in another household for more than one hour per week are considered to be economic activity. Furthermore, work at home which is non-economic may be considered to be economic if it is performed in another household or location. Economically active children may or may not receive pay for their services. Clearly some of the affected persons may be both non-economically and economically active at the same time.

Child labour applies only to those children who are economically active. It is age specific and is based on the guidelines set out in ILO Convention No. 138. Accordingly, any economically active child under the age of twelve years is a victim of child labour. Economically active children ages twelve years to fourteen years are also victims of child labour if they participate in work which is not light (Article 7, ILO Convention No. 138). Light work is not defined by the ILO Convention and its definition is left to the discretion of signatory countries. According to the 2001 Child Activity Survey light work is any work activity for pay, profit or family gain in another household for at least one hour but not exceeding 3 hours in a specified reference week. A list of these activities include babysitting, selling of food or pastries from home or at public places, sweeping, mopping, yard cleaning, cutting grass, cooking, cutting wood, domestic work and car washing.

Finally, economically active young persons ages fifteen, sixteen and seventeen years are victims of child labour if the work that they do is hazardous or likely to affect adversely the health, safety or morals of the young person (Article 3, ILO Convention No. 138). Once again the convention does not specify what hazardous activity is and so the definition has to be supplied by the proper authorities. No mention is made of any such determination in the laws of Belize. Furthermore, the 2001 Child Activity Survey makes mention of the use of tools but does not elaborate on the types of tools or on the effect such use would have on children or young persons. It should be noted that questions on injuries sustained while on the job and on the type of protective wear used are included in the questionnaire. These questions assist in determining if a young person is a child labourer.

Undoubtedly young persons are hurt quite often while on the job (Young, 2002). Talbert, E., & Vega, L., 2002 make the following suggestions as reasonable inclusions in any meeting convened to determine the types of work that are harmful to young persons.

Work harmful to children and young persons is work:

1. that exposes children to physical, psychological or sexual abuse;
2. occurring underground, underwater, at dangerous heights or in confined spaces;
3. using dangerous machinery, equipment or tools, or which involves the manual handling or transport of heavy loads;
4. in an unhealthy environment which may, for example, expose children to hazardous substances, agents or processes, or to noise levels, or vibration damaging to their health, and;

5. undertaken under particularly difficult conditions, such as work for long hours or during the night or work where the child is unreasonably confined to the premises of the employer.

Minimum ages set out in the Laws of Belize and ILO Conventions are subject to limited exceptions usually on the authority of some competent person or agency. For example, Article 8 of the ILO Convention No. 138 outlines certain carefully monitored exceptions for participation of children in artistic performances. Article 6 of the same convention indicates that work done by children or young persons in regular schools or in an approved apprenticeship program would not be subject to the ILO Convention No. 138 definitions. Furthermore, the participating country is permitted considerable latitude in determining the details of various categories of work and cut off ages.

Child labour as a concept is not well developed in Belize. There is no mention of this concept in the laws of the land although there are numerous laws governing different aspects of the employment of children. Evidently, the concept of child abuse is much more clearly understood and child labour is subsumed under this category. There is some good to be derived from this assumption in that it places child labour in a theoretical framework in which much research has been conducted. Hence, if child labour is a form of child abuse it might be reasonable to suppose that many of the findings on child abuse would also carry over to child labour.

II. SOCIAL AND ECONOMIC CONTEXT OF CHILD LABOUR IN BELIZE

II.1 Age, ethnic and regional distribution of population

Belize's 2000 estimated population of 232,111 persons is divided among six Districts. Belize District is not the largest in area (1,663 square miles) but it has the largest population (63,061 persons) of which 78.3% are located in Belize City. Its population density of 37.9 persons per square mile is not the largest since Corozal District with the smallest area of 718 square miles has the largest population density of 44.9 persons per square mile. Toledo District has the smallest population (23,117 persons) and also the lowest population density of 13.7 persons per square mile (Table 1).

With the exception of the Belize and Cayo Districts all districts are predominantly rural. Toledo District posts the highest percentage (81.5% or 18,840 persons) of its population in the rural areas. However, the district with the largest rural population is the Cayo District with a total of 25,252 rural dwellers (49.3% of its population). Belize District boasts the smallest rural population (13,684 persons) and is the most urbanized district. Average rural population density is about 13.9 persons per square mile. This varies from a high of 34.3 persons per square mile in the Corozal District to a low of 8.2 persons per square mile in the Belize District.

Persons between the ages of 5 years and 17 years constitute about 34.1% (79,061 persons) of the entire population according to the 2001 Child Activity Survey (Table 3). Of this number, 46,223 persons (58.5%) live in rural areas. Stann Creek District has the smallest number of rural dwellers in this age cohort (5,335 persons) while the Cayo District has the greatest number (10,755 persons). It is evident that population distributions over the districts of rural persons 5 years to 17 years follow quite closely the distribution trends observed in the general population. Hence, quite low population densities for this age group are obtained; Belize District has a low density of 2.9 persons per square mile while Corozal District has a high of 12.3 persons per square mile.

Belize enjoys a rich mixture of ethnic groups. According to the tabulated 2000 Census (Table 2) Mestizos constitute the most populous group with 113,045 persons or 48.7% of the entire population. Creoles form the next largest group with 57,859 persons (24.9%) followed by the Mayas with 24,501 persons (10.6 %) countrywide. The remaining ethnic groups contribute 36,706 persons (15.8%) to the population. These groups are aggregated together since this study does not require the fine details of ethnic diversity and include the Garifuna, Mennonite, East Indian, Caucasian/White, Chinese and African/Black.

Although there is a rich ethnic mixture countrywide, the mixture is not a uniform one. The Mestizo is the dominant ethnic group in Cayo District (63.7% of the district population), Corozal District (76%) and the Orange Walk District (77%). Belize District also has a large group of Mestizos (25.3% of the district population). Creoles are most plentiful in the Belize District (59%) while the population of the Toledo District is predominantly Mayan (65.4%). The population of the Stann Creek District is not heavily dominated by any single ethnic group. Garifunas contribute 31.0% to the district population while Mestizos

contribute 30.2% and Creoles and Mayas contribute 21.3% and 11.9% respectively (Table 2 and 2000 Population and Housing Census).

II.2 Economic activity, health and social services

Belize's major exports in the year 2000 were sugar (BZ$[1]74.2 million), bananas (BZ$65.8 million), citrus concentrate (BZ$38.8 million) and marine products (BZ$66.5 million) (Central Statistical Office, 2001). This reconfirms Belize's traditional dependence on primary sector activities.

For the year 2000 Gross Domestic Product (GDP) per capita at current prices is estimated at BZ$6,269. Tertiary sector GDP (BZ$761 million) exceeded the GDP for the Primary and Secondary Sectors approximately by a factor of two (Central Bank, 2002). Real GDP increased by 4.6% in 2001 and fishing, forestry, construction and tourism were responsible for most of this growth. Although this performance ranks Belize favourably with many other countries, poverty still remains a problem. Figures estimated for 1995 place one third of Belize's population below the poverty line of US$53 per month and indicate that the highest poverty rates occurred in rural areas, among the Maya and in households headed by single females (Kairi, 1996). Young (2000) indicates that the Maya of the Toledo District are among the poorest in the country accounting for approximately one quarter of all the poor in the country.

In the year 2000 most employed persons worked in the tertiary sector (66%), 27.6% worked in the primary sector and 6.4% worked in the secondary sector. About one half of persons above the age of 14 years (89,737 persons) comprised the working labour force. Unemployment rates have been decreasing over recent years and in 2000 stands at 12.2% (12,469 people). Estimates from the 2000 Census indicate a big disparity between the earnings of urban and rural workers. On average urban workers earn BZ$7,906.00 per year while in the same period the rural worker makes BZ$5,955. The general tendency is that rural workers take many unskilled low paying jobs.

[1] Two Belize dollars (BZ$) are equivalent to one US dollar (US$)

III. THE EDUCATION SYSTEM IN BELIZE

III.1 The system

Children between the ages of 5 years and 14 years are required by law to receive suitable education either by regular attendance at school or otherwise. In order to accommodate this ideal, the Ministry of Education manages and co-ordinates the education system of Belize. Force of law is supplied by the Education Act, which details the nature and scope of this Ministry. The tone of the education system is set by the following pronouncement in the Education Act.

> "The Ministry of Education, under the general direction of the Minister, shall work in partnership and in consultation with the churches, communities, voluntary organizations and bodies which the Ministry may identify and recognize as education partners for the sufficient and efficient provision of education in Belize." (Education Act, 1991)

Management of the education system is supplied by a government appointed Chief Education Officer and a National Council for Education, the members of which represent the churches, communities, voluntary organizations and other stake-holders involved in education in Belize. Schools are either totally government operated, totally privately operated or operated by some organization with financial and other tangible assistance from the government (the government-aided schools and assisted schools). In any case a license from the government is required to operate any school and ultimate policy decisions rest with the government (Handbook of Policies and Procedures for School Services, 2000).

Schools are categorized based on the level or the type of education offered. In the school year 2001–2002 there were 99 preschools, 234 primary schools (government and government-aided), 36 secondary schools and 9 tertiary institutions in Belize. In addition to these there were about 50 private and specially assisted primary schools (Educational Statistical Digest 2000-2002). Included among the secondary schools are the Centers For Employment Training, a priority area of the Ministry of Education for improving technical and vocational education in Belize.

Belize has developed a church-state partnership that dominates the educational system at the primary and secondary levels. At the primary level, the church-state partnership was responsible for 167 of the schools (Educational Statistical Digest 2000-2002). Seventeen primary schools were non-denominational but aided by the government and 50 primary schools were wholly run by the Government of Belize. At the secondary level a church-government or community-government partnership accounted for 20 schools while 13 secondary schools were totally run by the government and three schools were private or specially assisted schools.

This education machinery currently processes about 74,108 students (2001-2002 figures obtained from the Educational Statistical Digest 2000-2002). Of these 3,542 were preschool students, about 56,767 primary school students and 13,799 secondary school students. Primary school teachers amounted to 2,278 while the total number of secondary school

teachers was 896. Preschools are run primarily by private individuals, religious denominations and various organizations while a third of the 99 preschools registered were operated as community schools.

III.2 The system's finance

It is clear that The Government of Belize plays a dominant role in education at all levels and remains committed to provide educational opportunities to the Belizean population on a whole. In particular government is committed and obliged to provide formal education to all children between the ages of five years and 14 years. Government-aided primary schools receive grants to pay 100% of the salary costs, 60% maintenance costs and 70% capital costs. Secondary schools aided by the government received 70% of their salary budget from the government. Government's spending on education in the 2001-2002 year amounted to BZ$80.6 million or 22.4% of its entire recurrent budget, second only to the budget of the Ministry of Finance. Of this budgeted quantity, 85.8% (BZ$69.2 million) was used by the Ministry of Education for the payment of salaries.

The Ministry of Education in 2001-2002 placed heavy emphasis at the primary level spending 58.4% (BZ$47 million) of its recurrent budget there. Secondary schools received 25.6% (BZ$20.6 million) of the ministry's recurrent budget and the remainder of the recurrent budget was split up into tertiary (5.5%, BZ$4.43 million), Centers For Employment Training (1.3%, BZ$1.05 million), Special Education (0.8%, BZ$0.64 million), Preschool (0.5% BZ$0.4 million) and Other schools (7.9%, BZ$6.48 million).

A somewhat different picture emerges when the ministry's capital budget is examined. Most of this budget of BZ$18 million was allotted to the tertiary level (61.4%). A large portion of this was used in the construction of new buildings for the University of Belize. Eight percent of the capital budget was awarded to Centers For Employment Training while the primary level received 3.0% and secondary level received 3.6% of this budget (Education Statistical Digest 2000-2001).

Government is involved in financing various projects which improve the quality of education and increase access to the schools throughout the country (Estimates of Revenue and Expenditure for Fiscal Year 2002/2003). A school wide area network program was initiated in 2001 to provide primary and secondary schools with 5,000 computers and free internet access. This project was designed to be self-financing.

Primary schools in rural areas are often difficult to get to. Government sponsors a school transportation program which busses students to a nearby primary school. There are 95 such routes countrywide and some runs extend up to fifteen miles away from the target school. In the school year 2001-2002 the government about budgeted BZ$2.3 million for this program. Other government projects include the ongoing Secondary School Improvement project (BZ$2.15 million) and the Technical, Vocational Education and Training Project (BZ$1.5 million)

III.3 Accessibility of education

It is not surprising that the rural primary schools outnumber the urban primary schools in all districts except in the Belize District. Evidently, in the year 2001-2002 (Education Statistical Digest 2000-2002), the enrolment of primary school students in the urban Belize District far exceeded the enrolment in the rural areas (12,067 urban students to 3,025 rural students). Just the opposite is true for the other five districts with the opposite extreme being supplied by the Toledo District (1,037 urban students to 4,668 rural students). Access to primary schools, however, was much more uniform than these figures suggest. In the urban areas the average number of students enrolled in a primary school was 462 children with a high of 535 students in the Cayo District and a low of 303 students in the Corozal District. For rural areas the average number of students enrolled in a primary school was 169 pupils. A high of 232 students in the Stann Creek District and a low of 111 students in the Toledo District were observed (Education Statistical Digest 2000-2002).

Evidently, dense population centres lend themselves to larger primary schools while the rural areas with less population density tend to make access to a few large schools infeasible. Instead there are many smaller schools in the rural areas and this tends to make schooling more accessible to the rural student. Government's statistics indicate that there were about three times as many rural as urban primary schools in the school year 2001 to 2002 (175 rural to 59 urban primary schools).

It is estimated that most children of primary school age are within five miles of a primary school but transportation is often a problem. There are about 175 rural schools which service about 247 villages and rural communities. As a rough measure of access each school services an average of 1.4 villages. Table 4 indicates that access to rural primary schools is least for the Stann Creek and Toledo Districts with village to school ratios of approximately 1.6. Best access is enjoyed by the Corozal District where there are about 1.2 villages for each rural school.

Since each village does not have its own primary school many children are obliged to travel some distance between home and school. Transportation by bus is provided by the government for schools in most rural areas that are accessible by road but there are some rural schools that are difficult to reach especially during the rainy season. As of 2001 there were 95 established transportation routes for school children in rural areas countrywide.

Adequate numbers of primary schools and transportation to and from schools are not the only issues affecting access to schools. Free education covers only certain areas of the entire cost of education and the student's family has to bear the remainder of the cost of sending a child to primary school. These costs include food, clothing, school supplies and various fees. Gillett (2000) estimates that in 2000 the average annual cost of primary education was about BZ$1,000 per student. This sum could present an insurmountable obstacle to many families with limited income.

At the secondary level the enrolment and accessibility profiles are certainly different from the primary profiles where the trend is reversed. Schools tend to be concentrated in the urban areas (27 schools) and there are very few secondary schools in the rural areas (9

schools). This severely limits physical access to secondary education especially for those people living in the rural areas. An added financial burden is also placed on families of secondary school children living in rural areas. Such families have to provide money for fees, books and clothing and often have to pay for boarding and lodging.

During the 2000-2001 school year (Education Statistical Digest 200-2002 and Estimates of Revenues 2002/2003) the Ministry of Education spent about BZ$1,416 per secondary level student, about BZ$1,058 for each primary level student and about BZ$124 per preschool student. Education at the primary level is free in that students are not required to pay tuition but may be required to supply their own school supplies and pay special fees (for example library and computer fees). Students at the secondary level also do not pay tuition but are required to purchase books, supplies and pay special fees. Government pays the tuition for second year Associate level students attending Junior Colleges, Community Colleges or the University of Belize (Handbook of Policies, 2000).

In particular, access to primary, secondary and tertiary education is facilitated by the Ministry of Education through scholarship programs. In 2000-2001 the Ministry awarded 2,400 tuition grants, book awards, bursaries and financial assistances to primary and secondary school students. These grants ranged between BZ$30 to BZ$800 each. In addition the Ministry of Education provided financial assistance to about 2,200 tertiary level students with each grant worth between BZ$400 and BZ$800. Grants were awarded mainly on a needs basis addressing those students who would not be able to attend school because it was not affordable. A textbook program for primary schools maintained by the Government made textbooks available to those students whose parents could not purchase them (Handbook of Policies, 2000 and Lewis-Morter, 2000).

III.4 School infrastructure

Another issue that might impact directly on the accessibility of schools to pupils is the infrastructure of the schools themselves. In recent years (1999) there has been an effort to increase the number of classrooms at the secondary level. Four new high schools were opened and a shift system was introduced at four high schools. This shift system allows potential doubling of the student body at the school. Classrooms for the lower levels of primary education (Infant I and II) seem to be meeting the space demand but the shortfall of space increases as the school grade gets higher (Young 2000). Hence, students are pressured to leave the primary education system whether or not they are prepared for high school or other further schooling.

IV. CHILD LABOUR IN BELIZE

IV. 1 The child at work and play

There were 79,061 persons between the ages of 5 years and 17 years living in Belize in 2001 (2001 Child Activity Survey). This estimate was divided into 40,191 males and 38,870 females. Furthermore, 41.5% (32,838 people) of these young persons were urban dwellers while 58.5% (46,223 persons) lived in rural areas. Almost a half (47.7%) of the age cohort lived in the Belize and Cayo Districts while Stann Creek District had the smallest population of 7,918 persons (Table 3). It is clear that gender is about equally distributed in each district. However, the urban/rural distribution shows some marked differences in the districts. Belize District is the most urban in that 75.5% of its 5 year to 17 year population live in the cities while only 16.7% of Toledo's population are urban dwellers.

Almost a quarter (22.7% or 17,938 persons) of the entire age cohort 5 years to 17 years participated in no kind of activity, either economic or non-economic (Table 5). Of these idle persons 10,117 (56.4%) were males and 7,821 (43.6%) were females. Children or young persons who engage in some form of work can be either non-economically active, economically active or both. Those who were non-economically active alone amounted to 52,541 persons (66.5% of the age cohort), those economically active alone totalled 1,593 persons (2.0%) and those who were both amounted to 6,989 persons (8.8% of the age cohort). All economically active persons aged 5 years to 17 years are of interest in this study and their overall total was 8,582 persons.

IV.2 The child labourer

It is generally held that child labour constitutes child abuse and that its continued occurrence will ultimately reflect negatively on the Belize society (Young, R. 2002). However, there is a strong argument that some form of work for children and young persons is a good thing. Such activity, it is believed, will help to foster a sense of responsibility, instil good work ethics and in general impact positively on the development of the child or young person as a valuable member of society. Of course it is not at all clear to many people where acceptable work stops and child labour begins. Belize is a signatory to the ILO Convention No. 138 that sets out the boundaries between acceptable work and child labour for persons between the ages of 5 years and 17 years. There is considerable latitude in the interpretation of the details pertaining to the convention.

Non-economic activity is exempt from the conditions of the Convention No. 138. These activities are performed at home without pay and include household chores, running of errands, preparing and serving meals, mending, washing and ironing clothes, shopping and caring for siblings or sick or infirm persons in the household. Surely, a child six years of age should not be ironing and washing clothes. However, there are no age distinctions made with respect to accepted non-economic activities. Accordingly, it is estimated (2001 Child Activity Survey) that 75.3% of persons between the ages of 5 and 17 participated in non-economic work of one form or another. There was no significant gender difference for persons in this age cohort.

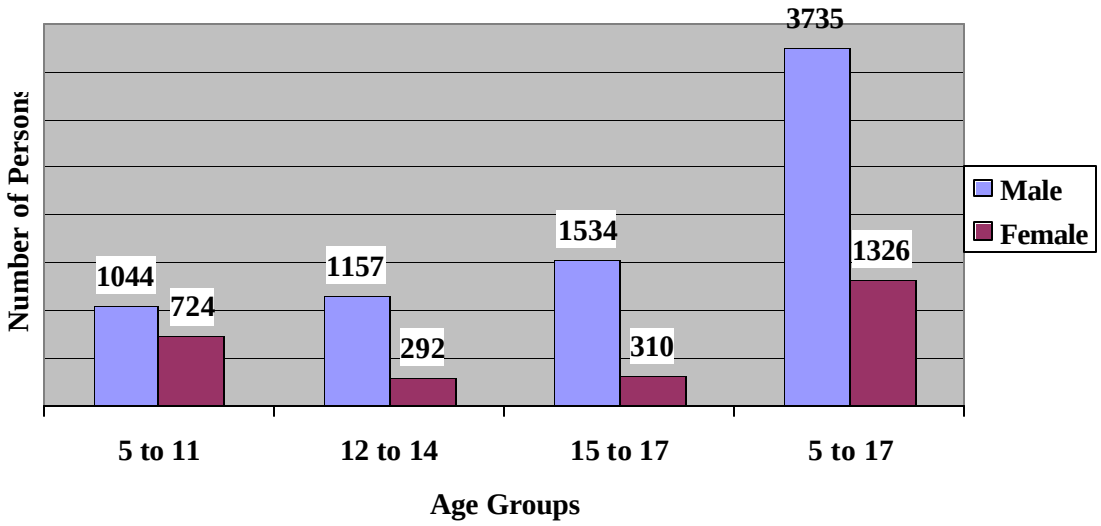
The 2001 Child Activity Survey provides the most current information on economic activity and child labour of children and young persons in Belize (Talbert, E., & Vega, L., 2002). At the time of the survey about 10.9% of the persons aged 5 years to 17 years were economically active. This amounted to 8,582 persons and of these about 5,061 persons or 6.4 % of all persons between the ages of 5 years and 17 years were involved in child labour.

Children between the ages of 5 years and 14 years are required by law to be in school. Notwithstanding, about 4,020 children (6.1% of the age cohort) participated in some form of economic activity and about 3,217 (80.0%) of these economically active children were engaged in child labour. Young persons between the ages of 15 years and 17 years participated in economic activity at a higher rate (40.4% or 4,562 persons) than children of compulsory school age. This is to be expected and the lower incidence of child labour (36.4% of the economically active young persons) was also to be expected since young persons are permitted to engage in work to a greater extent then children (Table 6).

Although non-economic activity showed no gender bias, the same is not the case for economic activity. In the age range 5 years to 17 years about twice as many males (5,799 persons) as females (2,783 persons) were economically active according to the 2001 Child Activity Survey (Table5). Furthermore, males between the ages of 15 years and 17 years participated in economic activity at a much higher rate than persons in the other age groups. Of the economically active children or young persons 45.4% or 3,897 persons were males between the ages of 15 years and 17 years. A possibility of undercounting the females is entertained by some authors, but it is not clear why the 2001 Child Activity Survey did not capture the information as non-economic activity if not as economic activity (Talbert, E., & Vega, L., 2002).

Child labour displays an even stronger gender bias since there were about three times as many males as females in child labour with total numbers estimated at 3,735 males and 1,326 females. This bias is even more pronounced when age groups are considered. Males between the ages of 15 years and 17 years outnumber the females of the same age group five to one and in the age cohort 12 years to 14 years there were 4 males to each female in child labour (Figure 1). Evidently, males are at a higher risk than females of being the victims of child labour in all age groups considered and the risk increased as the age of the person increased.

Figure 1: Child Labourer by Age Groups and Gender



Source: 2001 Child Activity Survey

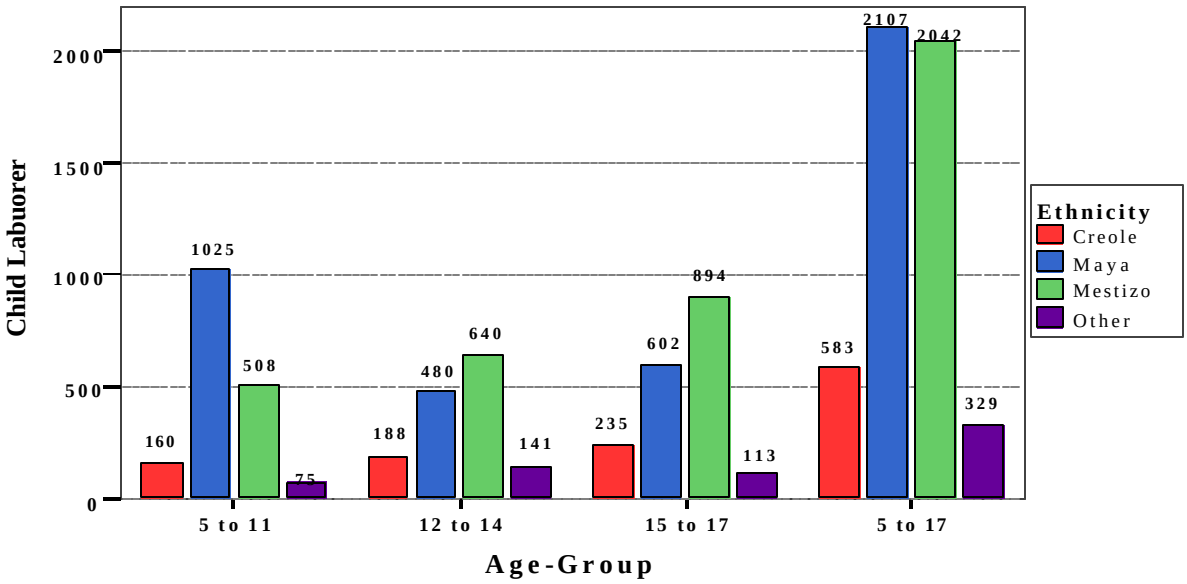
Ethnicity was also an important factor in the work profiles for children. Table 6 gives the details. About one in four (25.9% or 2,481 persons) Maya child between the ages of 5 years and 17 years was economically active. Mestizo persons in this age group participated at a rate of 10.3% (4,167 people) while Creole children were least economically active participating at a rate of 6.4% (1,282 persons).

Evidently, (Table 6) the Maya was over represented by a factor of two in the economically active group of children and young persons because, based on population estimates, one would expect the number of economically active Maya in the age group 5 years to 17 years to be about 1,030 persons, not the 2,481 persons as reported above. Creole children and young persons on the other hand were under-represented in the economically active group by a factor of two; population estimates suggesting an expected value of 2,180 persons instead of the reported 1,282 persons. Other ethnic groups of East Indian, Garifuna, Mennonite, Chinese and Caucasian origin were placed into one category because sample size did not permit adequate estimates for each (Talbert, E., & Vega, L., 2002). It was estimated that the other ethnic groups when combined together yielded an estimate of 651 persons in the age group 5 years to 17 years engaged in some form of economic activity.

Approximately one half of economically active children or young persons in the Mestizo (49.0%), Creole (45.5%) and the aggregated other ethnic groups (50.5%) were victims of child labour (Table 6). Maya children or young persons engaged in child labour at a much higher rate than the other ethnic groups. About 41.6% (2,107 persons) of all child labourers were Maya and 84.9% of the economically active Maya children or young persons were victims of child labour. Hence, five out of every six Maya children or young persons engaged in economic activity were involved in child labour. Estimated totals for child labourers classified by the various age groups and ethnicity are presented in Table 8.

This, coupled with the higher than expected incidence of economically active persons, identify the Maya as the most susceptible ethnic group for child labour. Furthermore, the Maya participate in child labour at a rate much higher than the percentage to which they contribute to the general population of 5 year to 17 year olds. In fact about 12.1% of this age cohort are Maya but fully 41.6% of the child labourers are Maya. It is clear from Table 8 that Maya children in the 5-year to 11-year age group are being heavily victimized. Evidently, the group consisting of Maya children between the ages of 5 years and 11 years boasts more child labourers in absolute terms (1,025 persons) and percentage (20.2%) than in any other age group and in any other ethnic group (Figure 2).

Figure 2: Child Labourers by Age Group and Ethnicity



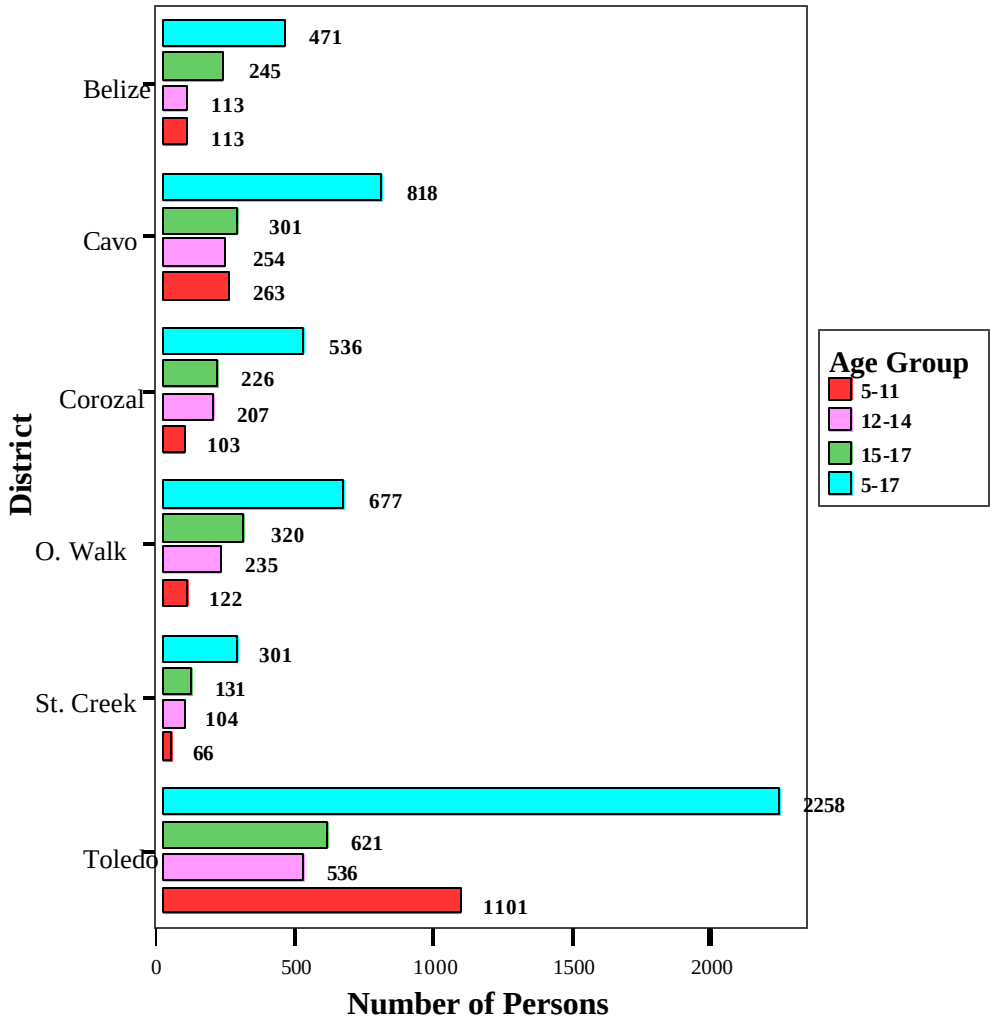
Source: 2001 Child Activity Survey

Geographic location is also an important risk factor for child labour. Children and young persons living in rural areas are about three times as likely to be economically active and about 3.8 times as likely to be child labourers as persons living in an urban setting (Table 6). About 74.6% (6,406 persons) of the economically active persons and about 79.0% (3,998 persons) of the child labourers reside in rural areas. These levels are elevated significantly above population estimates that place only 58.5% of persons between 5 years and 17 years in rural homes.

Furthermore, Table 6 indicates that child labour is not divided proportionately by population among the districts. Toledo District has a high of about 44.6 % (2,258 persons) of the child labourers. Belize District also deviates significantly from the expected but in the opposite direction with a low of about 9.3% of the child labourers (471 persons). It is clear from Figure 3 (Table 9) that children in the age group 5 years to 11 years who live in

the Toledo District are most heavily affected by child labour; fully 21.8% or 1,101 persons are in this category.

Figure 3: Child Labourers by District and Age Groups



Source: 2001 Child Activity

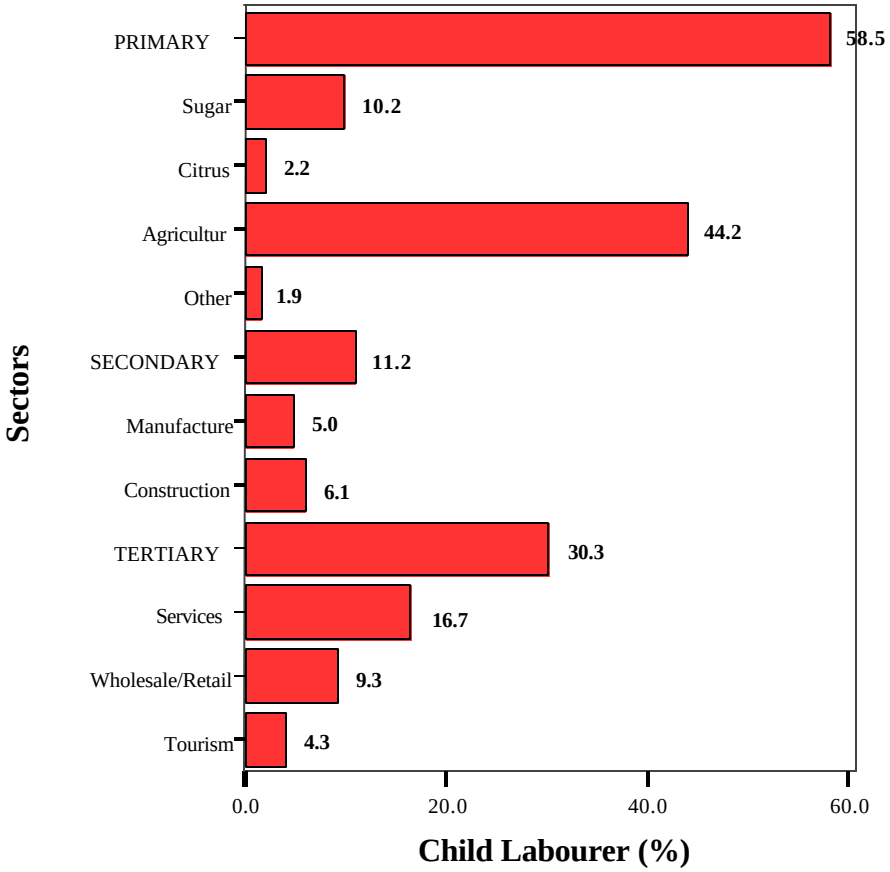
IV. 3 Nature, causes and consequences of child labour

It is clear that participating in economic activity is a necessary condition for participating in child labour. Hence, economic activity in the primary sector of sugar production, citrus farming, agriculture, the secondary sector of manufacture and construction and the tertiary sector of community, social and personal services, wholesale and retail trade, and tourism provide the setting in which child labourers operate. Approximately 49.9% of the economically active children work in the primary sector, 10.2% in the secondary sector and 39.9% in the tertiary sector (Table 11).

More specifically, about 30.5% (2,621 persons) of the economically active children and young persons work in agriculture (excluding sugar and citrus). Sugar and citrus are given separate mention from other forms of agriculture because they are major cash crops geared toward export. General agriculture is aimed primarily at home and in-country consumption but includes fishing and forestry. The next two economic areas where children and young persons are economically active are services (1,400 persons or 16.3%) and wholesale/retail trade (1,346 persons or 15.7%) (Table 11).

Agriculture (excluding sugar and citrus) is the biggest offender for child labour since fully 44.2% of all child labourers (2,239 persons) work in some form of agriculture. Agriculture is implicated even further when it is observed that 85.4% of the economically active children and young persons who work in this sector are child labourers (Table 11). Next in importance for child labour are services which contribute 16.7% (847 persons) of the child labourers. Figure 4 indicates the percentages for participation in child labour in the other areas of industry. Although the percentages of child labourers for manufacture (5.0%) and construction (6.1%) are small, an average of 64.5% of the economically active in these areas are child labourers.

Figure 4: Percentage Child Labourers By Employment Sectors



Source: 2001 Child Activity Survey

Most child labourers were males with an average of about three males to one female being victimized (Table 6). The distribution across economic sectors was not uniform, however. Males dominated the primary and secondary sectors (Table 13) where virtually all child labourers in the sugar industry and construction were males. This extreme in the Primary Sector is tempered somewhat by Agriculture which when averaged along with sugar and citrus yielded rates of 76.8% males to 23.2% females. In the secondary sector males outnumber females six to one (86.5% males to 13.5% females). Absolute numbers in this sector are small but it is clear that the type of hard labour characteristic of construction, manufacture and fieldwork is the domain of the males. Females participated in child labour at a much higher rate in the tertiary sector but were still well below the participation rates for males (63.2% males to 36.8% females obtained from Table 13).

Anyone under the age of 12 years who engages in economic activity is a child labourer. This is one of the criteria used to determine those who participate in child labour. Data from the 2001 Child Activity Survey summarized in Table 12 indicates that of the 5,061 persons who are in child labour, 1,769 (35.0%) of them are between the ages of 5 years and 11 years. A further 1,448 (28.6%) child labourers are children between the ages of 12 years and 14 years. Hence, persons of compulsory school age make up almost two thirds of the child labour work force.

Furthermore, if each sector is taken separately, children in the age group 5 years to 11 years contribute more than any other age group to child labour in the primary sector (1,138 children or 38.4% of the sector population) and also in the tertiary sector (574 children, 37.4%). Young persons age 15 years to 17 years, are most heavily involved as child labourers in the primary sector (998 persons, 33.7% of the sector population) and contribute most of the child labourers in the secondary sector (395 persons, 69.9% of the sector population) (Table 12). Children in the age group 12 years to 14 years are most active in agriculture (555 persons) and in services (311 persons).

It is clear also that most child labourers work in the primary sector (2,963 persons or 58.5% of all child labourers). Furthermore, 66.3% or 1,965 child labourers in the primary sector are children of compulsory school age. Children 5 years to 14 years also make up a majority of the child labourers in the tertiary sector (1,082 children or 70.6% of the sector total). Although the young persons 15 years to 17 years make up most of the child labourers in the secondary sector, there are still 170 (30.1% of the sector total) child labourers of compulsory school age in this sector.

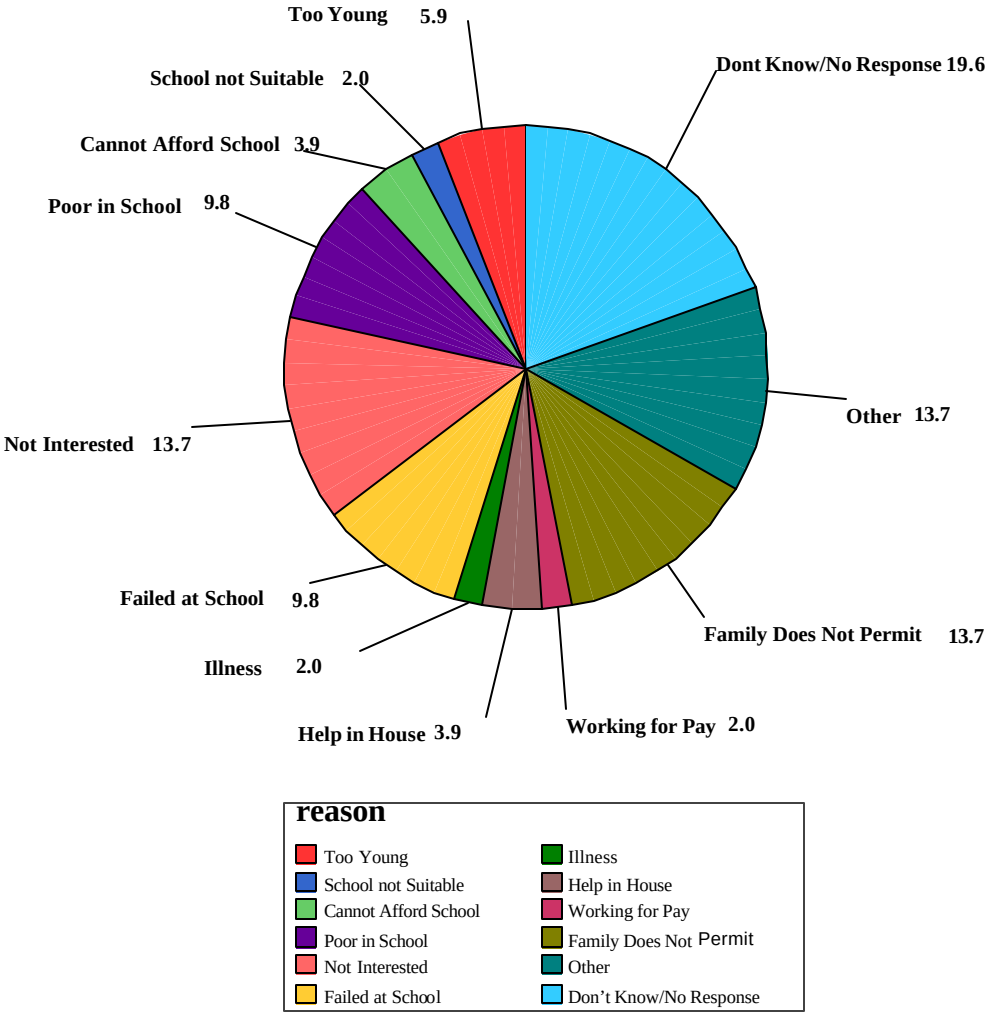
IV.4 Child labourers and education

As indicated in the previous section there were about 5,061 persons between the ages of 5 years and 17 years in the child labour force at the time of the 2001 Child Activity Survey. Of these, 36.6% or 1,853 persons were not attending any form of schooling (Table 15). Of course these figures include young persons in the age group 15 years to 17 years and these persons are not obliged to be attending school. A look at the profile for the highest level of education reached (Table 14) reveal that 33.7% (622 persons) of child labourers between the ages of 15 years and 17 years had no formal education. Evidently, these persons had not completed primary school.

Also indicated in the previous section, 63.6% (3,217 persons) of all child labourers were children between the ages of 5 years and 14 years and of these school aged children, 489 were not attending any form of schooling. Hence, fifteen percent of the children who should have been in school were not attending school at the time of the survey. Reasons given for these 489 child labourers not attending school were many. As indicated by the survey, the family did not permit the child labourer to go to school in 19.6% of the cases reported, as it is argued that the category of Too-Young is in fact a case of the family not permitting the child to go to school. Furthermore, about 6% of the children in child labour did not go to school because they had to work either for pay or around the house doing household chores. A further 33.3% of these children did not attend school because of lack of interest, failed in school or poor performance at school. Access to suitable schools was

an issue and 5.9% of the child labourers did not attend a school because there was no suitable school available or because school fees were too high (Figure 5).

Figure 5: Percent Child Labourers Ages 5 Years to 14 Years: Reasons for not Attending



Source: 2001 Child Activity Survey

A distinction is made among child labourers in the 2001 Child Activity Survey between those who are presently attending school and those who were attending school while working (Table 15). Presumably this distinction addresses issues of seasonal work at the time of the survey and lends itself to support the view that there is a tendency to take children out of school when there is much work to be done. There is a marked difference between the number of child labourers not attending school at the time of the survey and those not attending school while working. Children in the age group 5 years to 11 years are

most heavily affected since their non-attendance increases by a factor of 5.6 from 75 children to 423 children. Evidently, these children are being removed from school in order to work as the work becomes available. Children in the age group 12 years to 14 years are affected less dramatically with non-attendance increasing from 414 persons to 780 children. Although persons in the age group 15 years to 17 years are not required by law to attend school it is still the case that people are removed from school in order to work. In this last age group non-attendance increases from1, 364 young persons to 1,505 persons.

It is also of great interest to determine the age at which children first enter into the child labour force. Clearly the large numbers of 5-year to 11-year old child labourers (1,768 children) signal that induction into the child labour force occurs at a very early age. In fact the average age (calculated from Table 16) at which a child becomes a child labourer is 8.7 years and about 75.3% of all child labourers were inducted into child labour by age 11 years. Heaviest recruitment occurs between the ages of 5 years and 10 years where 71.9% (3,641 children) of all child labourers are recruited. Of these ages the 5-year age group contributed the most (810 children) to the total number of child labourers. There is, evidently, an unrecognised problem at the Infant I level of schooling and the loss of children to child labour begins in earnest at this age group.

Induction into the child labour force continues for the age group 12 years to 14 years. It can be seen from Table 16 that fully 90.8% of all child labourers were inducted into the child labour force by the age of 14 years. In addition to this there is another spurt of recruitment in the 14-year and 15-year age groups but this is far less than observed for the 5-year to 11-year age group. This secondary upsurge in child labour recruitment, no doubt, corresponds to graduation activities from primary schools. One can argue that strict adherence to the compulsory education age requirement of the laws of Belize has the potential to dramatically reduce the incidence of child labour in the country.

V. FURTHER ANALYSES OF EDUCATION AND CHILD LABOUR

V.1 Child labourers vs. non-child labourers

It is useful to divide the children and young persons between the ages of 5 years and 17 years into the two mutually exclusive categories: child labourers and non-child labourers. This dichotomy facilitates analyses that compare the child labourers versus the non-child labourers in terms of various characteristics of the population of 5-year to 17-year old persons. Is the population of child labourers significantly different in character from the population of non-child labourers in general terms and particularly as it pertains to education? The characteristics of interest include gender, age groups, ethnicity, location by district and urban-rural, level of education attained, number of years completed after the level reached and school attendance. It is of interest also to find out if certain combinations of these characteristics contribute significantly to the child labourer subgroup[2].

V.2 Child labourer, main effects

Detailed analyses in the sequel investigate whether it is possible to predict the likelihood of a person being a child labourer or not a child labourer based on the person's gender, age, ethnicity, location by district and urban-rural, level of education attained, number of years completed after the level reached and school attendance. If any of these factors (predictor variables) is deemed to be a predictor of child labour, that is found to be significant for predicting child labour, then it can be used to differentiate between the two subgroups of child labourer and non-child labourer. Otherwise, if a predictor variable is not significant for predicting child labour then it can be discarded from the model.

Evidently, there are two different kinds of predictor variables. One type, for example gender or ethnicity, cannot be manipulated by the investigator or government; these are fixed by nature. If any of these types of predictor variables are found to be significant for predicting child labour then they can be used to develop a profile for children at risk. Thus, for example, if ethnicity is a predictor for child labour then ethnicity is an important factor for determining children at risk for child labour. On the other hand some predictor variables can be manipulated. Hence, for example, the school attendance of a child can be adjusted by government, school officials and parents. If this variable is significant for predicting child labour then manipulation of the predictor variable may have a direct impact on changing the status of child labour. It is, therefore, important to determine those factors that can be used to identify children at risk and also those factors that can be manipulated by the competent authorities in order to reduce the incidence of child labour in the country.

Some light is shed on these questions by the analyses of Appendix A. In these analyses the factors of gender, age groups, ethnicity, location by district and urban-rural residence, attendance at school, highest level of education, and number of years beyond level are all significant for predicting child labour (Output A2). In light of previous discussion, the factors of gender, age groups, ethnicity, location by district and urban-rural residence and

[2] In all subsequent analyses, significance is measured at the .05 level.

number of years completed after the level reached can be used to determine those persons at increased risk for child labour. Also the factors level of education attained and school attendance are good candidates for manipulation by competent authorities in order to adjust the levels of child labour countrywide. Of course once a risk factor has been identified (for example gender) it is useful to determine which category of that factor (for example male or female) is most at risk.

Output A3 provides a little more detail on some of these risk factors and provides some partial answers to some of these questions.

(1) Nothing is immediately available for comparing the categories in each of the factors of gender, urban-rural location and school attendance.

(2) However, for the factor ethnicity, the analysis indicates that the Maya subgroup is at especially high risk. Mestizos are also at risk but not as extreme as for the Maya while the Creoles do not seem to be at high risk. The Other category of the factor ethnicity is not addressed in this output.

(3) At this level of the analysis the factor district of residence does not exhibit a profile that would indicate those districts at most risk. However, this factor remains important in the analysis and interacts with other factors to indicate those persons at risk.

(4) The factor number of years completed after the level reached displays a distinct risk profile. Those persons with no years after reaching the stated level of education were most at risk. The severity of risk diminishes with the increasing number of years after completion of the level of education. Elevated risk is experienced by those persons with zero to three years completed.

(5) Persons who indicated that they had not reached any level of education were at severe risk. The risk was greatly reduced for persons who indicated a primary school level of education.

(6) The age group 5 years to 11 years was at elevated risk as compared to the 12-year to 14-year age group. At this level of the analysis nothing can be said about the 15-year to 17-year age group.

A severe shortcoming is immediately obvious with these conclusions. There is no way to tell at this time if a factor level deemed to be a risk factor is addressing the child labour subgroup or the non-child labour subgroup. For example, the age group 5 years to 11 years is deemed to be at elevated risk but it is not clear if this is the risk of being a child labourer or the risk of not being a child labourer. Of course one would like this to be a risk for being a child labourer but this connection has still to be made. Evidently, some more analyses are necessary to clarify this issue and this will be addressed in a subsequent section.

V.3 Child labourer, interactions of factors

Although it is important to identify the factors which are predictors of child labour as argued in the above sections it is necessary also to investigate the effects on child labour of combinations of factors acting together. It is entirely possible that combinations of factors might more readily predict child labour than single factors on their own. The most serious drawback in identifying and using interactions of factors is that the model becomes very complicated and interpretation becomes difficult. Thus there is a trade-off between simplicity (the main effect model) and a more complex and challenging model. Because of this realization this study limits the analyses to interactions involving two factors, three factors and four factors and examines only those interactions that promise relatively easy interpretation. For a detailed description of this more complicated model see Appendix B[3].

The regression results revealed that the following main factors and factor interactions are significant as predictors for child labour and would be retained in this expanded second model.

Main Factors: Gender, Years Completed

Interactions:

Gender	*	School Attendance
Gender	*	Ethnicity
Gender	*	Educational Level
Urban-Rural	*	School Attendance
Urban-Rural	*	District
School Attendance	*	Ethnicity
School Attendance	*	District
Ethnicity	*	District
Ethnicity	*	Age Group
Ethnicity	*	Years Completed
District	*	Years Completed
District	*	Age Group

Observe the heavy participation of District (5 interactions), Ethnicity (4 interactions), Gender (3 interactions) and School Attendance (4 interactions) in the interactions among factors listed above. Hence, although District, Ethnicity and School Attendance were not found to be significant main factors (the inclusion of these variables as main factors did not seem to improve the fit of the model) they were important in interactions with other factors as predictors of child labour. Based on these results, one would like to make conclusions

[3] Appendix B is devoted primarily to obtain a list of the factor interactions that are important for predicting child labour. Output B1 (model 1) looks at the main factors alone and provides the same information as obtained in Output A2. A repeat of the analysis admitting interactions of all factors in pairs produced the results of Output B2 (model 2). It is immediately evident that the expanded analysis produces a model quite different from the previous main effects model. Nevertheless, the important outcome is that a list of significant two-way factor interactions is generated. Subsequent analyses will attempt to interpret these interactions.

similar to the following: a Maya person living in Toledo was at increased risk for child labour; but the analyses so far are not sufficient to permit these types of conclusions.

A reasonable question is how can one tell if the model obtained is the best. Clearly Model 2 above is lacking in many ways. For example, it is not reasonable that the only main factors to remain are Gender and Years Completed. The R-squared value which indicates model efficacy is still quite small and so perhaps there are some important interactions missing. Output B3 addresses these issues and the model in this case (Model 3) makes more sense. A summary of the significant factors is presented below.

Main Effects:
School Attendance
Education Level
District
Gender
Age Group
Years Completed

Second Order Terms:

Age Group	*	Gender
District	*	Ethnicity
School Attendance	*	Gender
Years Completed	*	Ethnicity
District	*	Years Completed

Third Order Terms:

Age Group	*	School Attendance	*	Ethnicity
Age Group	*	School Attendance	*	Gender
District	*	Years Completed	*	Ethnicity

Fourth Order Terms:

Age Group	*	District	*	Gender	*	Ethnicity

Model 3, yields a smaller error and larger R-square values and so would seem to be a better fit of the data. In any event the absence of the factors Ethnicity and Urban-Rural as main effects from the models is noteworthy. In particular, the factor Ethnicity is consistently eliminated as a main factor from almost all models investigated but remains important in the interaction terms.

Reasonable main factors are retained and the significant interactions are consistent with those of the previous model. Note once again the important role played by School Attendance, Ethnicity, District and Gender in interactions with other factors. Can the model be improved? Certainly the fit of the model can be improved by including such variables as Number-of-Hours-Worked and Economic-Activity (Output B4 and B5) but child labour is defined in terms of these variables and so the improved fit is to be expected and, hence, yields no new information. In light of this, model 3 above (Output B3) is used shed light

on the effect of interactions on child labour. The following listing indicates some of those factor levels that are significant predictors of child labour.

(1) Males between the ages of 5 years and 11 years.
(2) Males who do not attend school.
(3) Males in the age groups 5 years to 11 years and 12 years to 15 years who do not attend school.

(4) Maya of Toledo District.
(5) Maya in the age group 5 years to 11 years living in the Toledo District.
(6) Maya males between the ages of 15 years and 17 years living in the Toledo District.
(7) Maya males in the age group 12 years to 15 years living in the Cayo and the Orange Walk Districts.
(8) Maya in the age group 12 years to 14 years living in the Belize District.
(9) Maya females in the age group 5 years to 11 years living in the Orange Walk District.

(10) Mestizos in the age group 12 years to 14 years.

(11) Other ethnic groups between the ages of 12 years and 14 years who do not attend school.

V.4 School attendance and educational level as a dependent variables

Previous sections dealt with Child-Labour as the dependent variable and analyses were conducted to determine those factors that were predictors of Child-Labour. Of particular interest were the factors of Educational-Level and School-Attendance which turned out to be predictors of Child-Labour. The reciprocal is to determine which factors are the predictors of Educational-Level and School-Attendance, and in particular to determine if Child-Labour is one of these predictors. Accordingly, analyses using each of these two variables as the dependent variable were performed and the results given in Outputs B6 and B7 indicate that Child-Labour is not a predictor of either Educational-Level or School-Attendance. Evidently, the factor Child-Labour can be controlled in part by manipulating the factors of Educational-Level and School-Attendance.

V.5 Child labour and conditional independence

From the previous analyses it is clear that the factor Child-Labour is dependent on the factors of Educational-Level and School-Attendance and, hence, there is good reason to believe that Child-Labour can be controlled by manipulating these other two factors. This is especially important if one wants to address issues of child labour in the community and to devise ways to reduce the incidence of this type of child abuse. Once it is understood that child labour can be controlled by addressing issues of school attendance and educational competence then the next logical issue is to determine those groups of people who could be best served by intervention. Thus, for example, one could ask the question: is Child-Labour affected by the Educational-Level in each of the ethnic groups? If Child-Labour depends on

Educational-Level then is this dependence distributed evenly throughout the ethnic groups? Are there particular ethnic groups for which child labour depends heavily on school attendance? This is the question of conditional independence, that is, the question of the independence of Child-Labour and Educational-Level conditional on the factor Ethnicity.

Analyses of these sorts of questions addressing the independence of Child-Labour and a first factor conditional on a second factor are addressed in Appendix C. Accordingly, the subsequent analyses examine

- the independence of Child-Labour and School-Attendance for each level of the factors Educational-Level, Ethnicity, Gender, Urban-Rural, Age-Group and District.

- the independence of Child-Labour and Educational-Level for each level of the factors School-Attendance, Ethnicity, Gender, Urban-Rural, Age-Group and District.

V.6 Conditional independence results

1. Is Child-Labour independent of Educational-Level when School-Attendance is taken into account? This is the first question investigated in Appendix C. If School-attendance is discounted then the analysis indicates that Child-Labour is not independent of Educational-Level. Hence, the educational competence of the child affects the incidence of child labour as long as school attendance is discounted. However, the results are different for those people who do attend school. Evidently, Child-Labour is independent of Educational-Level in the group of people who do attend school.

   It is clear then that non-attendance at school is important in determining educational attainment, which links immediately to child labour. Evidently, interventions should target those persons who do not attend school (see Appendix C, Output C1).

2. Next the relationship between child labour and school attendance is studied while the level of education is discounted. As in the previous result, Child-Labour is not independent of School-Attendance conditional on Educational-Level. The analysis indicates that child labour is strongly dependent on school attendance for those persons who have no formal education or those who are at the primary school level. At the high school level, however, child labour is independent of school attendance.

   This indicates that the younger children who have not yet finished primary school or who have completed primary school but not high school are being withdrawn or withheld from school to engage in child labour. Any intervention must focus on the young children who seem to be at substantial risk for child labour. This analysis is in keeping with findings of previous sections, which

identify children less than 14 years as being at severe risk of child labour (see Appendix C, Output C2).

3. Overall, child labour is dependent on the highest level of education given the ethnicity of the person. This dependence persists in each ethnic group but is most pronounced for the Mestizo. Similarly, child labour is dependent on school attendance in any ethnic group. Once again it is seen that dependence is strongest for the Mestizo. The emergence of the Mestizo ethnic group as the most at risk in this instance is rather surprising since previous discussion did not indicate such a possibility. Evidently, in the Mestizo ethnic group child labour is strongly linked to non-attendance at school and also to the educational competence of the child or young person.

   One might ask what happened to the Maya ethnic group. Perhaps a more enlightening analysis would have been to consider the independence of Child-Labour and Ethnicity conditional on the Urban/Rural location. This will not be attempted here but it is noted that discussions in previous sections address this issue and indicated that there is a strong connection between rural Maya children and child labour (see Appendix C, Output C4).

4. School attendance and child labour are strongly dependent once gender is accounted for. The dependency is especially high for males and much less pronounced for females. This high influence of males is hinted at in previous discussion and one can conclude that there is a strong link between child labour and attendance at school for males (see Appendix C, Output C5).

5. In a similar fashion Educational-Level and Child-Labour are dependent once gender is discounted. Once again child labour and educational attainment are strongly associated for the males. Unlike in the previous result this analysis indicates that in the female subgroup Child-Labour is independent of Educational-Level. Evidently, there is a strong case for treating males with special attention in any contemplated intervention program.

   Results 4. and 5. are particularly interesting as there is a hint that there might be some connection between the low levels of female participation in the child labour force and attendance at school. Hence, these low levels are real effects and not the result of undercounting. Perhaps it might be possible to investigate these issues in subsequent studies.

6. Attendance at school and child labour are dependent given age groups. However, most of this result is obtained from the 12 – 14 and 15 – 17 years age groups. It appears from the analysis that child labour and school attendance are in fact independent for the 5 – 11 years age group. A similar result obtains for the Child-Labour versus the Educational-Level factors given Age-Group. In this case also independence holds for the 5 – 11 years age group.

This result seems to be capturing the fact that school attendance drops off dramatically for those people in Standard IV and Standard V (the 12 to 14 year cohort). Persons in the 15 – 17 years age group are mostly primary school graduates or non-graduates and would tend not to be attending school.

7. Conditional on District, Child-Labour is not independent of School-Attendance. Dependence is established for each of the six districts but especially so for the Orange Walk and Belize Districts. There seem to other factors at play which influence school attendance and hence child labour. Perhaps access to schools and quality and appropriateness of education are some such factors. Evidently, these are issues to be addressed in subsequent studies.

   A similar situation occurs for Child-Labour and Educational-Level. However, in this case Child-Labour and Educational-Level are independent in the Stann Creek District.

8. Child-Labourer is dependent on School-Attendance within the Urban-Rural setting but dependence is heaviest for the rural dwellers. This result tends to support the discussions in previous sections.

In summary, the analyses of Appendix C indicate that child labour depends most heavily on school attendance primarily for males who live in the rural areas of the country. These males are between the ages of 11 years and 17 years with primary school education or less and may be of any ethnicity. Similar results pertain to the link between child labour and educational attainment. One might argue that educational attainment depends on school attendance and so it is only reasonable that the results obtain should be very similar.

VI. CONCLUSIONS AND RECOMMENDATIONS

VI.1 Conclusions

1. There seem to be a general lack of understanding of what constitutes child labour at all levels in the society. Indeed the survey indicated a difference of opinion between the parent or guardian and the child as to what constituted work.

2. Child labourers work in all sectors of the economy for pay. Employers seem to be willing to employ children thus perhaps displaying a lack of understanding of the nature of child labour.

3. Other government ministries should play as dominant a role as the Ministry of Education in providing support and services to families at risk of perpetuating child labour. These should include ministries responsible for children and social services.

4. Educational data collection methodology for schools and school aged children and young persons require refocusing so that information can be presented in a format that can be easily used by decision makers.

5. Although the Ministry of Education spends a large part of its recurrent budget on primary education, it seems that not enough attention is paid to the circumstances of children at the Infant I and Infant II levels.

6. Rural areas of Belize might have a problem with access to primary schools, not because there are not enough schools, but because there is no rational methodology for allocating schools to rural areas. Also, there does not seem to be a coordinated method for allocating bus routes and other services to rural areas that require assistance.

7. An estimated 5,061 children and young persons in this age group were victims of child labour.

8. This number indicates that 6.4 % of all persons between the ages of 5 years and 17 years were child labourers.

9. There were 3,217 children (63.6% of the child labour force) between the ages of 5 years and 14 years engaged in child labour.

10. About three times as many males as females engaged in child labour with total numbers estimated at 3,735 males and 1,326 females.

11. An estimated 79.0% (3,998 persons) of the child labourers reside in rural areas.

12. Child Labourers classified by ethnicity number: 583 Creole children (11.5%), 2,107 Maya children (41.6%), 2042 Mestizo children (40.3%) and 329 Other children (6.5%).

13. Child Labourers Classified by districts number: 471 persons (9.3%) Belize District, 818 persons (16.2%) Cayo District, 536 persons (10.6%) Corozal District, 677 persons (13.4%) Orange Walk District, 301 persons (5.9%) Stann Creek District, 2,258 persons (44.6%) Toledo District.

14. Almost two thirds of all child labourers (those aged 5 years to 14 years) should, by law, have been attending some school on a full time basis. In fact about fifteen percent of all child labourers between the ages of 5 years and 14 years were not attending any form of schooling.

15. Most child labourers were males outnumbering females by a factor of three. Gender bias becomes progressively more pronounced as the child gets older. In the 15-years to 17-years age group there were approximately five male child labourers for each female child labourer. Young males seem to be at substantial risk of being the victims of child labour. Any program devised to address the issue of child labour must pay special attention to males as an at-risk group.

16. People of Maya ethnicity are at severe risk of being victimized by child labour. About three out of every four Maya children or young persons engaged in economic activity were involved in child labour.

17. Most of the Maya in Belize live in the Toledo District where most of the risk factors for child labour exist. Indeed the Toledo district is the most rural of all the districts having the lowest rural population density. Furthermore, the main activity for rural people in Toledo was farming geared toward local consumption. Primary schools were not as readily available as in other districts. Hence, not only was access to formal schooling reduced by the relative scarcity of primary schools but induction into economic activity and hence child labour was easily facilitated by the family's economic activities.

18. Maya children between the ages of 5 years and 11 years contribute more child labourers in absolute terms (1,025 persons) and percentage (20.2%) than in any other age group and in any other ethnic group. It is clear that the Maya, and especially those in the age group 5-years to 11-years, warrant special attention in any form of intervention undertaken by government.

19. Children living in rural areas are 3.8 times as likely as urban children to be child labourers. Reasons for this might include the relative inaccessibility of schools in rural areas and difficulties connected with monitoring truancy, the type of economic activities in which the families are engaged and the economic status of the family.

20. Children living in the Toledo District contribute the most to the child labour force. This is closely linked to the fact that the Maya is the heaviest contributor to child labour and that most Maya live in the Toledo District. Clearly, Maya children between the ages of 5 years and 11 years who live in rural Toledo District present a viable target for child labour intervention.

21. Child labourers were involved in all three sectors of the economy. Most child labourers, however, worked in the primary sector (2,963 persons or 58.5%) mainly in agriculture (2,239 persons or 44.2%) and the great majority of these were children of compulsory school age (66.3% of the sector total).

22. About 85.3% of the economically active children and young persons who work in Agriculture are child labourers.

23. Children 5 years to 14 years also constituted a majority of the child labourers in the tertiary sector (1,082 persons or 70.6% of the sector total). There is a clear and urgent need to sensitise the employers of Belize to the form and extent of child labour in Belize and a campaign along these lines would go a long way to address child labour issues in Belize.

24. The average age at which a person becomes a child labourer is 8.7 years.

25. Fully 75% of all child labourers were inducted into child labour by the age of 11 years, and furthermore, 90% of all child labourers became child labourers before their 15^{th} birthday.

26. Children who started working at the age of five contributed the most to total number of child labourers (810 children) when compared with child labourers who started working at any other age. There seems to be a problem at the Infant I level of schooling because the loss of children to child labour begins in earnest at this early stage.

27. The child labourer and non-child labourer subgroups differ significantly with respect to the factors Educational-Level and School-Attendance, Age-Group and residence location by District.

28. Most risk is a person who is Maya, male, who lives in the Toledo District, between the ages of 5 years and 14 years and not attending school.

29. Child-Labour is not a predictor for either Educational-Level or School-Attendance.

30. Child-Labour is independent of Educational-Level in the group of students who attend school.

31. Child labour is strongly dependent on school attendance for those persons who have no formal education or those who are at the primary school level. At the high school level, however, child labour is independent of school attendance. Hence, those persons with no formal or primary school education should be attending school to reduce the risk of becoming child labourers.

32. Child labour is dependent on the highest level of education given the ethnicity of the person. Similarly, child labour is dependent on school attendance conditional on the

educational level. In each of these two cases dependence is strongest for the Mestizo ethnic group.

33. School attendance and child labour are strongly dependent conditional on gender. The dependency is especially high for males and much less pronounced for females.

34. Educational level and child labour are dependent once gender is discounted. However, in this case Child-Labour is independent of Educational-Level in the female subgroup.

35. Attendance at school and child labour are dependent given age groups. However, most of this result is obtained from the 12 – 14 and 15 – 17 age groups.

36. Child labour and school attendance are independent for the 5 – 11 years age group.

37. A similar result obtains for the Child-Labour versus the Educational-Level factors given Age-Group. In this case also independence holds for the 5 – 11 years age group.

VI.2 Recommendations

Recommendations can be placed into two broad categories each addressing a different phase of the study. The first set of recommendations deals with the design and conduct of the survey and with issues of data collection and reporting. Secondly, general recommendations addressing findings of the analysis performed are proposed.

Design of study and data collection

- In a study of this magnitude it is necessary to state explicitly the purpose of the undertaking. This is necessary at the earliest stages of the study in order to design a questionnaire that will capture the required information. Once the survey is conducted it is impossible to get information that is not addressed by any of the questions. Accordingly, a statement of possible hypotheses should not be overlooked and an indication of the methods to be used in the analysis should be included.

- The questionnaire fielded five questions which dealt with some aspects of education as opposed to 14 questions which dealt with issues of housing, for example. The five education questions established if the person was attending school, dealt with the level of education attained and looked at the reasons for a person not attending school. Other possible questions could have addressed issues of:

    - level of access to schools including closeness of the school to home, school fees and access to books, materials and supplies,
    - the physical condition of the school and classroom,
    - levels of social assistance to families with school aged children,

- feeding and clothing issues,
- family views on the appropriateness of children working,
- the trade-off between work and attending school,
- type of curriculum taught in the school (for example, is there any vocational or technical subjects taught).

- The CSO should encourage the collection and publication of educational statistics to reflect the full range of formal education existing in Belize including information on preschools, special education schools, Vocational and Technical institutes, Centers for Employment Training, and tertiary level institutions. This information should be collected as far as possible for all ages without any grouping of ages in order to make available a profile of the Belizean student not only be level of achievement but also by age.

General recommendations

- There is a bewildering array of interlocking legislation that deals with child abuse and the employment of children and young persons in Belize. However, the concept of a child labourer is not explicitly addressed in the laws. This omission should be addressed and measures taken to introduce it into the laws of Belize. Very clear guidelines should be drafted and explicit references to child labour as it conforms to the ILO Conventions No. 138 and No. 182 and to the issues of the definitions of light and hazardous work should be inserted into Belize legislation.

- Very little is known about child labour by the general population of Belize. It is, therefore, necessary to initiate an extensive campaign to sensitise legal professionals, government executives, employers and the community in general to the different faces and to the consequences of child labour both on an individual level and at the national level. In order to accomplish this it might be necessary to establish a desk (office) dedicated to issues of child labour. Since child labour is a form of child abuse the agency responsible for issues of child abuse could also be obliged to vigorously pursue issues of child labour.

- Families in which parents are unemployed or unemployable often embrace child labour as an alternative form of economic subsidy. Yet it is clear that a solution for addressing non-functional parents or poor families is not the subjection of children to child labour. Clearly the issues to be addressed concern the entire Belizean society. There has to be a multi-sector effort to address poverty and child abuse in families. Agencies marshalled to this effort should include the Ministry of Education, Youth and Sports, Ministry of Human Development, Women, Children and Civil Society, Ministry of Health, Ministry of Finance, Ministry of Rural Development, Ministry of the Attorney General, Social Security, National Committee for Families and Children and National Organization for the Prevention of Child Abuse. The cost to society in the long term might be much more than the cost for not entertaining child labour in the short term.

Of course one may argue that it would be impossible to involve so many major players in one area when there are so many other pressing and competing issues to be addressed. It is recommended that an office be set up in the National Organization for the prevention of Child Abuse specifically to lead the entire process of addressing child labour in Belize. Important actors can be invited to lend their support in a phased and sequential manner. Some strategy has to be devised to identify a feasible sequence of activities which would eventually lead to the elimination of child labour in Belize.

- It has clearly been shown in the analyses and discussions above that there has been an unrecognised problem at the earliest ages of compulsory school-aged children. Clearly child labour cannot be eliminated overnight and furthermore one has to address the root causes or remove or weaken those factors which tend to encourage or perpetuate child labour. The strategy being proposed is to ensure attendance at some school for all children in the age range 5 years to 11 years along with prohibiting these children from engaging in any form economic activity.

  The restriction of ages to the 5-years to 11-years age group is deliberate, as this would introduce a gradual *inheritance effect* into the removing of child labour from the Belize society. This effect is based on the assumption that by and large the child labourers in the 12-years to 14-years age group were mainly inducted into child labour when they were in the 5-years to 11-years age group. One can envision that this *inheritance effect* would decimate the ranks of the child labourers between the ages of 5 years and 14 years in four years time. A further three years would see dramatic reduction in the child labour force for all persons 5 years to 17 years of age. Success of such a scheme would depend ultimately on the ability of the persons in authority to arrest the induction of children aged 5 years to 11 years into the ranks of the economically active and to ensure attendance into some formal school as required by law.

  Restriction to the age group 5-years to 11-years is also deliberately proposed to limit the financial exposure of the government and to try to make the project feasible from the point of view of the number of agencies and the level of their involvement and commitment to the child labour reduction program. Clearly it is no easy task to oblige parents and guardians to comply with compulsory education laws and to have children remain non-economically active. This is the point at which the joint efforts of many agencies become important. The thrust of their involvement is to offer encouragement, support, inducement and services to families that are at risk of forcing their children into child labour to enable them to maintain their children in school and out of the economically active cohort of children and young persons.

  Clearly issues of policing and enforcing this type of attendance at school and prohibition of any economic activity become important but it is felt that a solution comprising of these facets alone is doomed to failure. A much more gradual, supportive and cooperative strategy needs to be devised.

It should be noted that the age group 5-years to 11- years is arbitrary and conceptually there is nothing that would prohibit scaling down the program to address children between the ages of 5 years and 9 years if financing was not available for the project involving the 5-years to 11-years age group. The long-term effect would be the same but would take a few years longer to materialize than envisioned for the original proposal.

APPENDIX A: TABLES

Table 1: Demographic Profile of Districts of Belize (Tabulated Census 2000)

District	Total Population	Area (Sq. Miles)	Population Density	Rural (%) Population	* Density Rural Pop.
Belize	63,061	1,663	37.9	13,684 (21.7)	8.2
Cayo	51,221	2,006	25.5	25,252 (49.3)	12.6
Corozal	32,209	718	44.9	24,608 (76.4)	34.3
O. Walk	38,060	1,790	21.3	25,082 (65.9)	14.0
S. Creek	24,443	986	24.8	16,010 (65.5)	16.2
Toledo	23,117	1,704	13.6	18,840 (81.5)	11.1
Total	232,111	8,867		123,476 (53.2)	

***** Densities of Rural Populations do not factor in the land areas of the urban centres.
Source: 2000 Population and Housing Census

Table 2: Demographic Profile of Districts of Belize vs. Ethnicity (Tabulated Census 2000)

District	Total (% Country)	Creole (% Districts)	Maya (% Districts)	Mestizo(%) (% Districts)	Other (% Districts)
Belize	63,061 (27.1)	37,211(59.0)	708 (1.1)	15,865 (25.3)	9,277 (14.7)
Cayo	51,221 (22.1)	9,308 (18.2)	3,616 (7.1)	32,637 (63.7)	5,660 (11.1)
Corozal	32,209 (13.9)	2,302 (7.1)	921 (2.9)	24,478 (76.0)	4,508 (14.0)
O. Walk	38,060 (16.4)	2,604 (6.8)	1,229 (3.2)	29,296 (77.0)	4,931 (13.0)
S. Creek	24,443 (10.5)	5,208 (21.3)	2,898 (11.9)	7,385 (30.2)	8,952 (36.6)
Toledo	23,117 (10.0)	1,226 (5.3)	15,129 (65.4)	3,384 (14.6)	3,378 (14.6)
Total	232,111	57,859 (24.9)	24,501 (10.6)	113,045 (48.7)	36,706 (15.8)

Source: 2000 Population and Housing Census

Table 3: Distribution of Persons 5 – 17 Years by District, Gender and Urban/Rural (2001)

District	Total	Male # (%)	Female # (%)	Urban # (%)	Rural # (%)
Belize	19,542	9,713 (49.7%)	9,829 (50.3%)	14,753 (75.5%)	4,789 (24.5%)
Cayo	18,215	9,537 (52.3%)	8,678 (47.7%)	7,460 (41.0%)	10,755 (59.0%)
Corozal	11,035	5,501 (49.9%)	5,534 (50.1%)	2,230 (20.2%)	8,805 (79.8%)
O. Walk	13,358	6,892 (51.6%)	6,466 (48.4%)	4,307 (32.2%)	9,051 (67.8%)
S. Creek	7,918	3,988 (50.4%)	3,930 (49.6%)	2,584 (32.6%)	5,334 (67.4%)
Toledo	8,993	4,560 (50.7%)	4,433 (49.3%)	1,504 (16.7%)	7,489 (83.3%)
Total	**79,061**	**40,191(50.8%)**	**38,870(49.2%)**	**32,838(41.5%)**	**46,223(58.5%)**

Source : Talbert, E., & Vega, L. 2002 and 2001 Child Activity Survey

Table 4: Number of Rural and Urban Primary Schools and Number of Villages by Districts (2000)

Districts	# Urban P. Schools	#Rural P. Schools	# Villages	Village/Rural School Ratio
Belize	25	22	32	1.5
Cayo	12	37	47	1.3
Corozal	6	28	34	1.2
O. Walk	9	25	35	1.4
S. Creek	5	21	33	1.6
Toledo	2	42	66	1.6
Total	**59**	**175**	**247**	**1.4**

Source : Abstract of Education Statistics 1999-2000 and Education Statistical Digest 2002-2003

Table 5: Working and Non-Working Children 5 – 17 years by Gender

Working Status	Male (%)	Female (%)	Total	% Age Cohort
Idle	10,117 (56.4)	7,821 (43.6)	17,938	**(22.7**)
Economically Active Only	1,332 (83.6)	261 (16.4)	1,593	**(2.0)**
Non-Economically Active Only	24,274 (46.2)	28,267 (53.8)	52,541	**(66.5)**
Both Economically And Non-Economically Active	4,467 (63.9)	2,522 (36.1)	6,989	**(8.8)**
Total	40,190 **(50.8)**	38,871 **(49.2)**	79,061	**(100)**

Source: Talbert, E., & Vega, L. 2002 and 2001 Child Activity Survey

Table 6 : Children 5 – 17 in Economic Activity, Child Labour by Factors of Gender, Urban/Rural, Ethnicity, District (2001)

Factor Labels	Population Totals(%)	(1)Economic Active(%)	(1) % Factor Totals	(2)Child Labour(%)	(2) % Factor Totals	(2) as a % of (1)
5 – 14	66,330 (83.9)	4,020 (46.8)	6.1	3,217 (63.6)	4.8	80.0
15 – 17	12,731 (16.1)	4,562 (53.2)	35.8	1,844 (36.4)	14.5	40.4
Male	40,190 (52.1)	5,799 (67.6)	14.1	3,735 (73.8)	9.1	64.4
Female	38,871 (47.9)	2,783 (32.4)	6.8	1,326 (26.2)	3.4	47.6
Urban	32,838 (41.5)	2,176 (25.4)	6.6	1,063 (21.0)	3.2	48.9
Rural	46,223 (58.5)	6,406 (74.6)	13.9	3,998 (79.0)	8.6	62.4
Creole	20,049 (25.4)	1,282 (14.9)	6.4	583 (11.5)	2.9	45.5
Maya	9,574 (12.1)	2,481 (28.9)	25.9	2,107 (41.6)	22.0	84.9
Mestiz	40,575 (51.3)	4,167 (48.6)	10.3	2,042 (40.3)	5.0	49.0
Other	8,863 (11.2)	652 (7.6)	7.3	329 (6.5)	3.7	50.5
Belize	19,542 (24.7)	1,130 (13.2)	5.8	471 (9.3)	2.4	41.7
Cayo	18,215 (23.0)	1,798 (21.0)	9.9	818 (16.2)	4.5	45.5
Coroz	11,035 (14.0)	1,252 (14.6)	11.3	536 (10.6)	4.9	42.8
O.Wlk	13,358 (16.9)	1,067 (12.4)	8.0	677 (13.4)	5.1	63.4
St.Crk.	7,918 (10.0)	746 (8.7)	9.4	301 (5.9)	3.8	40.3
Toledo	8,993 (11.4)	2,589 (30.1)	28.8	2,258 (44.6)	25.1	87.2
TOT	**79,061**	**8,582**	**10.9**	**5,061**	**6.4**	**58.9**

Some round-off errors may occur

Sources : Talbert, E., & Vega, L. 2002, 2001 Child Activity Survey and Abstract of Statistics 2001.

Table 7: Child Labourers by Gender, Urban/Rural and Age Groups

Age Group	5 – 11 (%)	12 - 14 (%)	15 – 17 (%)	5 - 17 (%)
Male	1,044 (26.6)	1,157 (22.9)	1,534 (30.3)	3,735 (73.8)
Female	724 (14.3)	292 (5.8)	310 (6.1)	1,326 (26.2)
Urban	301 (5.9)	310 (6.1)	452 (8.9)	1,063 (21.0)
Rural	1,467 (29.0)	1,139 (22.4)	1,392 (27.5)	3,998 (79.0)
Total	1,768 (34.9)	1,449 (28.6)	1,844 (36.5)	5,061 (100.0)

Some round-off errors may occur

Source: 2001 Child Activity Survey

Table 8: Child Labourers by Age Groups and Ethnicity

Age Group	5 – 11 (%)	12 - 14 (%)	15 – 17 (%)	5 - 17 (%)
Creole	160 (3.2)	188 (3.7)	235 (4.6)	583 (11.5)
Maya	1,025 (20.2)	480 (9.5)	602 (11.9)	2,107 (41.6)
Mestizo	508 (10.0)	640 (12.6)	894 (17.7)	2,042 (40.3)
Other	75 (1.5)	141 (2.8)	113 (2.3)	329 (6.5)
Total	1,768 (34.9)	1,449 (28.6)	1,844 (36.5)	5,061 (100.0)

Some round-off errors may occur

Source: 2001 Child Activity Survey

Table 9: Child Labourers by Age Groups and Districts

Age Group	5 – 11 (%)	12 - 14 (%)	15 – 17 (%)	5 - 17 (%)
Belize	113 (2.2)	113 (2.2)	245 (4.8)	471 (9.3)
Cayo	263 (5.2)	254 (5.0)	301 (5.9)	818 (16.2)
Corozal	103 (2.0)	207 (4.1)	226 (4.5)	536 (10.6)
O. Walk	122 (2.4)	235 (4.6)	320 (6.3)	677 (13.4)
St. Creek	66 (1.3)	104 (2.0)	131 (2.6)	301 (5.9)
Toledo	1,101 (21.8)	536 (10.6)	621 (12.3)	2,258 (44.6)
Total	1,768 (34.9)	1,449 (28.6)	1,844 (36.5)	5,061 (100.0)

Some round-off errors may occur

Source: 2001 Child Activity Survey

Table 10: Child Labourers by Ethnicity and District (2001)

Ethnicity	Creole(%)	Maya(%)	Mestizo(%)	Other(%)	Total (%)
Belize	310 (6.1)	***	113 (2.2)	48(1.0)	**471 (9.3)**
Cayo	113 (2.2)	75 (1.5)	611 (12.1)	19 (0.4)	**818 (16.2)**
Corozal	66 (1.3)	9 (0.2)	405 (8.0)	56 (1.1)	**536 (10.6)**
O. Walk	9 (0.2)	38 (0.7)	630 (12.5)	***	**677 (13.4)**
St. Creek	47 (0.9)	28 (0.5)	113 (2.2)	113 (2.2)	**301 (5.9)**
Toledo	38 (0.7)	1,957 (38.7)	169 (3.3)	94 (1.9)	**2,258 (44.6)**
Total	**583 (11.5)**	**2,107 (41.6)**	**2,041 (40.3)**	**330 (6.5)**	**5061 (100)**

Some round-off errors may occur
*** : not represented in the sample.
Source : Talbert, E., & Vega, L. 2002 and 2001 Child Activity Survey

Table 11: Economically Active and Child Labourers by Industrial Sectors (2001)

Industrial Sector	Economically Active Children (%)	Child Labourers (%)	Child Labour as % Econ. Active
Primary Sector	**4,282 (49.9)**	**2,963 (58.5)**	**69.2**
Sugar	929 (10.8)	517 (10.2)	55.7
Citrus	373 (4.3)	113 (2.2)	30.3
Agriculture	2,621 (30.5)	2,239 (44.2)	85.4
Other	359 (4.2)	94 (1.9)	26.2
Secondary Sector	**876 (10.2)**	**565 (11.2)**	**64.5**
Manufacture	412 (4.8)	254 (5.0)	61.7
Construction	464 (5.4)	311 (6.1)	67.0
Tertiary Sector	**3,424 (39.9)**	**1,533 (30.3)**	**44.8**
Services	1,400 (16.3)	847 (16.7)	60.5
Wholesale/Retail	1,346 (15.7)	470 (9.3)	34.9
Tourism	442 (5.2)	216 (4.3)	48.9
Other	236 (2.7)	***	***
Total	**8582 (100)**	**5,061 (100)**	

Some round-off errors may occur
******* Not represented in the sample
Source : Talbert, E., & Vega, L. 2002 and 2001 Child Activity Survey

Table 12 : Child Labourers by Age Groups and Industrial Sectors (2001)

Industrial Sector	5 – 11 (%) # (% Group)	12 – 14 (%) # (% Group)	15 – 17 (%) # (% Group)	Total (%)
Primary Sector	**1,138 (22.5)**	**827 (16.3)**	**998 (19.7)**	**2,963 (58.5)**
Sugar	113 (6.4)	216 (14.9)	188 (10.2)	**517 (10.2)**
Citrus	9 (0.5)	47 (3.2)	57 (3.1)	**113 (2.2)**
Agriculture	1,016 (57.4)	555 (38.3)	668 (36.2)	**2,239 (44.2)**
Other	***	9 (0.6)	85 (0.5)	**94 (1.9)**
Secondary Sector	**57 (1.1)**	**113 (2.2)**	**395 (7.8)**	**565 (11.2)**
Manufacture	19 (1.1)	66 (4.6)	169 (9.2)	**254 (5.0)**
Construction	38 (2.1)	47 (3.2)	226 (12.3)	**311 (6.1)**
Tertiary Sector	**573 (11.4)**	**509 (10.0)**	**451 (8.9)**	**1,533 (30.3)**
Services	366 (20.7)	312 (21.5)	169 (9.2)	**847 (16.7)**
Wholesale/Retail	169 (9.6)	122 (8.4)	179 (9.7)	**470 (9.3)**
Tourism	38 (2.1)	75 (5.2)	103 (5.6)	**216 (4.3)**
Total	**1,768 (35.0)**	**1,449 (28.6)**	**1,844 (36.4)**	**5,061 (100)**

Some round-off errors may occur
******* Not represented in the sample.
Source : Talbert, E., & Vega, L. 2002 and 2001 Child Activity Survey

Table 13: Percentage Child Labourers by Gender and Industrial Sectors (2001)

Industrial Sector	Males # (%)	Females # (%)	Child Labourers
Primary Sector	**2,276 (76.8)**	**687 (23.2)**	**2,963**
Sugar	517 (100)	***	517
Citrus	94 (83.2)	19 (16.8)	113
Agriculture	1,571 (70.2)	668 (29.8)	2,239
Other	94 (100)	***	94
Secondary Sector	**490 (86.5)**	**75 (13.5)**	**565**
Manufacture	188 (74.0)	66 (26.0)	254
Construction	302 (97.1)	9 (2.9)	311
Tertiary Sector	**969 (63.2)**	**564 (36.8)**	**1,533**
Services	527 (62.2)	320 (37.8)	847
Wholesale/Retail	301 (64.0)	169 (36.0)	470
Tourism	141 (65.3)	75 (34.7)	216
Total	**3,735**	**1,326**	**5,061**

Some round-off errors may occur
******* Not represented in the sample.
Source : 2001 Child Activity Survey

Table 14: Child Labourer by Highest Level of Education Reached by Age Groups and Gender

Gender	Schooling	5 – 11 (%)	12 – 14 (%)	15 – 17 (%)
Male	**None**	1,044 (59.0)	950 (65.6)	490 (26.5)
	Primary	0	207 (14.3)	1,016 (55.1)
	High School	0	0	28 (1.5)
Female	**None**	724 (41.0)	169 (11.7)	132 (7.1)
	Primary	0	123 (8.4)	169 (9.2)
	High School	0	0	9 (0.6)
Totals		**1,768 (100)**	**1,449 (100)**	**1,844 (100)**

Some round-off errors may occur
******* Not represented in the sample.
Source: 2001 Child Activity Survey

Table 15: Number of Child Labourers by School Attendance and Age Groups

Question	Answer	5 – 11	12 – 14	15 – 17	Total
Presently Attending School	**Full-time**	1,684	1,035	471	3,190
	Part-time	9	0	9	18
	No	75	414	1,364	1,853
	Sub-total	**1,768**	**1,449**	**1,844**	**5,061**
Attending School while Working	**Yes**	1,345	669	339	2,353
	No	423	780	1,505	2,708
	Sub-total	**1,768**	**1,449**	**1,844**	**5,061**
Work affect Attendance *	**Yes**	66	19	19	104
	No	1,270	641	311	2,222
	Don't Know	9	9	9	27
	Sub-total	**1,345**	**669**	**339**	**2,353**

***** These totals pertain only to those persons who were attending school while working

Source: 2001 Child Activity Survey

Table 16: Child Labourers by Age Groups by Age at Which Work First Started

Age First Started Working	5 - 11 Age Group	12 - 14 Age Group	15 - 17 Age Group	Total (%)	Cumulative Percent
3	38	0	0	38 (0.7)	0.7
4	38	28	0	66 (1.3)	2.0
5	546	181	83	810 (16.0)	18.0
6	348	83	94	525 (10.4)	28.4
7	282	122	181	585 (11.5)	49.9
8	188	216	282	686 (13.6)	53.5
9	122	122	94	338 (6.7)	60.2
10	104	216	273	593 (11.7)	71.9
11	19	132	19	170 (3.3)	75.3
Sub-totals	**1,685**	**1,100**	**1,026**	**3,811**	
12	0	169	151	320 (6.3)	81.6
13	0	94	83	177 (3.5)	85.1
14	0	72	216	288 (5.8)	90.9
Sub-totals	**0**	**335**	**450**	**785**	
15	0	0	216	216 (4.3)	95.2
16	0	0	72	72 (1.5)	96.6
17	0	0	19	19 (0.4)	97.0
Sub-totals	**0**	**0**	**307**	**307**	
Don't Know	**83**	**14**	**61**	**158** (3.0)	100.0
TOTAL	**1,768**	**1,449**	**1,844**	**5,061 (100)**	

Source: 2001 Child Activity Survey

APPENDIX B: Logistic Regression Analyses

This appendix presents the results of Binomial Logistic Regression analyses of categorical predictor variables Gender, Ethnicity, District, Urban/Rural, Child- Labour-Age-Group, Educational-Level, School-Attendance and Years Completed versus the dependent dichotomous variable Child-Labourer. Only the main effects are investigated in this section to get an idea of those factors which are significant for predicting the variable Child-Labourer. Significance is declared at the 0.05 level and so any factor with a significance level of 0.05 or less is deemed to be significant for predicting Child-Labourer.

Output A1: Variables, Factors and Levels Used in the Analyses.

Variable Name	Factor	Level	Label
Q5.2_ SEX	Gender	1	male
		2	female
URBANRUR	Urban-Rural	1	urban
		2	rural
SCATTEND	School Attendance	1	not attending school
		2	attending school
ETHNIC	Ethnicity	1	Creole
		2	Maya
		3	Mestizo
		4	Other
DIS_NUM	District	1	Belize
		2	Cayo
		3	Corozal
		4	Orange Walk
		5	Stann Creek
		6	Toledo
COMPLETE	Years Completed	0	zero years
		1	one year
		2	two years
		3	three years
		4	four years
		5	five years
		6	six years
		7	seven years
EDUCLEV	Educational Level	1	no education
		2	primary
		3	secondary
CLS_AGE	Child Labour Age Group	1	5 – 11 years
		2	12 – 14 years
		3	15 – 17 years

Output A2: Results of Fitting the Main Effects Model

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	2229.130			
Final	1560.228	668.902	22	.000

Pseudo R-Square

Cox and Snell	.082
Nagelkerke	.224
McFadden	.187

Likelihood Ratio Tests

Effect	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	1560.228	.000	0	.
Q5.2_SEX	1669.830	109.602	1	.000
URBANRUR	1570.336	10.108	1	.001
SCATTEND	1654.477	94.249	1	.000
ETHNIC	1577.816	17.588	3	.001
DIS_NUM	1638.952	78.724	5	.000
COMPLETE	1617.068	56.840	7	.000
EDUCLEV	1617.623	57.395	2	.000
CLS_AGE	1581.120	20.892	2	.000

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

The null hypothesis is that the coefficient of each factor is zero. Reject this hypothesis for significance less than 0.05. Hence, the variables above are all significant at the 0.05 level and form part the linear logistic model.

Output A3: Parameter Estimates for Each Level of the Main Effects

Parameter Estimates

Child Laborer		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
laborer	Intercept	.377	.702	.288	1	.592			
	[Q5.2_SEX=1]	1.118	.113	98.518	1	.000	3.058	2.452	3.813
	[Q5.2_SEX=2]	0[a]	.	.	0	.	.	.	.
	[URBANRUR=1.00	-.419	.134	9.800	1	.002	.658	.506	.855
	[URBANRUR=2.00	0[a]	.	.	0	.	.	.	.
	[SCATTEND=1.00]	-1.428	.147	94.728	1	.000	.240	.180	.320
	[SCATTEND=2.00]	0[a]	.	.	0	.	.	.	.
	[ETHNIC=1.00]	.233	.254	.837	1	.360	1.262	.767	2.077
	[ETHNIC=2.00]	.893	.241	13.759	1	.000	2.443	1.524	3.916
	[ETHNIC=3.00]	.572	.230	6.182	1	.013	1.771	1.129	2.779
	[ETHNIC=4.00]	0[a]	.	.	0	.	.	.	.
	[DIS_NUM=1]	-1.653	.217	57.887	1	.000	.192	.125	.293
	[DIS_NUM=2]	-1.529	.205	55.798	1	.000	.217	.145	.324
	[DIS_NUM=3]	-1.555	.242	41.216	1	.000	.211	.131	.340
	[DIS_NUM=4]	-1.252	.197	40.570	1	.000	.286	.194	.420
	[DIS_NUM=5]	-1.225	.249	24.092	1	.000	.294	.180	.479
	[DIS_NUM=6]	0[a]	.	.	0	.	.	.	.
	[COMPLETE=.00]	-1.488	.293	25.883	1	.000	.226	.127	.401
	[COMPLETE=1.00]	-.940	.296	10.060	1	.002	.391	.218	.698
	[COMPLETE=2.00]	-.820	.292	7.874	1	.005	.440	.248	.781
	[COMPLETE=3.00]	-.662	.293	5.112	1	.024	.516	.291	.916
	[COMPLETE=4.00]	-.313	.280	1.247	1	.264	.732	.423	1.266
	[COMPLETE=5.00]	7.014E-02	.245	.082	1	.774	1.073	.664	1.732
	[COMPLETE=6.00]	.207	.235	.769	1	.380	1.229	.775	1.950
	[COMPLETE=7.00]	0[a]	.	.	0	.	.	.	.
	[EDUCLEV=1.00]	-2.080	.646	10.370	1	.001	.125	3.525E-02	.443
	[EDUCLEV=2.00]	-.193	.598	.104	1	.747	.825	.256	2.662
	[EDUCLEV=3.00]	0[a]	.	.	0	.	.	.	.
	[CLS_AGE=1.00]	.610	.242	6.364	1	.012	1.841	1.146	2.957
	[CLS_AGE=2.00]	-.273	.175	2.437	1	.118	.761	.541	1.072
	[CLS_AGE=3.00]	0[a]	.	.	0	.	.	.	.

a. This parameter is set to zero because it is redundant.

This output details parameter estimates for most levels of the predictor variables and identifies those which are not significantly different from zero. As usual significance is established at the 0.05 level and parameters are deemed to be zero if the level of significance is greater than 0.05. According to this criterion the following levels of variables can be omitted from a model for predicting child labour.

Factor	Level	Label	Significance
Ethnicity	1	Creole	0.360
Years Completed	4	four years	0.264
	5	five years	0.774
	6	six years	0.380
Education Level	2	primary	0.747
Age Group	2	12 – 14	0.118

APPENDIX C: General Linear Models (GLM) Analyses

A model involving only main factors ignores the possibility that combination of factors may contribute significantly to child labour. Accordingly, this appendix presents some analyses based on General Linear Models (GLM) methodology to investigate main factor and dependencies along with important interactions of these factors. In the sequel, as in Appendix A, the criterion for establishing significant factors and interactions remain at the 0.05 level and factors or interactions are maintained in the model if their significance is 0.05 or less. A list of the relevant variables and levels to be used in the analysis can be obtained from Output A1.

1. According to Output B1 all the main factors of Age-Group, District, Urban-Rural, Ethnicity, Gender, School-Attendance, Educational Level and Years Completed were found to be important in identifying the child labourer. Of course this result is the same as obtained from Output A2. A small R Square value and large model error tend to indicate that some important variables are missing. In particular the absence of interaction terms in the model is obvious. This issue is addressed in the sequel.

Output B1: GLM Results of Fitting the Main Effects Model

Model 1:

Tests of Between-Subjects Effects

Dependent Variable: Child Laborer

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	44.196[a]	21	2.105	41.252	.000
Intercept	354.547	1	354.547	6949.679	.000
Q5.2_SEX	5.122	1	5.122	100.394	.000
URBANRUR	.309	1	.309	6.052	.014
SCATTEND	6.780	1	6.780	132.906	.000
ETHNIC	1.234	3	.411	8.063	.000
DIS_NUM	5.621	5	1.124	22.035	.000
COMPLETE	2.289	6	.381	7.478	.000
EDUCLEV	2.158	2	1.079	21.150	.000
CLS_AGE	1.454	2	.727	14.251	.000
Error	400.376	7848	5.102E-02		
Total	7397.000	7870			
Corrected Total	444.572	7869			

a. R Squared = .099 (Adjusted R Squared = .097)

Output B2: GLM Including all Second Order Interactions

Model 2:

Tests of Between-Subjects Effects
Dependent Variable: Child Labourer

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	78.867	191	.413	8.669	.000
Intercept	30.151	1	30.151	633.021	.000
Q5.2_SEX	2.017	1	2.017	42.337	.000
URBANRUR	4.429E-02	1	4.429E-02	.930	.335
SCATTEND	.116	1	.116	2.442	.118
ETHNIC	.209	3	6.955E-02	1.460	.223
DIS_NUM	.297	5	5.934E-02	1.246	.285
COMPLETE	.851	6	.142	2.979	.007
EDUCLEV	.128	2	6.394E-02	1.342	.261
CLS_AGE	2.262E-02	2	1.131E-02	.237	.789
Q5.2_SEX * URBANRUR	1.552E-02	1	1.552E-02	.326	.568
Q5.2_SEX * SCATTEND	3.608	1	3.608	75.751	.000
Q5.2_SEX * ETHNIC	.403	3	.134	2.823	.037
Q5.2_SEX * DIS_NUM	.170	5	3.397E-02	.713	.613
Q5.2_SEX * COMPLETE	.424	6	7.068E-02	1.484	.179
Q5.2_SEX * EDUCLEV	.363	2	.182	3.813	.022
Q5.2_SEX * CLS_AGE	.119	2	5.960E-02	1.251	.286
URBANRUR * SCATTEND	.254	1	.254	5.330	.021
URBANRUR * ETHNIC	.212	3	7.077E-02	1.486	.216
URBANRUR * DIS_NUM	.761	5	.152	3.195	.007
URBANRUR * COMPLETE	.149	6	2.490E-02	.523	.792
URBANRUR * EDUCLEV	.222	2	.111	2.336	.097
URBANRUR * CLS_AGE	7.573E-02	2	3.786E-02	.795	.452
SCATTEND * ETHNIC	.926	3	.309	6.481	.000
SCATTEND * DIS_NUM	.926	5	.185	3.890	.002
SCATTEND * COMPLETE	.293	6	4.884E-02	1.025	.406
SCATTEND * EDUCLEV	.117	2	5.861E-02	1.231	.292
SCATTEND * CLS_AGE	.128	2	6.395E-02	1.343	.261

ETHNIC * DIS_NUM	1.648	15	.110	2.306	.003
ETHNIC * COMPLETE	1.503	18	8.349E-02	1.753	.025
ETHNIC * EDUCLEV	.393	6	6.552E-02	1.376	.220
ETHNIC * CLS_AGE	1.421	6	.237	4.973	.000
DIS_NUM * COMPLETE	2.292	30	7.638E-02	1.604	.020
DIS_NUM * EDUCLEV	.738	10	7.376E-02	1.549	.116
DIS_NUM * CLS_AGE	1.932	10	.193	4.057	.000
COMPLETE * EDUCLEV	5.047E-02	2	2.524E-02	.530	.589
COMPLETE * CLS_AGE	.663	12	5.523E-02	1.159	.306
EDUCLEV * CLS_AGE	3.339E-02	4	8.347E-03	.175	.951
Error	365.705	7678	4.763E-02		
Total	7397.000	7870			
Corrected Total	444.572	7869			

a R Squared = .177 (Adjusted R Squared = .157)

Output B3: GLM Fitted Models to Improve Fit

This output presents the GLM analyses which include second order, third order and fourth order interaction terms. Model 3 is an improvement over the analysis in Output B2 and indicates that the following terms should be retained in the model.

Main Effects:

School Attendance
Education Level
District
Gender
Age Group
Years Completed

Second Order Terms:

Age Group	*	Gender
District	*	Ethnicity
School Attendance	*	Gender
Years Completed	*	Ethnicity
District	*	Years Completed

Third Order Terms:

Age Group	*	School Attendance	*	Ethnicity
Age Group	*	School Attendance	*	Gender
District	*	Years Completed	*	Ethnicity

Fourth Order Terms:

Age Group * District * Gender * Ethnicity

This model yields a smaller error and larger R-square values and so would seem to be a better fit than Model 2 of the data. In any event the absence of the factors Ethnicity and Urban-Rural as a main effects from the models is noteworthy. In particular, the factor Ethnicity is consistently eliminated as a main effect from almost all models investigated but is most important in a large number of the interactions.

Model 3:

Tests of Between-Subjects Effects
Dependent Variable: Child Labourer

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	88.592	300	.295	6.279	.000
Intercept	233.222	1	233.222	4958.862	.000
SCATTEND	2.331	1	2.331	49.553	.000
EDUCLEV	1.738	2	.869	18.473	.000
DIS_NUM	2.403	5	.481	10.219	.000
Q5.2_SEX	1.762	1	1.762	37.457	.000
COMPLETE	.701	6	.117	2.482	.021
CLS_AGE	.295	2	.148	3.138	.043
Q5.2_SEX * CLS_AGE	.788	2	.394	8.381	.000
DIS_NUM * ETHNIC	2.055	15	.137	2.913	.000
SCATTEND * Q5.2_SEX	1.727	1	1.727	36.711	.000
COMPLETE * ETHNIC	1.380	18	7.669E-02	1.631	.045
DIS_NUM * COMPLETE	2.215	30	7.383E-02	1.570	.025
SCATTEND * CLS_AGE * ETHNIC	1.507	9	.167	3.560	.000
SCATTEND * Q5.2_SEX * CLS_AGE	1.301	2	.650	13.828	.000
DIS_NUM * COMPLETE * ETHNIC	4.759	86	5.534E-02	1.177	.127
DIS_NUM * Q5.2_SEX * CLS_AGE * ETHNIC	12.666	107	.118	2.517	.000
Error	355.980	7569	4.703E-02		
Total	7397.000	7870			
Corrected Total	444.572	7869			

a R Squared = .199 (Adjusted R Squared = .168)

Furthermore, coefficients of interaction terms summarized below identify the levels of factors in the interaction terms which are significant in predicting child labour.

Model 3: (Continued)

Parameter Estimates
Dependent Variable: Child Labour

Factor/ Level	Parameter	Std. Error	t	Sig.
[Cls_Age = 1]* [Q5.2_Sex = 1]	.261	.121	2.154	.031
[Scattend = 1]* [Q5.2_Sex = 1]	.209	.024	8.540	.000
[Ethnic = 2]* [Dis_Num = 6]	-.255	.118	-2.158	.031
[Scattend = 1]* [Ethnic = 2]* [Cls_Age = 2]	.650	.149	4.356	.000
[Scattend = 1]* [Ethnic = 3]* [Cls_Age = 2]	.593	.170	3.491	.000
[Scattend = 1]* [Ethnic = 4]* [Cls_Age = 2]	.280	.098	2.845	.004
[Scattend = 2]* [Ethnic = 2]* [Cls_Age = 2]	.640	.137	4.655	.000
[Scattend = 2]* [Ethnic = 3]* [Cls_Age = 2]	.452	.159	2.843	.004
[Scattend = 1]* [Cls_Age = 1]* [Q5.2_Sex = 1]	-.206	.039	-5.223	.000
[Scattend = 1]* [Cls_Age = 2]* [Q5.2_Sex = 1]	-.104	.042	-2.449	.014
[Complete = 1]* [Ethnic = 1]* [Dis_Num = 6]	.877	.294	2.988	.003
[Complete = 2]* [Ethnic = 1]* [Dis_Num = 6]	.730	.312	2.343	.019
[Complete = 3]* [Ethnic = 1]* [Dis_Num = 6]	.876	.305	2.868	.004
[Complete = 6]* [Ethnic = 1]*	1.003	.321	3.126	.002

[Dis_Num = 6]

Model 3: (Continued)

Parameter Estimates
Dependent Variable: Child Labour

Factor/ Level	Parameter	Std. Error	t	Sig.
[Complete = 6]* [Ethnic = 5]* [Dis_Num = 5]	-.322	.133	-2.419	.16
[Ethnic = 2]* [Cls_Age = 1]* [Dis_num = 6]	-.126	.057	-2.204	.028
[Ethnic = 2]* [Cls_Age = 2]* [Dis_Num = 1]	-.367	.150	-2.445	.014
[Ethnic = 2]* [[Cls_Age = 2]* [Dis_Num = 2]* [Q5.2_Sex = 1]	-.466	.144	-3.243	.001
[Ethnic = 2]* [Cls_Age = 2]* [Dis_Num = 4]* [Q5.2_Sex = 1]	-.426	.170	-2.513	.012
[Ethnic = 2]* [Cls_Age = 1]* [Dis_Num = 4]* [Q5.2_Sex = 2]	-.397	.154	-2.581	.010
[Ethnic = 2]* [Cls_Age = 3]* [Dis_Num = 6]* [Q5.2_sex = 1]	-.342	.110	-3.120	.002
[Ethnic = 3]* [Cls_Age = 1]* [Dis_Num = 1]* [Q5.2_sex = 1]	-.194	.101	-1.945	.056
[Ethnic = 3]* [Cls_Age = 1]* [Dis_Num = 4]* [Q5.2_sex = 1]	-.196	.101	-3.120	.052
[Ethnic = 3]* [Cls_Age = 2]* [Dis_Num = 2]* [Q5.2_sex = 1]	-.268	.123	-2.180	.029

2. The models tested in Output B3 above evidently did not include all predictor variables as evidenced by the still small R-square value. A model including the variable Number-of-Hours-Worked produced a substantial increase of the R Square value. This, however, is to be expected since the definition of child labourer depends heavily on the type of work done by the person. A similar result would have been produced if the variable of Economic-Non-Economic-Activity were used as an independent variable (Output B4) since only economically active persons may become child labourers. It should be noticed that, as in Output B3, the variable Ethnicity did not appear as a main effect but was important in several second order interactions. Of note also is the absence of the factors of Age-Group and Age-at-Which-Work-Started from the list of main effects.

Output B4: GLM Output for Child-Labourer vs. Number-of-Hours-worked, Ethnicity, District, Gender, Age-Group, Age-at-Which-Work-Started

Model 4

Tests of Between-Subjects Effects
Dependent Variable: Child-Labourer

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	177.200	175	1.013	23.807	.000
Intercept	25.421	1	25.421	597.696	.000
Hours Worked	46.050	14	3.289	77.336	.000
District	.885	5	.177	4.162	.001
Gender	.959	1	.959	22.537	.000
Age Group*Ethnicity	10.018	8	1.252	29.443	.000
Hours Worked*Ethnicity	6.765	33	.205	4.820	.000
Hours Worked*Gender	5.032	12	.419	9.860	.000
District*Age at Which Started to Work	8.328	84	9.914E-02	2.331	.000
District*Ethnicity	2.500	15	.167	3.918	.000
Error	245.539	5773	4.253E-02		
Total	5491.000	5949			
Corrected Total	422.740	5948			

a R Squared = .419 (Adjusted R Squared = .402)

Output B5: GLM Output for Child-Labourer vs. Number-of-Hours-worked, Ethnicity, District, Gender, Age-Group, Age-at-Which-Work-Started, Economic-Activity

Model 5 (Model 4 with Economic Activity added)

Tests of Between-Subjects Effects
Dependent Variable: Child-Labourer

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	245.448	161	1.525	49.762	.000
Intercept	49.651	1	49.651	1620.656	.000
Hours Worked	7.575	14	.541	17.662	.000

District	.568	5	.114	3.710	.002
Gender	.840	1	.840	27.422	.000
Age Group*Ethnicity	12.210	8	1.526	49.819	.000
Hours Worked*Ethnicity	7.218	33	.219	7.140	.000
Hours Worked*Gender	5.137	12	.428	13.973	.000
District*Age at Which Started to Work	5.814	84	6.921E-02	2.259	.000
Economic Activity	70.748	1	70.748	2309.284	.000
Error	177.292	5787	3.064E-02		
Total	5491.000	5949			
Corrected Total	422.740	5948			

a R Squared = .581 (Adjusted R Squared = .569)

3. It is of interest to determine if child labour is a predictor of the level of education attained by children and young persons and also a predictor of the actual school attendance of these persons. Accordingly, analyses using each of these two variables as the dependent variable were performed and the results given in Outputs B6 and B7. Child-Labourer was eliminated as a factor in of these models.

Output B6: GLM Output for Educational-Level vs. Various Factors and Interactions

Model 6

Tests of Between-Subjects Effects
Dependent Variable: Educational Level

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1280.075	181	7.072	277.878	.000
Intercept	388.156	1	388.156	15251.177	.000
Q5.2_SEX	5.140E-02	1	5.140E-02	2.020	.155
URBANRUR	2.472E-02	1	2.472E-02	.971	.324
ETHNIC	.242	3	8.081E-02	3.175	.023
DIS_NUM	.258	5	5.164E-02	2.029	.071
COMPLETE	91.132	6	15.189	596.783	.000
CLS_AGE	11.392	2	5.696	223.794	.000
LABYNO	8.602E-02	1	8.602E-02	3.380	.066
SCATTEND	.245	1	.245	9.621	.002
Q5.2_SEX * URBANRUR	2.696E-02	1	2.696E-02	1.059	.303
Q5.2_SEX * ETHNIC	6.974E-02	3	2.325E-02	.913	.434
Q5.2_SEX * DIS_NUM	.120	5	2.396E-02	.941	.453
Q5.2_SEX * COMPLETE	.180	6	2.996E-02	1.177	.315
Q5.2_SEX * CLS_AGE	.297	2	.149	5.843	.003
Q5.2_SEX * LABYNO	5.049E-04	1	5.049E-04	.020	.888
Q5.2_SEX * SCATTEND	2.250E-02	1	2.250E-02	.884	.347
URBANRUR * ETHNIC	.228	3	7.603E-02	2.987	.030
URBANRUR * DIS_NUM	1.248	5	.250	9.804	.000
URBANRUR * COMPLETE	.448	6	7.473E-02	2.936	.007
URBANRUR * CLS_AGE	9.820E-02	2	4.910E-02	1.929	.145
URBANRUR * LABYNO	7.045E-03	1	7.045E-03	.277	.599
URBANRUR * SCATTEND	.144	1	.144	5.657	.017
ETHNIC * DIS_NUM	1.551	15	.103	4.063	.000
ETHNIC * COMPLETE	.405	18	2.248E-02	.883	.600

ETHNIC * CLS_AGE	.297	6	4.943E-02	1.942	.070
ETHNIC * LABYNO	3.173E-02	3	1.058E-02	.416	.742
ETHNIC * SCATTEND	.385	3	.128	5.040	.002
DIS_NUM * COMPLETE	1.639	30	5.462E-02	2.146	.000
DIS_NUM * CLS_AGE	.632	10	6.316E-02	2.482	.006
DIS_NUM * LABYNO	.201	5	4.010E-02	1.576	.163
DIS_NUM * SCATTEND	.260	5	5.198E-02	2.042	.070
COMPLETE * CLS_AGE	185.850	12	15.488	608.526	.000
COMPLETE * LABYNO	9.241E-02	6	1.540E-02	.605	.726
COMPLETE * SCATTEND	4.756	6	.793	31.144	.000
CLS_AGE * LABYNO	1.614E-02	2	8.072E-03	.317	.728
CLS_AGE * SCATTEND	1.160	2	.580	22.782	.000
LABYNO * SCATTEND	8.786E-02	1	8.786E-02	3.452	.063
Error	195.666	7688	2.545E-02		
Total	12982.000	7870			
Corrected Total	1475.741	7869			

a R Squared = .867 (Adjusted R Squared = .864)

Model 7: (Model 6 with non-significant factors removed)

Tests of Between-Subjects Effects
Dependent Variable: Educational Level

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1278.027	114	11.211	439.722	.000
Intercept	736.165	1	736.165	28874.730	.000
ETHNIC	.544	3	.181	7.111	.000
SCATTEND	.784	1	.784	30.731	.000
Q5.2_SEX * CLS_AGE	.440	3	.147	5.753	.001
URBANRUR * ETHNIC	.251	3	8.376E-02	3.285	.020
URBANRUR * DIS_NUM	1.175	5	.235	9.215	.000
URBANRUR * COMPLETE	.455	6	7.577E-02	2.972	.007
URBANRUR * SCATTEND	.225	1	.225	8.835	.003
ETHNIC * DIS_NUM	1.551	15	.103	4.055	.000
ETHNIC * SCATTEND	.291	3	9.690E-02	3.801	.010
DIS_NUM * COMPLETE	1.646	30	5.486E-02	2.152	.000
DIS_NUM * CLS_AGE	.463	10	4.626E-02	1.815	.053
COMPLETE * CLS_AGE	189.596	12	15.800	619.713	.000
COMPLETE * SCATTEND	4.999	6	.833	32.681	.000
CLS_AGE * SCATTEND	1.069	2	.534	20.957	.000
Error	197.715	7755	2.550E-02		
Total	12982.000	7870			
Corrected Total	1475.741	7869			

a R Squared = .866 (Adjusted R Squared = .864)

Output B7: GLM Output for School-Attendance vs. Various Factors and Interactions

Model 8 (Main effects model)

Tests of Between-Subjects Effects
Dependent Variable: School Attendance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	301.979	51	5.921	76.543	.000
Intercept	96.664	1	96.664	1249.582	.000
EDUCLEV	14.702	2	7.351	95.027	.000
CLS_AGE	71.526	2	35.763	462.314	.000
DIS_NUM	1.322	5	.264	3.417	.004
Q5.2_SEX	2.199	1	2.199	28.424	.000
COMPLETE	22.475	6	3.746	48.422	.000
LABYNO	7.224E-02	1	7.224E-02	.934	.334
URBANRUR	2.845	1	2.845	36.779	.000
ETHNIC	2.716	3	.905	11.701	.000
Q10.4	8.984	16	.561	7.258	.000
HRS	33.856	14	2.418	31.262	.000
Error	463.213	5988	7.736E-02		
Total	8737.000	6040			
Corrected Total	765.192	6039			

a R Squared = .395 (Adjusted R Squared = .389)

Model 9 (A small improvement over Model 8)

Tests of Between-Subjects Effects
Dependent Variable: School Attendance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	334.456	210	1.593	21.010	.000
Intercept	137.849	1	137.849	1818.528	.000
Hours Worked	6.470	14	.462	6.096	.000
Age Group	9.994	2	4.997	65.920	.000
District	13.779	5	2.756	36.354	.000
Age Group*District	10.016	10	1.002	13.213	.000
Age at Which Work Started	2.343	15	.156	2.061	.009
Hours Worked* Age at Which Work Started	14.758	117	.126	1.664	.000
Hours Worked*Age Group	4.516	20	.226	2.979	.000
Educational Level	.963	2	.481	6.351	.002
Age Group*Educational Level	21.286	1	21.286	280.806	.000
Age at Which Work Started * Educational Level	5.732	22	.261	3.437	.000
Error	434.955	5738	7.580E-02		
Total	8673.000	5949			
Corrected Total	769.411	5948			

a R Squared = .435 (Adjusted R Squared = .414)

APPENDIX D: Cross-Classified Categorical Data Analyses

Is child labour independent of the level of education in each of the ethnic groups? Analyses of these sorts of questions addressing the independence of child labour and a first factor conditional on a second factor are addressed in this appendix. The first factor is chosen to be Educational-Level and School-Attendance while the second factors are Educational-Level, School-Attendance, Ethnicity, Gender, Urban-Rural, Age-Group and District. All hypotheses of independence are tested at the alpha level of 0.05 and the computed test statistic is reported as a sum corresponding to the levels of the conditional variable.

Output C1: Cross-Classified Analysis For Independence of Child-Labour and Highest Level of Education Conditional on School Attendance *

Attending School	Child Labourer	Highest Level of Education (Expected Values #) None	Primary	High School	Total
Yes	**Yes**	233	54	2	289
		(245.03)	(44.05)	(1.21)	
	No	5,446	967	26	6,439
		(5,459.40)	(981.52)	(26.92)	
	Total	5,679	1,021	28	6,698
No	**Yes**	80	102	2	184
		(106.10)	(75.72)	(2.18)	
	No	552	349	11	912
		(525.90)	(375.28)	(10.82)	
	Total	632	451	13	1,096

* Values quoted are un-weighted survey totals
 # Expected values: Maximum Likelihood Estimates of the expected values
Pearson's chi-squared statistic : $X^2 = 3.63 + 18.64 = 22.27$ df = 4
Source : 2001 Child Activity Survey

Result: Evidently, Child-Labour is not independent of Educational-Level conditional on School-Attendance. This summary result indicates that child labour is affected by the educational competence of the child while discounting attending school. However, once the levels of School-Attendance are considered it is apparent that Child-Labour is independent of Educational-Level in the group of students who attend school and that the overall result of non-independence of Child-Labour and Educational-Level is due mostly to those people not attending school.

Output C2: Cross-Classified Analysis For Independence of Child Labour and School Attendance Conditional on Highest Level of Education *

Highest Level Of Education	Child Labourer	Attending School: Yes (Expected Value #)	Attending School: No (Expected Value #)	Total
None	**Yes**	233	80	313
		(283.00)	(30.0)	
	No	5,446	522	5,968
		(5,396.0)	(752.0)	
Total		5,679	602	6,281
Primary	**Yes**	54	201	156
		(108.20)	(47.80)	
	No	967	349	1,316
		(912.80)	(403.20)	
Total		1,021	451	1,472
High School	**Yes**	2	2	4
		(2.73)	(1.27)	
	No	26	11	37
		(25.27)	(11.73)	
Total		28	13	41

***** Values quoted are un-weighted survey totals

 # Expected values: Maximum Likelihood Estimates of the expected values

Pearson's chi-squared statistic : $X^2 = 96.99 + 95.50 + 0.7 = 192.56$ df = 3

Source : 2001 Child Activity Survey

Result: Attendance at school impacts on child labour even when the level of schooling is taken into consideration. Dependence is high for the no education and the primary school levels but Child-Labour does not depend on school attendance for persons who have finished high school.

Output C3: Cross-Classified Analysis For Independence of Child Labour and School Attendance Conditional on Ethnicity *

Ethnicity	Child Labourer	Attending School: Yes (Expected Value #)	Attending School: No (Expected Value #)	Total
Creole	**Yes**	44	16	60
		(54.83)	(5.17)	
	No	1,675	146	1,821
		(1,664.17)	(156.83)	
	Total	1,719	162	1,881
Maya	**Yes**	127	55	182
		(145.08)	(36.92)	
	No	710	158	868
		(691.92)	(176.08)	
	Total	837	813	1,050
Mestizo	**Yes**	98	104	202
		(169.36)	(32.64)	
	No	3,275	546	3,821
		(3,203.64)	(617.36)	
	Total	3,373	650	4,023
Other	**Yes**	20	9	29
		(26.53)	(2.47)	
	No	763	64	827
		(256.47)	(61.83)	
	Total	783	73	856

***** Values quoted are un-weighted survey totals
 # Expected values: Maximum Likelihood Estimates of the expected values
Pearson's chi-squared statistic : $X^2 = 25.65 + 13.43 + 195.92 + 19.01 = 254.01$ df = 4
Source : 2001 Child Activity Survey

Result: Child-Labour is dependent on School-Attendance within each of the ethnic groups. Dependence is, however strongest for the Mestizo ethnic group.

Output C4: Cross-Classified Analysis For Independence of Child Labour and Highest Level of Education Conditional on Ethnicity *

Ethnicity	Child Labourer	Highest Level of Education: None	Primary	High School	Total
		(Expected Values #)			
Creole	**Yes**	35	24	1	60
		(44.24)	(15.31)	(0.45)	
	No	1,352	456	13	1,821
		(1,342.76)	(464.89)	(13.55)	
Total		1,387	480	14	1,881
Maya	**Yes**	138	44	0	182
		(156.35)	(25.31)	(0.35)	
	Co	764	102	2	868
		(745.65)	(120.69)	(1.65)	
Total		902	146	2	1,050
Mestizo	**Yes**	123	77	2	202
		(167.44)	(33.71)	(0.85)	
	No	3,210	594	15	3,819
		(3,165.56)	(637.24)	(16.15)	
Total		3,333	671	17	4,021
Other	**Yes**	17	11	1	29
		(22.93)	(5.80)	(0.27)	
	No	667	162	7	836
		(661.07)	(167.20)	(7.73)	
Total		684	173	8	865

* Values quoted are un-weighted survey totals
 # Expected values: Maximum Likelihood Estimates of the expected values
Pearson's chi-squared statistic : $X^2 = 7.78 + 19.7 + 72.58 + 8.40 = 108.46$ df = 8
Source : 2001 Child Activity Survey

Result: Overall, child labour is dependent on the highest level of education given the ethnicity of the person. Dependence is strongest for the Mestizo and weakest for the Creole.

Output C5: Cross-Classified Analysis For Independence of Child Labour and School Attendance Conditional on Gender *

Gender	Child Labourer	Attending School: Yes (Expected Value #)	Attending School: No (Expected Value #)	Total
Male	**Yes**	193 (293.86)	150 (49.14)	343
	No	3,204 (3,103.14)	418 (518.86)	3,622
Total		3,397	568	3,965
Female	**Yes**	96 (112.15)	34 (17.85)	130
	No	3,325 (3,218.85)	496 (512.15)	3,731
Total		3,331	530	3,861

***** Values quoted are un-weighted survey totals
 # Expected values: Maximum Likelihood Estimates of the expected values
Pearson's chi-squared statistic : $X^2 = 264.61 + 17.52 = 282.04$ df = 2
Source : 2001 Child Activity Survey

Result: School-Attendance and Child-Labour are strongly dependent conditional on Gender. The dependency is especially high for males.

Output C6: Cross-Classified Analysis For Independence of Child Labour and School Attendance Conditional on Urban-Rural *

Urban-Rural	Child Labourer	Attending School: Yes (Expected Value #)	Attending School: No	Total
Urban	**Yes**	75	33	108
		(97.88)	(10.13)	
	No	2,959	281	3,240
		(2,936.13)	(303.87)	
Total		3,034	314	3,348
Rural	**Yes**	214	151	365
		(301.10)	(63.9)	
	No	3,480	633	4,113
		(3,392.90)	(720.10)	
Total		3,694	784	4,478

***** Values quoted are un-weighted survey totals

 # Expected values: Maximum Likelihood Estimates of the expected values

Pearson's chi-squared statistic : $X^2 = 58.88 + 156.67 = 215.55$ df = 2

Source : 2001 Child Activity Survey

Result: Child-Labourer is dependent on School-Attendance within the Urban-Rural setting but dependence is heaviest for the rural dwellers.

Output C7: Cross-Classified Analysis For Independence of Child Labour and School Attendance Conditional on Age Groups *

Age Group	Child Labourer	Attending School: Yes (Expected Value #)	Attending School: No (Expected Value #)	Total
5 - 11	**Yes**	180 (178.29)	8 (9.22)	188
	No	3,989 (3,990.22)	207 (205.78)	4,196
Total		4,169	215	4,384
12 - 14	**Yes**	58 (79.65)	31 (9.35)	89
	No	1,638 (1,616.35)	168 (189.65)	1,806
Total		1,696	199	1,805
15 - 17	**Yes**	51 (109.34)	145 (86.66)	196
	No	812 (753.66)	539 (597.34)	1,351
Total		863	684	1,547

***** Values quoted are un-weighted survey totals
 # Expected values: Maximum Likelihood Estimates of the expected values
Pearson's chi-squared statistic : $X^2 = 0.19 + 58.77 + 80.7 = 139.66$ df = 3
Source : 2001 Child Activity Survey

Result: Attendance at school and child labour are dependent given age groups. However, most of this result is obtained from the 12 – 14 and 15 – 17 age groups. It appears that child labour and school attendance are in fact independent for the 5 – 11 years age group.

Output C8: Cross-Classified Analysis For Independence of Child Labour and School Attendance Conditional on Districts *

Age Group	Child Labourer	Attending School: Yes (Expected Value #)	Attending School: No (Expected Value #)	Total
Belize	**Yes**	31 (45.91)	19 (4.09)	50
	No	1,632 (1,617)	129 (143.91)	1,761
Total		1,663	149	1,811
Cayo	**Yes**	55 (69.12)	26 (11.88)	81
	No	1,312 (1,297.88)	209 (223.12)	1,521
Total		1,367	235	1,602
Corozal	**Yes**	27 (42.67)	24 (8.33)	51
	No	998 (982.33)	176 (191.67)	1,174
Total		1,025	200	1,225
Orange Walk	**Yes**	22 (56.76)	47 (12.24)	69
	No	1,147 (1,112.24)	205 (239.76)	1,352
Total		1,169	252	1,421
Stann Creek	**Yes**	17 (25.09)	11 (2.91)	28
	No	622 (613.91)	63 (71.07)	685
Total		639	74	713
Toledo	**Yes**	137 (59.21)	57 (34.79)	194
	No	728 (705.79)	132 (154.21)	860
Total		865	189	1,054

***** Values quoted are un-weighted survey totals

 # Expected values: Maximum Likelihood Estimates of the expected values

Pearson's chi-squared statistic: $X^2 = 60.81 + 20.70 + 36.76 + 126.13 + 26.13 + 21.18 = 291.77$ df = 6

Source: 2001 Child Activity Survey

Results: Child-Labour is not independent of School-Attendance conditional on District. Dependence is equally pronounced for most of the districts except for the Orange Walk District, where dependence is especially high, and the Belize District.

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