SOCIO-ECONOMIC CONSEQUENCES OF ADOLESCENT PREGNANCY IN GUYANA

UNFPA

CONTENTS

ABBREVIATIONS AND ACRONYMS

ABR	Adolescent Birth Rate
AP	Adolescent Pregnancy
BOS	Bureau of Statistics
CARICOM	Caribbean Community Secretariat
CO	Opportunity Cost
EM	Early Motherhood
GDP	Gross Domestic Product
GOG	Government of Guyana
GSDS	Green State Development Strategy
LAC	Latin America and the Caribbean
MICS	Multiple Indicator Cluster Survey
MILENA	Methodology for Assessing the Economic Impact of Adolescent Pregnancy and Early Motherhood in Latin American and Caribbean Countries
MMRA	Maternal Mortality Ratio in Adolescents

PAHO	Pan American Health Organization
SDG	Sustainable Development Goals
SLMMA	Social or Productive loss due to Maternal Mortality in Adolescents
TFR	Total Fertility Rate
UN	United Nations
UN6	United Nations Population Fund
UNICEF	United Nations Children's Fund
USD	United States Dollars
VAT	Value Added Tax
WHO	World Health Organization
YPLL	Years of Potential Life Lost
YPPLL	Years of Potential Productive Life Lost

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PREFACE

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Adolescent pregnancy rates in Latin America and the Caribbean continue to be the second highest in the world, estimated at 66.5 births per 1,000 girls aged 15–19 years and second only to Sub-Saharan Africa; a figure substantially higher than the global average of 46 births per 1000 girls aged 15–19 years. Guyana is reported to have the second highest rate in Latin America and the Caribbean with 90 births out of every 1,000 girls between the ages of 15 and 19 during the period 2010–2015. This is exceeded only by the Dominican Republic in the Caribbean, with 101 births per 1,000 girls aged 15–19, and Nicaragua in Central America with 93 births per 1,000 girls of the same age. Overall, the Caribbean region has one of the highest adolescent fertility rates in the world: 60.2 births per 1,000 girls aged 15–19 (2010–2015).

Adolescents often face diverse barriers in exercising their Sexual and Reproductive Health Rights (SRHR). In the Caribbean, these barriers include a lack of access to SRH information and services, limited access to quality Comprehensive Sexuality Education (CSE) and alarmingly high levels of Gender-Based Violence (GBV); all of which are perpetuated in part by harmful gender norms and a socio-cultural silence around adolescent sexuality. Together these barriers create a perfect storm, impeding the ability of adolescents to exercise their sexual and reproductive health rights, and many adolescents have to cope with the repercussions stemming from early, unplanned pregnancy. The most vulnerable are disproportionately affected, including adolescents living in poverty and adolescents from marginalized groups.

This report outlines the socio-economic consequences of Adolescent Pregnancy in Guyana and it is hoped that this study places adolescent pregnancy prevention programmes at the top of the political agenda not only in Guyana but also in the rest of Caribbean.

There are very strong financial, developmental, social and economic arguments in favor of sexual and reproductive health in the Caribbean. There have also been effective programmes for key development interventions such as access to quality sexual and

reproductive health care by adolescents (including contraception) in the Caribbean. However, more needs to be done. Global evidence reveals that adolescent pregnancies are not only associated with greater health risks for the mothers and the infants, but also reinforce a vicious cycle of poverty and ill health. Pregnancy has a tremendous impact on the educational attainment of adolescent mothers. It results in diminished earning potential, limited labour force participation and the loss of fiscal revenue for a country and this should not be underestimated.

Determining the socio-economic consequences of adolescent pregnancy can assist relevant ministries with making a case for the adoption of legal, policy, programmatic measures and budget prioritization to ensure universal access to quality SRH information and services and CSE. Amidst declining population growth rates in the Caribbean, it is important that the necessary initiatives, plans and programmes be put in place to help adolescents to live a fruitful and productive life; and enable them to make informed choices about fertility while also fully realising their sexual and reproductive health and rights.

It is with the aforementioned in mind that, at the UNFPA, we remain committed to continuing partnerships, projects and programmes that will contribute to realising the Sustainable Development Goals (SDGs), particularly SDGs 3 and 5 (Good Health and Well-being; and Gender Equality), as well as with the International Conference on Population and Development (ICPD) Programme of Action. Under several SDGs, renewed emphasis was given to investing in adolescents in recognition of its pivotal role in the realization of the 2030 Agenda. To ensure that we achieve these goals, we have committed to three transformative and people-centred results by the year 2030: to end preventable maternal deaths, to end the unmet need for family planning, and to end gender-based violence and harmful practices.

Our adolescents deserve to exercise the right to make choices about their Sexual and Reproductive Health that are in their best interests. Their role in the socio-economic development of the Caribbean should not be underestimated.

ACKNOWLEDGEMENTS

EXECUTIVE
SUMMARY

UNFPAs State of the World Population 2013 highlighted some of the socio-economic consequences associated with adolescent pregnancies. These included missed educational and other opportunities, perpetuation of poverty and exclusion, basic human rights denied and the ongoing unfulfilment of girls' potential. UNFPA argues that the action taken by many countries have been focused primarily on changing the behaviour of the girl and not addressing the underlying determinants. Among the main determinants identified are child marriages, gender inequality, poverty, sexual violence and coercion, lack of access to education and reproductive health services and national policies restricting access to contraception. It is the view of the UNFPA (2013, ix) that the action taken by many countries, aimed at preventing adolescent pregnancy, and in some cases to support girls who have become pregnant, have been primarily about changing the behaviour of the girl rather than addressing the underlying determinants outlined.

A 2017 joint report by Pan American Health Organization (PAHO), UNFPA, and the United Nations Children Fund (UNICEF) informed that Latin America and the Caribbean (LAC) was the only region in the world reporting an increase in adolescent pregnancy over time. The United Nations estimates for the period 2015–2020 show a rate of 63.0 per 1,000 girls 15–19 years old in LAC, compared to a global average of 42.5 per 1,000 girls. For Guyana, the rate estimated for 2015–2020 is 74.4 per 1,000 girls 15–19 years old, about 1.2 times greater than the average for the LAC region.

The goal of this report is to assess the economic impact of Adolescent Pregnancy (AP) and Early Motherhood (EM) using the methodology MILENA 1.0 developed by the UNFPA. The application of the method with respect to Guyana aims to produce

quantifiable evidence of the cost of adolescent motherhood for women and for the society. This evidence highlights the adverse consequences of early motherhood and by so doing should lead to the development and implementation of national policies and programmes geared to its prevention.

The analysis is based on the 2019 quarterly labour force surveys of Guyana and the measurements are derived from the use of a control group for comparison, comprising women who became mothers in adulthood, defined for this study as ages 20–29 years. For the women who became mothers as adolescents (10–19 years) and the control group, profiles of educational attainment, labour market participation and income are measured. For each of these dimensions, gaps are then calculated and their monetary values estimated to calculate the opportunity cost. The opportunity cost represents the resources a country allocates to welfare expenditure for adolescent pregnancy, as well as revenue lost by both the State and the adolescent mothers.

The MILENA methodology has revealed important economic and social implications of adolescent pregnancy in Guyana. The main findings based on the analysis of the quarterly labour force surveys conducted in 2019 are as follows:

- Adolescent mothers are 13% more likely than mothers who delay pregnancy until early adulthood, to withdraw from the labour market. This inactivity carries an estimated loss of annual income of $166,714, 064 the equivalent of USD 799,588 for 2019.

- The unemployment rate for the adolescent mothers is 32%, approximately 45% higher than the 22% rate of unemployment for women who were mothers at an adult age, a gap of 10 percentage points. The higher unemployment rate for adolescent mothers observed for 2019 implies a loss of revenue estimated at $295,958,250 or USD 1,419,464.

- The labour income gap between the adolescent mothers and those who delayed childbearing shows that the income of the adolescent mothers is about 10% lower than that of women who had a child in adulthood. The loss represents on average $6,250 (USD 29.98) per month for each adolescent mother during 2019. The estimated loss based on the gap in earnings between the two groups of mothers is $264,290,730 with equivalent USD 1,267,581.

- At every educational level the average income for the older mothers exceed that for the adolescent mothers. Tertiary and university studies significantly increase the earning potential of both groups of mothers. Based on the observed gaps

in the education levels and the resulting income difference between the two groups of mothers at 2019, the opportunity cost of education, indicating the loss of income is $230,777,890 the equivalent of USD 1,106,848.

- With 3 deaths from pregnancy related causes among adolescents the adolescent maternal mortality ratio for Guyana for 2019 is estimated at 103 per 100,000 live births. With a life expectancy for women of 73 years these 3 deaths with an average age at death due to pregnancy estimated at 17.5 years result in approximately 166 years of potential life lost. With an age of entry into the workforce of 15 years and a retirement age of 60 years, the potential productive years lost is estimated at 128 years. Bearing in mind therefore, that for each year of productive life women who had a child in adolescence earn an average of $687,000, maternal mortality among adolescents results in an economic loss of $ 87,592,500 (USD 420,108) each year.

- For 2019, the estimated budget for the Family Health Care programme of the Ministry of Public Health was $1,668,625,000 (USD 8,002,998) representing 0.7% of the total budget for the Ministry of Public Health. Maternal and Child Health Services and Adolescent Health Services are sub-programmes within the Family Health Care Services programme. Direct costs associated with normal pregnancies estimated for 2019 was $248,568,646 (USD 1,192,176). It should be noted that these latter costs relate to normal pregnancies only. Considering that adolescent mothers face high risks of pregnancy complications which jeopardize not just their health but also the health of their newborns, the true costs of health care associated with adolescent pregnancy is understated here.

- Decreases in labour participation, employment and income resulting from adolescent pregnancy and early motherhood withhold taxes in the form of value-added tax (VAT) and personal income taxes. Total revenues forgone by the State during 2019 from VAT and for personal income tax due to inactivity, unemployment and reduced income levels among women who became mothers in adolescence amount to $216,056,850 equivalent to USD 1,036,244.

INTRODUCTION

UNFPAs State of the World Population 2013 highlighted some of the socio-economic consequences associated with adolescent pregnancies. These included missed educational and other opportunities, perpetuation of poverty and exclusion, basic human rights denied and the ongoing unfulfilment of girls' potential. The World Health Organization (WHO) reports that approximately 12 million girls aged 15–19 years and at least 777,000 girls under 15 years give birth each year in developing regions. With specific reference to the health issues, the report states that complications during pregnancy and childbirth are the leading cause of death for 15–19 years old girls globally. (WHO 2020).

A 2017 joint report by Pan American Health Organization (PAHO), UNFPA, and the United Nations Children Fund (UNICEF) informed that Latin America and the Caribbean (LAC) was the only region in the world reporting an increase in adolescent pregnancy over time. The United Nations estimates for the period 2015–2020 show a rate of 63.0 per 1,000 girls 15–19 years old in LAC, compared to a global average of 42.5 per 1,000 girls. For Guyana, the rate estimated for 2015–2020 is 74.4 per 1,000 girls 15–19 years old, about 1.2 times greater than the average for the LAC region.

Adolescence is described by the WHO (2020b) as "a period of life with specific health and developmental needs and rights." Continuing, "all societies recognize that there is a difference between being a child and becoming an adult. How this transition from childhood to adulthood is defined and recognized differs between cultures and over time."

> **THE WORLD HEALTH ORGANIZATION (WHO) REPORTS THAT APPROXIMATELY 12 MILLION GIRLS AGED 15–19 YEARS AND AT LEAST 777,000 GIRLS UNDER 15 YEARS GIVE BIRTH EACH YEAR IN DEVELOPING REGIONS. WITH SPECIFIC REFERENCE TO THE HEALTH ISSUES, THE REPORT STATES THAT COMPLICATIONS DURING PREGNANCY AND CHILDBIRTH ARE THE LEADING CAUSE OF DEATH FOR 15–19 YEARS OLD GIRLS GLOBALLY. (WHO 2020).**

UNICEF (2011, 8) argues that adolescence is difficult to define in precise terms, and identifies as a main reason the fact that each individual experiences the period differently depending on his or her "physical, emotional and cognitive maturation as well as other contingencies." As it relates to the onset of puberty as a clear line of demarcation between childhood and adolescence, the view is that this cannot resolve the difficulty of definition as puberty occurs at different points for girls and boys and at different points even for different individuals of the same sex.

UNFPA (2018) addresses the negative consequences of adolescent pregnancy and early motherhood on the health, human development and the possibilities for economic and social progress of the adolescent, with such consequences having significant impact on the State. Maternal mortality due to complications of pregnancy and childbirth is the most critical health outcome. The most likely socioeconomic impacts of early motherhood are early drop-out from school, a limiting of future career possibilities for adolescents, and a raising of the labour participation and income gap between adolescent mothers and women who delay childbearing until adulthood. "At an aggregate level, for countries, adolescent motherhood represents a loss of the opportunity to benefit from the demographic bonus or dividend, that is, the boost to economic productivity that results from a larger population of working age, as compared to the dependent population."

The goal of this report is to assess the economic impact of Adolescent Pregnancy (AP) and Early Motherhood (EM) using the methodology MILENA 1.0 developed by the UNFPA. The application of the method with respect to Guyana aims to produce quantifiable evidence of the cost of adolescent motherhood for women and for the society. This evidence highlights the adverse consequences of early motherhood and by so doing should lead to the development and implementation of national policies and programmes geared to its prevention.

The objective is to show the quantifiable opportunity costs of education, labour participation and income, the total opportunity cost and its fiscal impact and the

health impact and costs associated with adolescent pregnancy and early motherhood in Guyana.

The MILENA methodology examines the impact through five dimensions as follows and illustrated in Figure 1:

- **Dimension 1:** Consequences of AP and EM on the participation in the labour market.
- **Dimension 2:** Consequences of AP and EM on labour income.
- **Dimension 3:** Consequences of AP and EM on the level of educational attainment.
- **Dimension 4:** Impacts of AP and EM on the health of the adolescent mother.
- **Dimension 5:** Tax revenues forgone, due to limited labour force participation and decreased income as a result of AP and EM.

Dimension 5
Fiscal Impact

Aggregation
Dimensions

Dimension 1.1	Dimension 1.2	Dimension 2	Dimension 3	Dimension 4
Inactivity	Unemployment	Income	Education	Health
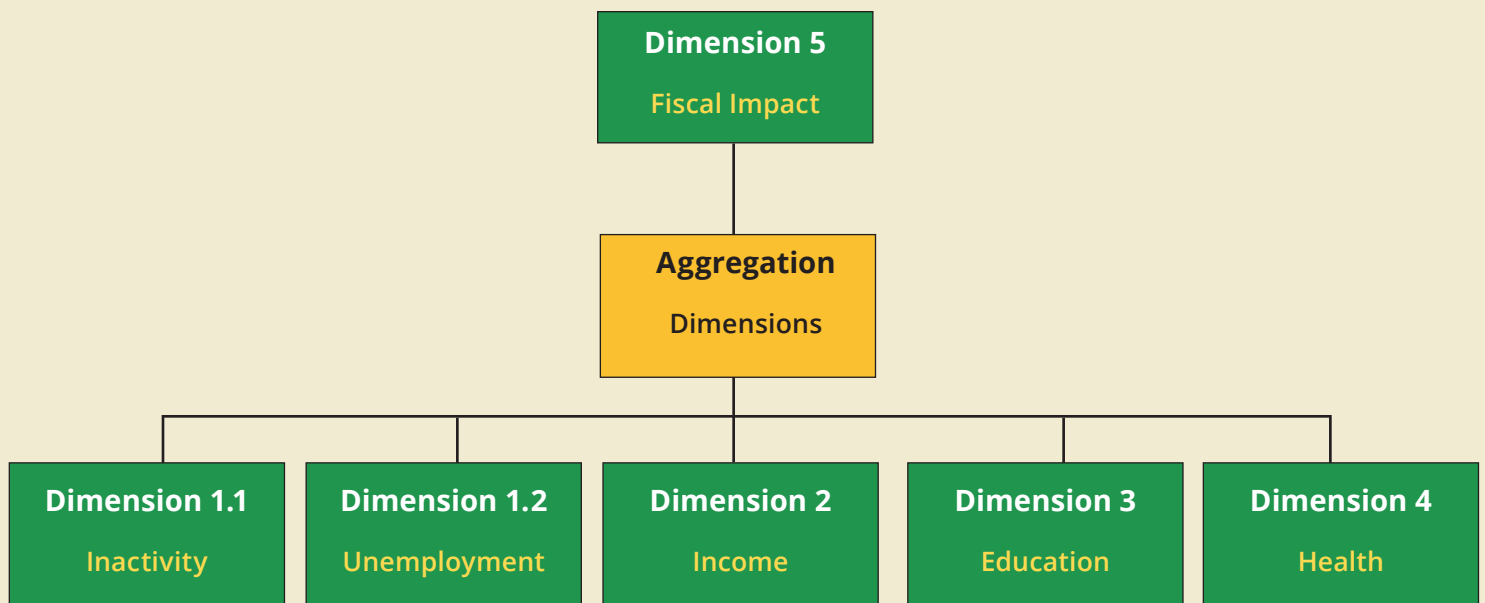
▲ **Figure 1.** Dimensions of the MILENA 1.0 Methodology

CHAPTER 1

DEMOGRAPHIC PROFILE OF GUYANA

Guyana, officially named the Cooperative Republic of Guyana is located on the northern mainland of South America. Because of its strong cultural, historical and political ties with the Caribbean countries it is considered part of the Caribbean. Guyana is the only South American nation in which English is the official language.

The country covers a land area of 214,969 sq. km with 80% coverage of rainforest. About 90% of the population of Guyana lives along a narrow coastal strip accounting for only 10% of the total land area. For administrative purposes, the country is divided into 10 regions. Region 4 where the capital Georgetown is located and which has only 1% of the land area is the most densely populated with 41.3% of the population. The majority of the Amerindians, who account for about one-tenth of the population, live in the sparsely populated hinterland, in Regions 8 and 9. Approximately 86% of the population of Region 9 and approximately 72% of the population of Region 8 are Amerindians. Each region is administered by a Regional Democratic Council. PAHO (2012) explains that the council "is responsible for providing services, including health and education to its catchment population. The sparsely populated hinterland areas have very limited health infrastructure, posing enormous challenges for the delivery of healthcare and other essential services."

Results from the 2012 census reveal the country's distinctive ethnic and religious

mix, with 39.8% East Indian, 29.3% African/Black, 19.9% classified as Mixed and 10.5% Amerindian as the main categories. Major religious groups are Christian 63.9%, Hindu 24.8% and Muslim 6.8%.

The count of the population at census 2012 was 746,955, representing a small decline of 0.6% over the 751,223 counted at 2002. This most recent decline is only the second time in the history of census taking in Guyana that a population decline has been recorded, the first time being 1991. "The population decline at census 1991 appears to be consistent with the peak emigration flows, recorded during the decade of the 1980s, as well as continuously falling fertility rates." (CARICOM 2009, 1). Total population at the 1991 census was 723,675, down from 759,567, at 1980, a reduction of about 36,000 people at an annual rate of 0.44%. In the 21-year period between 1991 and 2012 the population of Guyana grew by approximately 23,300, at an annual rate of growth of 0.15% (table 1).

Table 1. Population of Guyana for census years 1980–2012

Census Year	Total Population	Absolute Change	Annual % Rate of Growth
1980	759,567	–	–
1991	723,655	-35,912	-0.44
2002	751,223	27,568	0.34
2012	746,955	-4,268	-0.06
1991–2012	–	23,300	0.15

Source: Guyana census reports. See Annex 1 for details.

Official vital statistics for the intercensal period 2002–2012 are not available so it is not possible to assess the components of change for this most recent period. The Guyana census report (BOS 2016) states that a net outflow of residents was the cause but does not provide an analysis of the natural components (births and deaths) to make this assessment.

United Nations estimates show average crude birth rates for 2015–2020 at 20.1 per 1,000 population, reduced by 55% from 44.9 per 1,000 at the beginning of the estimation period 1950–1955. Crude death rates which averaged 11.4 per 1,000 at the earlier period had fallen to 7.4 per 1,000 at 2015–2020. Increases in life expectancy are reflected in the average life expectancy of 66.7 years and 72.3 years for men and women respectively

for 2015–2020, up from 56.2 years for men and 61.6 years for women at 1950–1955, reflecting the addition of 11 life years for both sexes.

Indications are therefore that demographic developments in Guyana have followed a similar path to many developing countries with declining fertility and mortality, typical of a country's progress through the demographic transition. Fertility and mortality declines over the period of the transition eventually result in changes to the age structure. Such changes are reflected in the decreased proportions among the youngest age groups occurring simultaneously with increasing proportions in the older age groups.

AGE STRUCTURE

The changing age profile is best observed graphically as shown in the age-sex pyramids presented as figure 2. The pyramids reflect the age distribution for 1991 (shaded) superimposed on the pyramid for 2012 (unshaded). The narrowing of the horizontal bars at the base of the pyramids is directly related to the decline in the number of persons at the young ages, resulting mainly from the fertility declines. The wider unshaded bars higher up the pyramid are based on the increases at the older ages.
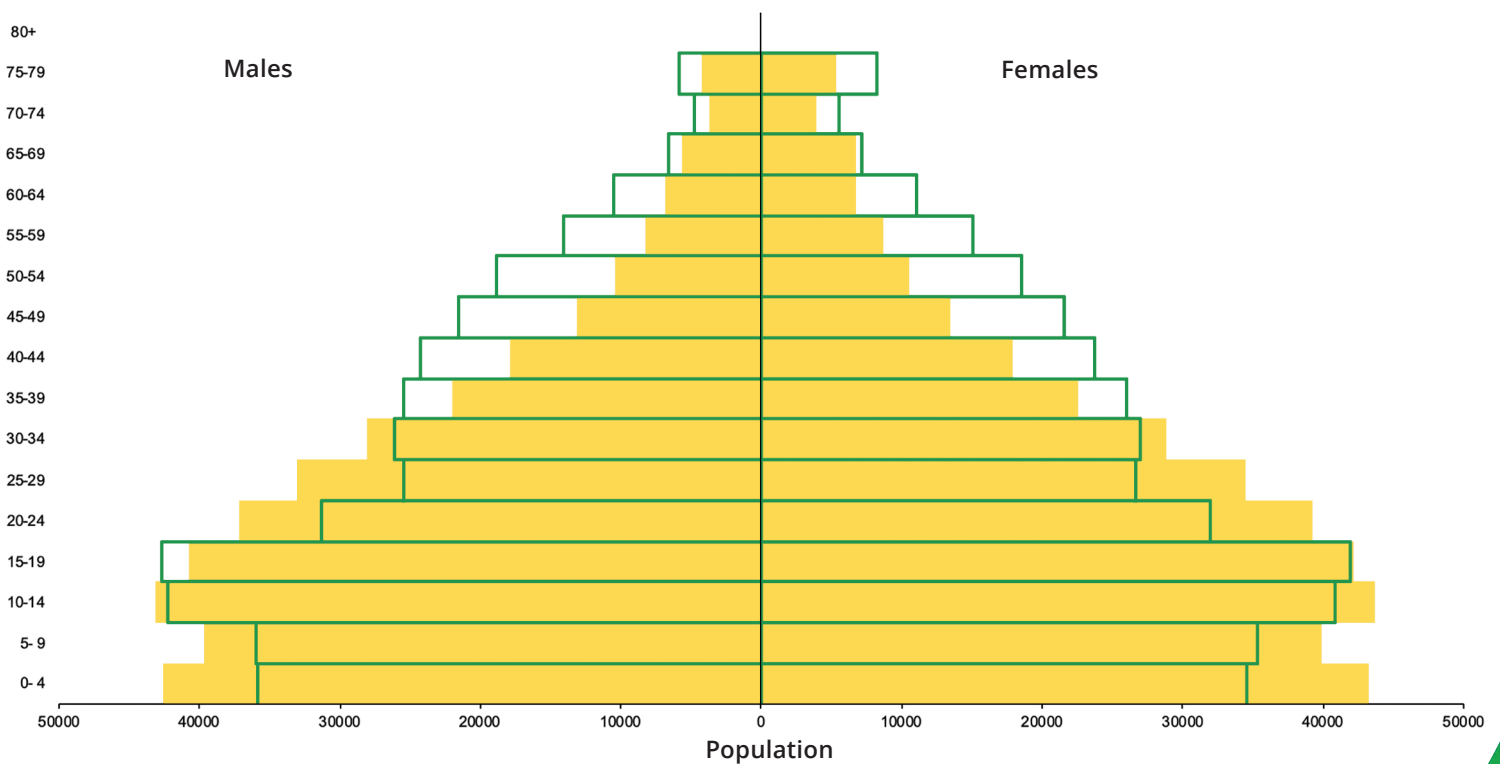
▲ **Figure 2. Age-sex pyramid of Guyana at census 1991 (shaded) and census 2012 (unshaded).**

INDICATIONS ARE THAT DEMOGRAPHIC DEVELOPMENTS IN GUYANA HAVE FOLLOWED A SIMILAR PATH TO MANY DEVELOPING COUNTRIES WITH DECLINING FERTILITY AND MORTALITY, TYPICAL OF A COUNTRY'S PROGRESS THROUGH THE DEMOGRAPHIC TRANSITION.

Another widely used measure of changing age structure is the age-dependency ratio. This indicator establishes the relationship between three age groups in a population – the youngest, the working age groups and the oldest. The youngest comprising ages 0–14 years and the oldest, the 65 years and over are regarded as dependents of those in the working age ranges. The age groups form the basis for the calculation of three dependency ratios. The child dependency ratio relates the number of persons 0–14 years old to the number of persons 15–64 years old and the old-age dependency ratio relates the 65 years and over age group to the number of persons 15–64 years old. The total dependency ratio is the sum of the two. Typically, high child dependency ratios are generally indicative of populations with a large proportion of children.

Table 2 and figure 3 show that in 1991 approximately 35% of the population was less than 15 years old. By 2012 this age group accounted for about 30% of the total, a fall of approximately 5 percentage points. Occurring simultaneously with this movement was the rise in the working age range of 15–64 years by over 40,000 from a share of 61% to 65% of the total population. The 65 years and over group grew by just under 9,000 over the 21 years accounting for approximately 5% of the total population in 2012 up from 4% in 1991.

Table 2. Distribution of the population by specific age groups, censuses 1991 and 2012 (Population in thousands)

Age group	1991		2012		Absolute Change	Percentage point change 1991–2012
	Number	Per cent of total	Number	Per cent of total		
0–14	252.1	34.8	224.9	30.1	-27.2	-4.7
15–64	442.2	61.1	483.7	64.8	41.5	3.7
65+	29.4	4.1	38.3	5.1	8.9	1.1
Total	**723.7**	**100.0**	**747.0**	**100.0**	**23.3**	–

Source: Guyana census reports. See Annex 1 for details.
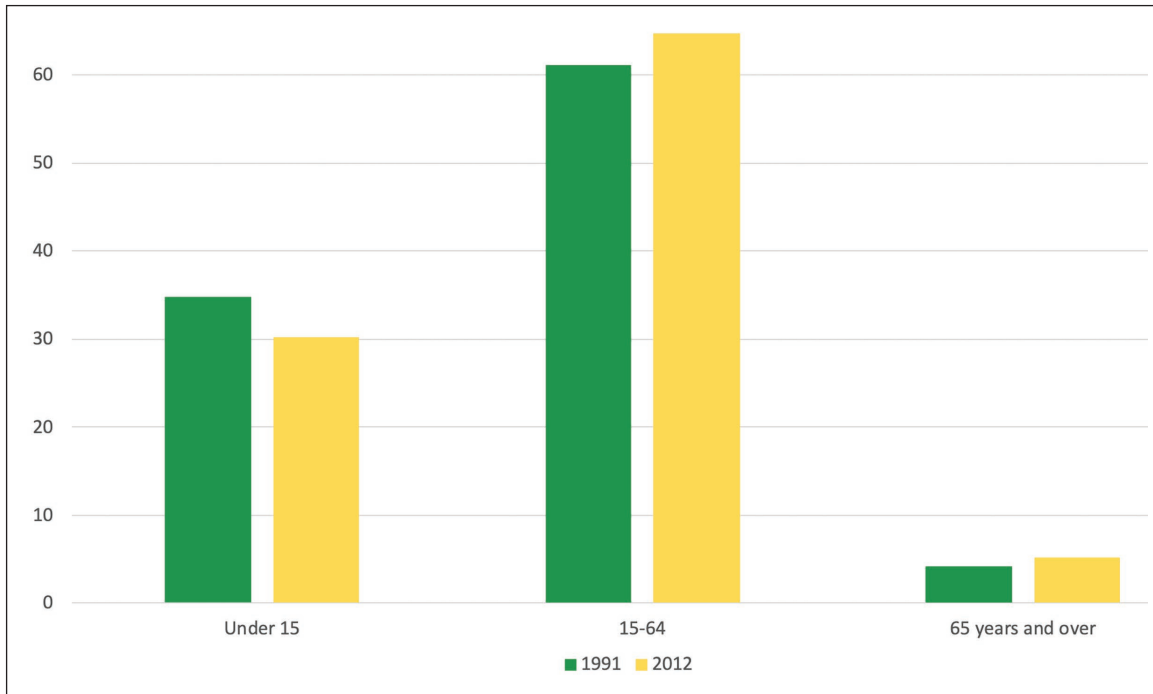
▲ **Figure 3.** Percentage distribution of the population of specific age groups at censuses 1991 and 2012

These changes are reflected in the dependency ratios presented in table 3 and illustrated in figure 4. In 2012 for every 100 persons of working age, there were approximately 54 persons in the 'dependent' age group, reflecting a fall of approximately 15% from the estimated 64 per 100 in 1991. This reduction was largely the result of the decline by 18% in the child dependency ratio from 57 per 100 to 47 per 100 between 1991 and 2012. In the meantime, the old age ratio moved up from approximately 7 per 100 to 8 per 100, an increase of 19%.

Table 3. Age dependency ratios, censuses 1991 and 2012

Dependency Ratios	1991	2012	Percentage change 1991–2012
Child dependency ratio	57.0	46.5	-18.4
Old age dependency ratio	6.6	7.9	19.2
Total dependency ratio	63.6	54.4	-14.5

Source: Derived from table 2.
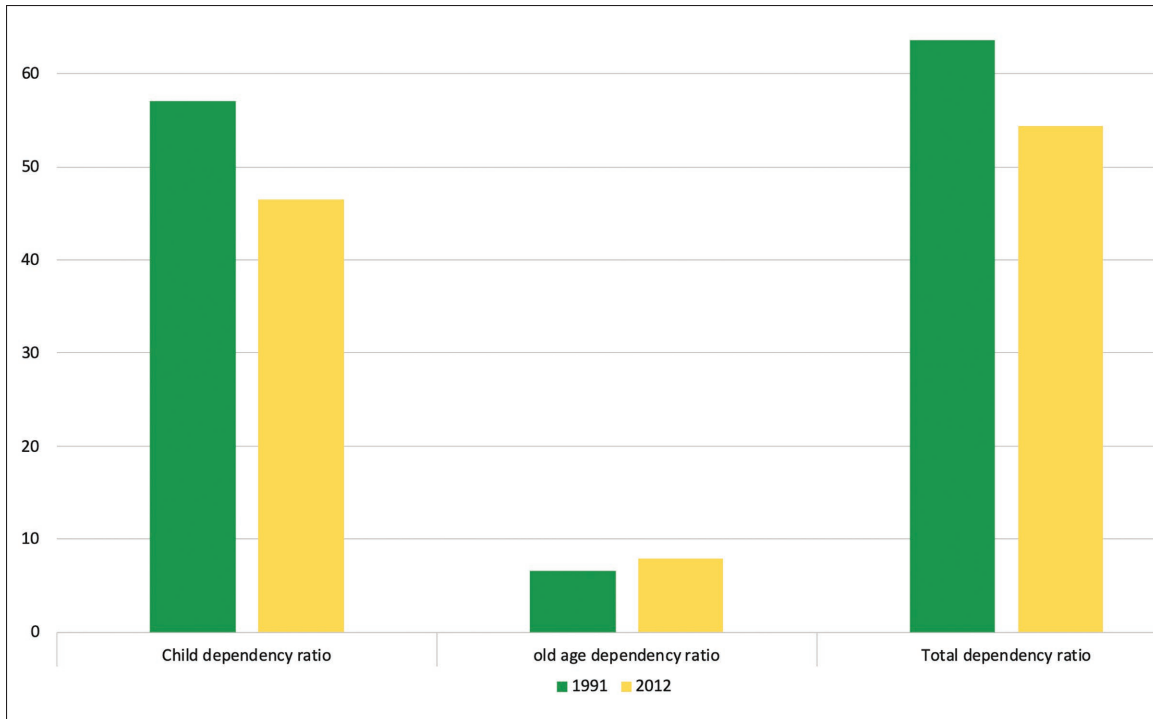
▲ **Figure 4.** Age dependency ratios, censuses 1991 and 2012

It is within the context of these broad changes in the age structure that the adolescent population and the pattern of adolescent fertility must be examined.

CHAPTER 2

PROFILE OF FEMALE ADOLESCENTS AND ADOLESCENT FERTILITY IN GUYANA

FEMALE ADOLESCENTS

The female population of Guyana of ages 10–19 years, counted at census 2012 numbered 82,754. This represents just over one-fifth (22%) of the total female population. From the table 4 it can be observed that the older of the two five-year age groups, the 15–19 years old, accounted for just over one-half (51%) of the total 10–19 years old.

Table 4. Distribution of the female adolescent population by five-year age groups, 2012

Age Group	Number	% of 10–19 years	% of 10–49 years	% of total female
10–14	40,857	49.4	18.8	10.9
15–19	41,897	50.6	19.3	11.2
10–19	82,754	100.0	38.1	22.1
10–49	217,371			
Total females	**375,150**			

Source: Guyana 2012 Census report. See Annex 1 for details.

Traditionally, among women, the ages 15–19 years have been regarded as the initial stages of the reproductive span of 15–49 years. For the purposes of this study which acknowledges the initiation of childbearing at earlier ages, the reproductive years will be considered to begin at ages 10–19 years.

Table 4 also shows the total population of women 10–49 years at census 2012 and the share of the population 10–19 years. At 2012 these young adolescents accounted for more than one in three (38%) of the total group of 10–49 years old women.

Census reporting (BOS, 2017) on educational attainment reveal that school attendance rates for girls 10–14 years old exceeded 90%, being 98.4%. Attendance rates for the 15–19 years old was a much lower 40%. With specific reference to secondary school, net enrolment rate for the 12–18 years old was 61.4%.

Marital and union status which is covered by the census from age 15 years shows that as expected, the overwhelming majority (96%) of adolescents were never married. (figure 5).
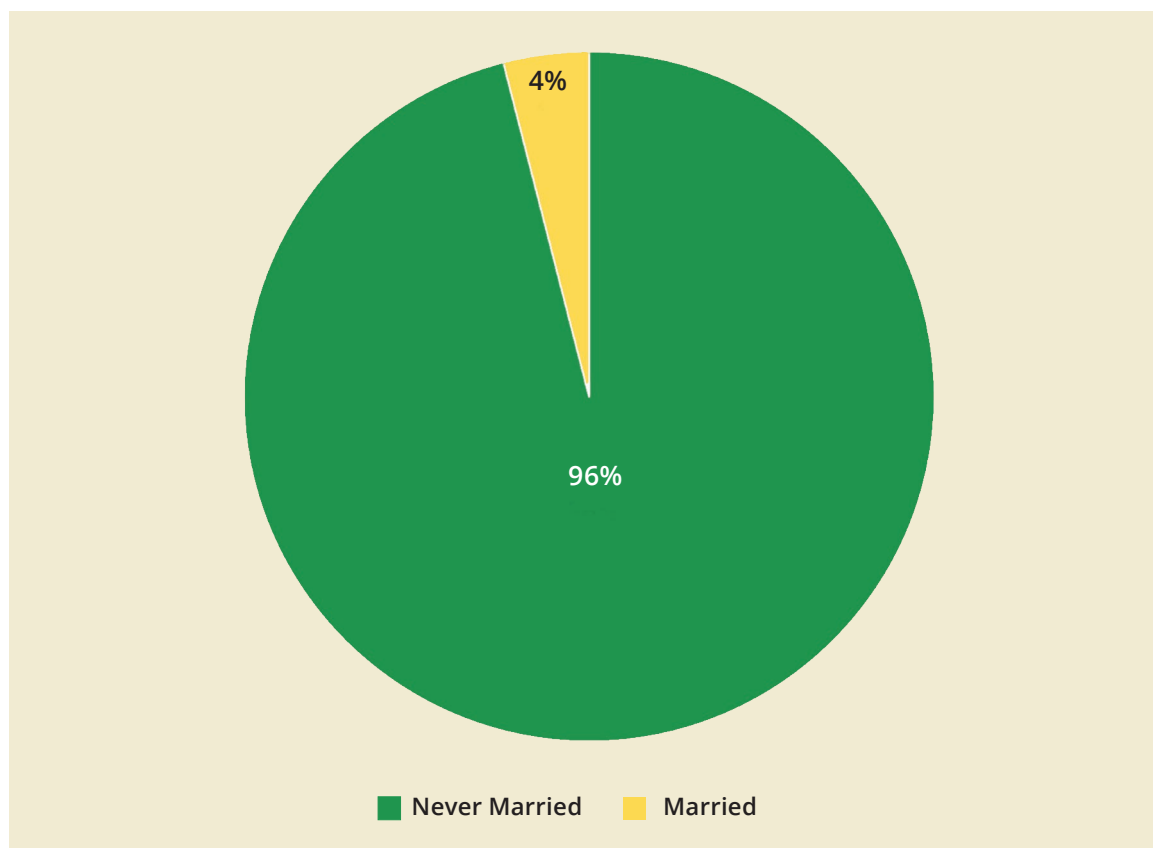
▲ **Figure 5.** **Adolescent females (15–19) by marital status, census 2012**
Source: Guyana Census 2012. Unpublished tables.

Union status is the subject of figure 6. A total of 5,197 young women approximately 12% of those 15–19 years old, were living with a spouse or a common-law partner.

12%

88%

■ Never Married   ■ Living with spouse/partner
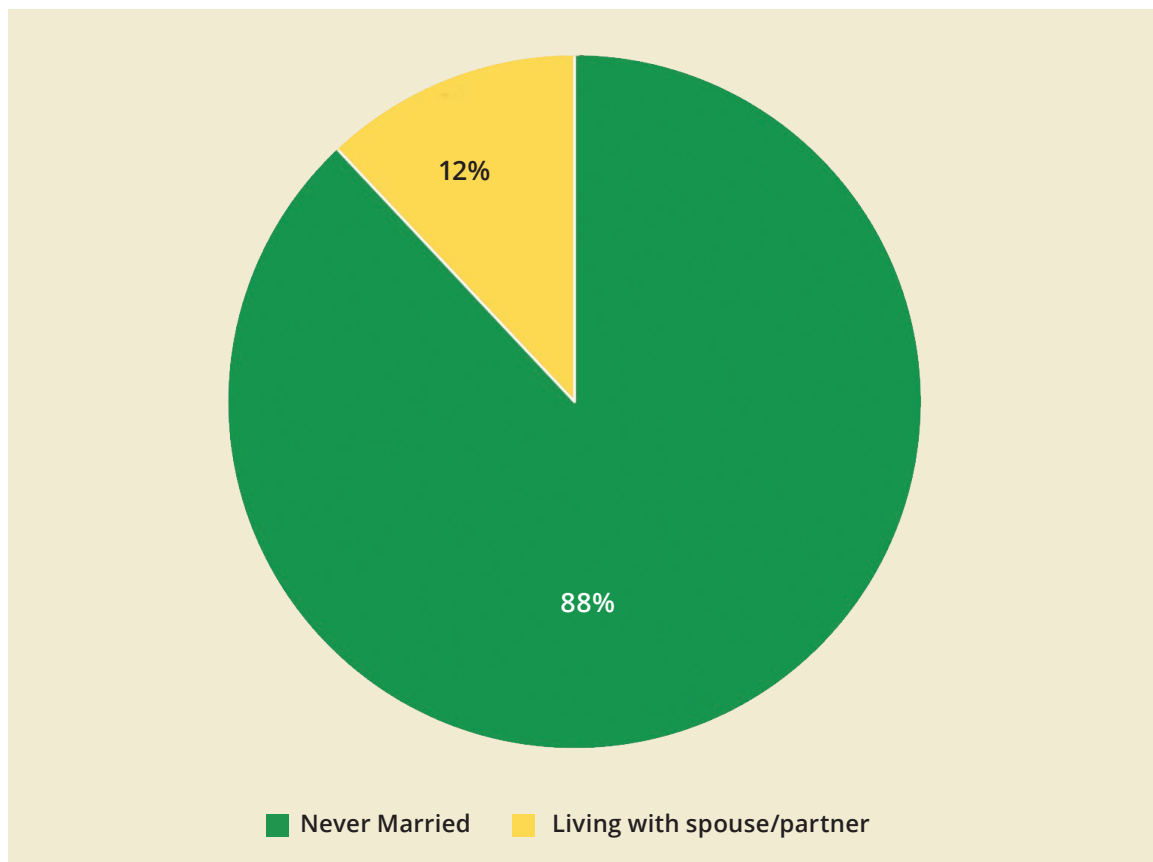
▲ **Figure 6. Adolescent females (15–19) by union status, census 2012**

Source: Guyana Census 2012. Unpublished tables.

Economic activity of the female adolescents covered in census 2012 is shown in table 5. The inactivity rate was 79% with the majority of those classified as inactive, attending school or doing home duties. The unemployment rate calculated as a percentage of the active population stood at 46% (not shown in table).

Table 5. Female population 15–19 years old by economic activity, census 2012

Activity	Number of persons	% of population reporting
Active	8,452	21.0
Worked/had a job	4,558	11.3
Looked for work	3,894	9.7
Inactive	31,847	79.0
Attended school	17,346	43.0
Home duties	14,247	35.4
Disabled	198	0.5
Other	56	0.1
Total reporting	**40,299**	

Source: Guyana Census 2012 report. See Annex 1 for details.

ADOLESCENT FERTILITY

There are a number of indicators which may be examined in an analysis of adolescent fertility, chief among them being the adolescent birth rate (ABR). The ABR is derived as the number of births to women 15–19 years divided by the total women in the same age group. If multiplied by 1,000 the ABR is expressed per 1,000 women. It is useful first, to examine the number of actual births to adolescent mothers. Table 6 presents the UN estimates of the average number of births to all mothers and the number to adolescent mothers for five-year periods from 1990–2020. The percentage of adolescent births range from around 18% in 1990–1995 increasing to about 22% by 2005–2010 before falling to 19% in the most recent period, 2015–2020.

Table 6. Annual average number of births for five-year periods, 1990–2020

Period	Annual average number of births to all women	Annual number of births to 15–19 year old women	Births to 15–19 year old as % of total births
1990–1995	21,282	3,748	17.6
1995–2000	20,386	3,545	17.4
2000–2005	18,038	3,429	19.0
2005–2010	16,094	3,473	21.6
2010–2015	15,988	3,428	21.4
2015–2020	15,592	2,907	18.6

Source: United Nations World Population Prospects 2019. See Annex 1 for details.

The movements in the ABR between 1990 and 2020, as estimated by the UN are presented in table 7 and figure 7. From 88.5 per 1,000 at the beginning of the period, the rate moves up and by 2000–2005 is 100.2 per 1,000. Thereafter a continuous decline is evident and by the years 2015–2020 is estimated at 74.4 Per 1,000.

Table 7. Adolescent birth rate, 1990–2020

Period	Adolescent Birth Rate
1990–1995	88.5
1995–2000	92.7
2000–2005	100.2
2005–2010	92.6
2010–2015	83.1
2015–2020	74.4

Source: United Nations World Population Prospects 2019. See Annex 1 for details.
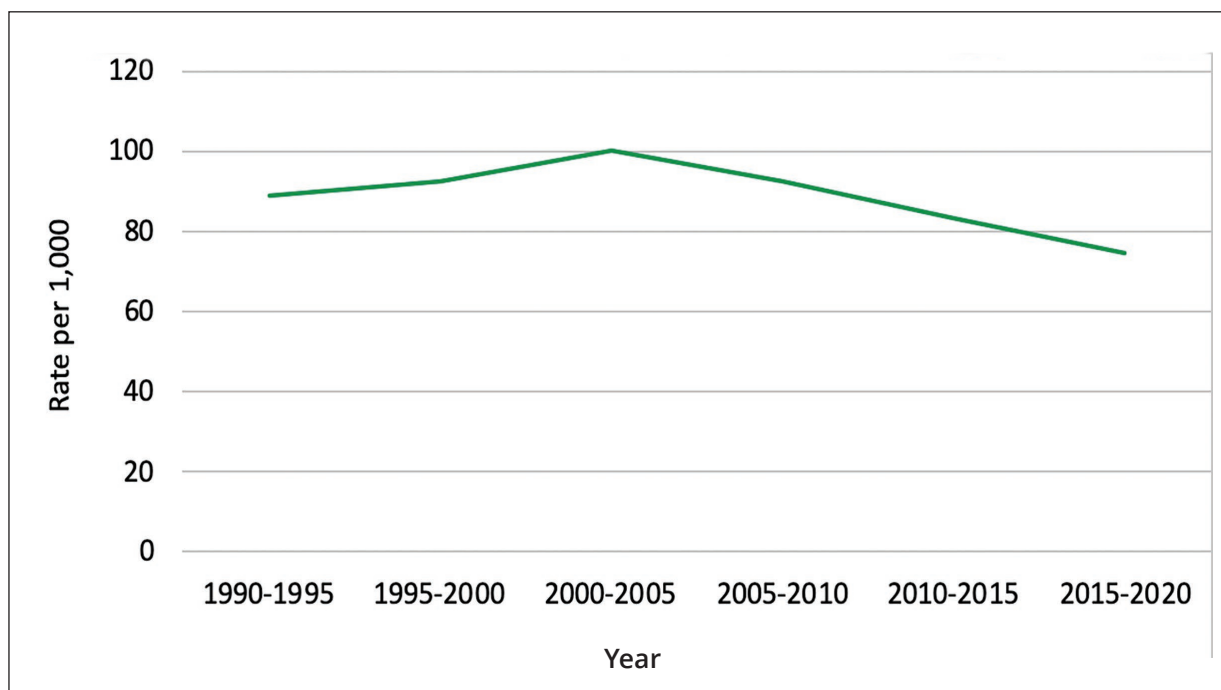
▲ **Figure 7.** Adolescent birth rate 1990–2020

As a component of the total fertility rate (TFR), one aspect of the analysis of the ABR is its contribution to the TFR. Table 8 presents the ABR and the TFR and the percentage contribution of the former to the latter for 1990–2020. At the peak of the ABR at 100.2 at 2000–2005 contribution to the TFR of 2.9 per woman was 17%. The proportion declines gradually as the TFR declines and by 2015–2020 contribution is 15% to the 2.5 per woman TFR.

Table 8. Adolescent birth rate and total fertility rate for specific five-year periods, 1990–2020

Period	TFR	ABR as a % of TFR
1990–1995	3.1	14.4
1995–2000	3.1	15.2
2000–2005	2.9	17.0
2005–2010	2.7	17.0
2010–2015	2.6	16.0
2015–2020	2.5	15.0

Source: United Nations World Population Prospects 2019. See Annex 1 for details.

The censuses of Guyana produce data which also gives an indication of the patterns of movements in adolescent fertility together with the analysis of children ever born. Table 9 presents the data for the censuses of 1980, 1991, 2002 and 2012. The table shows a fairly substantial decline in the percentage of adolescents that are mothers from about 19% to approximately 12% between 1980 and 1991 after which it rises substantially again in the other direction, to 20% before falling to 11% in the most recent intercensal period. The erratic movement could possibly point to issues of data quality, but the movement between 1991 and 2002 could also be interpreted as consistent with the rise in the ABR over the same period, previously discussed. Notwithstanding the irregular pattern of movement in motherhood, there has been a continuous decline in the average number of children ever born from about 0.24 in 1980 declining to 0.19 in 2002 and by 2012 to 0.13, a 46% decline over 1980.

… THERE IS A FAIRLY SUBSTANTIAL DECLINE IN THE PERCENTAGE OF ADOLESCENTS THAT ARE MOTHERS FROM ABOUT 19% TO APPROXIMATELY 12% BETWEEN 1980 AND 1991 AFTER WHICH IT RISES SUBSTANTIALLY AGAIN IN THE OTHER DIRECTION, TO 20% BEFORE FALLING TO 11% IN THE MOST RECENT INTERCENSAL PERIOD.

Table 9. Motherhood and number of children ever born per woman 15–19 years old at the time of the census, censuses 1980–2012

Census Year	Total Women Reporting	% Mothers	Children per Woman
1980	35,372	19.1	0.239
1991	41,033	11.9	0.236
2002	32,797	20.2	0.189
2012	40,312	11.0	0.134

Source: Guyana census reports. See Annex 1 for details.

The data show clear indications of declining adolescent fertility. The point however is that teenage pregnancy and adolescent fertility persists and remains of concern to policy makers and planners because of the impact on the young women themselves and the society at large.

Table 10. Adolescent birth rate by household characteristics, 2014

Characteristics of households/ household heads	Adolescent birth rate
Total	**74.4**
Region	
Regions 1, 7, 8, 9	187
Regions 2, 3	67
Region 4	71
Regions 5, 6	65
Region 10	(49)
Area	
Urban	55
Rural	81
Interior	105
Ethnicity of household head	
East Indian	68
African	59
Amerindian	148
Mixed Race	82
Wealth Index Quintile	
Poorest	150
Second	107
Middle	52
Fourth	36
Richest	23

Source: MICS 2014 table RH.2

The MICS 2014 (table 10) shows major disparities in the rate based on geographic location of households, ethnicity, education and wealth quintile of the household heads. The ABR in the interior is almost twice the ABR in the urban areas and 1.3 times the rural rate. Examination by region shows stark differences. The ABR in the regional grouping 1,7,8,9 at 187 births per 1,000 women, more than doubles the national rate of 74 per 1,000 women. It is important to note that regions 1,7 and 9 comprise the remote and hinterland areas of the country. With regard to the ethnicity of the household head, the ABR is highest in women living in households with an Amerindian head (148 per 1,000 women). As it relates to socio-economic status, the ABR is inversely related to the socio-economic status of the household as the rate is highest at 150 births per 1,000 women living in the poorest households and lowest at 23 per 1,000 women living in the richest households.

PROFILE OF ADOLESCENT MOTHERS

Limited data from the 2012 census related to the age at first birth allows for an examination of certain key characteristics of adolescent mothers including educational attainment and economic activity which are covered by the MILENA methodology.

Of the 121,381 mothers (women who at the time of the census reported having had a child previously), of ages 10–49 years at the census, and reporting age at first birth, an estimated 59,500 or 49% were between the ages of 10–19 years when they had their first child (table 11).

Table 11. Age distribution of adolescent mothers, census 2012

Age of mother at census	Total mothers	Number of Mothers 10–19 years old at first birth	% of mothers in age group
10–19	4,473	4,473	100.0
20–29	32,888	17,870	54.3
30–39	44,261	20,431	46.2
40–49	39,759	16,682	42.0
Total	**121,381**	**59,456**	**49.0**

Source: Guyana Census 2012. Unpublished tables.

The table shows that the percentage of adolescent mothers decreases with age as the younger mothers were more likely than the older mothers to have had an adolescent birth.

Just over one-half (51%) of these mothers were never married at the time of census 2012. Approximately 43% were married and the remaining 6% comprised widows, divorcees and those legally separated (figure 8). An estimated 71% of these mothers reported living with a legal spouse or a common-law partner (not shown in graph).
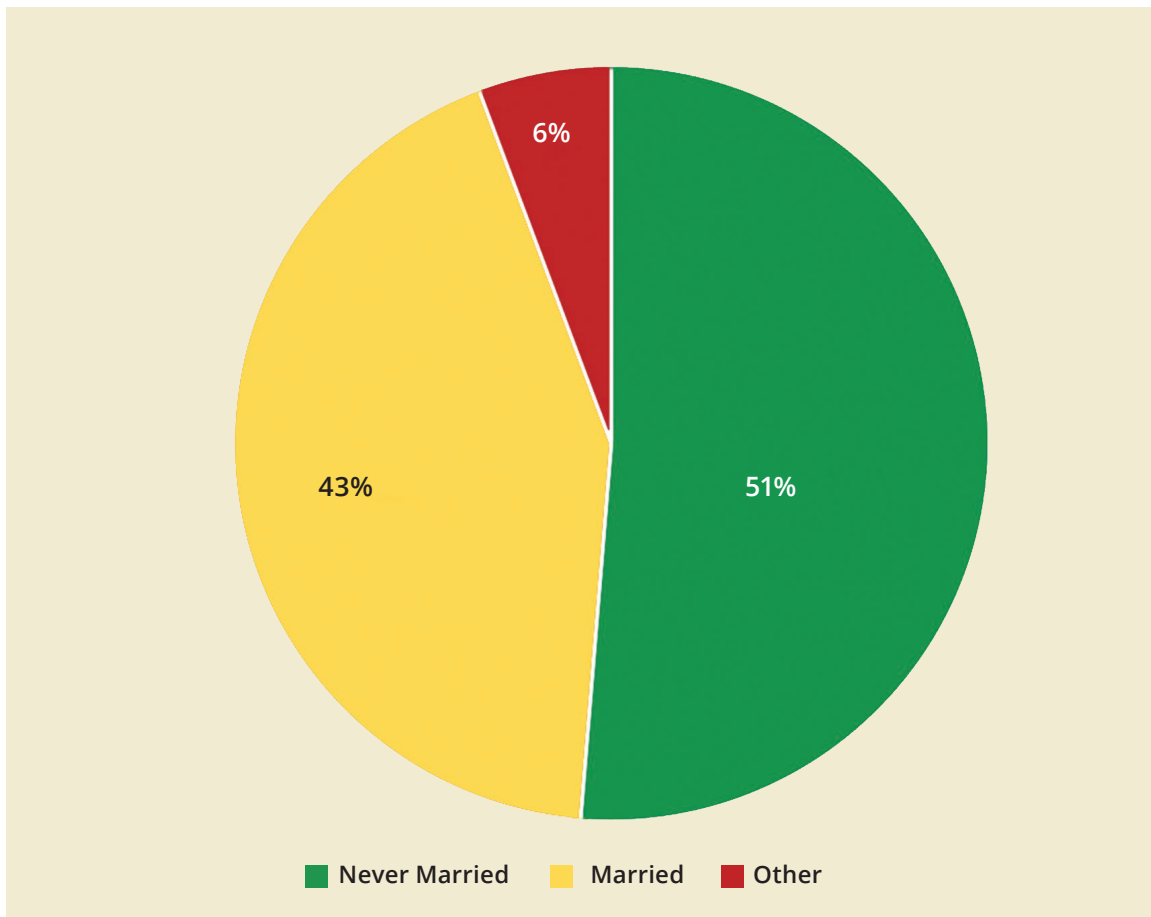
▲ **Figure 8.** **Women 10–49 years who had a child in adolescence by marital status, census 2012**

Source: Guyana Census 2012. Unpublished table.

Table 12 and figure 9 show the women by highest level of educational attainment. Over two-thirds (69%) of these mothers had gone no further than secondary school and only about 5% had completed post-secondary and tertiary level training. With regards to economic activity (table 12), only about one-third of the women were economically active. More than 6 out of 10 women were keeping house.

Table 12. Educational attainment and economic activity profile of women who had a child in adolescence, census 2012

Educational Attainment	% of women	Economic Activity	% of women
Primary or less	26.7	Active	33.6
Secondary	68.5	Inactive of which:	66.4
Post-secondary	1.5	Home duties	65.3
Tertiary/University	3.1	Other	1.1
Other	0.2		

Source: Guyana Census 2012. Unpublished table.
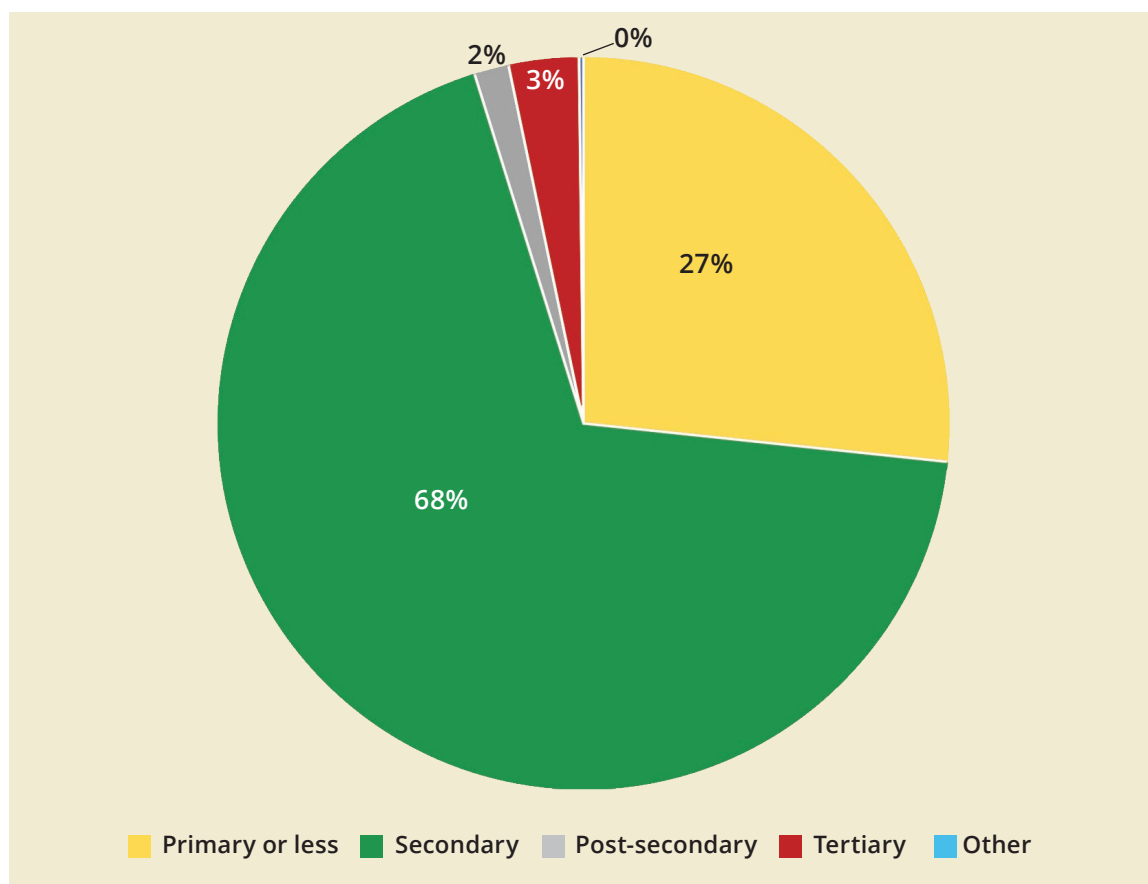
▲ **Figure 9. Women 10–49 years who had a child in adolescence by educational attainment, census 2012**

The MICS 2014 survey which show that at the time of the survey 15% of the women 15–19 years old had begun childbearing, 11% were already mothers and 4% were pregnant with their first child (table 13). Among women 20–24 years old 16% had had a live birth before age 18 (not shown in table).

Table 13. Percentage of women age 15–19 years by fertility profile and background characteristics, 2014

Item	Have had a live birth	Are pregnant with first child	Have begun childbearing
Total	**11.2**	**3.7**	**14.9**
Residence			
Urban	8.7	1.8	10.5
Rural	12.1	4.4	16.5
Interior	16.9	1.1	18.0
Education			
Primary	58.9	0.0	58.9
Secondary or higher	13.0	4.0	17.0
Wealth index quintile			
Poorest	23.5	1.8	25.3
Second	16.5	7.8	24.2
Middle	6.6	1.4	8.0
Fourth	5.6	2.3	7.9
Richest	3.8	5.7	9.5

Source: MICS 2014, table RH.3

The differences by place of residence are again worthy of note. The young women 15–19 years old who resided in rural areas were one and a half times as likely (17%) and those resident in the interior 1.6 times as likely (18%) as those in urban areas (11%) to have started childbearing. The negative socio-economic consequences of early childbearing are reinforced by additional findings which show that more than one-half of young women (15–19 years) who had begun childbearing (59%), had gone no further than primary school, and 50% were from the poorest and second poorest wealth quintiles.

Key determinants of adolescent pregnancy often cited (UNICEF 2018) are early sexual initiation, unprotected sex and early marriage. The Guyana MICS 2014 provides data on these important indicators. An estimated 33% of young women 15–19 years old reported ever having sex, with 5% having sex before age 15 years (table 14).

Table 14. Percentage of women 15–24 years by sexual experience, 2014

Age group	Ever had sex	Had sex before age 15
15–19	33.1	5.0
15–17	19.9	4.2
18–19	56.4	6.4
20–24	83.0	4.9
20–22	79.4	5.5
23–24	88.6	3.9
Total 15–24	**55.6**	**4.9**

Source: Guyana MICS 2014. Table HA.8

Table 15 shows that at the time of the survey, approximately 13% of young women 15–19 years old were currently married or in a union. About 5% of the women were married before age 15, higher than the 4% reported for all women 15–49 years old.

Table 15. Percentage of women 15–49 years old currently married or in a union and percentage married before age 15, 2014

Age group	Percentage currently married/in union	Percentage married before age 15
15–19	12.8	5.3
20–24	42.0	3.6
25–29	67.3	4.3
30–34	73.4	4.7
35–39	66.4	5.8
40–44	70.3	3.4
45–49	70.3	3.4
Total 15–49	**53.6**	**4.4**

Source: Guyana MICS 2014. Table CP.7 (currently married/in union), table CP.8 (married before age 15).

At the same time contraceptive prevalence was low as only about 13% of the young women currently married or in union were using (or whose partner was using) any form of contraceptive (table 16). This represents the lowest usage of any age group for women 15–49 years old and was considerably lower than the 34% usage reported for all women.

Table 16. Percentage of women 15–49 years old currently married or in a union who are using (or whose partner is using) a contraceptive method and percentage with an unmet need for family planning, 2014

Age group	Percentage using any method	Percentage with unmet need
15–19	12.9	61.9
20–24	33.5	39.4
25–29	41.6	27.3
30–34	41.0	25.2
35–39	35.5	21.4
40–44	35.1	20.0
45–49	25.2	16.3
Total 15–49	**34.1**	**28.0**

Source: Guyana MICS 2014. Tables RH.5 and RH.6

Table 16 also shows that overall, unmet need for contraception among the 15–19 year-old women was estimated at approximately 62% much higher than the estimate of 28% unmet need for all women 15–49 years old. Unmet need for contraception refers to fecund women who are married or in union and are not using any method of contraception, but who wish to postpone the next birth (spacing) or who wish to stop childbearing altogether (timing).

ADOLESCENT MATERNAL MORTALITY

The WHO (2020) states:

> Early pregnancies among adolescents have major health consequences for adolescent mothers and their babies. Pregnancy and childbirth complications are the leading causes of death among girls 15–19 years globally, with low- and middle-income countries accounting for 99% of global maternal deaths of women aged 15–49 years. Adolescent mothers aged 10–19 years face higher risks of eclampsia, puerperal endometritis and systemic infections than women aged 20–24 years.

The main indicator of adolescent mortality is the maternal mortality ratio in adolescents, which relates the number of deaths from pregnancy related causes to live births. The ratio derived is actually an age-specific ratio calculated as the number of deaths from pregnancy related causes, among adolescent women divided by the number of births to adolescent women. Data for Guyana provided by the Maternal and Child

Health Improvement Project of the Ministry of Public Health for the period 2015–2019 is presented in table 17. The number of pregnancies per year has ranged between 3,100 and about 3,500. The number of deaths from pregnancy related causes has not exceeded three in any one year. Using the UN estimates of births (2,907) in respect of women 15–19 years old, for Guyana from the World Population Prospects a ratio of 103 per 100,000 live births is calculated for 2019.

Table 17. Adolescent maternal mortality indicators, 2015–2019

Year	Number of adolescent pregnancies	Number of pregnancy related deaths
2015	3,472	1
2016	3,138	3
2017	3,064	3
2018	3,438	1
2019	3,189	3
Total 2015–2019	**16,301**	**11**
Average 2015–2019	3,260	2.2

Source: Ministry of Public Health, Guyana

The number of pregnancies per year has ranged between **3,100** and about **3,500**

CHAPTER 3

THE ECONOMIC IMPACT OF ADOLESCENT PREGNANCY AND EARLY MOTHERHOOD IN GUYANA

In this section the economic impact of adolescent pregnancy and the resulting early motherhood are analysed based on the findings from the calculation of the five dimensions previously outlined. As stated, the MILENA methodology measures this impact with respect to women's education, labour market participation and income as well as consequences for their health. At the level of the State the methodology allows for the estimation of tax revenues lost, due to limited labour market participation and reduced income, as well as expenditures on health associated with adolescent pregnancy care.

The analysis is based on the 2019 quarterly labour force surveys of Guyana and the measurements are derived from the use of a control group for comparison, comprising women who became mothers in adulthood, defined for this study as ages 20–29 years. For the women who became mothers as adolescents (10–19 years) and the control

group, profiles of educational attainment, labour market participation and income are measured. For each of these dimensions, gaps are then calculated and their monetary values estimated to calculate the opportunity cost.

The findings are presented graphically and the labels adolescent mothers and adult mothers are used to represent women who became mothers in adolescence and women who became mothers as adults, respectively.

THE IMPACT OF ADOLESCENT PREGNANCY AND EARLY MOTHERHOOD ON PARTICIPATION IN THE LABOUR MARKET

The MILENA methodology utilizes the traditional labour force classification of employment and unemployment complemented by the classification of economically active and inactive. Inactivity relates to persons of working age who are not looking or available for or interested in holding a paid job during a specific reference period.

Based on the data from the quarterly labour force surveys for 2019, the inactivity rate for the women who became mothers in adolescence is 56% compared to 49% for women who delayed childbearing (figure 10), a gap of 7 percentage points, reflecting a 13% difference. The adolescent mothers are therefore 13% more likely to retreat from the labour market than the adult mothers.
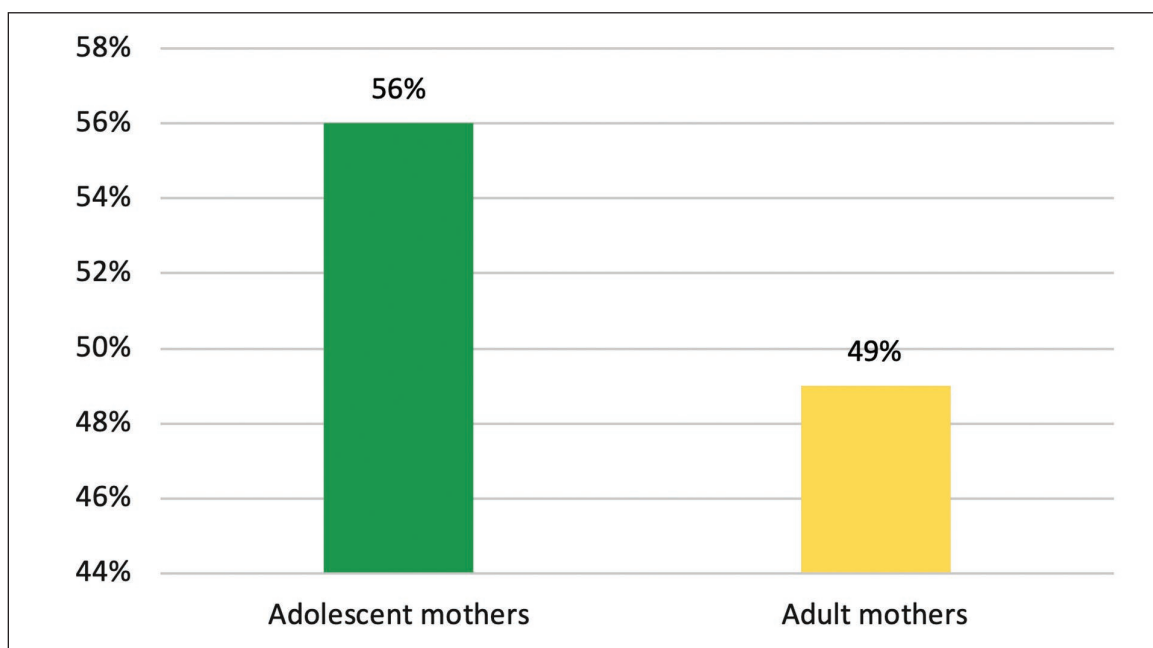
▲ **Figure 10.** **Inactivity rates for adolescent and adult mothers, 2019**
Source: Guyana Labour Force Surveys 2019

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This inactivity carries an estimated loss of annual income of $166,714,064 the equivalent of USD799,588 for 2019.

With regard to unemployment, women who became mothers as adolescents, have higher unemployment rates than those who became mothers as adults (figure 11). The unemployed comprises women who have not been actively looking for work in a recent period and not available for work in a short time. The unemployment rate for the adolescent mothers is 32%, approximately 45% higher than the 22% rate of unemployment for women who became mothers at an adult age, a gap of 10 percentage
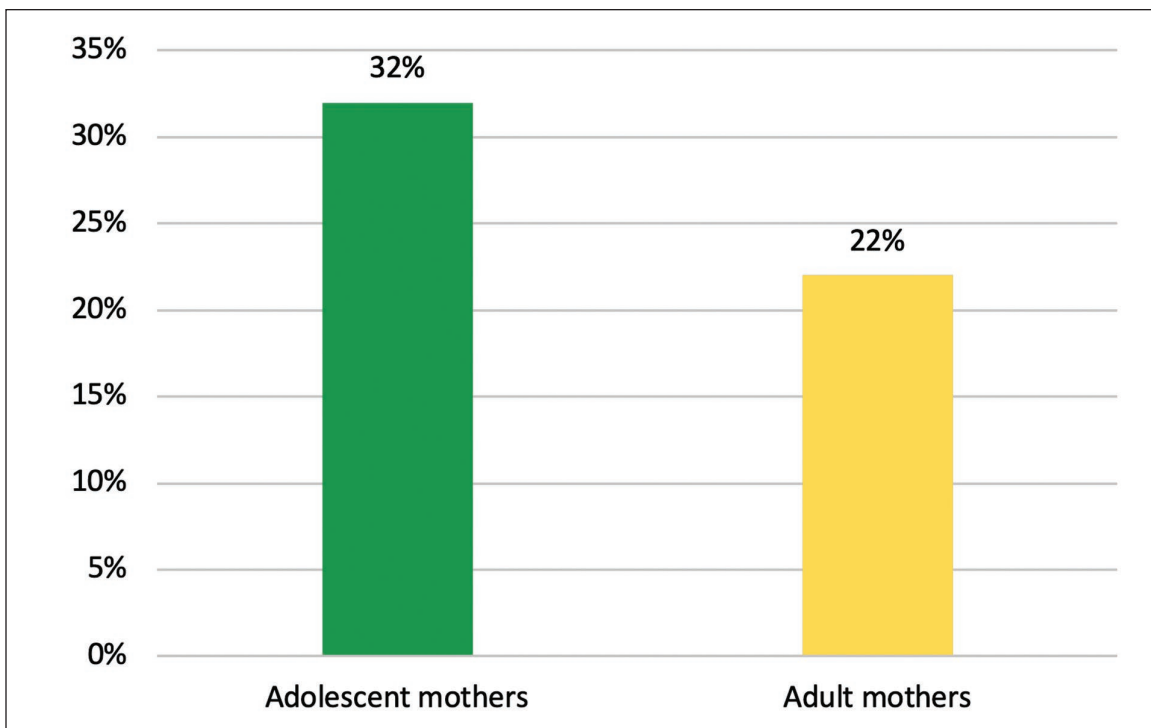
▲ **Figure 11. Unemployment rates for adolescent and adult mothers, 2019**
Source: Guyana Labour Force Surveys 2019

points.

The higher unemployment rate for adolescent mothers observed for 2019, implies a loss of revenue estimated at $295,958,250 or USD 1,419,464.

THE IMPACT OF ADOLESCENT PREGNANCY AND EARLY MOTHERHOOD ON LABOUR INCOME

The opportunity cost of paid employment shows the estimated loss of income due to the labour income gap between the younger mothers and those who had a child at an adult age. For Guyana, based on the 2019 Labour Force Surveys, the gap shows that the monthly median income of the adolescent mothers is about 10% lower than that of women who had a child in adulthood (figure 12). The loss represents on average $6,250 (USD 29.98) per month for each adolescent mother during 2019.
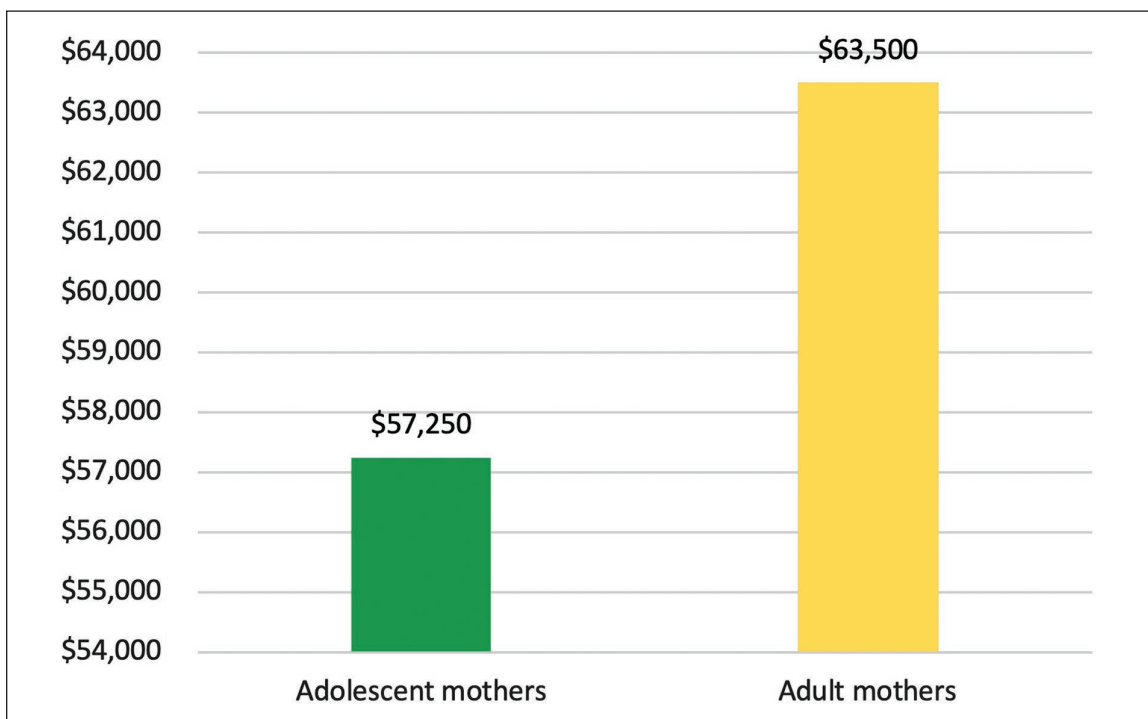
▲ **Figure 12.** Median monthly income for adolescent and adult mothers, 2019
Source: Guyana Labour Force Surveys 2019

The estimated loss based on the gap in earnings between the two groups of mothers during 2019, is $264,290,730 with equivalent USD 1,267,581.

If investments were made in preventing early pregnancy in order to avoid the negative effect on income levels for adolescent mothers, based on estimates for 2019, overall income generated from paid productive activity, could increase up to 11%. The total opportunity cost of labour participation (labour availability and employment) and labour income is therefore $726,963,044 or USD 3,486,633.

THE IMPACT OF ADOLESCENT PREGNANCY AND EARLY MOTHERHOOD ON EDUCATIONAL ATTAINMENT

Table 18 and figure 13 show that overall, women who became mothers as adolescents have achieved a lower level of education compared to women who delayed childbearing until adulthood. An estimated 15% of adolescent mothers had achieved only a primary level of education compared to a lower 8% for the women who became mothers in early adulthood. About 8 of every 10 adolescent mothers completed secondary level and only 5% go beyond the secondary level. On the other hand, while just over three quarters of the adult mothers attained a secondary level as the highest, these mothers were about two and three-quarter times as likely to go beyond the secondary level. An estimated 14% of them attained post-secondary other tertiary or university level training compared to only 5% of the women who became mothers at the younger age.

Table 18. **Percentage distribution of mothers by highest level of educational attainment, 2019**

Educational Level	Adolescent Mothers	Adult Mothers
Primary	14.6	8.3
Secondary	80.2	77.5
Post-secondary, tertiary/university	5.2	14.2
Total	**100.0**	**100.0**

Source: Guyana Labour Force Surveys, 2019
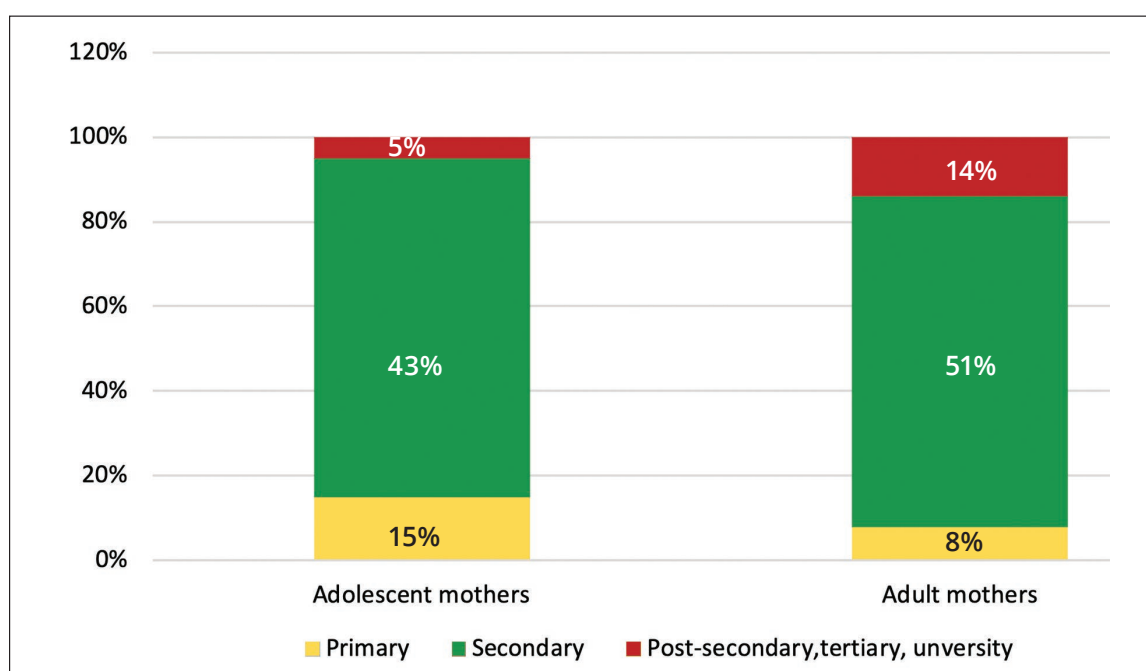
▲ **Figure 13.** **Educational attainment of adolescent and adult mothers, 2019**
Source: Guyana Labour Force Surveys 2019

With respect to the relationship between educational attainment and earnings from employment observed for 2019, at every educational level the median income for the adult mothers exceeds that for the adolescent mothers (Table 19 and figure 14). Tertiary and university studies significantly increase the earning potential of both groups of mothers. At the lowest and highest educational levels, income for the mothers who delayed pregnancy was about 1.3 times more than the income for the adolescent mothers at similar levels. The impact of educational attainment is further demonstrated by the observation that even among the adolescent mothers, the median monthly income for those with advanced level training is 2.4 times more than for the mothers with primary level education only.

Table 19. **Median monthly income from employment by highest level of education attained, 2019**

Educational attainment	Median monthly income from employment ($)	
	Adolescent mothers	Adult mothers
Primary	36,250	48,250
Secondary	56,231	58,750
Post-secondary	60,500	70,250
Tertiary/University	86,125	113,000

Source: Guyana Labour Force Surveys 2019
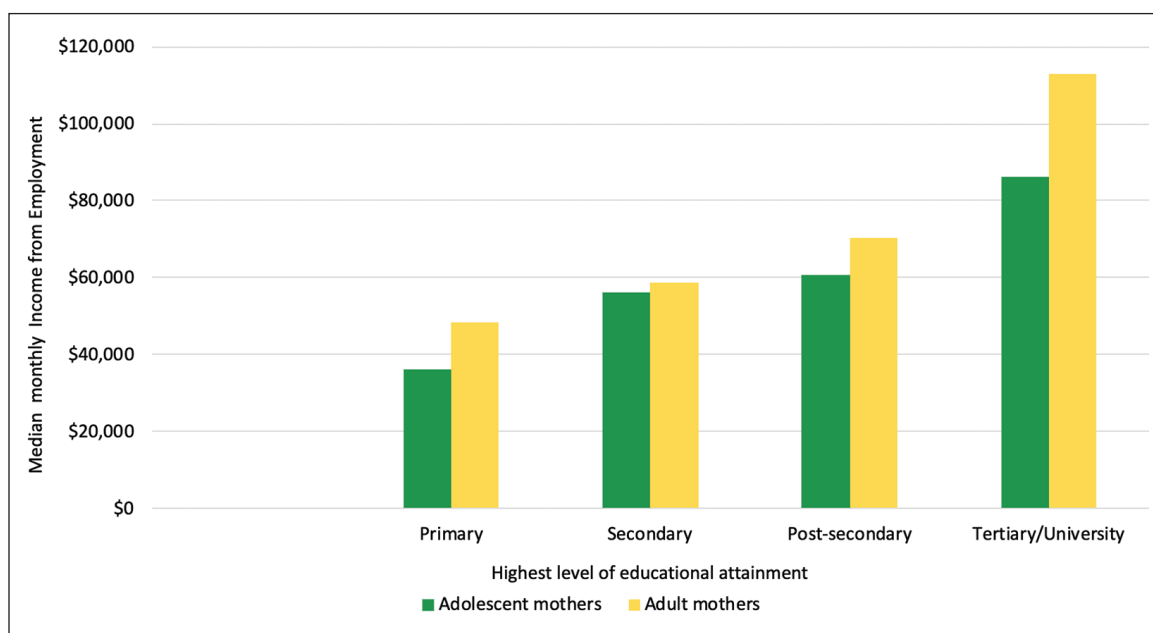
▲ **Figure 14.** **Median monthly income from employment by highest level of educational attainment for adolesecent and adult mothers, 2019**

Source: Guyana Labour Force Surveys 2019

Based on the observed gaps in the education levels and the resulting income difference between the two groups of mothers at 2019, the opportunity cost of education, indicating the loss of income is $230,777,890 the equivalent of USD 1,106, 848.

THE IMPACT OF ADOLESCENT PREGNANCY AND EARLY MOTHERHOOD ON THE HEALTH OF THE ADOLESCENT MOTHER

The WHO (2020) reports that complications during pregnancy and childbirth are the leading cause of death for 15–19-year-old girls globally. The agency states that of the estimated 5.6 million abortions that occur each year among adolescent girls aged 15–19 years, 3.9 million are unsafe, contributing to maternal mortality, morbidity and lasting health problems. Adolescent mothers (ages 10–19 years) face higher risks of eclampsia, puerperal endometritis, and systemic infections than women aged 20 to 24 years, and babies of adolescent mothers face higher risks of low birth weight, preterm delivery and severe neonatal conditions.

For the health dimension, the MILENA methodology measures the effects of two components – expenditure and frequency of health care for adolescent pregnancy and on the other hand public health outcomes with high social relevance. The Reproductive Health (RH) costing model is used for standardizing costing of health care of a pregnancy. Maternal mortality in adolescents is used as the indicator of an outcome of public health with social relevance, and the subsequent years of potential life lost, years of potential productive life lost and associated with these, the social or productive loss due to maternal mortality are derived on the basis of this indicator.

Data from the Ministry of Public Health shows 3 deaths from pregnancy related deaths to adolescent women in 2019. With a life expectancy for women of 73 years these 3 deaths with an average age at death due to pregnancy estimated at 17.5 years represents 166 years of potential life lost. With an age of entry into the workforce of 15 years and a retirement age of 60 years, the potential productive years lost is estimated at 128 years.

Bearing in mind therefore, based on the 2019 data, that for each year of productive life women who had a child in adolescence earn an average of $687,000, maternal mortality among adolescents results in an economic loss of $87,592,500 (USD 420,108) each year.

THE WHO (2020) REPORTS THAT COMPLICATIONS DURING PREGNANCY AND CHILDBIRTH ARE THE LEADING CAUSE OF DEATH FOR 15–19-YEAR-OLD GIRLS GLOBALLY. THE AGENCY STATES THAT OF THE ESTIMATED 5.6 MILLION ABORTIONS THAT OCCUR EACH YEAR AMONG ADOLESCENT GIRLS AGED 15–19 YEARS, 3.9 MILLION ARE UNSAFE, CONTRIBUTING TO MATERNAL MORTALITY, MORBIDITY AND LASTING HEALTH PROBLEMS. ADOLESCENT MOTHERS (AGES 10–19 YEARS) FACE HIGHER RISKS OF ECLAMPSIA, PUERPERAL ENDOMETRITIS, AND SYSTEMIC INFECTIONS THAN WOMEN AGED 20 TO 24 YEARS, AND BABIES OF ADOLESCENT MOTHERS FACE HIGHER RISKS OF LOW BIRTH WEIGHT, PRETERM DELIVERY AND SEVERE NEONATAL CONDITIONS.

With regard to the expenditure and frequency of health care for adolescent pregnancy, the lack of data does not allow for estimation of this part of the health dimension at the level of detail required. The RH model requires the specific costs related to prenatal and during delivery care, obstetric complications and newborn care interventions. The Estimates of Expenditure for Guyana shows Maternal and Child Health Services and Adolescent Health Services as sub-programmes within the Family Health Care Services programme of the Ministry of Public Health. For 2019 the estimated budget for the Family Health Care programme was **$1,668,625,000 (USD 8,002,998)** representing 0.7% of the total budget for the Ministry of Public Health. Data from the Ministry of Public Health's Maternal and Child Health Improvement Project show direct costs related to 3,189 normal pregnancies in 2019 to be **$248, 568, 646 (USD 1,192,176)**. It should be noted that these latter costs relate to normal pregnancies only. Considering that adolescent mothers face high risks of pregnancy complications which jeopardize not just their health but also the health of their newborns, the true costs of health care associated with adolescent pregnancy is understated here.

With respect to frequency of health care for adolescent pregnancy, some information can be gleaned from the MICS 2014 (table 20). The findings related to the number of antenatal care visits and timing of first visit for mothers of ages less than 20 years who had a live birth in the last two years, show that an estimated 86% had made four or more visits. Approximately 2% had made no visits and 1% had made one visit. Approximately 91% of these women had their birth in a public sector facility and the majority of these, more than one-half (56%) stayed 1–2 days.

Table 20. Distribution of women under 20 years old with a live birth in the last two years by specific characteristics related to last birth, 2014

Item	Percentage of women
Number of antenatal care visits	
No visits	1.5
One visit	1.1
Two visits	3.8
Three visits	1.7
Four or more visits	85.8
Not reported	6.1
Provider of antenatal care	
Medical doctor	37.4
Nurse/Midwife	44.2
Single midwife	2.0
Medex	8.7
Community health worker	6.0
Other	0.1
No antenatal care	1.5
Place of delivery	
Health Facility	
Public	90.9
Private	4.4
Home	3.8
Other	0.4
Not reported	0.5
Duration of stay in health facility	
Less than 6 hours	0.9
6–11 hours	0.4
12–23 hours	0.5
1–2 days	56.1
3 days or more	41.7
Not reported	0.4

Source: Guyana MICS 2014. Tables RH.7, RH.8, RH.11, RH.12

Though not specifically addressing adolescent maternal mortality, Guyana's Green State Development Strategy: Vision 2040 (GSDS Annex 6, 17) reports that the percentage of pregnant women attending antenatal clinics increased from 42% in 1984 to 92% in 2014 and surmises that this might have contributed to a decline in the maternal mortality ratio from 162.5 per 100,000 live births in 2005 to 112.5 in 2012. However,

by 2015, the ratio had increased to 229 per 100,000 falling far short of the MDG target of 43 deaths per 100,000 live births by 2015. The report states that according to the Ministry of Public Health, one reason for the regression is that pregnant women are joining antenatal clinics later than they are required. Because of the low antenatal care attendance there is not enough time or information to allow the medical personnel to undertake medical preventive measures prior to delivery and to respond to possible health complications which may arise.

The following extract from the report addresses the situation at the sub-national level:

> On the sub-national level, higher maternal mortality rates are reported at the public hospitals in Demerara-Mahaica, East Berbice-Corentyne and Pomeroon-Supenaam than any other Region. During the period 2010–2012, post-partum haemorrhage was the leading cause of direct maternal deaths i.e. accounting for 55% of all deaths directly related to maternal health. Other leading causes during that time were pregnancy-induced hypertension and placenta/previa haemorrhaging. Since most deaths occurred at referrals hospitals, it can be surmised that the quality of health care being offered is one of the root causes of maternal deaths in Guyana. Quality issues are related to inadequate or poor access to emergency obstetric and newborn care facilities, poor functionality of the national referral system for high-risk and emergency cases, the unavailability of necessary equipment and supplies and a shortage of skilled professionals. (GSDS, 2019).

Tax revenues forgone, due to limited labour force participation and decreased income as a result of AP and EM

This dimension of MILENA assesses the fiscal impact of pregnancy on adolescents in terms of income waiver. Decreases in labour participation, employment and income resulting from adolescent pregnancy and early motherhood withhold taxes in the form of value-added tax (VAT) and personal income taxes. The aggregation of the two opportunity costs of labour participation (labour availability and employment) and the opportunity cost of labour income are considered because it is here that many of the economic consequences of adolescent pregnancy and adult motherhood converge. The methodology excludes the opportunity cost of education as this cost is measured from the labour income by educational level and this effect is captured in a general way in the opportunity cost of income previously described.

Total revenues forgone by the State during 2019, from VAT and personal income tax due to inactivity, unemployment and reduced income levels among women who became mothers during adolescence, amount to $216,056,850 equivalent to USD 1,036,244.

SUMMARY AND CONCLUSION OF ECONOMIC AND SOCIAL IMPACT OF ADOLESCENT PREGNANCY AND EARLY MOTHERHOOD

The MILENA methodology has revealed important economic and social implications of adolescent pregnancy in Guyana. The methodology quantifies the consequences of adolescent pregnancy through the calculation of opportunity costs. Opportunity costs represent the resources a country allocates to welfare expenditure for adolescent pregnancy, as well as revenue lost by both the State and the adolescent mothers. The State loses due to lower tax revenues resulting from declines in productivity as well from higher expenditure for the provision of care for unintended adolescent pregnancies. Specifically, the losses from a social point of view are those related to education, labour participation, employment and income of the adolescent mothers. The methodology quantifies the income that women who became mothers in adolescence fail to receive as a result of their lower levels of education, lower market participation and lower salaries.

Based on the observations for 2019 women in the age group 20–36 years who had a child in adolescence (10–19 years old) have lower educational attainment, higher levels of economic inactivity and unemployment and when employed, lower income levels, than women of the same age who had a child in adulthood (20–29 years old). From a social point of view, the inequities are reflected first and foremost in the disparities in educational attainment. Based on the observations for 2019, adolescent mothers achieve lower levels of education than adult mothers. While a woman who had a child in adulthood has a 14% chance of going beyond the tertiary level the adolescent mother has only a 5% chance. Women who became mothers in adolescence are 13% more likely than women who delayed pregnancy until adulthood, to withdraw from the labour market. The high economic inactivity rate of 56% means that these women are not earning a steady income from employment. Over 90% of the inactive women who had a child in adolescence are keeping house. Even when they have jobs, earnings are about 10% lower on average than women who delayed childbearing to adulthood.

. . . ADOLESCENT MOTHERS ACHIEVE LOWER LEVELS OF EDUCATION THAN ADULT MOTHERS. WHILE A WOMAN WHO HAD A CHILD IN ADULTHOOD HAS A 14% CHANCE OF GOING BEYOND THE TERTIARY LEVEL THE ADOLESCENT MOTHER HAS ONLY A 5% CHANCE. WOMEN WHO BECAME MOTHERS IN ADOLESCENCE ARE 13% MORE LIKELY THAN WOMEN WHO DELAYED PREGNANCY UNTIL ADULTHOOD, TO WITHDRAW FROM THE LABOUR MARKET.

Adolescent mothers receive estimated annual income from employment of $687,000 (USD 3,295), $75,000 (USD 360) less than the annual earnings of $762,000 (USD 3,655) for the adult mothers. Based on the education gaps between the two groups of women, the median income based on education level and the employment rate among women, the total cost of the education gap, also the opportunity cost is estimated at $230.8 million or USD 1.1 million. Based on this, the per capita annual cost for a woman who became a mother in adolescence resulting from her education gap, in 2019 would be $23,760 (USD 114).

At the level of the State the gaps in labour participation, employment and earnings from wages between women who become mothers in adolescence and those who delay childbearing until early adulthood, result in losses of $727 million (USD 3.5 million) representative of 0.10% of GDP in 2019. Income reduction arising from adolescent pregnancy also produce costs for the State in forgone tax revenues by decreases in tax collection from VAT and personal income tax amounting to $216,056,850 equivalent to USD 1,036,244. Expenditure by the state on health care on the total Family Health Care programme amounts to $1,668,625,000 (USD 8,002,998), while costs associated with normal pregnancy only, among adolescents, for the year 2019 was $248,568,646 (USD 1,192,176).

CONCLUSION AND RECOMMENDATIONS

The application of the MILENA methodology to Guyana has demonstrated the adverse consequences of adolescent pregnancy and early motherhood. The methodology reveals the considerable costs and losses to the economy and the State related to the disparities in education and labour between the adolescent mothers and those who delayed childbearing and the benefits to be derived from investing in the preventative measures.

There is every indication that the adolescent birth rate in Guyana is declining, at least at the national level. The research has however shown large disparities at the sub-national level. It should also be borne in mind that the analysis of the adolescent birth rate showed that in an earlier period the rate had in fact moved upwards in the midst of a decline. The suggestion here is that a rise in rates will always be possible if effective preventative measures are not implemented.

In the 2018 Situation Analysis of Adolescent Pregnancy in Guyana, UNICEF concludes

that adolescent pregnancy is a real issue for Guyana. Socio-economic conditions, the report states, play a key role in the occurrences with poverty, level of education, area of residence, beliefs, traditions and culture having strong correlation with behavioural patterns. Not to be overlooked is the problem of sexual coercion and violence.

The findings of research (Rose, Rajasingam et al, 2014) conducted among a small group of teenagers attending the Georgetown Public Hospital Corporation is very instructive. The cross-sectional prospective study with the objective to develop a better understanding of the needs of these teenagers and to identify any gaps in services was conducted among 50 pregnant girls who were interviewed over a period of six weeks in 2012.

THERE IS EVERY INDICATION THAT THE ADOLESCENT BIRTH RATE IN GUYANA IS DECLINING, AT LEAST AT THE NATIONAL LEVEL. THE RESEARCH HAS HOWEVER SHOWN LARGE DISPARITIES AT THE SUB-NATIONAL LEVEL. IT SHOULD ALSO BE BORNE IN MIND THAT THE ANALYSIS OF THE ADOLESCENT BIRTH RATE SHOWED THAT IN AN EARLIER PERIOD THE RATE HAD IN FACT MOVED UPWARDS IN THE MIDST OF A DECLINE. THE SUGGESTION HERE IS THAT A RISE IN RATES WILL ALWAYS BE POSSIBLE IF EFFECTIVE PREVENTATIVE MEASURES ARE NOT IMPLEMENTED.

The study revealed poor sexual and reproductive health knowledge and high-risk sexual health practices. The study also revealed a high rate of rape and sexual coercion with more than one of every five girls (22%) admitting to having been raped in the past and 80% reported a lack of power in their sexual relationships. The researchers report that based on these findings a number of interventions were instituted. For example, "there is now universal intimate partner violence/sexual assault sexually transmitted infection screening in the antenatal clinic" (*ibid.*,6). A teenage pregnancy clinic providing antenatal and postnatal care to women under 20 years old was also established.

UNICEF (2018) identifies what the agency refers to as 'three interconnected immediate causes of adolescent pregnancy." These are early sexual debut, unprotected sex and early marriage which are influenced by underlying and structural causes of poverty, individual behaviour, beliefs and traditions, sexual abuse and violence. UNFPA (2015,3) states that globally, "Child marriage is a main contributing factor to adolescent pregnancy with nine out of ten births to girls aged 15–19 occurring within marriage." For Guyana, MICS 2014 reports that "among women aged 15–49 years, four (4) percent were married

before age 15 and among women aged 20–49 years, more than one in four (27%) women were married before age 18." The report also shows that at the same time, unmet need for contraception is particularly high (62%) among women 15–19 years. The implications for adolescent pregnancy levels are clear.

The World Fertility 2019 report states that "low levels of adolescent fertility are prevalent in countries that have adopted pragmatic policies and strategies to avoid teenage pregnancy and parenthood, including the promotion of sex education." The 2017 Report on Reproductive Health Policies report Guyana as having direct support from the government for family planning, meaning that family planning services are provided through government-run facilities or outlets. Various restrictions to access to contraceptive services exist, including requirements regarding the age and marital status of an individual seeking access to contraceptive services, requirements for parental consent, as well as restrictions on the availability of emergency contraceptive pills or sterilization. However, Guyana's first ever National Sexual and Reproductive Health Policy seeks to remove such barriers to access.

Guyana's adoption of a National Sexual and Reproductive Health Policy is an indication of an official commitment to address the drivers of adolescent fertility. The policy identifies as its overarching goal, universal access to sexual and reproductive health services in Guyana. The policy states that the Government has also taken important steps to ensure that Guyana has a legal and policy environment that supports the realization of sexual and reproductive rights and health. A number of Acts are identified for special attention. The 1995 Medical Termination of Pregnancy Act which legalized the medical termination of pregnancy is singled out as making "Guyana the only Commonwealth country to allow the medical termination of a pregnancy without restriction based on reason, where the woman is less than eight weeks pregnant." (UNFPA, GOG, 2014). The Marriage Act and the Protection of Children Act are also given specific mention in the policy.

There are indications that the policy does acknowledge the problems as it states "While sexual and reproductive health and rights relate to all persons, the fact that women and girls disproportionately face vulnerability, social injustice, inequality and the effects of poverty cannot be ignored and must feature prominently in any serious attempt to address sexual and reproductive health and rights." *ibid.*

Guyana has specific geographical, socio-cultural and ethnic characteristics which present many challenges and which must be recognized within the broad policy objectives.

CHAPTER 4

PROCEDURES FOR APPLYING THE MILENA 1.0 METHODOLOGY

DATA SOURCES AND DATA DEFICIENCIES

Income data forms the core of the calculation of opportunity costs and while the main source for data on pregnancy histories are Reproductive Health Surveys these sources generally do not contain income data. The main source for the study of Guyana is the quarterly Labour Force Surveys conducted in 2019. As this survey does not contain questions related to age at childbearing the women who are targeted for this study are those who had a child in adolescence or had a child in early adulthood, not necessarily the first child. From the survey data the women targeted were those from households with children who were not older than 17 years old, in keeping with the MILENA proposal. To be eligible for selection the woman had to be either head or spouse of head and the children, child of head or spouse. The age at which the women had children was calculated indirectly by subtracting both ages. This approach has obvious limitations as it excludes eligible children who might live outside of the household.

All four surveys were used and calculated values represent the averages of the four surveys.

Averages represent the mean with the exception of income for which the median is used.

Demographic statistics for background information on the demography of Guyana and to establish a context in which to undertake the analysis have not been available. There are no current series of vital statistics. The limited data from the fertility questions in the 2012 census have been used to provide some indications. Cause of death statistics which would provide the insight into maternal mortality indicators are non-existent.

Annex 1 of this report will outline the detailed calculation procedures including assumptions made in order to derive the indicators which serve as inputs for the calculation of the dimensions.

DEFINITION OF THE STUDY POPULATION

The specific target group as proposed by the MILENA methodology comprises women of an adult age range of 20 years and older who had their first child between the ages of 10 and 19 years (adolescence). There is a control group, for comparison comprising women in the same adult age range who had their first child between the ages of 20 and 29 years (adulthood). Further the methodology proposes that in order to get an accurate estimate of the effect of adolescent pregnancy (AP) and early motherhood (EM) on females who have their first birth in adolescence only mothers whose children are under 18 years are included in the analysis. The exclusion of older children is based on the assumption that older children constitute an additional human resource for the household and, as such, could enter the labour market and contribute to the household, thereby reducing its disadvantages. MILENA does acknowledge however that children over 18 years old could maintain or increase the disadvantages in the cases where that child does not contribute to the household.

Based on the methodology which states that the children in the household of the relevant women must be under 18 years old, the oldest child cannot be older than 17 years old. On this account the upper age limit for women for which age at first child was between 10–19 years would be 36 years and for women for which age at first child was 20–29 years would be 46 years. For consistency and to avoid any bias, the study group of AP and EM are women between the ages of 20 and 36 years.

In summary the two groups of women are:

- Group 1: Women between the ages of 20 and 36 years old who had children when they were adolescents (10–19 years old) and living with children of ages less than 18 years old.
Weighted total: 9,713 – *Source: Guyana Labour Force Survey 2019* (Average of four quarterly surveys).
- Group 2: Women between the ages of 20 and 36 years old who had children when they were young adults (20–29 years old) and living with children of ages less than 18 years old.
Weighted total: 17,818 – *Source: Guyana Labour Force Survey 2019* (Average of four quarterly surveys).

ESTIMATION OF THE OPPORTUNITY COSTS AND HEALTH IMPACTS AND COSTS ASSOCIATED WITH ADOLESCENT PREGNANCY

The concepts which form the basis of the labour related indicators required are based on the classifications within the national statistics systems and more specifically with the labour market indicators. Such concepts focus on employment, unemployment and economic inactivity.

The MILENA methodology explains that the reason for measuring the consequences of adolescent pregnancy and early adult motherhood on participation in the labour market according to the two specific dimensions of activity and employment is the classification of the population and its measurements by the national statistics systems (see figure 15).

The traditional measurement in statistics identifies as unemployed the population who, being willing and able to work, have not obtained paid employment in the reference period. This group is complemented by the classification of economic inactivity which comprises those persons who although of working age, consider that they cannot, do not need to or are not interested in holding a paid job in the labour market. According to MILENA, if only unemployment is considered, part of the effect of adolescent motherhood and early adult motherhood on labour participation is not visible, given that the classification of *'inactive'* may include those women who are not willing to enter the labour market for different reasons. For a discussion on the structure of the population classified as *'inactive'* refer to (Hincapie & Parra, 2015).
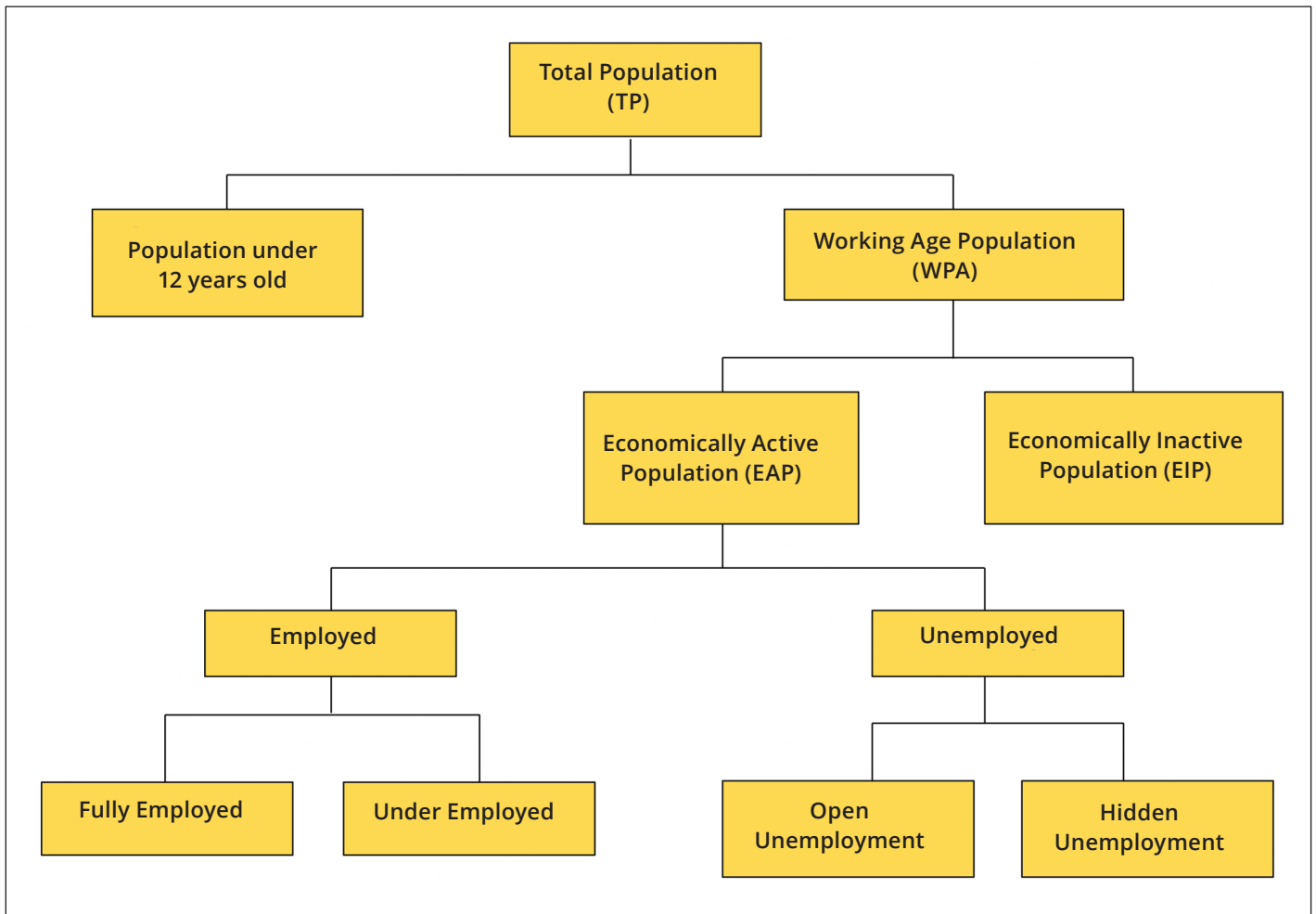
▲ **Figure 15. Classification of the population by economic activity**

Source: UNFPA (2018). Note: the minimum working age for the current study is 15 years and not 12 years as shown in the diagram.

The rates and the calculations relevant to these dimensions are:

- Inactivity rate (ir) = Economically inactive population/Working age population.

- Occupational rate (or) = Employed population/Working age population. Also called the employment rate.

- Unemployment rate (ur) = Unemployed population/Economically active population.

In this study of Guyana which is based on a study population comprising women between the ages of 20 and 36 years only, as explained previously, the working age population is in fact the total population of the study group.

Opportunity cost of availability for the labour market

The indicators used are listed:

tif_t^{ma} specific inactivity rate of women who had a child in adolescence

tif_t^{m} specific inactivity rate of women who had a child in adulthood

tof_t specific employment rate for all women (both groups)

PET_t^{ma} women who had a child in adolescence and are of working age

Sf_t annual labour income for all women

With values:

tif_t^{ma} = 0.5573

tif_t^{m} = 0 .4920

tof_t = 0 .3628

PET_t^{ma} = 9,713

Sf_t = $724,500

The activity gap between adolescent mothers and mothers who had a child in early adulthood (βa_t) is given by:

βa_t = tif_t^{ma} - tif_t^{m})/ tif_t^{m}

βa_t = (0.5573- 0.4920)/0.4920 =0.1327

This gap indicates that the adolescent mothers have an inactivity rate that is 13% higher than the women who had children in early adulthood or in other words they have about 13% less availability for work. If there is investment in preventing adolescent pregnancy and avoiding the consequences of adolescence pregnancy and early motherhood on employment (labour availability) inactivity in the adolescent mothers could be reduced by 11.7%

Shown as:

βa_t/ $(1+ \beta a_t)$ = $(tif_t^{m}$ - $tif_t^{ma})$ /tif_t^{ma}

$-\beta a_t$/ $(1+ \beta a_t)$ = -0.1327/ (1+0.1327) = (0.4920-0.5573)/0.5573 = -0.1172

The opportunity cost of being ready for the labour market, due to adolescent pregnancy and early adult motherhood (COD_t) is given by:

$$COD_t = (tif_t^{ma} - tif_t^m) * PET_t^{ma} * tof_t * Sf_t$$

$$COD_t = (0.5573 - 0.4920) * 9713 * 0.3628 * 724,500$$

$$COD_t = \mathbf{\$166,714,064}$$

This opportunity cost indicates the estimated loss of income due to women's non-availability for work due to adolescent pregnancy, and mainly to the domestic tasks associated with early motherhood.

Opportunity cost of employment

Figure 15 shows that the working age population comprises the economically inactive population as previously described and its complement the economically active population. The economically active population in turn comprises the persons who have a paid job as well as those who are seeking employment. On this account the economically active population reflects the supply or availability of workforce for the economy. To measure the opportunity cost of employment, in this dimension, the focus is on the economically active and in particular the unemployed segment:

tdf_t^{ma} specific unemployment rate of women who had a child in adolescence

tdf_t^m specific unemployment rate of women who had a child in early adulthood

PEA_t^{ma} economically active population of women who had a child in adolescence

With values:

$$tdf_t^{ma} = 0.3164$$

$$tdf_t^m = 0.2214$$

$$PEA_t^m = 4,300$$

The employment gap between adolescent mothers and women who had a child in adulthood (βE_t) is given by:

$$\beta E_t = (tdf_t^{ma} - tdf_t^m)/ tdf_t^m$$

$$\beta E_t = (0.3164 - 0.2214)/0.2214$$

$$\beta E_t = 0.4291$$

This gap indicates that adolescent mothers have an unemployment rate that is 43% higher than women who were mothers in early adulthood. If there is investment in preventing adolescent pregnancy and avoiding the adverse consequences of adolescent pregnancy and early motherhood, unemployment in adolescent mothers could be reduced up to 30% as shown:

$$\beta e_t / (1+ \beta e_t) \quad = \quad (tdf_t^m - tdf_t^{ma}) / tdf_t^{ma}$$

$$-\beta e_t / (1+ \beta e_t) \quad = \quad (-0.4291)/ (1+0.4291) = (0.2214-0.3164)/0.3164 = -0.3003$$

The latter also shows the potential number of women who could be employed if there were investments in adolescent pregnancy prevention or in avoiding the effects of early motherhood, such that adolescent mothers could achieve higher educational levels and more work experience which, in turn, would enable them to reach better employment levels. Thus the opportunity cost of paid employment is given by:

$$COE_t \quad = \quad (tdf_t^{ma} - tdf_t^{m}) * PEA^{ma}_t * Sf_t$$

$$COE_t \quad = \quad (0.3164-0.2214) *4300*\$724,500$$

$$COE_t \quad = \quad \mathbf{\$295,958,250}$$

This opportunity cost shows the estimated loss of income as a result of the employment gap for adolescent mothers, due to adolescent pregnancy and, mainly, to the unpaid work associated with early motherhood.

Opportunity cost of labour income linked to adolescent pregnancy in Guyana

The hypothesis that there is an income gap between women who had a child in adolescence and women who delayed childbearing until the early adulthood years is underpinned by the socioeconomic effects of adolescent and early adulthood childbearing on the educational level achieved and work experience gained. The opportunity cost of labour income is meant to support this hypothesis.

The relevant indicators are:

Sf_t^{ma} average annual labour income of women who had a child in adolescence

Sf_t^{m} average annual labour income of women who had a child in early adulthood

With values:

$$Sf_t^{ma} \quad = \quad \$687{,}000$$

$$Sf_t^{m} \quad = \quad \$762{,}000$$

The labour income gap between adolescent mothers and women who had a child in adulthood is given by:

$$\beta S_t^{ma} \quad = \quad 1- (Sf_t^{ma}/ Sf_t^{m})$$

$$\beta S_t^{ma} \quad = \quad 1-(\$687{,}000/\$762{,}000)$$

$$\beta S_t^{ma} \quad = \quad 0.0984$$

This gap shows that the income of adolescent mothers is 9.8% lower than that of women who had a child in adulthood. If there were investments in adolescent pregnancy prevention and in avoiding the unintended consequences of early motherhood, there could be an increase in income of up to 11%:

$$\beta S_t^{ma}/(\beta S_t^{ma}\text{-}1) \quad = \quad (Sf_t^{m}/ Sf_t^{ma}) \text{-}1$$

$$\beta S_t^{ma}/(\beta S_t^{ma}\text{-}1) \quad = \quad (\$762{,}000/\$687{,}000)\text{-}1 = 0.1091$$

Thus, the opportunity cost of labour income due to adolescent pregnancy and early motherhood is given by:

$$COS_t \quad = \quad \beta S_t^{ma} * Sf_t^{m} * PET_t^{ma} * tof_t$$

Which is the same as saying:

$$COS_t \quad = \quad (Sf_t^{m} - Sf_t^{ma}) * PET_t^{ma} * tof_t$$

$$COS_t \quad = \quad (\$762{,}000 – \$687{,}000) *9713*0.3628$$

$$COS_t \quad = \quad \mathbf{\$264{,}290{,}730}$$

This opportunity cost shows the loss of income resulting from the labour income gap for adolescent mothers.

THE HYPOTHESIS THAT THERE IS AN INCOME GAP BETWEEN WOMEN WHO HAD A CHILD IN ADOLESCENCE AND WOMEN WHO DELAYED CHILDBEARING UNTIL THE EARLY ADULTHOOD YEARS IS UNDERPINNED BY THE SOCIOECONOMIC EFFECTS OF ADOLESCENT AND EARLY ADULTHOOD CHILDBEARING ON THE EDUCATIONAL LEVEL ACHIEVED AND WORK EXPERIENCE GAINED. THE OPPORTUNITY COST OF LABOUR INCOME IS MEANT TO SUPPORT THIS HYPOTHESIS.

Educational opportunity costs linked to adolescent pregnancy in Guyana

Education levels for Guyana are reported in the labour force survey as follows:

- Pre-primary
- Primary
- Secondary
- Post-Secondary
- Tertiary/University

For the calculation of the dimension and in order to maintain the five levels of MILENA, the education levels are re-grouped as:

Level	School Type
1	Primary
2	Secondary
3	Post-secondary
4	Tertiary/university – no degree
5	Tertiary/university – degree

Note: pre-primary is excluded because less than 100 persons were at this level and no employed person had this level.

Based on this classification the opportunity costs associated with the impact of adolescent and early adult motherhood on educational attainment (*COEdu*). The first step is to calculate the schooling gaps between the two sets of mothers. The second step is to calculate a value for the gaps based on the income for each level.

The schooling gaps by level (β_k^{edu}) are represented as:

$$\beta_k^{edu} = m_k - ma_k$$

where m_k is the enrolment rate for early adulthood mothers and ma_k is the enrolment rate for adolescent mothers.

The MILENA methodology explains that "According to the levels of education used, with *k=2* we get the schooling or secondary education gap (β_{k2}^{edu}) for adolescent mothers and with *k=3* we get the professionalization gap or gap in the first academic qualification at the tertiary level (β_{k3}^{edu}). It is at these two levels and above that there are expected to be

gaps in the educational levels reached, because at the age range defining adolescents, a good proportion of them will already have completed primary education."

Based on the estimation of the gaps by level of education the opportunity cost associated with adolescent motherhood and early adult motherhood is:

$$COEdu = \left[\sum_{k=1}^{5} \square (m_k - ma_k) * Sf_k\right] * MA * tof$$

Where Sf_k is the annual labour income of women by level of education, MA is the number of adolescent mothers and tof the employment rate for all the women.

The table below shows the values used for the calculations:

Education level	ma_k N= 9713	m_k N = 17,818	m_k-ma_k	Annual Salary for all women Sf_k
Primary	0.1456	0.0826	-0.0630	507,000
Secondary	0.8027	0.7752	-0.0275	689,888
Post-secondary	0.0184	0.0193	0.0009	754,500
Tertiary/university – no degree	0.0148	0.0255	0.0107	1,069,500
Tertiary/university – degree	0.0183	0.0973	0.0790	1,320,000
Total	1.0000	1.0000		

When the gaps in secondary education (β_{k2}^{edu}) and the professionalization gap, here considered to be the tertiary/university level with degree (β_{k5}^{edu}) are examined the following is evident:

$\beta_{k2}^{edu = m_{k2} - ma_{k2}}$ $=$ 7.8% - 8.0% $=$ -0.2 percentage points

$\beta_{k5}^{edu = m_{k5} - ma_{k5}}$ $=$ 9.7% - 1.8% $=$ 7.9 percentage points

Then the opportunity cost of education (*COEdu*) due to adolescent pregnancy and early adult motherhood is:

$$COEdu = \left[\sum_{k=1}^{5} \square (m_k - ma_k) * Sf_k\right] * MA * tof$$

COEdu = [$65,490] *9,713*0.3628

COEdu = **$230,777,890**

This opportunity cost represents the estimated loss of income of adolescent mothers due to their educational gaps.

Health impacts and costs associated with adolescent pregnancy in Guyana

Health care for adolescent pregnancies

MILENA identifies adolescent care activities as:

- Prenatal, during delivery and postpartum care
- Obstetric complications and other maternal health conditions
- Interventions for newborns

The specific activities related to each group are:

Prenatal and during delivery care

- Prenatal care
- Treatment for acute anemia
- Hypertension during pregnancy
- Malaria prevention during prenatal care
- Care during childbirth
- Postpartum care

Obstetric complications

- Emergency care prior to referral
- Membrane rupture before delivery
- Prolonged labour (>18 hours)
- Assisted birth by forceps or vacuum extractor
- Caesarean section
- Antepartum haemorrhage
- Postpartum haemorrhage
- Puerperal sepsis

- Eclampsia/severe pre-eclampsia
- Treatment of complications after an abortion

Other maternal conditions

- Obstetric fistula
- Urinary tract infection
- Mastitis
- Newborn care interventions
- Routine newborn care
- Sepsis/newborn infections
- Asphyxia/breathing difficulties at birth
- Low birth weight

The detailed costing of health care required by the MILENA methodology is not available for Guyana. The 2019 Estimates of Public Expenditure for Guyana shows the estimated budget for the Family Health Care Programme to be **$1,668,625,000**. This programme included the activities related to Maternal and Child Health Services and Adolescent Health Services. Data compiled by the Maternal and Child Health Improvement Project of the Ministry of Public Health provides direct costs related to normal pregnancy as follows:

Item	Total Cost (per person) in USD
Screening for pregnancy	101.88
Drugs and medical supplies	27.96
In-patient care	38.00
Personnel cost	206.00
Total cost per normal pregnancy	373.84

There were 3,189 adolescent pregnancies during 2019 which makes the total cost for the year **USD1,192,176** with equivalent **$248,568,646.**

Public health outcomes with social relevance

In line with the evidence that adolescents and especially those under 15 years of age have the highest risks of maternal mortality, associated with the complications of pregnancy and childbirth, which are the main causes of death, and in line with the

action strategies of the SDGs, the main indicator used is the maternal mortality ratio in adolescents (*MMRA*), which inform the years of potential life lost (*YPLL*), the years of potential productive life lost (*YPPLL*) and the social or productive loss due to maternal mortality in adolescents (*SLMMA*).

The maternal mortality ratio in adolescents (*MMRA*) is an important indicator of human development, since many of the complications of pregnancy are preventable with quality care:

MMRA = (Number of deaths of women (10–19) due to pregnancy related causes/number of births) *100,000.

Of these deaths, some could have been avoided with effective health interventions. According to (WHO, 2015), the main avoidable causes of maternal mortality are:

- Safe abortion

- Eclampsia

- Postpartum haemorrhage

- Puerperal sepsis

Based on the foregoing the application of the methodology to derive public health costs in such detail requires access to disaggregated information or microdata.

The calculation of the years of potential life lost (*YPLL*) from maternal mortality in adolescents is based on the difference between life expectancy and age at time of death, and can be calculated in two ways depending on data availability.

Either:

(a) $YPLL = \sum n_i$ (Life expectancy – Ef_i)

Where Ef_i is the age at time of death.

Or

(b)   In case the age at death of each one of the adolescents is not available, the YPLL will be given by:

$YPLL = N *(Life\ Expectancy – Ef)$

Where *Ef* is the average age of death and *N* the number of adolescents who died due to pregnancy-related causes.

Using option (b):

YPLL   =   3*(72.9–17.5)

YPLL   =   166.2 years

The years of potential life lost from adolescent maternal mortality is estimated at 166 years.

In turn, the years of potential productive life lost (*YPPLL*) are given by the difference between the retirement age and the age of labour market entry *(ALE)*.

$YPPLL_1$ =   N* (Retirement age - ALE) IF Ef < ALE

$YPPLL_2$ =   N* (Retirement age - Ef) IF Ef ≥ ALE

Assuming that *Ef* ≥ *ALE,* valuation of the social or productive loss due to maternal mortality in adolescents *(SLMMA)* is given by:

SLMMA = $(YPLL_2) * Sf_t^{ma}$

For Guyana, age of death is estimated at 17.5 years based on the data which show the majority of deaths among adolescents from pregnancy related causes between 2015 and 2019 for ages 17 and 18. The age of entry into labour market is 15 years, (de facto age based on minimum age for the labour force survey) and retirement age is 60 years. There were three (3) deaths recorded for 2019.

So:

$YPPLL_2$ =   3 *(60–17.5)

$YPPLL_2$ =   127.5 years of potential productive life lost.

And therefore the cost of social or productive loss due to adolescent mortality (*SLMMA*) is:

SLMMA   = $(YPLL_2) * Sf_t^{ma}$

SLMMA   =   127.5* 687,000

SLMMA   =   **$87,592,500**

The fiscal impact of adolescent pregnancy in terms of tax revenues forgone for Guyana

The MILENA methodology states that the total opportunity cost represents the estimated loss of income from the economic (age and employment) gaps for women who became mothers in adolescence and, in turn, represents the potential benefit of investing in adolescent pregnancy prevention and in avoiding the adverse effects of early motherhood on the economic conditions of the women who became mothers as early adults.

As a total economic opportunity cost, the aggregation of the two opportunity costs of labour participation (labour availability and employment) and the opportunity cost of labour income is taken, because it is here that many of the economic consequences of adolescent pregnancy and early motherhood converge. The opportunity cost of education (*COedu*) is not included, since, as previously indicated, this cost is measured from the labour income by educational level and this effect is captured in a general way in the opportunity cost of income *(COS)*.

$$COTotal_t \quad = \quad COD_t + COE_t + COS_t$$

$$COTotal_t \quad = \quad \$166,714,064 + \$295,958,250 + \$264,290,730$$

$$COTotal_t \quad = \quad \textbf{\$726,963,044}$$

Expressed as a proportion of the Gross Domestic Product (GDP) the total annual opportunity cost is:

$$COTotal_t / GDP_t$$

$$\$726,963,044 / \$698,700,000,000 = 0.10\%$$

The estimation of tax revenues forgone from consumption taxes (VAT) is given by:

$$IFIVA_t \quad = \quad COTotal_t * (C_{vat} * vat).$$

Where:

- *vat: % of value added tax (consumption tax).*
- C_{vat}: *% of income spent on taxable consumption through VAT*

Values:

- *vat*: 14%
- *cvat*: 85%

Note: cvat estimated as follows:

From the National Accounts Aggregates presented in the Estimates for 2020 (Appendix G), Private Consumption = $445,011,000,000.

Expected VAT revenue .14*$445,011,000,000 = $62,301,540,000.

From Guyana Estimates of Expenditure 2020, the revenue from VAT in 2019 = $52,675,552,000.

This represents 85% of the expected revenue.

$IFIVA_t$ $=$ $COTotal_t *(C_{vat}*vat).$

$IFIVA_t$ $=$ $\$726,963,044*.85*.14$

$IFIVA_t$ $=$ **$86,508,602**

For the estimation of tax revenues from income tax the variable is created $COTotal_t^\pi$ such that:

$IFISR_t$ $=$ $COTotal_t^\pi * it$

Where:

- it: % income tax applicable from the specified level of income
- it value for Guyana: In 2019 there was a personal tax allowance of $780,000 per year. A rate of 28% was applied to chargeable income of less than $1,560,000 per annum. Incremental rate of tax applicable on amounts exceeding $1,560,000 is 40%.

and where,

$COTotal_t^\pi$ $=$ $COD_t + COE_t + COS_t^\pi$

The calculation of the opportunity cost variables of COD_t and COE_t have been previously outlined. Now the opportunity cost of income will depend on the income levels of the groups of women with respect to the taxable base income such that:

$COS_t^\pi = \pi * PET_t^{ma} * tof_t$

With:

π $=$ $Sf_t^m - Sf_t^{ma})$ if $Sf_t^m \geq P$ and $Sf_t^{ma} \geq P$

π $=$ $(Sf_t^m - P)$ if $Sf_t^m \geq P$ and $Sf_t^{ma} < P$

π $=$ 0 if $Sf_t^m < P$ and $Sf_t^{ma} < P$

P: Taxable income re floor with income tax

For Guyana:

P: $1,560,000

π will equal ($762,000 – $687,000) if annual income of women $\geq$ $1,560,000

π will equal ($762,000-$1,560,000) if $672,000 $\geq$ $1,560,000 and $687,000<$1,560,000

π will equal 0 if $762,000 < $1,560,000 and $687,000 < $1,560,000

$$COS_t^{\pi} \quad = \quad \pi * PET_t^{ma} * tof_t$$

$$COS_t^{\pi} \quad = \quad 0$$

Where:

$$COTotal_t^{\pi} \quad = \quad COD_t + COE_t + COS_t^{\pi}$$

$$COTotal_t^{\pi} \quad = \quad \$166,714,064 + 295,958,250 + 0$$

$$COTotal_t^{\pi} \quad = \quad \mathbf{\$462,672,314}$$

Therefore:

$$IFISR_t \quad = \quad COTotal_t^{\pi} * it$$

$$IFISR_t \quad = \quad \$462,672,314 * .28$$

$$IFISR_t \quad = \quad \$129,548,248$$

Thus, tax revenues forgone are given by:

$$IFNPI \quad = \quad IFIVA_t + IFISR_t$$

$$IFNPI \quad = \quad \$86,508,602 + \$129,548,248$$

$$IFNPI \quad = \quad \mathbf{\$216,056,850}$$

ANNEX 1: TECHNICAL NOTES AND NOTES TO THE TABLES

A. CALCULATING THE INDICATORS

The purpose of this annex is to provide details of the assumptions and data used in the calculations of the indicators for the dimensions.

The data used are the weighted values from the sample surveys of the Labour Force.

1. Dimension: Labour participation, employment and labour income

Item	Adolescent mothers	Adult Mothers	Total
Absolute Numbers			
Total population/population of working age	9,713	17,818	27,531
Employed population	2,940	7,048	9,988
Unemployed population	1,360	2,004	3,364
Active population	4,300	9,052	13,352
Inactive population	5,413	8,766	14,179
Average (median) annual income	$687,000	$762,000	$724,500
Rates			
Employment rate*	0.3026	0.3955	0.3628
Unemployment rate**	0.3164	0.2214	0.2520
Inactivity rate***	0.5573	0.4920	0.5150

*Employed/Population of working age
** Unemployed/Active population
*** Inactive/Population of working age

- Variables as created from the questionnaire
  Employed – if worked at least one hour in the past 7 days even as an unpaid worker or subsistence farmer.
  Unemployed – if without work for up to 3 months, actively looking and available in the past 7 days.

Inactive – if not available to start working because of school attendance, housework, illness, injury or disability, off-season, working conditions not acceptable or any other reason not specified.

Income – where income is reported as a range, the mid-point of the range was used as the exact income.

2. Dimension: Education

Education system in Guyana

- **Nursery** – available to children from 3 years and 6 months.
- **Primary** – minimum age at entry 5 years and 9 months.
- **Secondary** – General secondary schools, community high schools, primary schools with secondary departments.
- **Post-secondary** – Above age 16 years. Technical education and vocational training
- **Tertiary** – teacher training colleges and university.

Source: UESCO – IBE http://www.ibe.unesco.org. Accessed November 2020.

3. Dimension: Health care for adolescent pregnancies

Average age at death of adolescent used is 17.5 years as ages 17 and 18 are the most frequently occurring ages from the data shown below.

Year	Age at death	Number of deaths
2015	18	1
2016	16	1
	17	2
2017	17	1
	18	2
2018	18	1
2019	14	1
	17	1
	19	1
Total adolescent deaths		**11**

Source: Maternal and Child Health Improvement Project. Ministry of Public Health.

4. **Dimension: The fiscal impact of adolescent pregnancy in terms of tax revenues forgone**

Data Sources for tax information –

https://taxsummaries.pwc.com/guyana/individual/taxes-on-personal-income. Accessed September 2020.

https://taxsummaries.pwc.com/guyana/corporate/other-taxes. Accessed September 2020.

Data Sources for tax receipts, GDP

Estimates of Expenditure 2020. Volume 2 table 2 (b). Appendix G.

5. **All costs are reported in Guyana dollars. The US Dollar equivalence is based on the average exchange rate for 2019 = 208.50 Guyana dollars to 1 USD.**

Source: Central Bank of Guyana.

https://www.bankofguyana.org.gy/bog/. Accessed September 2020.

B. NOTES TO THE TABLES — DATA SOURCES

Guyana Census Reports
Population by age and sex – 1980, 2002, 2012 censuses
Bureau of Statistics, Guyana. (2016) Final 2012 Census Compendium 2. Table 2.10

Population by age and sex – 1991 census
CARICOM Secretariat (undated). 2000 Round of Population and Housing Census Data Analysis Sub-Project, National Census Report Guyana. Table 2.9. http://www.caricomstats.org/censuspub.htm

Ethnicity and Religion – 2012
Bureau of Statistics, Guyana. (2016) Final 2012 Census Compendium 2. Tables 2.1 and 2.17.

Education – 2012
Bureau of Statistics, Guyana. (2016) Final 2012 Census Compendium 4. Tables 4.1.2 and 4.1.8.

Economic Activity – 2012
Bureau of Statistics, Guyana. (2016) Final 2012 Census Compendium 3. Appendix table B.3.4

Fertility – 1991
CARICOM Secretariat (undated). 1990–1991 Population and Housing Census of the
Commonwealth Caribbean, Volume of Basic Tables for Sixteen CAICOM Countries,
Guyana. Table 16.

Fertility – 2002
CARICOM Secretariat (undated). 2000 Round of Population and Housing Census
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Bureau of Statistics, Guyana. (2016) Final 2012 Census Compendium 4. Tables
4.2.2, 4.3.1, B 4.3.1

World Population Prospects 2019
http://population.un.org/wpp/Download/Standard/Population
File FERT/06 Births by five-year age group of mother, region, sub region and
country, 1950-2100 (thousands). Estimates 2010–2015

Guyana Multiple Indicator Cluster Survey 2014, Final Report.
Bureau of Statistics, Ministry of Public Health and UNICEF. 2015.

Trends in maternal mortality 2000 to 2017.
World Health Organization. 2019. Estimates by WHO, UNICEF, UNFPA, World Bank
Group and the United Nations Population Division.

ANNEX 2: CHARACTERISTICS OF THE STUDY POPULATION

Female population 20–36 years old	41,072
	Percentage
Residence N = 41,072	
Urban	73.6
Rural	26.4
Marital Status and Union Status N = 38,709	
Never Married/Never lived with partner	15.1
Living with spouse/partner	39.8
Married	42.1
Separated, Divorced, Widowed	29.6
Ethnicity N = 38,663	
African/Black	23.4
East Indian	41.6
Mixed	22.0
Amerindian	12.7
Other	0.3
Educational Level N = 38,239	
Primary or less	9.2
Secondary	77.2
Post-secondary	2.2
Tertiary/University	11.4
Economic Activity N = 34,900	**Rates**
Employment	42.0
Unemployment	22.6
Inactivity	45.7
Median labour income	$64,825

Note: (i) This represents the total population of women 20–36 years old, who were household heads or spouses of heads and living with children, from which the two groups of mothers were selected.

(ii) The combination of marital and union status means that the percentages for will not add to 100.

ANNEX 3: POPULATION OF GUYANA BY SEX AND FIVE-YEAR AGE GROUPS, CENSUSES 1991, 2002 AND 2012

Age Group	1991		2002		2012	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**
0–4	42,555	43,178	45,683	44,013	35,853	34,544
5–9	39,639	39,832	49,545	47,889	35,988	35,339
10–14	43,151	43,698	41,575	40,564	42,287	40,857
15–19	40,732	42,195	33,787	33,667	42,696	41,897
20–24	37,165	39,252	32,186	32,739	31,333	31,939
25–29	33,086	34,459	30,494	31,081	25,491	26,602
30–34	28,104	28,863	29,338	29,065	26,114	27,029
35–39	22,007	22,557	26,666	26,487	25,450	26,049
40–44	17,897	17,924	23,539	23,319	24,230	23,745
45–49	13,116	13,413	18,107	17,991	21,564	21,544
50–54	10,452	10,479	14,331	14,044	18,889	18,566
55–59	8,275	8,699	9,058	9,216	14,063	15,014
60–64	6,827	6,698	7,254	7,870	10,488	11,042
65–69	5,633	6,671	5,623	6,212	6,654	7,197
70–74	3,715	3,871	4,000	4,611	4,819	5,525
75+	4,183	5,329	4,848	6,421	5,886	8,261
Not Reported	4	16	–	–	–	–
Total	**356,541**	**367,134**	**376,034**	**375,189**	**371,805**	**375,150**

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