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## Levels, Trends, and Correlates of Under-15 Fertility in the Philippines, 2003–2022

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in the Philippines, 2003–2022**

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# CONTENTS

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<b>TABLES</b> .....	<b>v</b>
<b>FIGURES</b> .....	<b>vii</b>
<b>ABSTRACT</b> .....	<b>ix</b>
<b>ACRONYMS AND ABBREVIATIONS</b> .....	<b>xi</b>
<b>1 BACKGROUND</b> .....	<b>1</b>
<b>2 METHODS</b> .....	<b>3</b>
2.1 Data Sources and Study Design .....	3
2.2 Statistical Analysis .....	4
2.2.1 Analysis of trends .....	4
2.2.2 Analysis of under-15 fertility profiles .....	4
2.2.3 Analysis of sociodemographic correlates of under-15 fertility .....	5
<b>3 RESULTS</b> .....	<b>7</b>
3.1 Levels of and Trends in Under-15 Fertility .....	7
3.1.1 Trends based on civil registration and vital statistics data .....	7
3.1.2 Trends based on National Demographic and Health Survey data .....	7
3.2 Profiles of Under-15 Fertility .....	10
3.2.1 Characteristics of registered births to women under age 15 .....	10
3.2.2 Characteristics of women with under-15 pregnancies and births .....	12
3.3 Sociodemographic Correlates of Under-15 Fertility .....	14
<b>4 DISCUSSION</b> .....	<b>17</b>
4.1 Recommendations .....	19
4.2 Study Strengths, Limitations, and Future Directions .....	20
<b>REFERENCES</b> .....	<b>23</b>
<b>APPENDIX: COMPARING TRENDS IN UNDER-15 FERTILITY</b> .....	<b>27</b>



## TABLES

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Table 1	Number of registered births by age of mother, percentages of women with under-15 births, and young adolescent birth rates over time, 2013–2022 Philippines civil registration and vital statistics .....	7
Table 2	Estimated fertility rates (births per 1,000 years of exposure) for very young adolescents age 10–14 by specific age over time, 2003–2022 Philippines NDHS surveys .....	8
Table 3	Percentages of women who had live births before age 15 and who had ever been pregnant before age 15 according to year and age at time of survey, 2003–2022 Philippines NDHS surveys.....	8
Table 4	Percent distribution of registered births according to age of mother and selected birth and parental characteristics, 2022 Philippines civil registration and vital statistics .....	11
Table 5	Percentages of registered births among girls age 10–14 in relation to the female population age 10–14 by region, 2022 Philippines civil registration and vital statistics .....	12
Table 6	Percent distribution of women age 15–49 with under-15 pregnancies and live births according to pregnancy characteristics, 2022 Philippines NDHS.....	13
Table 7	Percent distribution of women age 15–49 according to current sociodemographic characteristics and the timing of first pregnancies and live births, 2022 Philippines NDHS .....	15
Table A1	Under-15 births from civil registration and vital statistics and fitted births from Philippines National Demographic and Health Surveys, by year .....	30





# FIGURES

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Figure 1	Percentages of women who had live births before age 15, 2003–2022 Philippines NDHS surveys .....	9
Figure 2	Percentages of women attending school among those age 15–22 who had not completed college, according to age at first pregnancy, 2022 Philippines NDHS .....	16
Figure A1	Observed and fitted numbers of births (in 1,000s), by maternal age groups, Philippines 2018 data.....	28
Figure A2	Observed and fitted numbers of births before age 15, Philippines 2013–2020 data .....	29



## ABSTRACT

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Amid declining fertility rates among adolescent women age 15–19 in the Philippines, attention has now shifted to very young adolescents (age 10–14). However, limited information is available on childbearing patterns within this critical age group. This study aimed to establish levels of and trends in fertility among girls under age 15 in the Philippines and examine the associated sociodemographic factors. The analysis drew on two major sources of demographic data—civil registration and vital statistics (CRVS) birth data from 2013 to 2022 and Philippines National Demographic and Health Survey (NDHS) data from five surveys conducted between 2003 and 2022.

Trend analysis of the CRVS data indicated a notable increase in births among 13- and 14-year-old girls over the study period. However, these births accounted for only a small proportion of the approximately 1.5 million annual births in the Philippines. This modest yet consistent trend was also observed across various NDHS indicators of under-15 fertility. Analyses of the 2022 CRVS birth statistics and the 2022 NDHS data revealed significant regional, health, educational, and economic disparities. Very young mothers from Northern Mindanao, Davao Region, SOCCSKSARGEN, Cagayan Valley, Central Luzon, and Zamboanga Peninsula had the highest risks of very early childbearing when compared with the national average. Births to mothers under age 15 were predominantly nonmarital and were associated with poorer health outcomes for infants, including lower birth weights. These very early pregnancies were also associated with early cohabitation or marriage, lower educational attainment, greater economic disadvantages, and a tendency toward larger families. We found a large age difference between the very young mothers and the fathers of their children, and most of the fathers were significantly older, raising concerns about informed consent and the effectiveness of legal protections against sexual exploitation.

The study’s recommendations for addressing these issues include strengthening the comprehensive sexuality education program for young girls to enhance sexual and reproductive health knowledge, expanding access to adolescent-friendly reproductive health services including contraception and antenatal care, developing educational and vocational programs to improve the economic prospects of young mothers, and implementing support mechanisms to help young mothers continue their education.

**Key words:** civil registration and vital statistics, Demographic and Health Surveys, Philippines, under-15 fertility



## ACRONYMS AND ABBREVIATIONS

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CRVS	civil registration and vital statistics
CSE	comprehensive sexuality education
DHS	Demographic and Health Surveys
NDHS	National Demographic and Health Survey
PSA	Philippine Statistics Authority
SD	standard deviation
YAFS	Young Adult Fertility and Sexuality Study



# 1 BACKGROUND

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The Philippines has experienced a continuous decline in its total fertility rate, which dropped to a below-replacement level of 1.9 children per woman in 2022, based on National Demographic and Health Survey (NDHS) data. This downward shift has been particularly pronounced among adolescent women age 15–19, with their age-specific fertility rate decreasing by nearly half, from 47 to 25 births per 1,000 women in this age group between 2017 and 2022.<sup>1</sup> During the same period, the percentage of female adolescents age 15–19 who began childbearing also decreased from 8.6% to 5.3%.<sup>2,3</sup> This pattern is supported by results of another large-scale population-based survey, the 2021 Young Adult Fertility and Sexuality Study (YAFS). Results of this survey indicated a significant drop in the percentage of female adolescents age 15–19 who reported ever being pregnant, from 14% in 2013 to 7% in 2021.<sup>4</sup>

As attention once shifted from the broader female population to female adolescents age 15–19, the focus is now on very young female adolescents (age 10–14\*), who constituted a substantial 5% of the 110 million Filipinos in 2020. Data from the Philippine Statistics Authority’s civil registration and vital statistics (CRVS) system show that births to girls age 10–14 doubled from 1,522 in 2012 to 3,135 in 2022.<sup>1</sup> This trend has prompted the Commission on Population and Development (the lead policymaking and coordinating agency of the Philippine population management programs) to sound the alarm, urging the government to institute measures to reduce pregnancies in this very young age group.<sup>5</sup> The severity of this issue is compounded by the well-documented risks associated with adolescent childbearing, including adverse maternal and child health outcomes as well as socioeconomic challenges.<sup>6–9</sup>

Globally, the Philippines is among 89 countries where annual birth rates among young adolescents age 10–14 are estimated to be less than 1 birth per 1,000 girls.<sup>9</sup> In comparison, countries such as Nepal, Vietnam, and Yemen have higher young adolescent birth rates, ranging from 1 to 5 births per 1,000 girls per year, while Bangladesh is the lone Asian country with an annual rate of at least 6 births per 1,000 girls.

Despite these developments, demographers have largely neglected under-15 fertility, considering its impact on total births and population growth as minimal, which led Schoumaker and Sanchez-Paez to label it an “understudied phenomenon.”<sup>10</sup> In the Philippines, apart from the aforementioned birth statistics, little is known about the fertility experiences of women before age 15. This knowledge gap has spurred an increased interest in research on this underexplored segment of the female population, prompting development agencies and population program managers to advocate for the inclusion of girls under age 15 in surveys such as Demographic and Health Surveys (DHS) and the YAFS. However, such inclusion does not appear feasible, as Pullum and colleagues found that lowering the minimum age in such surveys would yield a larger sample of births without substantially improving the precision of fertility estimates.<sup>11</sup> They also noted that most under-15 fertility occurs at age 14, and that birth histories of women age 15–19 provide nearly complete information on births at age 14. Furthermore, capturing data on under-15 pregnancies and births poses significant challenges. Among these are underreporting in the CRVS system, especially among very young mothers who may avoid registration due to the social stigma attached to early and nonmarital pregnancies,<sup>12</sup> and lack of awareness about birth registration, especially among certain cultural groups and

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\* We defined “very young mothers” or “very early pregnancies” as those occurring in girls age 10–14, while “young mothers” and “early pregnancies” referred to those in the broader age range of 10–19.

socioeconomically disadvantaged populations.<sup>13</sup> Meanwhile, DHS and similar population surveys face historical, sociocultural, logistical, and ethical issues that pose potential risks to respondents under age 15.<sup>12</sup> Nevertheless, the flexibility of DHS surveys allows essential socioeconomic and demographic data to be collected to understand the determinants and consequences of under-15 pregnancies and births.

The association between early childbearing and various socioeconomic characteristics of young mothers has been well studied. For example, Kane et al. found that young mothers generally have fewer years of schooling than those who become mothers later.<sup>14</sup> Similarly, a study on mothers age 15–19 in the Philippines found that education plays a mediating role in shaping work status and type of work.<sup>15</sup> Specifically, those who experienced teen pregnancy were less likely than older mothers to finish high school and more likely to have less favorable job prospects due to their lower educational attainment. This is also supported by results of a longitudinal study in the Philippines and other low- and middle-income countries, showing that younger maternal age (when compared with maternal age 20–24) was associated with failure to complete secondary education.<sup>7</sup> Smithbattle also found that the effects of teen birth were less pronounced among girls who grew up in disadvantaged families than among those from less disadvantaged backgrounds.<sup>16</sup>

The link between early childbearing and poor health outcomes for infants is also well established. Children of teen mothers often have low birth weights,<sup>7,17</sup> and young maternal age is associated with higher rates of preterm birth and stunting by age 2.<sup>7</sup> Teen mothers in the Philippines also have lower rates of use of antenatal care from a skilled provider than other age groups. In 2022, 84% of teen mothers compared with 86% of older mothers received antenatal care from a skilled provider.<sup>1</sup>

In the United States, cohabitation is a common pathway to marital union among teen mothers.<sup>18</sup> This is also true in the Philippines, where childbearing occurs within the context of both formal marriage and cohabitation; however, becoming pregnant or having a child is a strong predictor of marriage.<sup>19</sup> Other studies also show that early pregnancy is positively associated with early marriage.<sup>9,20</sup>

This study was conducted to provide a comprehensive understanding of under-15 fertility in the Philippines, drawing on two sources of demographic data to address the paucity of research on the childbearing patterns of very young Filipino adolescents. The three main objectives were (1) to establish levels of and trends in under-15 fertility experiences of Filipino women between 2003 and 2022, (2) to describe the profiles of under-15 birth and pregnancy experiences of Filipino women, and (3) to compare the sociodemographic characteristics of women with under-15 fertility experiences with those of older mothers.

By estimating the level of under-15 fertility in the Philippines and exploring its associated sociodemographic factors, we provide crucial insights for designing effective and targeted sexual and reproductive health policies and interventions that address the unique challenges faced by very young mothers. The under-15 fertility estimates generated by the study also contribute valuable data that are essential for achieving Sustainable Development Goal 3.



## 2 METHODS

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### 2.1 Data Sources and Study Design

The 2022 Philippines National Demographic and Health Survey (NDHS) was the primary source of data for this study, supplemented by data from the 2003, 2008, 2013, and 2017 NDHS surveys. The Philippines NDHS is part of a global initiative that implements nationally representative household surveys to collect population, health, and nutrition data that serve as an evidence base for program and policy formulation. In the Philippines, the NDHS has been conducted by the Philippine Statistics Authority (PSA) approximately every 5 years since 1993. Survey respondents consist of Filipino women of reproductive age (15–49), although men age 15–54 were also included in the 2003 survey.

To provide a comprehensive view of under-15 fertility in the Philippines, NDHS data were supplemented by data on registered births for 2013 and 2022 from the civil registration and vital statistics (CRVS) system. CRVS data encompass data on vital acts and events such as births, marriages, and deaths, including the characteristics of the people involved in these events. CRVS data are routinely compiled by the PSA, which is legally mandated to manage civil registration processes and maintain the civil registration database in the Philippines. For fertility analysis, CRVS data offer several advantages over survey data. For example, CRVS data provide annual birth counts, facilitating more timely comparisons across time, and offer subregional-level disaggregation. Systems that collect data on vital statistics can be vulnerable to under-registration, which can affect the completeness of data. However, birth registration in the Philippines is estimated to be above 90%,<sup>21</sup> hence, no adjustments for under-registration were made in our study, as recommended by Sorchik.<sup>22</sup>

Levels of and trends in under-15 fertility were analyzed using both CRVS and NDHS data. The CRVS analytic sample comprised all registered births to mothers under age 15 at the time of the births: 1,629 births in 2013 and 3,135 births in 2022. The NDHS analytic sample comprised all female respondents age 15–49: 13,633 women from the 2003 NDHS, 13,594 from the 2008 NDHS, 16,155 from the 2013 NDHS, 25,074 from the 2017 NDHS, and 27,821 from the 2022 NDHS.

Profiles and correlates of under-15 fertility were analyzed using only the most recent data: the 2022 CRVS data and the 2022 NDHS data. The 2022 CRVS data were used to examine birth and parental characteristics for births among women and girls of all ages, while the 2022 NDHS sample was restricted to women of reproductive age (15–49) who experienced pregnancy before age 15 ( $n = 285$ ) and/or had live births before age 15 ( $n = 111$ ).

All analyses of NDHS data were weighted to account for sampling probability and nonresponse. Given the low level of under-15 fertility and the corresponding small sample size, the study was confined to descriptive analysis.

## **2.2 Statistical Analysis**

### **2.2.1 Analysis of trends**

We examined several indicators of under-15 fertility over time using both CRVS and NDHS data. Using the CRVS data, we examined three annual indicators in 2013 and 2022: (1) the number of registered births to mothers under age 15, (2) the percentage of registered births to mothers age 10–14 among the total births for a particular year, and (3) the adolescent birth rate for girls age 10–14. The adolescent birth rates were calculated using the first indicator as the numerator and the female population age 10–14 as the denominator. The data for the denominator were obtained from population censuses for 2015 and 2020; from the interpolated population growth rates for 2013, 2014, 2016, and 2019; and from the 2020 census-based population projections for 2021 and 2022 (Inter-Agency Working Group on Population Projections, unpublished data, 2020).

Conventional estimates of the total fertility rate using NDHS data were limited to women of reproductive age (15–49) but included births to younger or older women. (Births to individuals under age 15 were included in the 15–19 age group, and births to those older than age 49 were included in the 45–49 age group). This was mainly because individuals in these younger and older age groups have fewer births.<sup>23</sup> However, given the increasing number of births to younger women registered in the CRVS system, three alternative indicators of fertility among girls age 10–14 were calculated using the NDHS data.

Using the NDHS data, we first examined fertility rates for adolescents age 10–14 (births per 1,000 years of exposure) with reference periods of 3 and 5 years before the survey, following the methodology employed by Pullum et al.<sup>11</sup> The other two indicators were generated based on data for women of reproductive age. The first was the percentage of women who experienced any live birth before age 15, derived from the variable age at first birth. This indicator was examined across all five NDHS surveys from 2003 to 2022. The second indicator was the experience of pregnancy before age 15, determined by calculating a woman's age at first pregnancy using her date of birth, the date of the end of her first pregnancy, and the duration of the pregnancy in months. This indicator was available only for the 2022 NDHS.

The percentages of women who experienced under-15 births and pregnancies were generated for three age groups: 15–19, 15–24, and 15–49. This allowed comparison across groups with progressively larger sample sizes. Although the 15–49 age group was the largest, the risk of recall bias was greater than in other groups, as older women must recall events from much earlier in their lives. The 15–24 age group was included to help balance the trade-off between sample size and recall bias. Ninety-five percent confidence intervals were computed for estimates in each age group to ascertain significant changes over time.

Finally, we assessed the consistency of fertility trends between the CRVS and NDHS data. Details of the methodology, as well as the findings of this exercise, are fully described in the Appendix.

### **2.2.2 Analysis of under-15 fertility profiles**

Using the 2022 CRVS data, we analyzed the percent distribution of registered live births to mothers under age 15 at the time of the births, by various birth and parental characteristics. Of note, not all information collected in the birth certificates was released in the public use data file (for example, occupation of father and mother). Birth characteristics examined were birth order, legitimacy status (marital or nonmarital

birth), birth weight (below 2,500 grams, which was considered low birth weight as defined by the World Health Organization, or 2,500 grams or higher), place of delivery (health facility, home, or other places) and attendant at delivery (health professional, traditional birth attendant, or other). Parental characteristics were the mother's usual region of residence at the time of birth, her number of living children, the father's age, and the age difference between the father and mother.

For an analysis by region of residence, the ratio of the percentage of births to the percentage of the female population age 10–14 (using projected populations based on the 2020 Philippine Census of Population and Housing) was calculated for each region and compared to 1.0, the national level. This approach standardized the number of births by accounting for the at-risk population (that is, girls age 10–14), and it provided a comparison of regional values relative to the national level.

Using the 2022 Philippines NDHS data, we conducted separate analyses for under-15 pregnancies and under-15 live births. Development of the respective profiles involved examining the percent distribution of all women age 15–49 with under-15 pregnancies or live births and some descriptive statistics according to reproduction-related characteristics: age at first sexual intercourse, age at first pregnancy, number of pregnancies or births, and outcome of the first under-15 pregnancy. Four possible pregnancy outcomes were live birth, stillbirth (fetal deaths in pregnancies lasting at least 28 weeks or 7 months), miscarriage or spontaneous abortion (fetal deaths in pregnancies lasting less than 28 weeks or 7 months), and induced abortion.

### **2.2.3 Analysis of sociodemographic correlates of under-15 fertility**

Lastly, we examined the associations between women's under-15 fertility experiences and select sociodemographic characteristics at the time of the 2022 NDHS: marital status, educational attainment, wealth quintile, and number of children ever born. We compared the percent distribution of these sociodemographic outcomes across subgroups of women age 15–49 based on their age at first pregnancy or live birth (before age 15, age 15 or older, or never been pregnant/had a live birth) and the timing of their first live birth (before age 15, age 15 or older, or never had a live birth).

Marital status was classified into never married, legally married, living together, and formerly married (separated, widowed, or divorced). Educational attainment referred to the highest level of schooling that the woman had reached at the time of the survey, and was grouped into no education/primary (no education or Grades 1 to 6), incomplete secondary education (Grades 7 to 11 under the current K–12 system that started in 2016, or 1st year to 3rd year of high school under the old educational system), complete secondary education (Grade 12 under the current system, 4th year of high school under the old system, or vocational), and higher education (college or postgraduate). Wealth index, a composite measure of the economic status of a woman's household, was derived from information on characteristics of the household dwelling unit and a variety of consumer goods and services. The index was categorized into five groups (quintiles) ranging from lowest (poorest households) to highest (wealthiest households). The number of children ever born was categorized into none, 1, 2, and 3 or more.

To gain further insights into the educational consequences of very early pregnancy, we also used the 2022 NDHS data to compare the school attendance of young women age 15–22 across four subgroups based on the timing of first pregnancy: before age 15, age 15–18, age 19–22, and never been pregnant. School attendance data were derived from the survey question about whether the young woman attended school at

any time during the 2021–2022 school year. This question was asked of all household members age 3–24 in the Household Questionnaire. Unlike in the analysis of other sociodemographic outcomes, the examination of school attendance was restricted to young women who were expected to still be in school. Given that college education is a universal aspiration among Filipinos, particularly youth,<sup>24,25</sup> women older than age 22 (the typical age at college graduation in the Philippines) and those who had completed college were excluded from this analysis. The timing of the first pregnancy was categorized differently in this analysis to align with the typical ages of school attendance in the Philippines. Under the current K–12 basic education program, students age 12–15 are typically enrolled in Grades 7 to 10 (junior high school), students age 16–18 are generally in grades 11 to 12 (senior high school), and students age 19–22 are typically in tertiary education.<sup>26</sup>

## 3 RESULTS

### 3.1 Levels of and Trends in Under-15 Fertility

#### 3.1.1 Trends based on civil registration and vital statistics data

A general decline was observed in the number of births in the Philippines over the past decade based on civil registration and vital statistics (CRVS) data (Table 1). From nearly 1.8 million births in 2013, the number declined to just under 1.5 million in 2022. This trend was reflected across all age groups starting from age 15. The yearly pattern of births by maternal age was consistent over time, with women in their 20s having the most births (more than half), followed by women in their 30s. However, births to girls under age 15 increased from 1,629 births in 2013 to 3,135 in 2022, with the most notable increase among 13- and 14-year-old girls. In 2022, under-15 births represented 0.22% of all births, which corresponded to a young adolescent birth rate of 0.579 births per 1,000 girls age 10–14, or approximately 6 births per 10,000 girls in this age group.

**Table 1** Number of registered births by age of mother, percentages of women with under-15 births, and young adolescent birth rates over time, 2013–2022 Philippines civil registration and vital statistics

Age of mother	Registered births									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Under 15	1,629	1,877	1,986	1,903	2,077	2,250	2,411	2,113	2,320	3,135
9	-	-	-	-	-	-	-	-	1	-
10	50	43	39	33	22	2	2	1	-	-
11	28	39	41	33	23	7	5	9	12	18
12	48	60	65	57	65	48	42	41	67	73
13	187	199	224	216	243	293	359	275	394	517
14	1,316	1,536	1,617	1,564	1,724	1,900	2,003	1,787	1,846	2,527
15–19	207,953	207,995	205,844	201,182	194,401	181,717	178,505	154,947	133,982	147,003
20–29	946,216	942,542	938,247	931,968	914,113	898,013	892,909	810,772	713,202	751,291
30–39	529,320	523,066	524,414	519,371	515,876	514,804	527,837	494,678	456,442	491,529
40–49	72,763	69,603	70,833	71,582	69,497	67,217	68,897	63,186	57,709	59,998
50 and over	458	392	367	387	328	215	169	130	122	171
Not stated	3,263	3,382	3,076	4,896	4,326	3,904	3,195	2,858	962	2,266
Total	1,761,602	1,748,857	1,744,767	1,731,289	1,700,618	1,668,120	1,673,923	1,528,684	1,364,739	1,455,393
<b>Percentage of under-15 births</b>	<b>0.09</b>	<b>0.11</b>	<b>0.11</b>	<b>0.11</b>	<b>0.12</b>	<b>0.13</b>	<b>0.14</b>	<b>0.14</b>	<b>0.17</b>	<b>0.22</b>
Young adolescent (under-15) birth rate	0.324	0.371	0.391	0.370	0.399	0.428	0.453	0.393	0.430	0.579

#### 3.1.2 Trends based on National Demographic and Health Survey data

Similarly, the Philippines National Demographic and Health Survey (NDHS) data showed a continuous decline in the total fertility rate, with fertility dropping to a below-replacement level of 1.9 in 2022.<sup>1</sup> This downward shift was particularly pronounced among women age 15–19, with the age-specific fertility rate decreasing by almost half, from 47 to 25 births per 1,000 women in this age group between 2017 and 2022.<sup>1</sup> The percentage of women age 15–19 who had begun childbearing also decreased from 8.6% to 5.3% during this period.<sup>2,3</sup>

Table 2 shows two sets of estimates of the total fertility rate among girls age 10–14. Fertility rates among 12- to 14-year-olds in the 3 years prior to the survey increased from 2003 to 2013, declined in 2017, and then increased again in 2022. However, these changes were not statistically significant except for the decline between 2013 (0.774 births per 1,000 years of exposure) and 2017 (0.091 births per 1,000 years of exposure). Changes in fertility rates in the 5 years prior to the survey were also not statistically significant.

**Table 2 Estimated fertility rates (births per 1,000 years of exposure) for very young adolescents age 10–14 by specific age over time, 2003–2022 Philippines NDHS surveys**

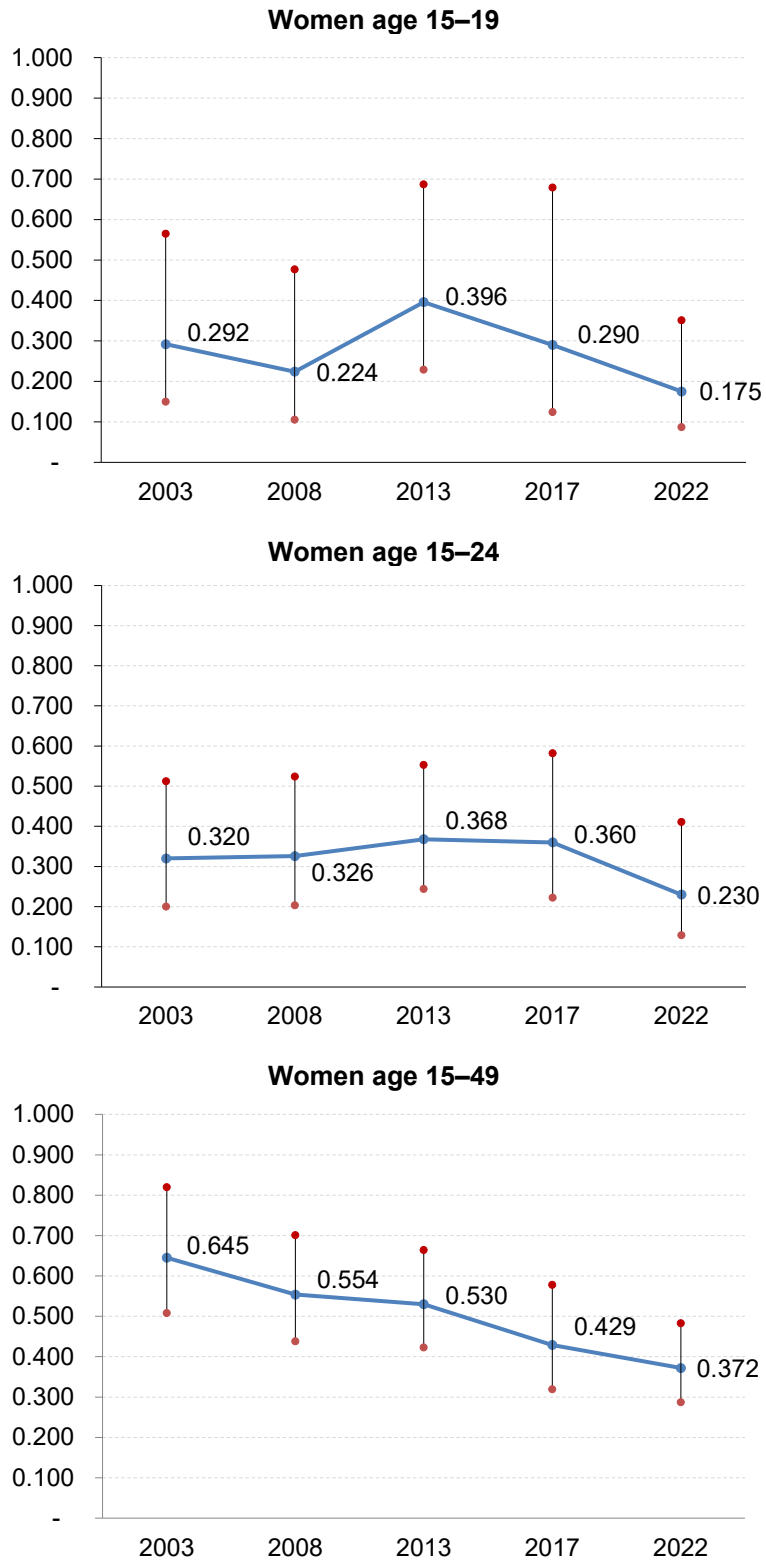
Age of mother	2003		2008		2013		2017		2022	
	Fertility rate	95% confidence interval	Fertility rate	95% confidence interval	Fertility rate	95% confidence interval	Fertility rate	95% confidence interval	Fertility rate	95% confidence interval
<b>3 years before the survey</b>										
12	0.000		0.000		0.000		0.000		0.000	
13	0.000		0.882	[0.125, 6.249]	0.000		0.000		0.390	[0.095, 1.608]
14	1.559	[0.383, 6.336]	1.368	[0.325, 5.754]	4.140	[1.967, 8.713]	0.432	[0.129, 1.446]	1.821	[0.615, 5.397]
12–14	0.308	[0.076, 1.250]	0.431	[0.135, 1.380]	0.774	[0.368, 1.627]	0.091	[0.027, 0.304]	0.446	[0.176, 1.129]
<b>5 years before the survey</b>										
10	0.000		0.000		0.000		0.000		0.000	
11	0.000		0.000		0.000		0.000		0.000	
12	0.000		0.000		0.000		0.000		0.000	
13	0.470	[0.066, 3.345]	0.720	[0.177, 2.929]	0.000		0.752	[0.152, 3.710]	0.465	[0.120, 1.805]
14	2.485	[1.165, 5.303]	1.891	[0.775, 4.612]	3.454	[1.854, 6.434]	3.309	[1.017, 10.767]	1.374	[0.580, 3.259]
10–14	0.556	[0.274, 1.131]	0.488	[0.231, 1.033]	0.632	[0.340, 1.177]	0.822	[0.302, 2.234]	0.367	[0.177, 0.762]

Among women age 15–19 and those age 15–24 at the time of the survey, the proportion who had a live birth before age 15 also did not change significantly between 2003 and 2022, given the overlapping confidence intervals. The only significant change was among women age 15–49, as the proportion with a live birth before age 15 declined from 0.645% in 2003 to 0.372% in 2022 (Table 3 and Figure 1).

**Table 3 Percentages of women who had live births before age 15 and who had ever been pregnant before age 15 according to year and age at time of survey, 2003–2022 Philippines NDHS surveys**

Age of mother	Had a live birth before age 15					Ever been pregnant before age 15
	2003	2008	2013	2017	2022	2022
<b>15–19</b>						
Percentage	0.292	0.224	0.396	0.290	0.175	0.452
95% confidence interval	[0.150, 0.565]	[0.105, 0.477]	[0.229, 0.687]	[0.124, 0.679]	[0.087, 0.351]	[0.281, 0.727]
Number of women	2,648	2,749	3,237	4,897	5,531	5,531
<b>15–24</b>						
Percentage	0.320	0.326	0.368	0.360	0.230	0.563
95% confidence interval	[0.200, 0.512]	[0.203, 0.524]	[0.244, 0.553]	[0.222, 0.582]	[0.129, 0.411]	[0.404, 0.785]
Number of women	4,856	4,896	6,026	9,072	10,208	10,208
<b>15–49</b>						
Percentage	0.645	0.554	0.530	0.429	0.372	0.885
95% confidence interval	[0.508, 0.820]	[0.438, 0.701]	[0.423, 0.664]	[0.319, 0.578]	[0.287, 0.483]	[0.748, 1.048]
Number of women	13,633	13,594	16,155	25,074	27,821	27,821

**Figure 1 Percentages of women who had live births before age 15, 2003–2022 Philippines NDHS surveys**



Note: Vertical lines indicate 95% confidence intervals for the estimates.

## **3.2 Profiles of Under-15 Fertility**

### **3.2.1 Characteristics of registered births to girls under age 15**

Table 4 shows the percent distributions of registered births in 2022 by characteristics of the births and parents. Due to the vast majority of births occurring to women age 15 and older, the patterns among mothers in this age group were similar to the overall distributions among all women.

First births were more common among younger mothers (under age 15) than older mothers. As girls under age 15 are not legally allowed to marry in the Philippines, the majority of births to very young mothers were nonmarital. The majority of the babies weighed at least 2,500 grams at birth, but a notably small percentage of these babies were born to under-15 mothers. More than a quarter of the babies born to under-15 mothers, compared with only 13% born to older mothers, weighed less than 2,500 grams. In addition, the percentages of births that occurred in a health facility and that occurred with a health professional in attendance were lower among younger mothers.

Among mothers who gave birth before age 15, less than 1% had a partner who was also under age 15, with the youngest partner being 13. About one in seven had partners age 15–17, while 40% had partners age 18–24. On average, the partners of mothers who gave birth before age 15 were around 21 years old. However, 10% of the partners were age 25 or older, with the oldest reported father being 75. Of note, a substantial percentage (36%) of mothers who gave birth before age 15 did not report the age of the father, compared with only 5% of mothers who gave birth at older ages.

When examining the age gap between the under-15 mothers and the fathers at the time of the child's birth, about 21% had partners who were the same age or up to 3 years older, and the majority had partners who were at least 4 years older. In contrast, among mothers who gave birth at age 15 or older, 20% were older than their partners, and 46% had partners up to 3 years older. On average, the age difference between mothers and fathers was 7 years among mothers who gave birth before age 15, compared with less than 3 years among older mothers.



**Table 4 Percent distribution of registered births according to age of mother and selected birth and parental characteristics, 2022 Philippines civil registration and vital statistics**

Characteristic	Age of mother		All births <sup>a</sup>
	Under 15	15 and over	
<b>Birth order</b>			
First	98.7	33.8	33.9
Second	1.3	27.9	27.8
Third or higher	0.0	38.3	38.3
Not stated	<0.01	<0.01	<0.01
<b>Legitimacy status</b>			
Marital	4.9	42.0	41.9
Nonmarital	95.1	58.0	58.1
<b>Birth weight</b>			
<2,500 grams	26.0	12.8	12.8
2,500 grams or higher	73.6	86.7	86.7
Not stated	0.4	0.5	0.5
<b>Place of delivery</b>			
Health facility	90.8	92.4	92.4
Home	8.6	7.2	7.2
Other	0.6	0.4	0.4
<b>Attendant at delivery</b>			
Health professional	91.9	93.5	93.5
Traditional birth attendant	7.5	6.1	6.1
Other	0.6	0.4	0.4
Not stated	0.0	<0.01	<0.01
<b>Number of living children of mother</b>			
1	98.9	35.4	35.5
2	1.1	28.5	28.4
3 or higher	0.0	36.1	36.0
Not stated	0.0	<0.01	<0.01
<b>Age of father</b>			
Under 15	0.8	<0.01	<0.01
15–17	13.6	0.7	0.7
18–24	39.8	19.8	19.8
25 and older	10.0	74.1	74.0
Not stated	35.9	5.4	5.5
Mean	20.9	30.5	30.5
<b>Age difference between father and mother<sup>b</sup></b>			
Father younger than mother	<0.01	20.5	20.5
Same age	0.8	12.2	12.2
Father older by 1–3 years	19.9	32.6	32.6
Father older by 4–5 years	25.5	13.7	13.7
Father older by 6–9 years	32.4	13.0	13.0
Father older by at least 10 years	21.4	8.0	8.0
Mean age difference	7.0	2.7	2.7
Total	100.0	100.0	100.0
Number of births	3,135	1,449,992	1,453,127

Note: Percentages may not add up to 100% due to rounding.

<sup>a</sup> Excludes births for which the age of the mother was "Not stated"

<sup>b</sup> Excludes births for which the age of the father and mother was "Not stated"

Table 5 shows the percentages of registered births among female adolescents age 10–14 in relation to the total very young adolescent population across the 17 regions in the Philippines. At the national level, the ratio between the two was 1 (100/100). Regions with a ratio greater than 1 had a higher incidence of births among 10- to 14-year-olds than the national average. Regions with a ratio less than 1 had a lower incidence, taking the number of girls age 10–14 within each region into account.

The risk of very early childbearing was highest in Northern Mindanao, where girls age 10–14 were 1.8 times more likely to give birth when compared with the national average (Table 5). Other regions with ratios higher than the national average included Davao Region, SOCCSKSARGEN, Cagayan Valley, Central Luzon, and Zamboanga Peninsula. In contrast, Bangsamoro Autonomous Region of Muslim Mindanao showed the lowest ratio, at 0.3, indicating that girls in this region were at lower risk of giving birth before age 15 compared with the national average.

**Table 5 Percentages of registered births among girls age 10–14 in relation to the female population age 10–14 by region, 2022 Philippines civil registration and vital statistics**

Usual region of residence of mother at the time of birth	Percentage of registered births among girls age 10–14 <sup>a</sup>	Percentage of female population age 10–14 <sup>b</sup>	Ratio of the percentage of births to the percentage of female population age 10–14
National Capital Region	10.4	10.6	1.0
Cordillera Administrative Region	1.5	1.5	1.0
Ilocos	3.6	4.5	0.8
Cagayan Valley	4.2	3.3	1.3
Central Luzon	13.0	10.9	1.2
CALABARZON	11.8	14.0	0.8
MIMAROPA	3.0	3.2	0.9
Bicol	4.6	6.2	0.7
Western Visayas	5.3	7.1	0.8
Central Visayas	7.7	7.3	1.0
Eastern Visayas	3.5	4.4	0.8
Zamboanga Peninsula	4.4	3.9	1.1
Northern Mindanao	9.2	5.0	1.8
Davao	7.7	4.9	1.6
SOCCSKSARGEN	5.9	4.4	1.4
Caraga	2.1	2.8	0.8
Bangsamoro Autonomous Region in Muslim Mindanao	2.3	6.0	0.4
Total	100.0	100.0	1.0
Number	3,135	5,413,761	

Note: Percentages may not add up to 100% due to rounding.  
<sup>a</sup> 2022 civil registration and vital statistics  
<sup>b</sup> 2020 census-based population projection

### 3.2.2 Characteristics of women with under-15 pregnancies and births

The distributions of selected characteristics of women who had experienced pregnancies and live births before age 15, based on the 2022 NDHS data, are presented in Table 6. Of the 246 women age 15–49 who experienced under-15 pregnancies, less than half (only 104) had under-15 live births. The difference was mostly attributed to women who became pregnant at age 14 but gave birth at age 15 (and were thus excluded from the study sample), rather than to substantial pregnancy losses, as will be shown later.

The majority (78%) of women who experienced pregnancies before age 15 had their first sexual intercourse between ages 13 and 14. Although sexual activity before the teenage years was less common, it was notable. Among women with a pregnancy before age 15, 2% reported sexual initiation at age 11 and 11% at age 12. The largest percentage (49%) of women with under-15 pregnancies reported sexual debut at age 14. In

contrast, the largest percentage (50%) of women with under-15 live births reported engaging in sex for the first time at age 13. This was further reflected by the median age of 14 for first sexual experience among women with under-15 pregnancies and age 13 for those with under-15 live births.

Seven out of 10 women with under-15 pregnancies became pregnant for the first time at age 14. Among women with under-15 births, a similar percentage gave birth for the first time at age 14. Nine percent had their first pregnancy during their preteen years—3% at age 11 and 6% at age 12.

Nearly all (93%) of women who had very early pregnancies experienced only one pregnancy before age 15. Most (89%) also had only one birth before this age. However, 7% experienced repeated under-15 pregnancies, and 11% had repeated live births before they turned 15.

A great majority (84%) of first under-15 pregnancies resulted in a live birth, while miscarriages or spontaneous abortions occurred in 14% of cases. Induced abortions were relatively rare (1%), as abortion is illegal in the Philippines. Stillbirths were the least common outcome (0.5%). When this analysis was restricted to the outcome of the first pregnancy among women with under-15 live births, 96% of the first pregnancies ended in a live birth and nearly 4% in a miscarriage. However, the nature of the analysis meant that all the women who experienced a miscarriage during their first under-15 pregnancy eventually had a live birth before age 15.

**Table 6** Percent distribution of women age 15–49 with under-15 pregnancies and live births according to pregnancy characteristics, 2022 Philippines NDHS

Characteristic	Percentage of women with under-15 pregnancies	Percentage of women with under-15 births
<b>Age at first sexual intercourse</b>		
11	2.2	3.8
12	10.5	19.2
13	28.5	49.8
14	49.4	17.7
Inconsistent	9.5	9.5
Median	14.0	13.0
<b>Age at first pregnancy/birth</b>		
11	2.6	1.0
12	6.4	5.0
13	20.6	23.4
14	70.4	70.6
Median	14.0	14.0
<b>Number of under-15 pregnancies/births</b>		
One	93.1	88.9
Two	6.1	10.5
Three	0.9	0.6
<b>Outcome of the 1st under-15 pregnancy</b>		
Live birth	84.4	96.3
Stillbirth <sup>a</sup>	0.5	0.0
Miscarriage <sup>b</sup>	13.7	3.7
Induced abortion	1.4	0.0
Total	100.0	100.0
Number of women age 15–49	246	104

Note: Percentages may not add up to 100% due to rounding.  
<sup>a</sup> Stillbirths were defined as fetal deaths in pregnancies lasting 28 or more weeks. When pregnancy duration was reported in months, stillbirths were fetal deaths in pregnancies lasting 7 or more months.  
<sup>b</sup> Miscarriages were defined as fetal deaths in pregnancies lasting less than 28 weeks. When pregnancy duration was reported in months, miscarriages were fetal deaths in pregnancies lasting less than 7 months.

### 3.3 Sociodemographic Correlates of Under-15 Fertility

Table 7 presents the percent distribution of women according to their sociodemographic characteristics at the time of the 2022 Philippines NDHS and according to the timing of their first pregnancies and live births. Women with under-15 pregnancies were predominantly either legally married (47%) or living with their partners (43%). Both were most common among women whose first pregnancies occurred at age 15 or older (60% legally married, 29% living together) and lowest among women who had never experienced pregnancy (5% legally married, 5% living together). The finding that 90% of women who had never been pregnant had also never been married further underscored the association between marital status and pregnancy experience.

Overall, the data painted a generally favorable educational profile of Filipino women. Only 1 in 10 women had no schooling or only a primary level of education. More than half (53%) had reached the secondary level (either incomplete or complete), while nearly 4 in 10 (37%) had achieved a college education. However, we found substantial disparities in educational attainment based on pregnancy history, indicating a severe educational disadvantage for women with very early pregnancies.

Slightly more than half (51%) of the women who had their first pregnancy before age 15 had no education or had reached only the primary level. Substantially smaller proportions of women who became pregnant at a later age (14%) and women who had never been pregnant (3%) had this low level of education. At the other end of the education gradient, only 3% of women with very early pregnancies reached college, which was 10 times lower than the proportions of women who began childbearing later (37%) and of those with no pregnancy experience (39%) who reached college.

**Table 7 Percent distribution of women age 15–49 according to current sociodemographic characteristics and the timing of first pregnancies and live births, 2022 Philippines NDHS**

Sociodemographic characteristic	Timing of first pregnancy			Timing of first live birth			Total
	First pregnancy before age 15	First pregnancy at age 15 or older	Never been pregnant	First live birth before age 15	First live birth at age 15 or older	Never had a live birth	
<b>Marital status</b>							
Never married	5.2	5.5	89.7	2.9	5.4	88.2	41.7
Legally married	46.6	60.2	4.5	50.0	60.3	5.3	36.2
Living together	42.9	28.7	5.4	42.3	28.7	6.1	18.8
Formerly married	5.2	5.5	0.4	4.8	5.5	0.5	3.3
<b>Education</b>							
No education/primary	51.0	14.4	3.0	64.4	14.7	3.1	9.8
Incomplete secondary	26.8	16.4	38.5	14.4	16.5	38.1	26.0
Complete secondary	18.9	32.7	19.4	19.2	32.7	19.6	26.9
Higher	3.3	36.5	39.1	1.9	36.1	39.1	37.3
Mean (SD) no. of years of schooling	6.7 (3.4)	11.3 (4.3)	12.2 (3.6)	5.8 (3.6)	11.3 (4.3)	12.2 (3.6)	11.6 (4.1)
<b>Wealth quintile</b>							
Lowest	40.6	19.6	12.0	44.2	19.8	12.1	16.5
Second	24.1	20.2	16.8	18.3	20.2	16.9	18.8
Middle	21.3	20.7	19.9	21.2	20.7	20.0	20.4
Fourth	6.6	19.9	24.5	7.7	19.8	24.4	21.7
Highest	7.4	19.6	26.8	8.7	19.5	26.7	22.6
<b>Number of children ever born</b>							
No child	3.9	1.5	100.0	0.0	0.0	100.0	43.8
1	10.3	25.2	0.0	13.5	25.4	0.0	14.2
2	17.9	28.2	0.0	11.5	28.6	0.0	16.0
3 or more	67.8	45.1	0.0	75.0	46.0	0.0	25.9
Mean (SD)	4.0 (2.6)	2.7 (1.7)	0.0	4.3 (2.7)	2.7 (1.7)	0.0	1.6 (1.9)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of women age 15–49	246	15,621	11,954	104	15,525	12,192	27,821

SD = standard deviation

Figure 2 shows further evidence of the adverse impact of very early pregnancy on education. Data from the 2021–2022 school year showed a high overall percentage of school attendance (82%) among women age 15–22, with an even higher level (88%) reported by women who had never been pregnant. In contrast, women who had experienced pregnancy were much less likely to attend school, with only about 3 in 10 ever-pregnant women reporting attending school in the 2021–2022 school year. However, we found no substantial disparity in the percentages of women who attended school based on their age at first pregnancy. The school attendance rate was 28% among women whose first pregnancy occurred before age 15, which was slightly lower than the rate among women whose first pregnancy occurred at age 15–18 (30%) and slightly higher than the rate among women whose first pregnancy occurred at age 19–22 (28%).

**Figure 2 Percentages of women attending school among those age 15–22 who had not completed college, according to age at first pregnancy, 2022 Philippines NDHS**

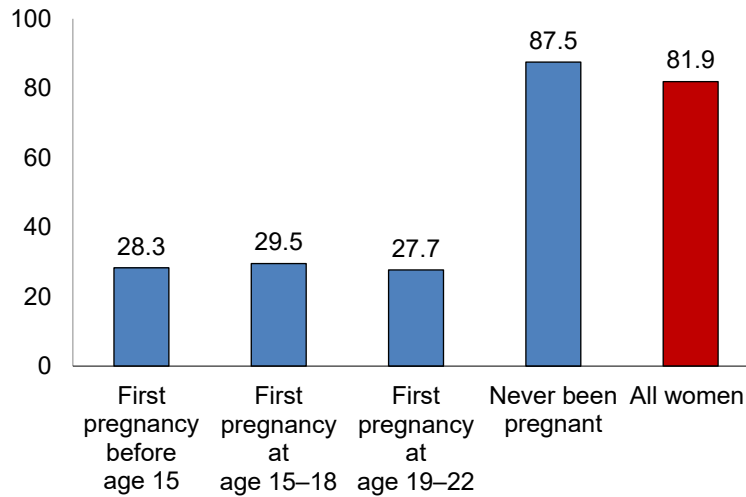


Table 7 also provides insights into the potential economic outcomes of the timing of first pregnancy. Women who had their first pregnancy before age 15 were disproportionately represented in the lowest wealth quintile (41%); this was more than double the percentage for women who had their first pregnancy at a later age (20%) and more than three times the percentage for those who had never been pregnant (12%). In contrast, only 7% of women with under-15 pregnancies were in the highest wealth quintile, which was considerably lower than the percentages of women in the highest wealth quintile among those who had their first pregnancy at age 15 or older (20%) and those who had never experienced pregnancy (27%).

Examination of fertility outcomes revealed that a significantly higher percentage of women who had their first pregnancy before age 15 (68%) than of women had their first pregnancy at age 15 or older (45%) had three or more children. Of note, small percentages of women who became pregnant before age 15 (4%) and of those who had their first pregnancy at age 15 or older (2%) had no children, validating our earlier finding that some pregnancies did not result in live births.

The pattern we found in our analysis of live birth experiences was similar to that found for pregnancy experiences for all sociodemographic characteristics. Women who had given birth before age 15 were typically in a marital union (50% were legally married and 42% were in a living-in arrangement), had low educational attainment (64% had either no schooling or reached only the primary level), were economically disadvantaged (63% belonged to the two lowest wealth quintiles), and had large families (75% had at least three children).

## 4 DISCUSSION

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Using retrospective data from women age 15–49 who responded to the National Demographic and Health Survey (NDHS) over the past two decades, supplemented by annual registered birth statistics from the civil registration and vital statistics (CRVS) system over the past 10 years, this study contributed to our understanding of the fertility behaviors of Filipino girls under age 15. The study addressed the dearth of research on this topic and, more importantly, provided critical insights to inform evidence-based policy and program interventions aimed at addressing early pregnancies and improving maternal and child health outcomes in the Philippines.

CRVS data revealed a notable increase in births among 13- and 14-year-old girls between 2013 and 2022. However, these births represent only a minuscule share (0.22%) of the approximately 1.5 million annual births in the Philippines. This low prevalence was also reflected in various NDHS indicators, which showed that pregnancies and births among girls under age 15 were relatively rare. It is also important to note that many pregnancies initiated at age 14 result in live births at age 15, suggesting that under-15 pregnancies may be slightly underrepresented in birth statistics. Despite the increasing trend indicated by the CRVS data, special estimations of fertility among girls age 10–14 in the NDHS data showed no statistically significant changes over the same period.

As discussed in the Appendix, the limited number of births to mothers under age 15 restricted the statistical power of the analysis, making it challenging to detect significant trends or differences over time. Despite the small numbers of births, the data indicated a consistent, albeit modest, level of fertility among this very young age group—a level lower than that in other low- and middle-income countries.<sup>9</sup> Nonetheless, this trend is noteworthy as it highlights a persistent public health issue that requires targeted interventions.

Our findings also underscore significant regional, health, educational, and economic disparities. Very young mothers from Northern Mindanao, Davao Region, SOCCSKSARGEN, Cagayan Valley, Central Luzon, and Zamboanga Peninsula face significantly higher risks of very early births when compared with the national average. This regional variation suggests that cultural, economic, and health care factors may play a substantial role in influencing very early pregnancies, calling for further investigation.

Although most pregnancies to these very young women result in live births, these births are associated with poorer health outcomes, including lower birth weights. This confirms the vulnerability of young mothers and their children to adverse health outcomes documented in the literature.<sup>7,17</sup>

Moreover, pregnancies and births to girls under age 15 are predominantly nonmarital, reflecting both legal restrictions on marriage and prevailing societal norms. Very early pregnancies often result in cohabitation rather than marriage because the legal age for marriage in the Philippines is 18. The passage of Republic Act No. 11596 in 2021,<sup>27</sup> which prohibits child marriage in the Philippines and penalizes both adult partners and the parents of minors in such unions, ensures that young girls are not forced into marriage due to pregnancy. Strict enforcement of this law is essential to protect these vulnerable girls. Nevertheless, our findings further suggest that pregnancy is a significant factor influencing early marital unions.

The long-term consequences of under-15 pregnancies are profound, impacting the economic prospects and overall well-being of very young mothers. NDHS data show that very early pregnancies are associated with

lower educational outcomes and greater economic disadvantages, suggesting that the absence of pregnancy-related responsibilities allows young women to better focus on schooling. However, the minimal differences in school attendance rates among women who became pregnant before age 15, at ages 15–18, and at ages 19–22 suggest that very early pregnancies are not substantially more disruptive to education than those during middle to late adolescence. In contrast, the economic trajectories of women with under-15 pregnancies diverged considerably from those of women who delayed first pregnancy or were never pregnant, underscoring a serious economic disadvantage associated with very early pregnancies. In addition, our results showed that women who delay their first pregnancy tend to have fewer children. Limited opportunities due to educational and economic disadvantages are exacerbated by large families, which can further strain limited resources and perpetuate a cycle of poverty.

A notable finding from our study is that the majority of Filipino girls who gave birth before age 15 were in age-disparate relationships, defined as partnerships with an age difference of at least 5 years.<sup>28,29</sup> Such relationships are often linked to negative outcomes for women, including a heightened risk of intimate partner violence and a lower likelihood of contraceptive use.<sup>30–32</sup> Age disparity may reflect a power imbalance that places young girls in vulnerable positions, making them susceptible to coercion or abuse, and limiting their ability to negotiate, particularly in matters such as contraception.

Given the substantial age gap between partners in our study—an average of 7 years—and the fact that the girls were minors while most of their partners were of legal age, the issue of sexual consent is also critical. Special tabulations from the 2021 Young Adult Fertility and Sexuality Study data support this, revealing that 28% of female Filipino youth whose first sexual experience occurred before age 15 reported that it was nonconsensual, while another 16% described it as unwanted.<sup>33</sup> These statistics raise critical questions about whether girls under age 15 can genuinely give informed consent for sexual activity, especially when such acts can result in pregnancy. The passage of Republic Act No. 11648 in 2022,<sup>34</sup> which raised the age of sexual consent in the Philippines from 12 to 16, aims to protect these young girls against sexual exploitation and abuse, but its effectiveness remains to be seen. If we apply the provisions of this law, which stipulates that sexual relations involving a girl under 13 years old or a girl age 13–14 whose sexual partner is more than 3 years older constitutes sexual abuse, then an estimated 87% of the 3,135 births in 2022 could be classified as resulting from sexual abuse. These findings underscore the urgent need to address compromised consent and its role in exacerbating the pressing issue of adolescent pregnancy.

Also notable is that information about the age of fathers was not reported for a large percentage of children born to girls under age 15. A preliminary examination of other details about the fathers in CRVS data, such as citizenship and region of residence, suggests that in many cases no information about the father was provided at all. Interestingly, despite the enactment of Republic Act No. 9255 in 2004,<sup>35</sup> allowing children of unmarried parents to use their father's surname if paternity is acknowledged, the data suggest that reluctance—or even resistance—to reporting paternal details remains. As the CRVS data showed, a great majority of fathers of babies born to girls under age 15 are already adults at the time of birth. The impact of the law prohibiting child marriage in the Philippines<sup>27</sup> is yet to be fully understood, but the high frequency of missing paternal information may reflect a reluctance among young mothers to disclose the identity of fathers, perhaps in part because of the legal penalties outlined in the Act, or because the mothers themselves lack knowledge about the fathers, potentially as a result of sexual abuse.



## 4.1 Recommendations

Although overall fertility trends in the Philippines are declining, the increasing number of births among girls under age 15—although still relatively low—poses a multifaceted public health challenge with potential long-term consequences. As Dr. Esperanza Cabral, former Secretary of the Philippines’ Department of Health, emphasizes, “One teenage pregnancy is still one teenage pregnancy too many.”<sup>36</sup> This underscores the need for targeted, multisectoral interventions to address the specific needs of very young mothers and their children.

One of the foremost priorities is to strengthen the comprehensive sexuality education (CSE) program focusing on young girls as a preventive measure against adolescent pregnancies. Mandated by Republic Act No. 10354—the Responsible Parenthood and Reproductive Health Act of 2012,<sup>37</sup> more commonly known as the RH Law—the CSE curriculum is designed to provide age- and development-appropriate reproductive health education across formal and nonformal educational systems. As outlined in Department of Education Order No. 031, s. 2018,<sup>38</sup> the program is implemented in public and private schools at all levels, with private schools able to opt out. It is also extended to alternative learning systems, indigenous learning systems, the Madrasah Education Program, and out-of-school youth. Implementing the CSE program in both formal and nonformal settings is particularly crucial given the significant gaps in sexual and reproductive health knowledge among Filipino youth; only 35% have adequate knowledge about sex, and a meager 10% of female youth and 5% of male youth understand the correct timing for conception. These dismal statistics are not surprising since discussions on sexuality are rare in Filipino homes, and adolescents often lack parental guidance.<sup>39</sup> Strengthening the CSE program could equip young people with the knowledge and skills necessary to make informed decisions about their sexuality and reproduction, such as delaying sexual activity and practicing safe sex to prevent early and unintended pregnancies.

Equally important is improving access to adolescent-friendly reproductive health services, including contraception and prenatal care. Our results indicate that a quarter of babies born to very young girls are of low birth weight (double the corresponding proportion among older mothers), suggesting the need for better antenatal care for these young mothers. Antenatal checkups can also provide valuable opportunities for health care providers to discuss family planning options with these very young mothers. Moreover, considering the vulnerability of these young mothers, their antenatal and postnatal checkups should include routine screening for potential sexual abuse. This approach ensures comprehensive care while also helping to identify and address the underlying factors contributing to early pregnancies.

Encouragingly, we found no substantial disparities in facility-based deliveries and skilled birth attendance between very young mothers and their older counterparts. Efforts should continue to maintain these safe childbirth practices, particularly among adolescents who are more vulnerable to adverse maternal and child health outcomes.

Our study also found that repeat childbearing is a reality for a significant number of young girls, echoing earlier research on older Filipino adolescents.<sup>40</sup> This underscores the urgent need to remove barriers to adolescents’ access to contraceptive supplies and services. The provision of contraceptives to minors who are already mothers without the need to have written consent from their parents or guardians, as stipulated in the RH Law, must therefore be reinforced. In addition, if these pregnancies are a result of abuse—

although the data did not allow confirmation of this—comprehensive child protection services and interventions must also be prioritized.

Although preventing adolescent pregnancy is crucial, developing programs that mitigate the health and social challenges faced by women who become pregnant at a very young age is also important. Health facilities should offer an integrated package of services, including mental health support for young mothers and their families, as early pregnancy can have long-term impacts on mental well-being.

In addition, programs that help young mothers continue their education and acquire vocational skills are essential for improving their economic prospects and personal development. Support mechanisms to improve school attendance rates among young mothers should accommodate their unique needs and circumstances. These mechanisms could include flexible schooling options and school-based child care facilities.

Beyond academic barriers, young unwed mothers often experience discrimination and social stigma within their school communities.<sup>41–43</sup> In some cases, pregnant students are even forced to leave school despite the provisions of the Philippines' Magna Carta of Women,<sup>44</sup> which prohibits schools from expelling or refusing admission to female students solely due to nonmarital pregnancy.<sup>41</sup> Therefore, fostering a more inclusive and supportive school environment is important for reducing the stigma associated with early motherhood and ensuring that young mothers can achieve their educational aspirations.

## **4.2 Study Strengths, Limitations, and Future Directions**

A major strength of this study, despite it being limited to correlational analysis, is its attention to childbearing patterns among girls under age 15—an area that has been largely neglected in previous research. This study addressed a significant gap in fertility research in the Philippines, which has traditionally concentrated on pregnancy among adolescent women age 15–19. As previously mentioned, program personnel in the Philippines have primarily relied on CRVS data to understand childbearing among girls under age 15. By incorporating data from the NDHS, this study provides a richer and more nuanced analysis of under-15 fertility, adding a valuable complement to CRVS data for informing public health research and policymaking.

Despite its strengths, the study was not without limitations. One key limitation concerns the potential for recall bias inherent in retrospective pregnancy and birth history data, particularly among older respondents. Since the analyses relied on self-reported information from women age 15–49, those at the upper end of this range might not have accurately remembered pregnancy-related experiences from two or three decades earlier. This extended recall period may have increased the likelihood of memory inaccuracies and age misreporting. For instance, approximately 1 in 10 women with under-15 pregnancies or under-15 births reported an age at first sexual activity that was inconsistent with the age of conception of their child. However, such discrepancies are not unique to Filipino women with under-15 pregnancies, as they have also been identified as a potential data quality issue in Demographic and Health Surveys data across countries.<sup>45</sup> Nonetheless, several studies have demonstrated minimal inaccuracy in maternal long-term recall of pregnancy-related events, particularly those related to first pregnancies and births.<sup>46–48</sup>

In addition, the limited number of respondents to the NDHS who had fertility experiences before age 15 restricted the depth of the analyses. Further disaggregation by women's age, which could have measured

the time elapsed between their first pregnancy and their sociodemographic outcomes at the time of the survey, would have enriched the analysis. This approach could offer a clearer understanding of how early fertility experiences impact women's later life. To fully assess the long-term effects on health, education, and economic self-sufficiency among young mothers and their children, longitudinal studies tracking their life trajectories are strongly recommended. Such studies could explore, for instance, the complex interplay of resuming schooling after early pregnancy—a finding from this study that warrants deeper exploration. In addition, a study comparing economic outcomes of teenage mothers from economically disadvantaged versus stable backgrounds could yield valuable insights, particularly given evidence suggesting a more pronounced impact on those facing greater economic hardship.<sup>16</sup>

Finally, given the challenges of identifying survey respondents with under-15 fertility experiences, qualitative studies are most appropriate for further uncovering the sociocultural dynamics and barriers to reducing very early pregnancies. Such studies could also capture more challenges faced by young mothers and identify the psychosocial support they need. Furthermore, examining whether abuse or coercion played a role in under-15 pregnancies would provide critical insights into the circumstances surrounding such very early fertility. These qualitative findings could supplement both CRVS and NDHS data and provide a more comprehensive picture of the experiences of girls who become mothers at a very young age.



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## APPENDIX: COMPARING TRENDS IN UNDER-15 FERTILITY

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Despite steady annual increases in the size of the population and improvements in the coverage of vital statistics, the annual number of registered births in the Philippines remained flat or declined between 2013 and 2022, according to civil registration and vital statistics (CRVS) data (see Table 1). This pattern was consistent with results from the 2022 Philippines National Demographic and Health Survey (NDHS), which showed significant recent declines in fertility rates.<sup>†</sup> Table 1 also showed that the national number of registered births among mothers younger than age 15 increased from 1,629 in 2013 to 3,135 in 2022, nearly doubling. The percentage of all births to mothers under age 15 increased from 0.09% in 2013 (about 1 birth per 1,000 years of exposure) to 0.22% in 2022 (about 2 births per 1,000 years of exposure). Although these percentages were low, the increase was a source of concern.

In our study, trends in under-15 fertility were analyzed using both CRVS and NDHS data. Although NDHS surveys use a different mechanism for estimating fertility than do CRVS systems, we expect correspondence in levels and trends from the two sources. Here we describe an effort to see whether the 2017 and 2022 Philippines NDHS data matched the CRVS data on under-15 births presented in Table 1. We did not aim to interpret the results as a validation of either source, as surveys and vital statistics have complementary strengths and weaknesses. However, it is useful to know whether the two data sources agreed.

The 2017 and 2022 NDHS data included lifetime births for all women age 15–49 at the time of the surveys. For each birth, we knew the calendar year of the birth. Using the month and year of a birth, we calculated the mother’s age in single years at the time of the birth. Data about births before age 15 were incomplete, as 15 was the minimum age for inclusion in the survey. However, the birth histories for older respondents included births before age 15. Coverage of births to women at the high end of the age range was lost, but that was of less concern for current purposes. With these limitations, we obtained an array of respondents’ births at each year of age in each calendar year from 2013 to 2022. We excluded 2021 and 2022 because the 2022 survey had little to no information about under-15 fertility in the years pertinent to this exercise.

To provide a sense of the number of cases, the 2022 survey included 1,702.4 weighted births for the calendar year 2018, for example. Women age 49 in 2022 were age 45 in 2018; the data backdated to 2018 did not include any births after age 45. The weighted number of births under age 15 was 1.7 (the unweighted frequency was 3), which was almost exactly equivalent to 1 birth per 1,000. All of those births were at age 14; no births under age 14 were found in the survey for 2018. These numbers of births, in each combination of age and calendar year, were referred to as *b*.

To compare the survey data with the CRVS data, we inflated the sample to the national population. To inflate the sample, we chose the following two steps. First, we used the Philippines NDHS data to calculate the number of woman-years of exposure to the risk of childbearing in each combination of age and calendar year in the sample. These numbers were referred to as *w*. Second, we downloaded the midyear population

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<sup>†</sup> Source: Philippine Statistics Authority (PSA), ICF. 2022 *Philippine National Demographic and Health Survey (NDHS): Final Report*. PSA and ICF; 2023.

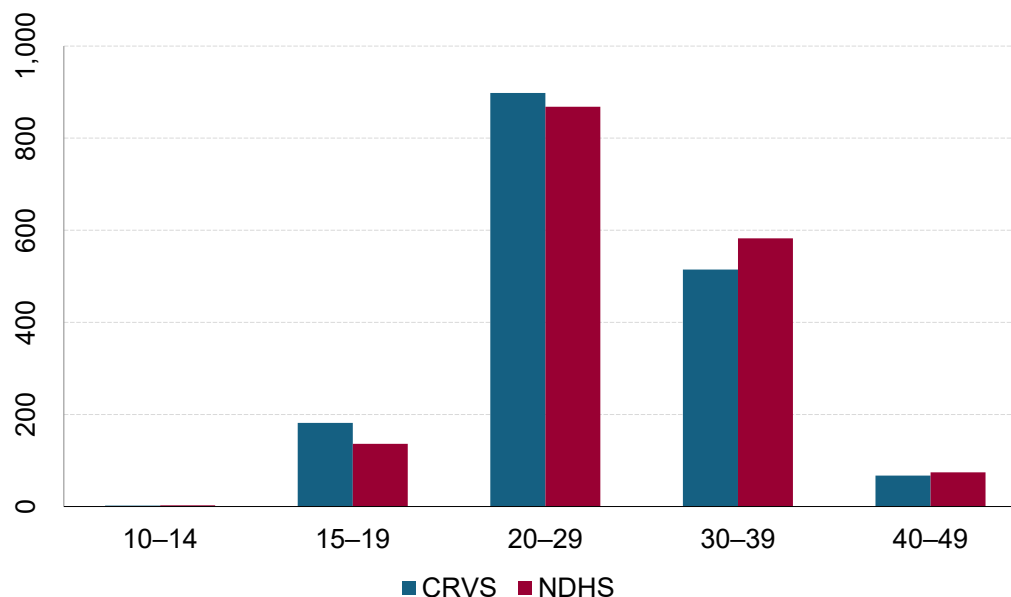
estimates from World Population Prospects 2022 prepared by the United Nations Population Division.<sup>‡</sup> The population numbers of women in each combination of age and calendar year were referred to as *W*.

We then inflated to *B*, the estimated number of births in the population, for each combination of age and calendar year, using the formula  $B = b(W/w)$ . To avoid small frequencies at some ages, we collapsed *b*, *w*, and *W* into 5-year age intervals for ages above 15. We then collapsed *B* into 10-year age intervals. For the calendar years 2013–2017, we pooled the birth histories from the 2017 and 2022 surveys.

As a final step, because our main interest was the age distribution of the births, we adjusted *B* so that each calendar year would have the same total number of births, ignoring the births at age 50 and older and the births for which the mother’s age was not stated. This normalization compensated for potential factors that are not age-specific, such as differences in the population growth rates estimated by the United Nations Population Division versus the Philippine Statistics Authority, incomplete or fluctuating coverage in the registration system, and reverse survival of the NDHS sample (in which the potential mortality of the cohorts of respondents was not taken into account).

Figure A1 compares the age distributions of mothers of children born in 2018 between the two sources. The blue bars correspond with the number of births according to CRVS data, and the red bars show the corresponding estimates from the NDHS data. The agreement is very close. (Similar figures were prepared for the other calendar years between 2013 and 2020, which showed similar levels of agreement.)

**Figure A1 Observed and fitted numbers of births (in 1,000s), by maternal age groups, Philippines 2018 data**



Note: Fitted births were based on NDHS fertility rates and United Nations age distributions. The fitted total was scaled to match the observed total.

CRVS = civil registration and vital statistics; NDHS = National Demographic and Health Survey

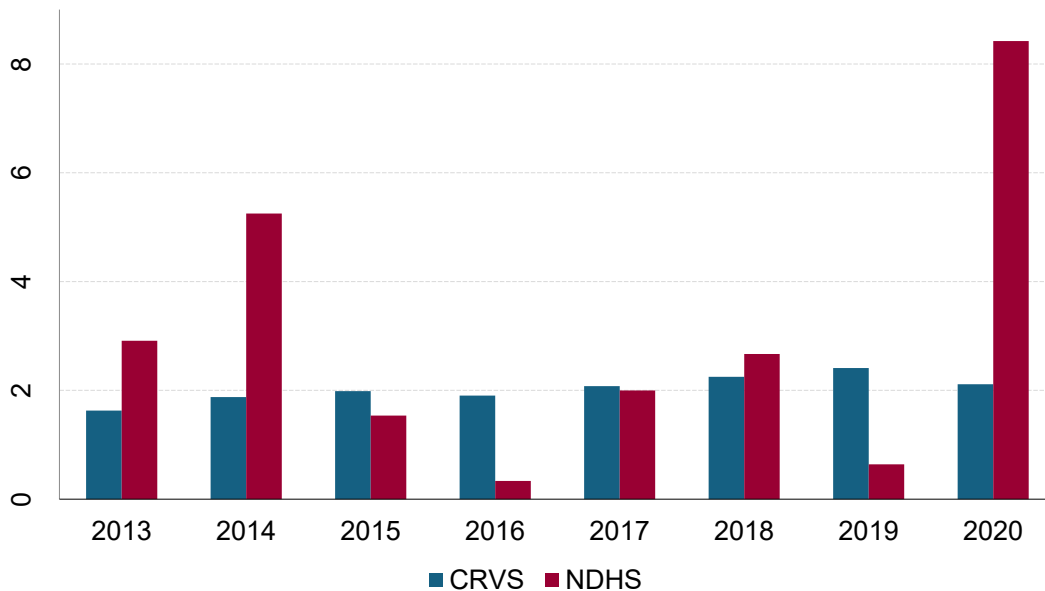
<sup>‡</sup> Source: United Nations, Department of Economic and Social Affairs, Population Division. *World Population Prospects 2022: Summary of Results*. United Nations; 2022.

[https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp2022\\_summary\\_of\\_results.pdf](https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp2022_summary_of_results.pdf)

The level of fertility was so low among girls age 10–14 that it did not show up in the scale used in Figure A1 and similar figures for other calendar years. Therefore, we created Figure A2, which compares the CRVS and NDHS under-15 fertility estimates for 2013–2020. As mentioned earlier, 2021 and 2022 were not included because the Philippines NDHS had little or no exposure to girls under age 15 for those calendar years.

Figure A2 shows a pair of vertical bars for each calendar year, with a blue bar for the numbers of births before age 15 from the CRVS data and a red bar for the fitted numbers based on the pooling of the 2017 and 2021 NDHS data. The NDHS estimate was lower than the CRVS estimate for four of the eight years and higher than the CRVS estimate for the other four. In 2020, the NDHS estimate was *much* higher than the CRVS estimate.

**Figure A2 Observed and fitted numbers of births before age 15, Philippines 2013–2020 data**



Note: Fitted births were based on NDHS data and United Nations age distributions. The fitted total was scaled to match the observed total.  
 CRVS = civil registration and vital statistics; NDHS = National Demographic and Health Survey

Table A1 supplements Figure A2 with actual numerical values. Important to recognize is that the NDHS estimates were based on very few cases. The unweighted number of births was always in a range from 2 to 8. Such low counts are subject to considerable sampling variability.

**Table A1** Under-15 births from civil registration and vital statistics and fitted births from Philippines National Demographic and Health Surveys, by year

Calendar year	CRVS national births (in 1,000s)	NDHS fitted national births (in 1,000s)	Unweighted NDHS births	Weighted NDHS births
2013	1.629	2.912	6	7.906
2014	1.877	5.250	8	14.706
2015	1.986	1.537	5	3.874
2016	1.903	0.336	4	0.804
2017	2.077	1.999	3	2.263
2018	2.250	2.669	3	1.688
2019	2.411	0.640	2	0.384
2020	2.113	8.422	5	4.978

CRVS = civil registration and vital statistics; NDHS = National Demographic and Health Survey

The conclusions of this comparison were as follows:

1. The CRVS and NDHS estimates of the numbers of births in the different age intervals, including under age 15, were in close agreement.
2. The numbers of births before age 15 in the NDHS data were too small to permit inferences about trends.
3. In the population, only 1 to 2 births per 1,000 were among girls under age 15. Lowering the minimum age of respondents to capture more under-15 births in future surveys would be costly and inefficient.