DETERMINANTS OF AGE AT FIRST BIRTH IN NAMIBIA

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ABSTRACT

Background: Proximate and underlying determinants have been identified as factors that contribute to differences in the timing of motherhood and overall fertility between population sub groups (Sarkar, 2010; Ngalinda, 1998). In Namibia few studies have focused on the relationship between age at first birth and proximate and underlying determinants. The aim of this study is to investigate factors associated with age at first birth in Namibia.

Method: Data from the 2013 Namibian Demographic and Health Survey (NDHS) was used. For data analysis, both Univariate statistics and a multivariate model were used. Univariate statistics used in this study include frequency distribution of the dependent and independent variables. For multivariate analysis, a Multiple Linear Regression model using a stepwise regression method was employed to investigate the relationship between age at first birth and selected Proximate and underlying determinants of age at first birth. Coefficients were reported for the model.

Results: Education, region, contraceptive use and age at first sexual intercourse were associated with age at first birth**.** Results showed that most women in Namibia give birth to their first child at an early age with the average being at 21years of age. Women with higher education and those from central Namibia were predicated to have higher chances of having their first child late in their child bearing years. Women who said they used contraceptives to prevent or delay pregnancy were predicated to have had their first birth at an early age. The results also showed that with each year increase in age at first sexual intercourse, age at first birth increase by 0.874 holding other variables constant.

Conclusion: the findings of the study indicated that age at first birth in Namibia was associated with education, region, contraceptive use and age at first sexual intercourse. These factors should be taken into consideration when formulation new strategies to reduce fertility and combating rapid population growth in Namibia. Efforts to increase the status of women through higher education level attainment should be encouraged.

1. INTRODUCTION

According to Rabbi and Kabir (2013) giving birth to a child for the first time is considered to be an important event within a woman's life cycle. It does not only indicate a biological change in a woman, but also determine future roles and responsibilities a woman is likely to face after giving birth to their first child (Sarkar, 2010; Presser, 1971). Research further noted that the age at which a woman gives birth to their first child at an early age has consequences for example: lower levels of socio-economic and educational empowerment, poor shelter under which children are raised, reduced chances to opportunities available to them, and their intellectual development whereas a late first birth may help improve the women and child's livelihood and wellbeing (Barber, 2001; Zajonc, 1976).

Research further noted that the change of a woman to motherhood shows the interaction of cultural and societal determinants (Rindfuss et al 1984). Mainly the first birth of a child to a woman is influenced by differences in the physiological capacity of a woman to produce (Rindfuss et al 1984). Social/cultural region play an important role for the transmission of specific norms and attitude of a woman that affects the timing of the first births. (Rindfuss and John 1983). Socioeconomic processes and religious beliefs are identified as the reasons that influence individual's behaviour contributing to differences in the timing of motherhood and overall fertility between population sub groups (McDaniel 1996; Rindfuss et al. 1984; Kiernan and Diamond 1983).

According to Getu and Alemayehu (2009), Sub-Saharan Africa has witnessed a decline in fertility over recent decades although the total fertility rate in several African countries remains high. In Namibia, the census 2011 results showed that overtime there has been a decline in fertility from 6.1 in 1991 and 4.1 in 2011 to 3.9 in 2011 (Namibia Statistics Agency, 2014). Furthermore Namibian Statistics Agency (2014) indicated that early childbearing between the ages of 15-19 has dropped from 23.4% live births in 2001 to 12.3% live births in 2011, however teenage pregnancy is said to remains a concern for the Namibian government although teenage childbearing has decreased (Namibia Statistics Agency, 2014).

At the best knowledge of the author, few studies have been done in identifying determinants of age at first birth in Namibia. A study by Pulkkinen (1997) studied differences in fertility between Namibia's ethnic groups by comparing the Total Fertility Rates among different language group. Arowolo (2000) also did a study on examining the socioeconomic factors

and proximate determinants (including age at first birth) on fertility (Shemeikka, 2006). However determinants of age at first birth have not been scientifically studied.

PROBLEM STATEMENT

Research further noted that an early start at childbearing lengthens the reproductive period and eventually increases the chances of women to have high fertility (Rabbi and Kabir, 2013; Zuberi et al, 2005). This then contributes to population growth due to the fact that child birth that occurs at a young age implies a higher rate of fertility and population growth because of the shorter length of the time between generations (Kumar and Danabalan, 2006). This result into high levels of fertility in a country which slows down the human and economic development (Rabbi and Kabir, 2013; Weeks, 2008), the reason being that the government spends a lot of resources on children who are classified as the dependent population and fewer resources in the productive population/the youth who needs more human resources in order to be productive in the labour force and facilitate economic growth (Week, 2008). Childbearing at an early age can severely damage a female's reproductive and general health, causing such problems as obstructed labour, sometimes bleeding to death, and vision-vaginal fistula, leading to social ostracism (WHO, 2004; Harrison and Rossiter, 1985). The conditions under which a first birth occurs at an early age are said to be lower levels; of socio-economic and educational empowerment, shelter in which children are raised, opportunities available to both the child and the mother, and their intellectual development (Rabbi and Kabir, 2013; Zajonc, 1976).

RESEARCH QUESTION

What are the factors associated with age at first birth in Namibia?

OBJECTIVE OF THE STUDY

- **Main objective**

To investigate factors associated with age at first birth in Namibia.

Specific objectives

1. To describe the level of age at first birth.

2. To investigate factors associated with age at first birth.

2. LITERATURE REVIEW

Levels of age at first birth

According to Rabbi and Kabir (2013), Sub-Saharan Africa has some of the highest levels of adult and adolescent childbearing in the world. Since the 1980s, several countries in the region have begun a transition toward lower fertility (Rabbi and Kabir, 2013). This has generally been accompanied by an upward trend in the age at first birth, although wide variations remain across countries and social groups (Rindfuss et al 1984).

Research further noted that rapid rise in age at first birth appears likely for younger cohorts. The Demographic and Health Survey data also reveal that in 14 out - 37 - of the 19 sub-Saharan countries studied, the average ages at first birth for women aged 45-49 exceed those of women aged 40-44 (Westoff et al., 1994). In this study, it was found that the average age at first birth for women aged 35-39 is lower than that for women aged 40-44. Thus there seems to be a decline in age at first birth among younger mothers (Westoff et al., 1994).

It is estimated that in low and middle income countries 10% of all girls become mothers before they are 16, with the highest levels being in Sub-Saharan Africa, south-central and south-eastern Asia (WHO, 2008). Despite this shocking statistic there has been no recent comprehensive analysis of the scale of very early adolescent motherhood at country level, and very little data is readily available (WHO, 2008). Organizations (e.g. UNICEF) often exclude those giving birth before the age of 15 from datasets or reports into adolescent pregnancy, meaning the issue is very rarely specifically considered (WHO, 2008).

Determinants

Education has been found to be the most background factor influencing Age at first birth (Rindfuss et al, 1983). In various studies research further noted that that education delays childbearing and decreases years dedicated to childbearing (Zuberi, 2005). The more time a woman spends in school the less likely she will get married early and start childbearing early, also women who are educated have a tendency to delay marriage and childbearing after school so they can focus on their careers first, some may choose not to get married which leads to years dedicated to childbearing to be decreases (Rabbi and Kabir, 2013). By the time a woman decides to get married, she will be older and there will not be time to have many children because she will be close to menopause this in turn decreases fertility (Rabbi and Kabir, 2013).

Research furthermore noted that in Tanzania, the age at menarche is declining due to better nutrition and health (Ngalinda, 1998). This is likely to facilitate early childbearing depending on the debut or exposure to sexual intercourse and contraceptive use. If certain measures are not taken to change the situation, we may witness high fertility levels for decades and decades to come (Rabbi and Kabir, 2013).

A research in Bangladesh found that age at first birth is associated with contraceptive use (Sarkar, 2010). It was found that an increase in the prevalence rate of contraceptive from 9.6 % in 1975 to 53.6% in 2005 determined most of the decline of fertility in Bangladesh. The absence of intentional contraceptive is said to lead to population growth because women who start childbearing at an early age tend to have more births than their fecund counterparts who begin childbearing at an older age (Kumar and Danabalan, 2006).

According to Rindfuss and John (1983), religion is responsible for the transmission of intergenerational norm. Irish Catholics are best known for marrying late in the ages (kennedy, 1973). Considering that there catholic doctrine prohibits sexual activities without marriage, this may influence late child bearing as well (kennedy, 1973). However Catholics are said to prohibit any method of contraceptive except the rhythm method. This may again lead to unplanned pregnancies leading to early first birth (Rindfuss and John, 1983).

Research further noted that poverty is a social factor influencing age at first birth (Mkhize, 1995:45). According to Mkhize (1995) women who grow up in poor households whereby in most cases parents are unemployed the family struggles to survive because no one is working (Anthony et al, 2000). Young females tend to get sexual partners older than they are in order for them to support their livelihood. This results in high risk for these young females to be vulnerable to their partners and sexual decision such as using condoms or any form of contraceptives which then leads to the risk of getting pregnant (Mkhize, 1995:45). Young girls who grow up in poor households may also decide to leave school and go find jobs in order to support their needs, if they do not find jobs because they do not have the necessary skills they end up choosing to get married so they can be taken care of which leads to childbearing at a young age (Anthony et al, 2000).

In a study in Brazil, it was noted that there is an association between regions and age at first birth. Region tends to vary when it comes to the kind of situated in that place (Marteleto and Dondero, 2013). Namibia is divided into thirteen administrative areas call regions. These regions comprises of the: Zambezi, Kavango, Kunene, Ohangwena, Omusati, Oshana, and Oshikoto in the north; Omaheke, Otjozondjupa, Erongo, and Khomas in central Namibia; and Hardap and //Karas in the south. The capital is Windhoek, located in the Khomas region (Namibian Demographic and Health Survey, 2013; NSA, 2014).

3. METHODOLOGY

Data

Secondary data was used for this study. The data is obtained from Namibia Demographic and Health Survey (NDHS) 2013 which is a nationally representative survey. The survey was implemented by the Ministry of Health and Social Services (MoHSS) in collaboration with the Namibian Statistics Agency (NSA) and the National Institute of Pathology (NIP). The samples size of this survey is with 9,176, yielding a response rate of 92%. The study population for this study is 6222 women of age between 15-64 who had ever given birth (Namibian Demographic and Health Survey, 2013).

Description of variables

Dependent variable: The variables of interest for this study were obtained from the individual women questionnaire. The dependent variable "Age at first birth" in women individual recode dataset was calculated from the Century Month Code (CMC) of date of first birth and the CMC of the date of birth of the respondent. All dates in the data are expressed in terms of

months and years and also as CMC. The CMC is the number of the month since the start of the century. For example January 1900 is CMC 1, January 1901is CMC 13, January 1980 is CMC 961 and September 1994 is CMC 1137 and so on. Age at first birth is a continuous variable that ranges from twelve years of age to forty-two years of age (Namibian Demographic and Health Survey, 2013).

Independent variables**:** six independent variables were used in the analysis (as seen in the table below). All variables were obtained from the participants section of background characteristics of the respondent.

Table 1: Independent variables and their categories

Variables	**Categories**
Religion	Lutheran, seventh-day Adventist, roman catholic, Anglican & no religion
Education	No education, primary, secondary & tertiary
Region	North, central & south
Wealth index	Poor, middle & rich
Contraceptive use	no & yes
Age at first sex	ranges from age 8 to 63

Method of analysis

The weighted data was analyzed using statistical software Stata 12 (Statistics and Data version 12). The analyses were done in two stages including univariate and multivariate analyses.

Univariate: univariate analysis of variables to give the frequency distribution of the age at which women that had ever given birth, gave birth to their first child. A number and frequency distribution was done for the categorical independent variables used in the study.

Multivariate: Multiple Linear Regression Model (MLRM) was employed to investigate the relationship between the independent variables and one dependent variable. When it comes to variable selection, a stepwise regression method set at significance level of 0.05 (5%) was applied to select the best subset of the independent variables for the model. This model was selected on the basis that the nature of the dependent variable is continuous and we have more than one independent variables. The Multiple Linear Regression tries to model the

relationship between the independent variables and one dependent variable by fitting a linear equation to the data at hand. Every independent variable value *x* is associated with a value of the dependent variable *y*.

The principle assumptions behind the model is among others is that the relationship between the dependent and the independent variable is linear and that there is no interaction for variable which are categorical

Multiple Linear Regression analysis

A linear equation of the formula for regression model is used as follows:

$$Y = a_0 + a_1x_1 + a_2x_2 + a_3x_3 + a_4x_4 + a_5x_5 + a_6x_6 + \varepsilon$$

Where *Y* is the dependent variable

x_1 = Religion

x_2 = Education level

x_3 = Region

x_4 =Wealth index

x_5= Contraceptive use

x_6= Age at first sexual intercourse

a_0 is the constant

a_1, a_2, a_3, a_4 and a_5 a_6 are the coefficients of the respective explanatory variables

And ε is the error component which is normally distributed with mean 0 and variance1 ε~N(0,1).

Multiple Linear Regression Assumptions test (appendix)

Multiple Linear Regression model rely on certain assumptions. It is important to report these assumptions in order to show the validity of the findings and also to identify the limitations of the study. These tests of assumption include: Normality, Linearity and Homoscedasticity. All the independent variable met the assumption for normality, the histogram showed a symmetrical distribution of the variables. This means that the three central tendencies which are mode median and mean coincides. The assumption for linearity and homoscedasticity was

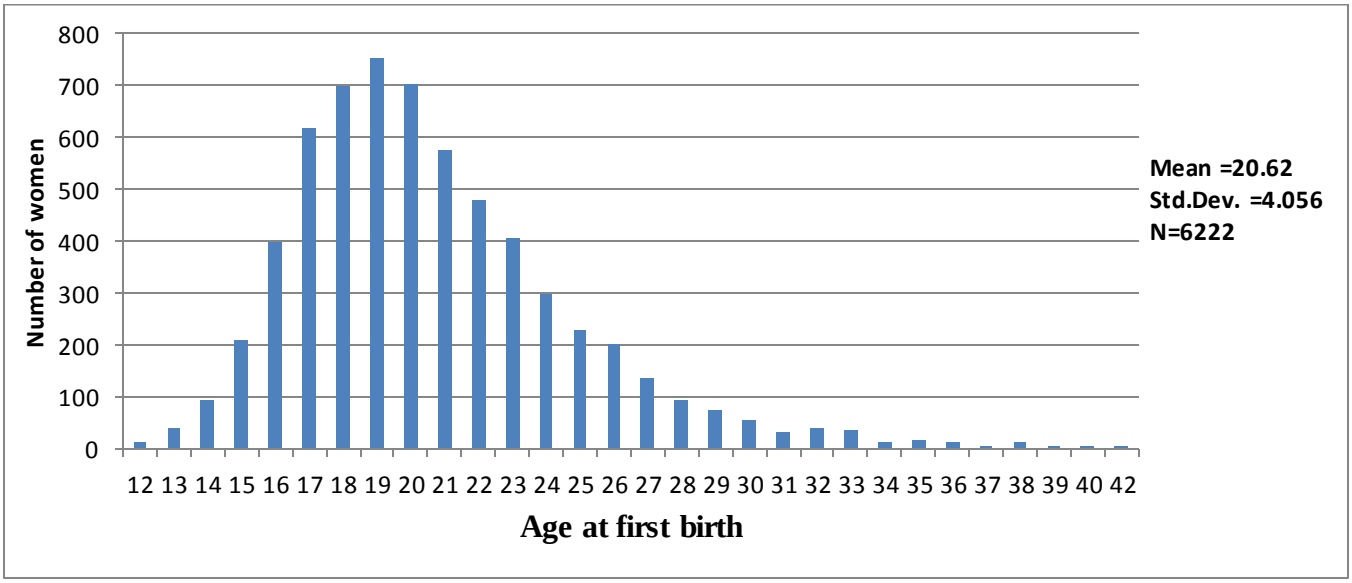
violated. The relationship between the dependent and independent variable is not linear and the variance of errors is not the same across all levels of the explanatory variables respectively. To adjust for the asymmetric distribution for the continuous outcome variable, a log transformation may have to be applied in order to meet the model's assumptions. The log transformation was attempted to adjust for the asymmetric distribution of the continuous variable but still the assumptions for linearity and homoscedasticity were still violated.

Limitation

- The Multiple Linear Regression assumptions for linearity and homoscedasticity were violated. Therefore certain precautions have to be taken on the results of the model.

4. RESULTS

Figure 1: Distribution of women aged 15-64 years by age at first birth (12-42), Namibia 2013



According to figure 1, the earliest reported age at first birth was 12 years of age and the oldest was 42 years. The majority of first birth occurred when the women were aged 18-20 years of age. Less than 190 women gave birth to their first child after the age of 30. The overall mean age at first birth was 20.6.

Table 2: Frequency distribution of the independent variables, Namibia 2013

Variables	N	%
Religion		
Lutheran	2659	43
Catholic	1374	22
Anglican	1267	20
seventh-day Adventists	302	5
No religion	67	1
Education		
None	373	6
Primary	1378	22
Secondary	3978	64
Higher	493	8
Wealth index		
Poor	2273	37
Middle	1289	21
Rich	2660	43
Contraceptive use		
No	1056	17
Yes	5167	83
Region		
North	3286	53
Central	2459	40
South	477	8
Total	**6222**	**100**

The table above shows that Lutherans (43%) are the most dominant religion in Namibia while the seventh-day Adventists (5%) are the least dominants religious affiliation. A majority of Namibian women have at least secondary education (64%) and only 6% have none education. 83% of women stated that they used contraceptives to try and prevent or delay pregnancy. Only 8% of the people in Namibia live in the South region.

Table 3: Presents results of model fit

The results below indicated that the model is significant and it fits the data. 0.5293 (53%) variability of the outcome was explained by the model.

Linear	regression	Number of obs	=	5359
		F(7, 5351)	=	669.52
		Prob > F	=	0.00
		Adj R-squared	=	0.5293
		Root MSE	=	2.7896

Table 4: shows coefficient results of Multiples Linear Regression Model

Age at first birth	Coefficients	Std. Err.	t	Significance level	[95% Confidence Interval	
Education						
None (reference group)						
Primary	-0.699	0.199	-3.51	0.000	-1.0888	-0.3089
Secondary	-0.197	0.193	-1.02	0.308	-0.5755	0.1818
Higher	1.296	0.323	4.02	0.000	0.6635	1.9281
Region						
North (reference group)						
Central	0.451	0.107	4.22	0.000	0.2418	0.6607
South	-0.256	0.099	-2.60	0.009	-0.4498	-0.0631
Contraceptive use						
No (reference group)						
Yes	-0.362	0.128	-2.83	0.005	-0.6127	-0.1110
Age at first sex						
Age	0.874	0.014	62.04	0.000	0.8462	0.9014
constant	5.315	0.312	17.02	0.000	4.7032	5.9275

Women with primary education had a lower score (-0.699) of age at first birth when compared to women with none education, holding other variable constant. Holding other variables constant, women with higher education had a higher score (1.296) of age at first birth when compared to women with none education. The association is significant.

Women in central region of Namibia had a higher score (0.451) of age at first birth when compared to women in the Northern region holding other variables constant. Holding other variables constants women in South region of Namibia had a lower score (-0.256) of age at first birth when compared to women in the Northern region. The association is significant.

Women who used contraceptives to delay or avoiding getting pregnancy had a lower score (-0.364) of age at first birth when compared to women who didn't use contraceptives, holding other variables constant and the association is significant.

For each unit increase in age at first sex, age at first birth increases by 0.874, holding other covariates constant and the association is significant. This implies that, for each one year increase in age at first sex, age at firs birth increase by 0.874.

5. DISCUSSION

The aim of this study was to investigate factors associated with age at first birth among women in Namibia aged 15-64. Education, region, contraceptive use and age at first sexual intercourse were found to be significantly associated with age at first birth. With regards to education, women with tertiary education had a first birth late in their childbearing years when compared to those who had non education. This explains the importance of education among women Namibia. This helps empower women and the conditions in which children are raised in. Education also equips women to have better working opportunities when it comes to the labour force participation and increases the status of women in a society. A good working opportunity contributes to the wealth of the household.

With regards to regions, the central region where urban areas such as Windhoek (capital city of Namibia) are found had a lower score of age at first birth meaning that women in the central region have a first birth at an early age when compared to women in North and South regions. In this case, urban areas have a better access to services such as health care where women can access all form of contraceptives to delay their first birth. Surprisingly, women who had said they used contraceptive to delay pregnancy/ prevent pregnancy had their first birth at an early age. This may be due to the type of method they used provided that some of the contraceptive methods are unreliable e.g. withdrawal method.

6. CONCLUSION AND RECOMMENDATION

This study has implications for policies and programs that aim at reducing early Age at first birth/ adolescent childbearing and to increase the status of women in Namibia. Programs or policies that aim at reducing the early age at child bearing should be promoted. It is also important to improve and provide access to young women's education as it is evident from the results that women who have higher education have their first birth at older ages.

When formulating these program and policies, emphasis should be made on how advantageous it is starting childbearing at an older age when it comes to health, economic opportunities and development of a country as a whole. Most important demographically, increasing the Age at first birth is key at reducing fertility rates.

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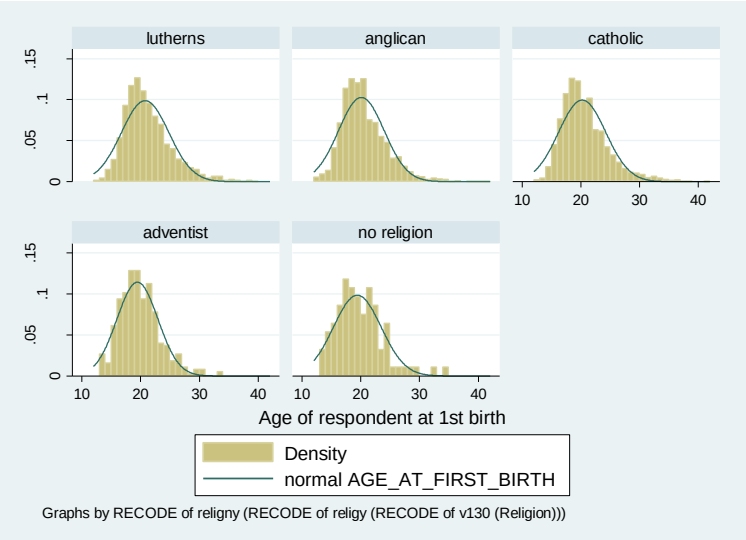
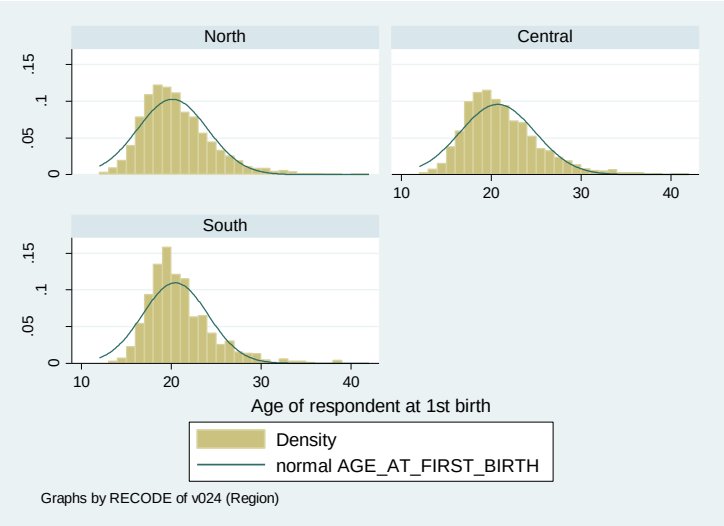
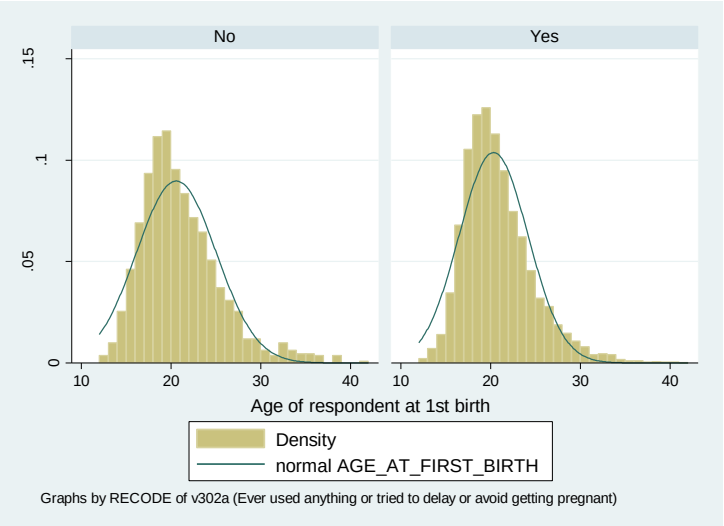
APPENDIX

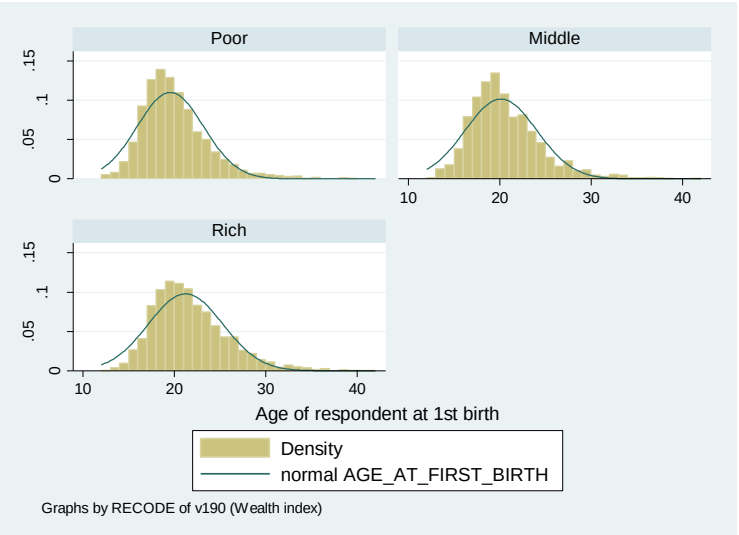
Multiple Linear Regression Assumptions

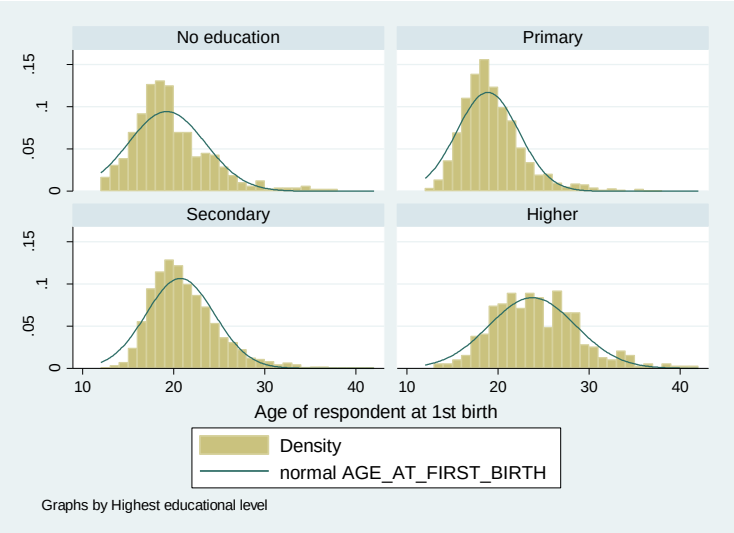
Normality



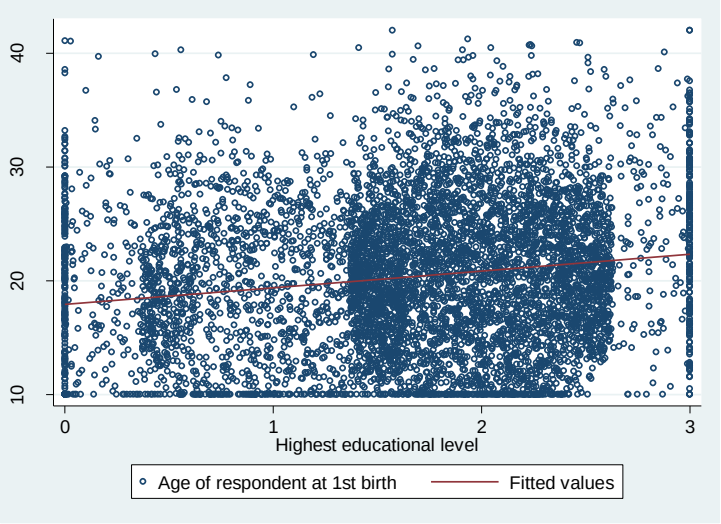

North
Central
South
0
.05
.1
.15
10
20
30
40
Age of respondent at 1st birth
Density
normal AGE_AT_FIRST_BIRTH
Graphs by RECODE of v024 (Region)

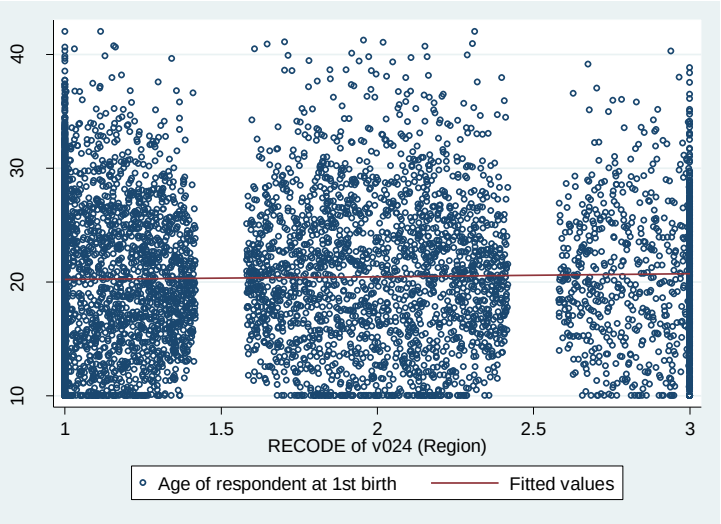

No
Yes
0
.05
.1
.15
10
20
30
40
Age of respondent at 1st birth
Density
normal AGE_AT_FIRST_BIRTH
Graphs by RECODE of v302a (Ever used anything or tried to delay or avoid getting pregnant)

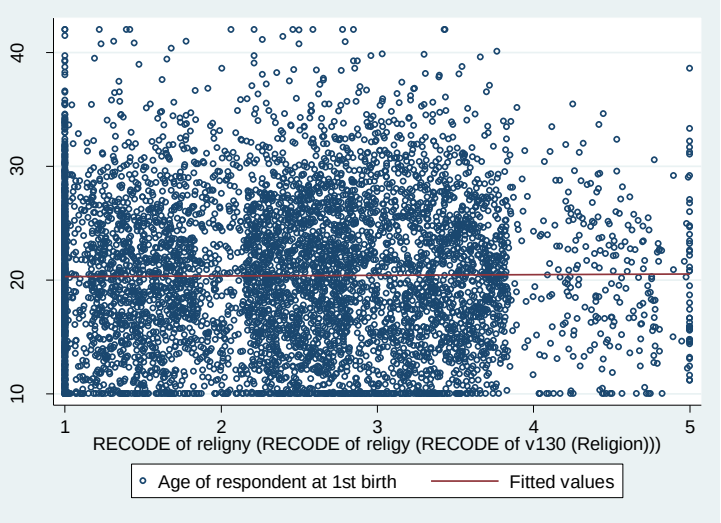

Poor
Middle
Rich
0
.05
.1
.15
10
20
30
40
Age of respondent at 1st birth
Density
normal AGE_AT_FIRST_BIRTH
Graphs by RECODE of v190 (Wealth index)

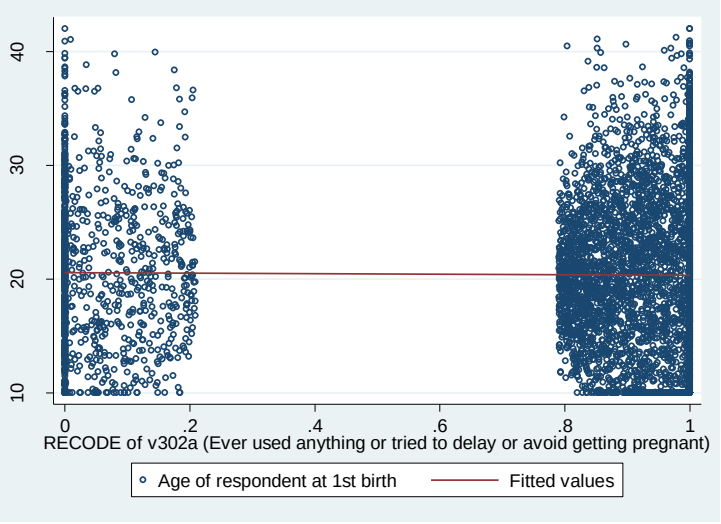

No education
Primary
Secondary
Higher
0
.05
.1
.15
10
20
30
40
Age of respondent at 1st birth
Density
normal AGE_AT_FIRST_BIRTH
Graphs by Highest educational level

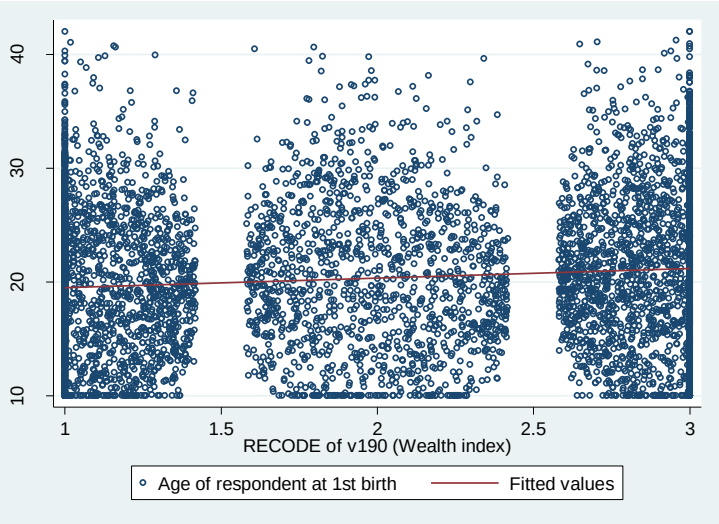
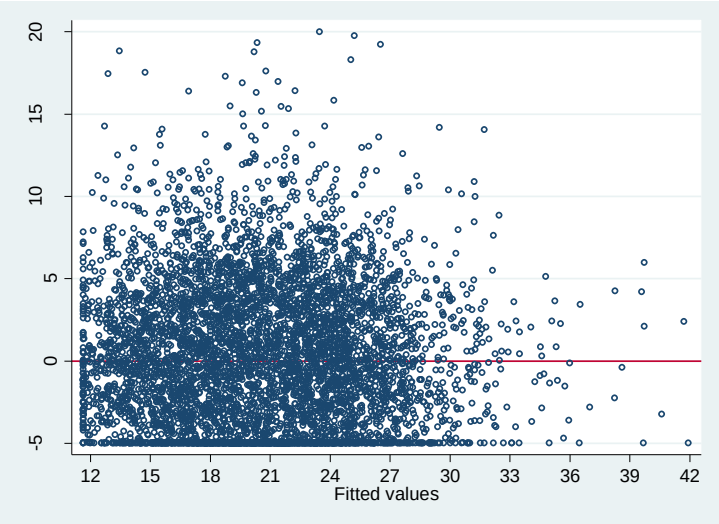
Linearity


10
20
30
40
0
1
2
3
Highest educational level
Age of respondent at 1st birth
Fitted values


10
20
30
40
1
1.5
2
2.5
3
RECODE of v024 (Region)
Age of respondent at 1st birth
Fitted values


10
20
30
40
1
2
3
4
5
RECODE of religny (RECODE of religy (RECODE of v130 (Religion)))
Age of respondent at 1st birth
Fitted values


10
20
30
40
0
.2
.4
.6
.8
1
RECODE of v302a (Ever used anything or tried to delay or avoid getting pregnant)
Age of respondent at 1st birth
Fitted values



Homoscedasticity