

# DETERMINANTS OF PLACE OF DELIVERY AMONG WOMEN IN REPRODUCTIVE AGE IN BORAMA DISTRICT, AWDAL REGION IN SOMALILAND

Nasir Ibrahim Said

Public Health / College of Health Sciences / Amoud University



# Dr. Ismacil X Muxumed Aye, Amoud University

**Prof. Stig Wall, Umea University** 

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#### ABSTRACT

This study investigated the determinants on choice of place of delivery among women in reproductive age in Borama District, Awdal region in Somaliland. It specifically investigated the influence of socio-demographic, influence of maternal and influence of institutional on choice place of delivery among mothers in Borama district. Delivery, childbirth, or labour is the ending of a pregnancy by one or more babies leaving a woman's uterus by vaginal passage or caesarean. Choice of Place of delivery is selection where the pregnant mother give birth. It was categorized by home/ non-institutional and health facility/ institutional. Institutional births is low in urban and rural Somaliland were only 2.6%. Hospital deliveries are 54% in urban centers and 14% in the rural area (IRIN, 2012). Maternity clinic deliveries are 18% in the urban centers and 5% in the rural centers. Despite evident of low institutional delivery among mothers, the determinants on choice of place of delivery had not been investigated from an empirical standpoint and were largely unknown. Determinant on choice of place of delivery was characterized by socio- demographic, maternal and institutional. Guided by Reasoned Action / Planned Behavior theory, the study was conducted through cross-sectional survey research design on random sample of 373 women in reproductive age who have delivered at least once in the four sectors in Borama. Data was collected using questionnaire method in March 2018. The study found that 62.6% of women delivered at institutional, while 27.4% births occurred at home without the help of a skilled birth attendant. The socio-demographic factors,  $[\chi 2 (N = 350) = 8.437, p = .004]$ ; maternal factors,  $[\chi 2 (N = 350) = 29.619, p = .000]$ ; and institutional factors,  $[\gamma 2 (N = 350) = 6.096, p = .014]$  have a significant influence on choice of place of delivery among women's in reproductive age. The study concludes that institutional influence is the main determinant of choice of place of delivery among women in reproductive age in Borama.

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# LIST OF ABBREVIATIONS AND ACRONYMS

ANC	-	Antenatal Care
EDHS	-	Ethiopia Demographic Health Survey
GOK	-	Government of Kenya
KDHS	-	Kenya Demographic Health Survey
KNBS	-	Kenya National Bureau of statistics
MDG	-	Millennium Development Goal
МОН	-	Ministry of Health
NACOSTI	-	National Commission for Science, Technology and Innovation
SBA	-	Skilled Birth Attendant
ТВА	-	Traditional Birth Attendant
UBOS	-	Uganda Bureau of Statistics
UNICEF	-	United Nations Children Fund
WHO	-	World Health Organization
UNFPA	-	United Nations Population Fund

#### **INTRODUCTION**

#### **Background and Rationale**

Childbirth, or labour, or delivery, is the ending of a pregnancy by one or more babies leaving a woman's uterus by vaginal passage or caesarean section (Addai, 1998, 2000). In 2015, there were about 135 million births globally. In the developed countries, most deliveries occur in hospital (Cooper & Schindler, 2003), while in the developing countries, most births take place at home, with the support of a traditional birth attendant (Fatusi & Ijadunola, 2003). Home delivery is a delivery that is not attended by a trained health worker using a safe delivery kit or attended by a non-trained person (Fotso, Ezeh & Essendi, 2009).

Non-institutional (home) birth was, until the advent of modern medicine, the de facto method of delivery (Kruk, Paczkowski, Tegegn, Tessema, Hadley, Asefa & Galea, 2010). In many developed countries, home birth declined rapidly over the 20<sup>th</sup> century. In the United States there was a large shift towards hospital births beginning around 1900, when close to 100% of births were at home. Rates fell to 50% in 1938 and to less than 1% in 1955 (Kyomuhendo, 2003). Since 2000 a shift back towards non-institutional deliveries brought the rate up from 0.54% in 2004 to 0.72% in 2009 (Man'ong'o, 2013). In the United Kingdom a similar but slower trend happened with approximately 80% of births occurring at home in the 1920s and only 1% in 1991 (Magadi, Agwanda & Obare, 2007). In Japan the change in birth location happened much later, but much faster: home birth was at 95% in 1950, but only 1.2% in 1975 (Man'ong'o, 2013).

In developed countries, home birth is relatively low (Kitui, Lewis & Davey, 2013), though this varies widely, with the Netherlands having a higher home birth rate than many high-income

countries. The US rate of out-of-hospital birth has remained steady at 1% of all births since 1989 (Man'ong'o, 2013). Non-institutional birth in the United Kingdom is only 3% and 0.3% in Wales. However, there is a wide range of home birth rates in the UK, with some regions around 1% and others over 20% (Montagu, Yamey, Visconti, Harding & Yoong, 2011). The New Zealand rate is 2.5% (Onah, Ikeako & Iloabachie, 2006); and in South Korean, non-institutional birth is less than 1.0% (Regidor, Martinez, Carell, Astasio, Ortega & Dominguez, 2008).

Home birth may be attended or unattended, planned or unplanned (Kruk, Paczkowski, Tegegn, Tessema, Hadley, Asefa & Galea, 2010). A planned home birth occurs at home by intention. An unplanned home birth occurs at home by necessity but not with intention (Kyomuhendo, 2003). Reasons for unplanned home births include inability to travel to the hospital or birthing center due to conditions outside the control of the mother such as weather or road blockages or speed of birth progression (Lahana, Papp & Niakas, 2011). The UK has a planned home birth rate of between 2-3% (Kowalewski, Jahn, & Kimatta, 2000).

Millennium Development Goal 5 (MDG 5) set a target of 75% reduction in maternal mortality, from 400/100,000 live births to 100/100,000 between the 1990 baseline and 2015 (Dietrich, 2010). Increasing the proportion of women who deliver in a health facility is one important means of reducing maternal mortality in low-income settings (Edwards, 2000). It is globally recognized that one of the main challenges to achieving the MDG 5 of a global reduction of maternal death by 75% by 2015 was the low proportion of women who deliver with skilled birth attendants (Envuladu et al., 2013).

Complications from pregnancy and childbirth result in about 500,000 maternal deaths annually, 7 million serious long term problems, and 50 million negative health outcomes (Envuladu, Agbo, Lassa, Kigbu & Zoakah, 2013). Most of these occur in the developing countries (Envuladu et al., 2013). Specific complications include obstructed labour, postpartum bleeding, eclampsia, and postpartum infection. The baby complications may include lack of oxygen at birth, birth trauma, prematurity, and infections (Asada & Kephart, 2007). This is the reason that is recommended that child delivery should take place in a health facility.

Institutional delivery is the best-recommended mode of child delivery. Free institutional childdelivery is one mode of achieving this goal and many countries have moved to provide free child delivery services. Deliveries in health facilities ensure that mothers are attended by skilled personnel. It also links mothers to the referral systems in case of any complications (Edwards, 2000; Forbes & Janzen, 2004). Skilled birth attendant is an accredited health professional such as a midwife, doctor or nurse, who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns (Gabrysch & Campbell, 2009).

Institutional deliveries are essential to ensuring that women receive quality care and deliver in an environment that is prepared for an emergency. Delivery in a health facility increases access to appropriate equipment and supplies available on site or through immediate referral to a higher-level facility (Seljeskog, Sundby & Chimango, 2006). It is also ensure that the delivery is carried out by skilled health personnel. Skilled attendants can predict and appropriately manage serious complications such as hemorrhage or sepsis, which are the leading killers of mothers during and after childbirth (Ronsmans & Graham, 2006; Thind, 2004). Globally, about one in five births (22%) take place without the assistance of a skilled birth attendant. This translates into nearly 31 million unattended births worldwide (Say & Raine, 2007). Non-institutional delivery is responsible for the annual deaths of an estimated 303,000 mothers and 2.7 million newborns in the first month of life (Satoko, Sophal & Susumu, 2006). Three quarters of all maternal deaths take place during delivery and in the immediate postpartum period (Say & Raine, 2007).

Globally, institutional deliveries have increased from an average of 51% in 2000 to more than 76% in 2015 (Doctor, Nkhana-Salimu and Abdulsalam-Anibilowo, 2017). But this is still low. Although institutional coverage of childbirth is increasing in the developing world, substantial births still occur outside of health facilities (Katung, 2001). In Eastern Europe and Central Asia, 97% of births are institutional. In Western Europe, 99%, Latin America and the Caribbean, 94% and in East Asia and the Pacific, 90% of births occur in health facilities (UNFPA, 2010). In contrast, in sub-Saharan Africa, only 56% births occur in a health facility, with a urban-rural gap of over 30 percentage points (78% and 46%) (Montagu D, Yamey G, Visconti A, Harding A, Yoong J 2011)

Institutional deliveries are low across Africa. In fact, the proportion of health facility delivery between 1995 and 2011 were in the range of 5-15 % (Kitui, Lewis & Davey, 2013; Katung et al., Davey, 2013).approximately 800 women still die from preventable causes related to pregnancy and childbirth every day and 99% of all maternal deaths occur in Africa. Somaliland is one of the worst maternal mortality rate in the world: 1,000 - 1,400 maternal deaths per 100,000 live births with an infant mortality rate is 73 per 1,000 births while the under-five mortality is approximately 117/1,000 (UNICEF, 2014). In 1997, 1,600 out of every 100,000

women giving birth were estimated to die in Somaliland. In 2006 was 1,044 per 100,000 (IRIN, 2012).

Somaliland has one of the worst maternal mortality ratios in the world, estimated to be between 10,443 and 14,004 per 100,000 live births (IRIN, 2012). The infant mortality rate is 73/1,000 while the under-five mortality [rate] is about 117/1,000 (IRIN, 2012). Maternal mortality is the leading cause of death among women of reproductive age; mainly due to hemorrhage, puerperal sepsis, eclampsia and obstructed labour (IRIN, 2012). In 2013, institutional births in urban and rural Somaliland were only 2.6%. Hospital deliveries are 54% in urban centers and 14% in the rural area (IRIN,2012). Maternity clinic deliveries are 18% in the urban centers and 5% in the rural centers. The present study focused on Boroma district because the rather of health facility delivery is low compared to other districts in Awdal region. This called to question the factors responsible, or the determinants.

Some of the widely reported determinants are demographic characteristics and socioeconomic status (Hendryx, Ahern, Lovrich, & McCurdy, 2002; the number of times of birth, and age at delivery (Ikeako, Onah & Iloabachie, 2006). Others are level of education, average monthly family income, and ANC attendance (Johanson, Newburn & Macfarlane, 2002). Health care provider's behavior and attitudes are also determinants of a choice of place of delivery. Some health workers are impolite, with offensive language and refusing to support the patients. These attitudes inhibit the women to deliver in health facilities (Gage & Calixte, 2006). Other factors are provider-client relationship. These factors can generally be grouped under three main themes: socio-demographic, maternal and institutional factors. The study investigated these factors because they subsume most of the factors listed by the several authors above.

Socio-demographic refers defined its sociological and group by to а demographic characteristics (Asada & Kephart, 2007). It refers to 'of, relating to, or involving a combination of social and demographic factors (Baker, 1994). Accoring to Bhatia and Cleland (1995) and Bloom et al. (2001), it looks at the life around individuals and characteristics such as age, gender, sexual orientation, race, religion, income, marital status, birth rate, death rate, average size of family, heritage, education, medical history. As Cooper and Schindler (2003) notes, it is basically a grouping of people by those characteristics. Socio-demographic variables also include total number of persons living in the house and living arrangements (Addai, 1998, 2000).

Institutional factors include systemic issues such as the quality of hospital care; availability of medicine and doctors to handle complications and geographical barriers to accessing health service (Dietrich, 2010). It also incldes infiormation systems; financing system, leadership and management practices, and human resources for health (Edwards, 2000). It also encompases medical prducts technologies and servuce delivery (Envuladu et al., 2013).

Maternal factors are many and varied. Some mothers prefer familiar surroundings while others just dislike a hospital or birthing center environment, or do not like a medically centered birthing experience (Magadi, Agwanda & Obare, 2007). Others dislike the presence of strangers at the birth (Man'ong'o, 2013). Maternal factors are those which relate to a particular mother and can affect how they act and behave (Fatusi & Ijadunola, 2003). This obviously has repercussions for overall health and safety as factors such as attitude, motivation and ability to do the task will all influence the way mothers work and how (Forbes & Janzen, 2004). Whilst some maternal factors may be ingrained into the character and be extremely difficult or even impossible to change, others can be influenced (Fotso et al., 2009). Knowledge can be changed

and improved (Gabrysch & Campbell, 2009), while motivation can be positively or negatively affected by a multitude of factors (Gage & Calixte, 2006).

This study was guided by the Theory of Reasoned Action / Planned Behavior, two closely associated theories. The Theory of Reasoned Action and the Theory of Planned Behavior postulates that a person's health behavior are determined by their intention to perform a behavior (Aronson, Wilson & Akert, 2003). In this context, a person's intention to perform a behavior (behavioral intention) is predicted by i) a person's attitude toward the behavior, and ii) subjective norms regarding the behavior (Ajzen, 2002). As Ajzen and Fishbein (2003) points out, subjective norms are the result of social and environmental surroundings and a person's perceived control over the behavior and according to Aronson et al. (2003), positive attitude and positive subjective norms result in greater perceived control and increase the likelihood of intentions governing changes in behavior.

Ajzen and Fishbein formulated in 1980 the theory of reasoned action (TRA). This resulted from attitude research from the Expectancy Value Models. Ajzen and Fishbein formulated the TRA after trying to estimate the discrepancy between attitude and behavior. This TRA was related to voluntary behavior. Later on behavior appeared not to be 100% voluntary and under control, this resulted in the addition of perceived behavioral control. With this addition, the theory was called the theory of planned behavior (TpB). The theory of planned behavior is a theory, which predicts deliberate behavior, because behavior can be deliberative and planned. This study holds that mothers can reason and change their behavior to use institutional deliveries if the right environment is created.

# **General Objective**

The broad objective of the study was to investigate the determinants of choice of place of delivery among women of reproductive age in Borama district, Awdal in Somaliland.

# **Specific Objectives**

This study was guided by the following specific objectives:

- To determine the association between socio-demographics factors and choice of place of delivery among mothers of reproductive age in Borama district.
- 2. To determine the association between maternal factors and choice of place of delivery among mothers of reproductive age in Borama district.
- 3. To determine the association between institutional factors and choice of place of delivery among mothers of reproductive age in Borama district.

# **Research Hypothesis**

This study was guided by the following research hypotheses:

- 1. There is a significant association between socio-demographics factors and choice of place of delivery among mothers of reproductive age in Borama district.
- 2. There is a significant association between maternal factors and choice of place of delivery among mothers of reproductive age in Borama district.
- 3. There is a significant association between institutional factors and choice of place of delivery among mothers of reproductive age in Borama district.

# **Conceptual Framework**



Figure 1. Conceptual framework.

#### **METHODS**

# **Study Design**

This study adopted a cross-sectional survey research design. A survey is a detailed study of a geographical area to collect data on attitudes, impressions, opinion or satisfaction levels, by polling a section of the population (Oso, 2016). The basic consideration in the choice of a survey is the absence of manipulation (Oso, 2016); a deliberate change of a variable (Oso, 2016). In this study, variables could not be manipulated because socio-demographic factors, maternal and institutional factors, and the place of delivery could not be deliberately altered especially as they relate to health. Absence of manipulation pointed to survey design as the most viable design. However, the survey design also added other benefits such as a high level of general capacity in representing a large population, low cost, convenient data gathering, several statistical methods and high precision of results (Oso, 2016).

Survey is a descriptive research design. Like other research designs, a survey generally examine situations as they are; they do not attempt to change or modify situations under investigation nor do they attempt to detect cause-effects). Survey studies, or as they are also called, normative or status studies, are present oriented studies designed to investigate populations by selecting samples to analyze and discover occurrences, and provide quantitative descriptions of some part of a population within a slice of time. Surveys basically explore, describe and explain opinions, attitudes, preferences and perceptions of groups of people of interest to a researcher. Surveys involve researchers asking (usually) a large group of people questions related to the issue at hand. Survey research uses mainly questionnaires to collect basic descriptive information from broad samples, and interviews to gather in depth responses usually from small samples or on sensitive topics, and to elicit deeper responses that cannot be adequately captured by questionnaires.

Surveys gather facts (rather than manipulate variables) to discover, clarify and describe incidences, distribution, or interrelationship among variables to fully explain the phenomenon involved. Surveys are broadly classified as census and sample surveys. In a census survey, a researcher collects data from each individual member of the whole population; it is a complete enumeration of the population. In a sample, survey data is collected from a part of the population (the sample) with the intention of generalizing the results from the sample to the population. Surveys can also be classified as descriptive and exploratory. Exploratory surveys determine the status of a defined population with respect to certain variables and measures, and describe what exit without questioning why they exist. For example, a study that determines the number of males and females students in a college is descriptive when the proportions are not related to any other variable. Exploratory surveys explain why things are the way they are, by relating the status of the variables under study to other variables. Because they seek to explain, exploratory surveys always begin within hypotheses that direct data gathering.

There are two main types of survey research designs: cross sectional survey and longitudinal survey designs. The difference between the two survey designs found is in the time and procedure taken to collect data. A cross-sectional survey design collects data from a target population at one point in time. Data is collected from various cases at the same time - although the time taken to collect data may vary between a day and a few weeks. The researcher goes to the population and collects data from a fairly large cross-section of the population at one point in time, and then makes a report based on the data collected at once. The researcher has no intention of going back to the same population to collect the same data for the same study. Cross-sectional survey designs save time and cost which may be incurred in repeated data collections. In addition, since it collects data from several cases at the same time, it ensures

that a variety of views over the same issue are captured in a short time, and this increases the external validity of the study. However, cross-sectional surveys cannot trace changes over time because they are "one-short" studies.

Longitudinal (or developmental) surveys collect data from the same target population at different points in time in order to study changes over time. Data is collected over time and at specified points in time. The cases in a longitudinal survey are followed over a long period to track changes on the some issue of interest through collecting same data from the same cases (or case) over extended period of time. A major problem of longitudinal surveys is that they take a long time to collect data and since the same data is collected from the same case(s) over an extended time, there is a danger of losing some cases, or of the case(s) becoming fatigued due to repeated treatment or observation.they are a very effective way to study changes and trends of behavior over time.

# Setting

The study was conducted in Borama district, Awdal region. Borama is in northwestern Somaliland, about 120 Km northwest of Hargeisa, 283 Km southeast from Djibouti, and 3 km to the north of Ethiopian Border, lies at Latitude 9° and Longitude 23° (World Bank, 2003), with approximately 415,616 people (FAO, 2015). Borama is the headquarters of Awdal Region, and has more registered patients than other districts in Awdal Region. This made it a good cite for conducting a study of national importance, and to act as a pointer to other regions. Borama district is divided into 4 main sectors: sh. Osman (A), sh. Ali Jawhar (B), sh. Ahmed Salan (C) and sh. Makahil (D) by Borama municipality. Each sector was further divided into 4 sub-sectors, which we labelled them as: A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub> and A<sub>4</sub> and each sub-sector was even further divided into 4 smaller areas which we labelled them as A<sub>1.1</sub>, A<sub>1.2</sub>, A<sub>1.3</sub> and A<sub>1.4</sub>. The study particularly focused on socio-demographic factors, maternal and institutional factors, with respect to socio-demographic factors, maternal and institutional factors, and the place of delivery. Data was collected using questionnaire method from a random sample of 373 women of reproductive age in March, 2018, analyzed using odds-ratio method and was reported in figures and tables.

# **Participants**

The target population of the study was 22,612 women of reproductive who have delivered at least once in Borama district. These are the people who have delivered at home or in the hospital and were better placed to explain why they delivered at those places. The accessible population of the study was the same as target population. Mothers who had delivered last three years by the time of the study and are residents of one of the four sectors in Borama district regardless of the time of the stay in the area. But mothers who were very sick or mentally disturbed who could not respond, and those who refused the oral consent were excluded from the study.

# Variables

The main variables in this study were determinants of place of delivery and place of delivery, as the independent and the dependent variables respectively. The determinants of place of delivery were conceptualized as socio-demographic factors, maternal and institutional factors. Socio-demographic factors was operationalized as age, education level, income levels and marital status; while maternal factors were operationalized as parity level, level of awareness on HFD, and past obstetric complications. Institutional factors were operationalized as attitude of health workers, availability and accessibility of drugs and equipment, affordability of services and distance between home and the nearest delivery facility. Place of delivery, the

dependent variable was operationalized as at home or non-institutional, and a health facility (or institutional). The outcome was visualized in terms of maternal mortality, maternal morbidity, productivity of the generation, expenditure on health care, and disability. The intervening variable was policy implementation. There were no conceived extraneous factors.

# **Data Sources and Measurements**

All data was obtained from mothers who had delivered last three years by the time of the study and are residents of one of the four sectors in Borama district regardless of the time of the stay in the area. The respondents were requested to react to several statements on each sub-variable intended to measure the status of the main variable. Responses on each sub-variable were coded and scored on a minimum of 1 and a maximum of 5. The scores on each sub- variable were added to obtain the score on the main variable, and then converted to the scale of good and poor. The scores on socio-demographic factors ranged between 4 - 20 and were classified such that 4-10 scores were rated poor and coded 1; and scores of 11-20 were rated good and scored 2. The scores on maternal factors ranged between 3 - 15 and were classified such that 3 - 8 scores were rated poor and coded 1; and scores of 9 - 15 were rated good and scored 2. The scores on institutional factors ranged between 4 - 20 and were classified such that 4 - 10 scores were rated poor and coded 1; and scores of 9 - 15 were rated good and scored 2. The scores on institutional factors ranged between 4 - 20 and were classified such that 4 - 10 scores

The dependent variable was place of birth and was measured from the place of last delivery. The place of birth was was coded 0 for home birth and 1 for institutional. The variables were coded, weighted and rated as summarized in Table 1.

# Table 1

# Measurement of Variables

			Score/Status/Code				
Variable	Indicators	Data Source	Good = 2	Poor = 1	Scale	Analysis Method	
Socio-demographic	Age at birth.						
factors.	Education level.	Women 18-49	11 - 20	4 - 11		Odds-ratio	
	Income level.	years.					
	Marital status.						
	Parity level.	Women 18 /0	9 – 15	3 - 8	Interval	Odds-ratio	
Maternal factors.	Awareness on HFD.	Women 18-49					
	Past obstetric complications.	years.					
	Attitude of health workers.						
	Availability/accessibility of		11 - 20	4 - 11	Interval	Odds-ratio	
Institutional	drugs and equipment.	Women 18-49					
Factors.	Affordability of services.	years.			inter var		
	Distance between home and the						
	nearest delivery facility.						
	Home or non-institutional.	Women 18-49	Institutional = 1	Home = 0	Ordinal	Odds-ratio	
Place of Delivery.	A health facility (or	Vears					
	institutional).	years.					

#### Bias

The researcher informed all participants of the intention of the study. The researcher also ensured that data was collected and analyzed professionally. The researcher obtained all the necessary permits to ensure that the study did not break any ethical obligation. Further, the researcher treated all information provided with utmost privacy and confidentiality and no information was passed to third parties without express permission from the respondent. All sources of potential bias were professionally eliminated by the researcher.

# **Study Size**

The sample was 378 women of reproductive age. This was determined according to Krejcie and Morgan (as cited in Oso, 2016), tables of samples. This table is highly recognized as a tool for determining sample sizes (Oso, 2016). It recommends a sample of 378 for a population of 22,612 at 95% level of significance and 5% margin of error. These were the same parameters set in this study.

# **Statistical Methods**

The study used odds-ratio (OR) to determine the determinants of place of delivery among women of reproductive in Boroma district. Odds-ratio is a measure of association between an exposure and an outcome; and represents the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure (Scotia, 2010). In this study, exposure was determinant while outcome was place of delivery. In this study researcher wanted to compare whether the odds of place of delivery were different based on certain factors. The OR can also be used to determine whether a particular exposure is a risk factor for a particular outcome, and to compare the magnitude of various risk factors for that outcome (Scotia, 2010). Further, the researcher wanted to compare whether the factors

(determinants) was a risk factor to place of birth; and if so, to assess the magnitude of the risk. The OR is also a measure of effect size and therefore enabled the researcher to determine the strength of the relationship between a determinant and place of birth (Oso, 2016). In applying OR, the researcher proceeded as shown in Table 2

# Table 2

# General Structure of an Odds-Ratio

	Place of birth			
	Institutional	Home	Total	
Exposed (good status)	A	b	a+b	
Un-exposed (poor status)	С	d	c+d	
Total	a+c	b+d	a+b+c+d	

$$OR = \frac{a}{c} / \frac{b}{d} = \frac{ad}{cb}$$
(1)

Analysis of OR was based on the fact that if:

- i. OR = 1, then exposure (good status) does not affect odds of outcome (place of birth), and is not effective;
- ii. OR >1, then exposure (good status) is associated with higher odds of outcome (place of birth); in which case, determinant is effective; and
- iii. OR < 1, then exposure (good status) is associated with lower odds of outcome (place of birth), and in which case, determinant is not effective (Scotia, 2010).</li>

There is a close association between OR and logistic regression. When a logistic regression is calculated; the regression coefficient ( $b_i$ ) is the estimated increase in the log odds of the outcome per unit increase in the value of the exposure (Scotia, 2010). In other words, the exponential function of the regression coefficient ( $e^{b1}$ ) is the odds ratio associated with a one-

unit increase in the exposure (Scotia, 2010). The study therefore obtained the OR from logistic regression. Logistic regression also provided further statistics for fitting a model for predicting place of birth based on the determinants. The data was analyzed at 5% margin of error, confidence level of 95% and 0.05 level of significance. These statistics were selected because they are the conventional measures in social science research (Oso, 2016).

#### RESULTS

# **Participants**

This study investigated the determinants of place of delivery among mothers of reproductive age in Borama district, Somaliland. A determinant is a factor that predisposes a mother to deliver in a particular place of choice. A determinant was conceptualized as socio-demographic factors, maternal factors and institutional factors. The study arose from the fact that the prevalence of home delivery among mothers of reproductive age was high in Borama district. Home deliveries are generally 77.25%. The sample size designed for this study was 373, but 350 respondents returned complete data. This was a 93.82% response return-rate which was acceptable, being more than the 70% response return-rate recommended in social science research (Oso, 2016). Data was collected on background information of the respondents, on socio-demographic factors, on maternal factors and on institutional factors, and on place of birth. This chapter presents the results and findings of the study along these major themes.

# **Descriptive Data**





# Figure 2. Age of respondents.

From Figure 2, most (36.6%) of the mothers surveyed were aged 30-39 years while 35.7% were aged 40-49 years. However, a majority (72.3%) of the mothers was aged at least 30 years. Those is quite an advanced age for giving birth.



Figure 3. Marital status of respondents.

Figure 3shows marital status a majority (75.1%) of the mothers were married and only 8.0% of the mothers were separated.



Figure 4. Employment of respondents.

Figure 4 shows that most (49.7%) mothers were not employed. Only 15.4% of the mothers were in formal employment.

# **Outcome Data**

The outcome variable was place of birth and was measured from the place of last delivery. The place of birth was coded 0 for home birth and 1 for institutional. The place of birth was distributed as shown in Table 3.

# Table 3

	Palace of Birth		
	Home	Institutional	Total
Count	131	219	350
Percent	37.4	62.6	100.0

Table 3 shows the distribution of respondents by place of delivery. While majority (62.6%) of mothers surveyed delivered in a medicinal facility, a large percentage of mothers (37.4%) still delivered outside institutional facility, yet they are in town where there are several facilities. This adds to the fact that home deliveries are still high in Bororma district.

#### **Main Results**

The purpose of this study was to ascertain the determinants of the place of delivery among mothers of reproductive age in Borama District. To realize this purpose, the study investigated three specific objectives: It determined (i) the influence of socio-demographic factors (ii) the influence of maternal factors and (iii) the influence of institutional factors on choice of place of delivery among mothers of reproductive age in Borama District. The main results covered these three themes.

#### **Socio-Demographic Factors and Choice of Place of Delivery**

The first objective of this study was to determine the influence of socio-demographic factors on choice of place of delivery among mothers of reproductive age in Borama district. Socio-demographic factors were operationalized as age, education level, income levels and marital status. Choice of place of delivery was measured from the last delivery and coded 0 for home delivery and 1 for institutional delivery. The choice of place of delivery was compared against the status of socio-demographic factors, and the results summarized in Table 4 were obtained.

#### Table 4

#### Socio-demographic Factors and Choice of Place of Birth

		Place of Birth		
		Institutional	Home	Total
Socio-Demographic Factors	Good	38	43	81
Socio Demographie Lactors	Poor	93	176	269
	Total	131	219	350

Table 4 shows distribution of choice of place of birth with the status of socio-demographic factors among mothers of reproductive age in Borama district. Data on the last column show the overall status of socio-demographic factors. It shows that 269 (76.85%) of mothers of reproductive age surveyed had poor socio-demographic factors while 81 (23.14%) had good socio-demographic factors. Data on the last row show the overall prevalence of choice of place of delivery. It shows that same information that was presented in Table 3: 131 (37.4%) of mothers surveyed had delivered at home and 219 (62.6%) of the mothers surveyed had delivered their last babies in an institution. This generally shows that non-institutional deliveries are still common among mothers of reproductive age in Boroma district.

Table 4 further shows that 38 (46.91%) of mothers of reproductive age who had good sociodemographic factors delivered in intuitional facilities. But 93 (34.57%) of mothers with poor socio-demographic factors delivered in institutional facilities. This suggests that choice of place of birth is dependent on socio-demographic factors and better the socio-demographic factors the higher the chances of choosing institutional delivery. Hence socio-demographic factor can be said to be a determinant of the choice of pace of delivery.

Data in Table 4 was subjected to OR test to determine the odds of choice of place of delivery from the status of socio-demographic factors. This was done under the hypothesis that:

There is no significant difference in the odds of choice of place of delivery among mothers of reproductive age with good and poor socio-demographic factors.

 $H_{o1}: OR = \frac{Odds (good socio-demographic factors)}{Odds (poor socio-demographic factors)} = 1$ 

The OR was obtained through a logistic regression. Whenever a logistic regression is calculated, the regression coefficient  $(b_i)$  is the estimated increase in the OR. The results of the OR analysis are summarized in Table 5.

#### Table 5

	В	3	Wald	df	Sig.	Exp(B)	$N\overline{R}^2$	Fit
Constant	931	.463	.711	1	.399	.677		
SDF	.514	.257	4.007	1	.045	1.672	.015	62.6

Summary of OR of Choice of Place of Delivery with Socio-demographic Factors

*Note*.  $\chi^2(1, .05) = 3.840$ ; SDF = Socio-demographic Factors.

Table 5 shows a summary of the results of OR analysis of choice of place of delivery among mothers of reproductive age in Borama with status of socio-demographic factors. The Exp (B) is the OR of choice of place of delivery with status of socio-demographic factors. The OR = Exp (B) = 1.672 shows that the odds of choice of institutional delivery is 1.672 times higher for mothers with good socio-demographic factors than for mothers of reproductive age with poor socio-demographic factors. Therefore, mothers of reproductive age with good socio-demographic factors are 1.672 times likely to deliver in institutional facilities than mothers of reproductive age with poor socio-demographic factors. Further, the odds for delivering in institutional facilities are (1.672-1)\*100 = 67.2% higher for mothers of reproductive age with poor socio-demographic factors than for mothers of reproductive age with poor socio-demographic factors. Further, the odds for delivering in institutional facilities are (1.672-1)\*100 = 67.2\% higher for mothers of reproductive age with good socio-demographic factors than for mothers of reproductive age with poor socio-demographic factors is a significant determinant of place of delivery among mother of reproductive age in Boroma district.

The Wald statistic  $\left(\frac{.514}{.257}\right)^2 = 4.007$  measures the overall significance of the model. It is also the chi-square value for the data in Table 4. Therefore  $\chi^2 (N = 350) = 4.007$ , p = .045 led to the rejection of the null hypothesis. The hypothesis that there is no significant difference in the odds for choice of place of delivery among mothers of reproductive age with good and poor

socio-demographic factors was therefore rejected. There are significant differences in the odds of choice of place of delivery among mothers of reproductive age with good and poor sociodemographic factors. Therefore, socio-demographic factors are significant determinants of the choice of place of delivery mothers of reproductive age in Borama district. The position suggested by data in Table 4 was therefore upheld: mothers of reproductive age with good socio-demographic factors tend to have high chance of choosing institutional delivery than mothers of reproductive age with poor socio-demographic factors.

In Table 5, B is the unstandardized regression coefficients. From the coefficient of B, a model was developed as:

Logit ( $\pi$ ) = .514SDF - .391

(2)where SDF is socio-demographic factors. This model shows that for a unit improvement in the odds for choice of place of delivery, an increase of .514 units in socio-demographic factors is required, other factors notwithstanding. The study therefore established that socio-demographic factors is a determinant of the choice of place of delivery among mothers of reproductive age in Borama district, and accounts for about 1.5% (N $\overline{R}^2$  = .015) of the choice of place of delivery, other factors notwithstanding.

#### Maternal Factors and Choice of Place of Delivery

The second objective of this study was to determine the influence of maternal factors on choice of place of delivery among mothers of reproductive age in Borama district. Maternal factors were operationalized as parity level, level of awareness on HFD. Choice of place of delivery was measured from the last delivery and coded 0 for home delivery and 1 for institutional delivery. The data in Table 6 were obtained.

# Table 6

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Maternal Factors and Choice of Place of Birth

Table 6 shows distribution of choice of place of birth with the status of maternal factors among mothers of reproductive age in Borama district. Data on the last column show the overall status of maternal factors. It shows that 279 (79.71%) of mothers of reproductive age surveyed had poor maternal factors while 71 (20.28%) had good maternal factors. Data on the last row show the overall prevalence of choice of place of delivery. It shows that same information that was presented in Table 3 and Table 4: 131 (37.4%) of mothers surveyed had delivered at home and 219 (62.6%) of the mothers surveyed had delivered their last babies in an institution. Like in the case of Tables 3 and 4, it generally shows that non-institutional deliveries are still common among mothers of reproductive age in Boroma district.

Table 6 further shows that 49 (69.01%) of mothers of reproductive age who had good maternal factors delivered in intuitional facilities; while 82 (26.39%) of mothers with poor maternal factors delivered in institutional facilities. This suggests that choice of place of birth is dependent on maternal factors and the better the maternal factors, the higher the chances of choosing institutional delivery. Hence, maternal factors can be said to be a determinant of the choice of pace of delivery.

Data in Table 6 was subjected to OR test to determine the odds of choice of place of delivery from the status of maternal factors. This was done under the hypothesis that:

There is no significant difference in the odds of choice of place of delivery among mothers of reproductive age with good and poor maternal factors.

$$H_{o2}: OR = \frac{Odds (good maternal Factors)}{Odds (poor maternal Factors)} = 1$$

The OR was obtained through a logistic regression. The results of the OR analysis are summarized in Table 7.

#### Table 7

Summary of OR of Choice of Place of Delivery with Maternal Factors

	В	3	Wald	df	Sig.	Exp(B)	$N\overline{R}^2$	Fit
Constant	-2.478	.530	21.875	1	.000	.084		
MTL	1.677	.288	33.839	1	.000	5.351	.137	70.3

*Note*.  $\chi^2(1, .05) = 3.840$ ; MTL = Maternal Factors.

Table 7 shows a summary of the results of OR analysis of choice of place of delivery among mothers of reproductive age in Borama with status of maternal factors. The Exp (B) is the OR of choice of place of delivery with status of maternal factors. The OR = Exp (B) = 5.351 shows that the odds of choice of institutional delivery is 5.351 times higher for mothers with good maternal factors than for mothers of reproductive age with poor maternal factors. Therefore, mothers of reproductive age with good maternal factors are 5.351 times likely to deliver in institutional facilities than mothers of reproductive age with poor maternal factors. Further, the odds for delivering in institutional facilities are (5.351-1)\*100 = 435.1% higher for mothers of reproductive age with poor maternal factors is a maternal factors. Hence it can be concluded from this results that maternal factors is a

significant determinant of place of delivery among mother of reproductive age in Boroma district.

The Wald statistic  $\left(\frac{1.677}{.288}\right)^2 = 33.839$  measures the overall significance of the model. It is also the chi-square value for the data in Table 4. Therefore  $\chi^2$  (N = 350) = 33.839, p = .000 led to the rejection of the null hypothesis. The hypothesis that there is no significant difference in the odds for choice of place of delivery among mothers of reproductive age with good and poor maternal factors was therefore rejected. There are significant differences in the odds of choice of place of delivery among mothers of reproductive age with good and poor maternal factors. Therefore, maternal factors are significant determinants of the choice of place of delivery mothers of reproductive age in Borama district. The position suggested by data in Table 6 was therefore upheld: mothers of reproductive age with good maternal factors tend to have high chance of choosing institutional delivery than mothers of reproductive age with poor maternal factors.

In Table 7, B is the unstandardized regression coefficients. From the coefficient of B, a model was developed as:

Logit ( $\pi$ ) = 1.677SDF – 2.478

(3)where SDF is maternal factors. This model shows that for a unit improvement in the odds for choice of place of delivery, an increase of 1.677 units in maternal factors is required, other factors notwithstanding. The study therefore established that maternal factors is a determinant of the choice of place of delivery among mothers of reproductive age in Borama district, and accounts for about 13.7% (N $\overline{R}^2 = .137$ ) of the choice of place of delivery, other factors notwithstanding.

#### **Institutional Factors and Choice of Place of Delivery**

The last objective of this study was to determine the influence of institutional factors on choice of place of delivery among mothers of reproductive age in Borama district. Institutional factors were operationalized attitude of health workers, availability and accessibility of drugs and equipment, affordability of services and distance between home and the nearest delivery facility. Choice of place of delivery was measured from the last delivery and coded 0 for home delivery and 1 for institutional delivery. The data in Table 8 were obtained.

#### Table 8

#### Institutional Factors and Choice of Place of Birth

		Place of Birth		
		Institutional	Home	Total
Institutional Factors	Good	65	61	126
	Poor	66	158	224
	Total	131	219	350

Table 8 shows distribution of choice of place of birth with the status of institutional factors among mothers of reproductive age in Borama district. Data on the last column show the overall status of institutional factors. It shows that 224 (64.0%) of mothers of reproductive age surveyed had poor institutional factors while 126 (36.0%) had good institutional factors. Data on the last row show the overall prevalence of choice of place of delivery. It shows that same information that was presented in Table 3, Table 4 and Table 6: 131 (37.4%) of mothers surveyed had delivered at home and 219 (62.6%) of the mothers surveyed had delivered their last babies in an institution. Like in the case of Tables 3, 4 and 6, it generally shows that non-institutional deliveries are still common among mothers of reproductive age in Boroma district.

Table 8 further shows that 65 (51.58%) of mothers of reproductive age who had good institutional factors delivered in intuitional facilities; while 66 (29.46%) of mothers with poor institutional factors delivered in institutional facilities. This suggests that choice of place of birth is dependent on institutional factors and the better the institutional factors, the higher the chances of choosing institutional delivery. Hence, institutional factors can be said to be a determinant of the choice of pace of delivery.

Data in Table 8 was subjected to OR test to determine the odds of choice of place of delivery from the status of institutional factors. This was done under the hypothesis that:

There is no significant difference in the odds of choice of place of delivery among mothers of reproductive age with good and poor institutional factors.

 $H_{03}$ : OR =  $\frac{\text{Odds (good institutional factors)}}{\text{Odds (poor institutional factors)}} = 1$ 

The OR was obtained through a logistic regression. The results of the OR analysis are summarized in Table 9.

#### Table 9

Summary of OR of Choice of Place of Delivery with Institutional Factors

	В	3	Wald	df	Sig.	Exp(B)	NR <sup>2</sup>	Fit
Constant	-1.000	.385	6.729	1	.009	.368		
INF	.936	.231	16.466	1	.000	2.551	.063	63.7

*Note*.  $\chi^2(1, .05) = 3.840$ ; INF = Institutional Factors.

Table 7 shows a summary of the results of OR analysis of choice of place of delivery among mothers of reproductive age in Borama with status of institutional factors. The Exp (B) is the

OR of choice of place of delivery with status of institutional factors. The OR = Exp (B) = 2.551 shows that the odds of choice of institutional delivery is 2.551 times higher for mothers with good institutional factors than for mothers of reproductive age with poor institutional factors. Therefore, mothers of reproductive age with good institutional factors are 2.551 times likely to deliver in institutional facilities than mothers of reproductive age with poor institutional factors. Further, the odds for delivering in institutional facilities are (2.551-1)\*100 = 155.1% higher for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors than for mothers of reproductive age in Boroma district.

The Wald statistic  $\left(\frac{936}{231}\right)^2 = 16.466$  measures the overall significance of the model. It is also the chi-square value for the data in Table 4. Therefore  $\chi^2$  (N = 350) = 16.466, p = .000 led to the rejection of the null hypothesis. The hypothesis that there is no significant difference in the odds for choice of place of delivery among mothers of reproductive age with good and poor institutional factors was therefore rejected. There are significant differences in the odds of choice of place of delivery among mothers of reproductive age with good and poor institutional factors. Therefore, institutional factors are significant determinants of the choice of place of delivery mothers of reproductive age in Borama district. The position suggested by data in Table 8 was therefore upheld: mothers of reproductive age with good institutional factors tend to have high chance of choosing institutional delivery than mothers of reproductive age with poor institutional factors.

In Table 9, B is the unstandardized regression coefficients. From the coefficient of B, a model was developed as:

Logit 
$$(\pi) = .936INF - 1.000$$
 (4)

where INF is institutional factors. This model shows that for a unit improvement in the odds for choice of place of delivery, an increase of .936 units in institutional factors is required, other factors notwithstanding. The study therefore established that institutional factors is a determinant of the choice of place of delivery among mothers of reproductive age in Borama district, and accounts for about 6.3% (N $\overline{R}^2 = .063$ ) of the choice of place of delivery, other factors notwithstanding.

# Socio-Demographic Factors, Maternal and Institutional Factors, and Place of Delivery

The three determinants should ideally interact together to determine the place of delivery. Social variables do not usually act in isolation. So while each has its lone effect as has been determined and presented in the preceding sections, it was necessary to determine how the three factors interact to influence choice of place of delivery among mothers of reproductive age. Hence, the three elements were taken together on to determine the odds of choice of place of delivery. This was investigated under the hypothesis that:

There is no significant difference in the odds of place of delivery among mothers with different status of socio-demographic, maternal and institutional factors.

 $H_{o4}: OR = \frac{Odds (good socio-demographic factors, maternal factors and institutional factors)}{Odds (poor socio-demographic factors, maternal factors and institutional factors)} = 1$ 

The results of the OR analysis are summarized in Table 10.

#### Table 10

OR of Choice of Place of Delivery with Socio-demographic Factors, Maternal Factors and Institutional Factors

	В	3	Wald	df	Sig.	Exp(B)	$N\overline{R}^2$	Fit
Constant	-4.869	.854	32.520	1	.000	.008	-	-
SDF	.806	.277	8.427	1	.004	2.238	-	-
MTL	1.667	.306	29.619	1	.000	5.296	-	-
INF	.617	.250	6.096	1	.014	1.853	-	-
Model	-	-	-	-	-	-	.189	69.7

*Note*.  $\chi^2(1, .05) = 3.840$ ; SDF = Socio-demographic Factors; MTL = Maternal Factors; INF = Institutional Factors.

Table 10 shows the OR analysis of socio-demographic factors, maternal factors and institutional factors with choice of place of delivery among mothers of reproductive age in Borama district. It shows that when taken together, socio-demographic factors,  $[\chi^2 (N = 350) = 8.437, p = .004]$ , maternal factors,  $[\chi^2 (N = 350) = 29.619, p = .000]$ , and institutional factors,  $[\chi^2 (N = 350) = 6.096, p = .014]$ , are significant determinants of choice of place of delivery. Hence, all factors are significant determinants when taken together.

When taken together, the OR of socio-demographic factors, Exp(B) = 2.238, shows that the odds of delivery at an institution is 2.238 times higher for mothers of reproductive age with good socio-demographic factors than for mothers of reproductive age with poor socio-demographic factors. Therefore, mothers of reproductive age with good socio-demographic factors are 2.238 times likely to deliver at a health facility than mothers of reproductive age with poor socio-demographic factors. The odds for choice of place of institutional delivery are

(2.238-1)\*100 = 123.8% higher for mothers of reproductive age with good socio-demographic factors than for mothers of reproductive age with poor socio-demographic factors, when all three elements are taken together.

The OR of maternal factors, Exp (B) = 5.296, shows that the odds of delivery at an institution is 5.296 times higher for mothers of reproductive age with good maternal factors than for mothers of reproductive age with poor maternal factors. Therefore mothers of reproductive age with good maternal factors are 5.296 times likely to deliver at a health facility than mothers of reproductive age with poor maternal factors. The odds for choice of place of institutional delivery are (5.296-1)\*100 = 429.6% higher for mothers of reproductive age with good maternal factors than for mothers of reproductive age with poor maternal factors, when all three elements are taken together.

The OR of institutional factors, Exp (B) = 1.853, shows that the odds of delivery at an institution is 1.853 times higher for mothers of reproductive age with good institutional factors than for mothers of reproductive age with poor institutional factors. Therefore, mothers of reproductive age with good institutional factors are 1.853 times likely to deliver at a health facility than mothers of reproductive age with poor institutional factors. The odds for choice of place of institutional delivery are (1.853-1)\*100 = 85.3% higher for mothers of reproductive age with good institutional factors than for mothers of reproductive age with good institutional factors are 1.853, higher for mothers of reproductive age with good institutional factors are 1.853, higher for mothers of reproductive age with good institutional factors than for mothers of reproductive age with poor institutional factors, when all three elements are taken together.

A model for the interaction between socio-demographic factors, maternal factors and institutional factors for odds of choice of place of delivery was developed as:

Logit 
$$(\pi) = .806$$
SDF + 1.667MTL + .617INF - 4.869 (5)

where SDF is = Socio-demographic Factors; MTL is Maternal Factors; INF is Institutional Factors. Togetgter, the three determinats account for 18.9% of the variance of the log of odds for the choice of place of delivery among mothers of reproductive age in Borama district, ( $N\overline{R}^2$  = .063), other factors notwithstanding with a model fit of 69.7%.

# Discussion

This study found that socio-demographic factors are significant determinants of the choice of place of delivery mothers of reproductive age in Borama district,  $\chi^2$  (N = 350) = 4.007, *p* = .045. This support the position advanced earlier by Hendryx et al. (2002) that the number of times of birth, and age at delivery are important in influencing, mothers choice of place for delivery. Further, and as Johanson et al. (2002) also point out, level of education, income area also important influencers. Generally, a combination of social and demographic factors are important indicators of where the mother will deliver (Gabrysch & Campbell, 2009).. In any case, institutional delivery remains one modes of achieving this goal. Therefore, Somaliland should move a head like other countries to provide free child delivery services. This is the only way to ensure that mothers are attended by skilled personnel while linking mothers to the referral systems in case of any complications (Edwards, 2000; Forbes & Janzen, 2004).

The author concurs with Seljeskog, Sundby and Chimango (2006) that institutional deliveries are essential to ensuring that women receive quality care and deliver in an environment that is prepared for an emergency. This will increase access to appropriate equipment and supplies available on site or through immediate referral to a higher-level facility (Seljeskog, Sundby & Chimango, 2006). It will also ensure that the delivery is carried out by skilled health personnel. Skilled attendants can predict and appropriately manage serious complications such as hemorrhage or sepsis, which are the leading killers of mothers during and after childbirth (Ronsmans & Graham, 2006; Thind, 2004).

Socio-demographic are the group defined by its sociological and demographic characteristics (Asada & Kephart, 2007); referring to 'or, relating to, or involving a combination of social and demographic factors. It is concerned with life around individuals and characteristics such as age, gender, sexual orientation, race, religion, income, marital status, birth rate, death rate, average size of family, heritage, education, and medical history. As Cooper and Schindler (2003) notes, it is a grouping of people by those characteristics. Socio-demographic variables also include total number of persons living in the house and living arrangements (Addai, 1998, 2000).

The study also found that maternal factors are significant determinants of the choice of place of delivery mothers of reproductive age in Borama district,  $\chi^2 (N = 350) = 33.839$ , p = .000. as pointed out earlier, maternal factors are those which relate to a particular mother and can affect how they act and behave. From this definition, maternal factors have repercussions for overall health and safety. As Forbes and Janzen (2004) obsrved, attitude, motivation and ability influences the way mothers work. Therefore, the preferences of a mother, the likes and dislikes of a mother for a hospital or birthing center environment will influence the choice of place of delivery.

As pointed out, maternal factors are many and varied. The author concurs with Magadi, Agwanda and Obare (2007) that while some mothers prefer familiar surroundings, others just dislike a hospital or birthing center environment, or do not like a medically centered birthing experience. Others dislike the presence of strangers at the birth (Man'ong'o, 2013). It

si thertefore c;ear that maternal factors can affect how mothers act and behave (Fatusi & Ijadunola, 2003); and this will have repercussions for overall health and safety as factors such as attitude, motivation and ability to do the task will all influence the way mothers work and how (Forbes & Janzen, 2004). Nevertneels, while some maternal factors may be ingrained into the character and be extremely difficult or even impossible to change, others can be influenced (Fotso et al., 2009). Knowledge can be changed and improved (Gabrysch & Campbell, 2009), while motivation can be positively or negatively affected by a multitude of factors (Gage & Calixte, 2006).

As pointed out earlier, some of the widely reported determinants are demographic characteristics and socioeconomic status (Hendryx, Ahern, Lovrich, & McCurdy, 2002); the number of times of birth, and age at delivery (Ikeako, Onah & Iloabachie, 2006); and even the level education, average monthly family ANC of income, and attendance (Johanson, Newburn & Macfarlane, 2002). Health care provider's behavior and attitudes are also determinants of a choice of place of delivery. Some health workers are impolite, with offensive language and refusing to support the patients. These attitudes inhibit the women to deliver in health facilities (Gage & Calixte, 2006).

The study also established that institutional factors are also significant determinants of the choice of place of delivery mothers of reproductive age in Borama district,  $\chi^2$  (N = 350) = 16.466, p = .000. Mothers of reproductive age with good institutional factors tend to have high chance of choosing institutional delivery than mothers of reproductive age with poor institutional factors. This finding can be understood from Institutional factors as systemic issues such as the quality of hospital care; availability of medicine and doctors to handle complications. If these are not available, mothers are likely to resort to unskilled birth

attendants who are always available. However, as Dietrich (2010) pointed out, it can also be dure to infiormation systems, leadership and management practices adopted by the health institution. However, the behavior of health personal is also important. The author concurs with Gage and Calixte (2006) that health care provider's behavior and attitudes are determinants of a choice of place of delivery. Health workers with impolite and offensive language and who refuse to support patients can easily turn mothers away.

As pointed out already, institutional factors include systemic issues such as the quality of hospital care; availability of medicine and doctors to handle complications and geographical barriers to accessing health service. They also include infiormation systems; financing system, leadership and management practices, and human resources for health (Edwards, 2000). It also encompases medical prducts technologies and servuce delivery (Envuladu et al., 2013). No dobut, institutional delivery remains the best-recommended mode of child delivery, and free institutional child-delivery the best mode of achieving it. Deliveries in health facilities ensure that mothers are attended by skilled personnel and links mothers to the referral systems in case of any complications (Edwards, 2000; Forbes & Janzen, 2004).

Institutional deliveries are essential to ensuring that women receive quality care and deliver in an environment that is prepared for an emergency. Delivery in a health facility increases access to appropriate equipment and supplies available on site or through immediate referral to a higher-level facility (Seljeskog, Sundby & Chimango, 2006). It is also ensure that the delivery is carried out by skilled health personnel. Skilled attendants can predict and appropriately manage serious complications such as hemorrhage or sepsis, which are the leading killers of mothers during and after childbirth (Ronsmans & Graham, 2006; Thind, 2004). Home birth, whether attended or unattended, planned or unplanned should be discouraged (Kruk, Paczkowski, Tegegn, Tessema, Hadley, Asefa & Galea, 2010). While reasons for unplanned home births may be valid, such as inability to travel to the hospital or birthing center due to conditions outside the control of the mother such as weather or road blockages or speed of birth progression (Lahana, Papp & Niakas, 2011), it is not a good optiuon for delivery

# **Key Results**

This study investigated three specific objectives and made three main findings, but alongside other results. The study found that:

- 1. Socio-demographic factors are significant determinants of the choice of place of delivery mothers of reproductive age in Borama district,  $\chi^2$  (N = 350) = 4.007, p = .045. Sociodemographic factors accounts for about 1.5% of the choice of place of delivery, other factors notwithstanding, N $\overline{R}^2$  = .015. The prediction model is Logit ( $\pi$ ) = .514SDF - .391, with 62.6% fit.
- 2. Maternal factors are significant determinant of the choice of place of delivery mothers of reproductive age in Borama district,  $\chi^2$  (N = 350) = 33.839, p = .000. Maternal factors accounts for about 13.7% of the choice of place of delivery, other factors notwithstanding, N $\overline{R}^2$  = .137. the logistic model Logit ( $\pi$ ) = 1.677SDF 2.478, is 70.3% fit.
- 3. Institutional factors are significant determinants of the choice of place of delivery mothers of reproductive age in Borama district,  $\chi^2 (N = 350) = 16.466$ , p = .000. Institutional factors accounts for about 6.3% of the choice of place of delivery, other factors notwithstanding,  $N\overline{R}^2 = .063$ . The logistic model Logit ( $\pi$ ) = .936INF– 1.000 is 63.7% fit.
- 4. Finally, the study established that three factors are determinants when taken together: sociodemographic factors,  $[\chi^2 (N = 350) = 8.437, p = .004]$ , maternal factors,  $[\chi^2 (N = 350) = 29.619, p = .000]$ , and institutional factors,  $\chi^2 (N = 350) = 6.096, p = .014$ . Together, the three determinants account for 18.9% of the variance of the log of odds for the choice of

place of delivery among mothers of reproductive age in Borama district,  $N\overline{R}^2 = .189$ . The combined prediction model Logit ( $\pi$ ) = .806SDF + 1.667MTL + .617INF – 4.869, is 69.7% fit.

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# APPENDIX

# **APPENDIX 1: QUESTIONNAIRE**

QUESTIONNAIRE ON FACTORS THAT DETERMINE THE CHOICE PLACE OF DELIVERY AMONG MOTHERS IN BORAMA TOWN BORAMA DISTRICT, AWDAL REGION, SOMALIALND

My name is Nasir Ibrahim Said, from Amoud University, college of health science. I am collecting data on factors that determine the choice place of delivery among lactating mothers in Borama town. I request for your assistance and co-operation. This exercise will take less than 30 minutes. Please note that we do not mention people's names in our reports as a matter of privacy and confidentiality and will be strictly for studies purposes.

Note: Please tick the right option

Date .....

Sector Name .....

#### Section 1: Socio-demographic data

1) How old are you?	
---------------------	--

1) 15-24	[]	2) 25-34 [ ]

- 3) 35-44 [ ] 4) 45-49 [ ]
- 5) 50 and above []

#### 2) What level of education have you attained?

- 1) Primary [ ] 2) Secondary [ ]
- 3) Tertiary [] 4) None []

# 3) What is the level of education of your husband?

- 1) Primary [] 2) Secondary []
- 3) Tertiary [] 4) None []

## 4) How much do you earn per month?

- 1) Less 200\$/= [ ] 2) between 250-500 [ ]
- 3) Above 500/= []

#### 5) What is your marital status?

- 1) Single [] 2) Married []
- 3) Widowed [] 4) Divorced []

# Section II: Maternal factors

6) i) How many	pregnanc	ies have you c	arried including the miscarriages?
1) 1 only	2) 2-4	3) More	e than 5
ii) of these how	many chi	ldren were ali	ve at their birth?
1) All	2	) Some	3) None
7) i) Do you kno	w of the s	ervices provid	ed to pregnant mothers in the nearest Health unit?
1) Yes	2	) No (Go to iii)	
ii) If yes, list the	services	you know?	
iii) Do these serv	vices mee	t your expecta	tions?
1) Yes	~	2) No	3) Do not know
8) Did you atten	d antenat	al care in hea	th facilities when you were pregnant?
1) Yes	2	2) No	
ii) If yes, why di	d you atte	end antenatal	care (ANC)?
iii) If no, why di	dn't you :	attend ANC?	
1) Far		2) Expensive	3) No quality services
4) Other specify.			
9)			
i) Did you get ar	ıy compli	cations during	your pregnancy/es?
1) Yes	2	2) No	
ii) If yes, what w	vas it/wha	t were they?	
1) Obstructed lab	oour	2) Post-partum	bleeding
3) Sepsis	4) others	specify	
10)			
I) Do you know	what hea	lth facility del	ivery is?
1) Yes	2	2) No (so what	sir)
ii) Are there ben	efits of d	elivering from	the health facility?

# 1) Yes 2) No

#### iii) If yes, mention some of the benefits.

.....

# iii) Are there disadvantages of health facility delivery?

- 1) Yes 2) No
- iv) If yes, what are they?
- .....

11)

# i) Where was your last baby delivered?

1) Health facility 2) Traditional Birth Attendant

3) At home 4) other specify.....

# ii) Why did you choose to deliver from the above mention place?

- 1) Hygienic 2) Affordable
- 3) Culturally accepted 4) Locally accessible
- 12)

# i) Have all your previous deliveries been from the health facility (those with more than one delivery) ?

1) Yes 2) No

# ii) If no, what are the main reasons?

- 1) Very far2) Expensive3) Poor quality services
- 4) Against culture 5) Others specify.....
- 13)

# i) Are you aware of any danger signs that can occur during the delivery?

1) Yes 2) No

# ii) In case this danger sign occurs, what should be done?

.....

# Sector III: Health facility factor

14)

i) How would you rate the attitude of the health workers following your delivery/es from the health facilities? 1) Excellent 2) Good 3) Average 4) Poor ii) How would you rate the waiting time of receiving a care in the HF? 3) immediately 1)Too long 2) average iii) Is there payment for delivery at health facility? 1) Yes 2) No iv) If yes, are the charges for services affordable? 1) Yes 2) No 15) i) Are there other requirement for the delivering in the health facilities? 2) No 1) Yes ii) If yes, please list them down ..... iii) Are these requirements accessible (financially and physically)? 1) Yes 2) No 16) i) Are the health facilities accessible? 1) Yes 2) No ii) If yes, how far is the nearest health facility from your home/place of residence? 2) 1-4 km 1) Less than 1 km 3) More than 5 km ii) What means of transport is available to the health facilities? 1) Bajaj 2) Motor cycle 3) A vehicle 4) A donkey/Camel iii) Are these means transportation affordable and accessible all the time? 2) No 1) Yes THANK YOU VERY MUCH FOR YOUR TIME AND RESPONSE

# **APPENDIX 2: RESEARCH DATA**

Respondent	Age	Marital Status	Occupation	Place of Birth	Socio-demographic factors	Maternal Factors	Institutional Factors	Place of Birth - Coded	Socio-demographic factors - Coded	Maternal Factors - coded	Institutional Factors - Coded
1.	4	3	1	17	12	21	30	1	2	2	2
2.	1	2	1	14	12	27	27	1	2	2	2
3.	3	1	4	13	12	18	23	1	2	2	1
4.	4	3	2	17	12	21	27	1	2	2	2
5.	4	2	3	16	13	19	25	1	2	2	1
6.	2	2	1	14	12	27	27	1	2	2	2
7.	5	2	2	14	11	19	30	1	2	2	2
8.	2	5	1	15	10	21	28	1	1	2	2
9.	3	2	2	12	12	19	28	1	2	2	2
10.	4	4	2	16	11	20	30	1	2	2	2
11.	4	2	1	14	12	27	27	1	2	2	2
12.	3	2	2	17	12	24	29	1	2	2	2
13.	4	2	2	17	11	22	30	1	2	2	2
14.	3	2	1	14	12	27	27	1	2	2	2
15.	4	3	3	14	10	19	24	1	1	2	1
16.	4	2	1	15	13	14	22	1	2	1	1
17.	5	2	2	15	13	22	31	1	2	2	2
18.	4	5	1	14	13	17	19	1	2	1	1
19.	3	2	1	18	12	10	27	1	2	1	2
20.	3	2	1	12	13	10	16	1	2	1	1
21.	1	2	5	14	13	14	24	1	2	1	1
22.	5	1	1	14	12	6	24	1	2	1	1
23.	5	5	1	17	10	22	24	1	1	2	1
24.	4	2	3	14	13	15	26	1	2	1	2
25.	4	2	4	13	12	24	23	1	2	2	1
26.	4	2	4	15	12	18	34	1	2	2	2
27.	2	2	2	14	12	26	32	1	2	2	2
28.	4	2	4	18	8	22	28	1	1	2	2
29.	2	2	3	14	10	19	25	1	1	2	1
30.	4	2	4	16	11	26	26	1	2	2	2
31.	3	4	4	14	10	21	28	1	1	2	2
32.	2	3	3	15	12	18	27	1	2	2	2
33.	2	2	2	16	10	17	20	1	1	1	1
34.	5	3	4	18	11	20	21	1	2	2	1
35.	4	3	4	15	11	26	19	1	2	2	1
36.	3	2	4	13	11	24	31	1	2	2	2

Respondent	Age	Marital Status	Occupation	Place of Birth	Socio-demographic factors	Maternal Factors	Institutional Factors	Place of Birth - Coded	Socio-demographic factors - Coded	Maternal Factors - coded	Institutional Factors - Coded
37.	3	2	4	13	10	30	25	1	1	2	1
38.	4	2	2	14	12	24	24	1	2	2	1
39.	4	2	4	18	10	20	25	1	1	2	1
40.	5	2	3	17	12	28	33	1	2	2	2
41.	3	3	3	17	11	23	31	1	2	2	2
42.	4	2	4	12	12	22	26	1	2	2	2
43.	3	2	3	14	11	22	23	1	2	2	1
44.	4	2	4	13	12	26	30	1	2	2	2
45.	3	2	3	9	11	18	25	0	2	2	1
46.	3	2	3	8	12	12	26	0	2	1	2
47.	3	2	3	8	12	7	16	0	2	1	1
48.	4	2	3	12	12	26	29	1	2	2	2
49.	4	2	1	14	12	27	27	1	2	2	2
50.	2	2	3	8	9	9	26	0	1	1	2
51.	3	2	4	16	9	28	23	1	1	2	1
52.	3	2	4	15	12	21	21	1	2	2	1
53.	4	2	3	10	12	10	23	0	2	1	1
54.	4	2	3	8	13	24	28	0	2	2	2
55.	4	2	4	14	12	10	18	1	2	1	1
56.	5	2	1	14	12	27	27	1	2	2	2
57.	2	3	4	10	13	13	29	0	2	1	2
58.	4	3	4	11	12	21	26	0	2	2	2
59.	5	2	1	8	12	28	28	0	2	2	2
60.	4	2	4	9	11	22	28	0	2	2	2
61.	4	4	4	8	13	16	29	0	2	1	2
62.	3	2	4	7	10	21	30	0	1	2	2
63.	4	3	3	13	10	24	23	1	1	2	1
64.	3	2	1	9	10	9	27	0	1	1	2
65.	4	2	1	10	12	26	29	0	2	2	2
66.	4	2	1	13	13	23	31	1	2	2	2
67.	4	1	1	8	13	18	23	0	2	2	1
68.	4	2	2	11	13	16	25	0	2	1	1
69.	4	2	1	10	11	22	25	0	2	2	1
70.	2	1	1	11	10	18	26	0	1	2	2
71.	3	1	1	12	12	18	27	1	2	2	2
72.	2	2	1	13	11	22	25	1	2	2	1
73.	4	1	1	12	13	22	26	1	2	2	2
74.	2	1	1	11	12	12	26	0	2	1	2

Respondent	Age	Marital Status	Occupation	Place of Birth	Socio-demographic factors	Maternal Factors	Institutional Factors	Place of Birth - Coded	Socio-demographic factors - Coded	Maternal Factors - coded	Institutional Factors - Coded
75.	4	2	3	14	12	19	28	1	2	2	2
76.	3	2	1	14	11	19	24	1	2	2	1
77.	4	2	1	15	12	28	30	1	2	2	2
78.	3	3	2	12	11	28	28	1	2	2	2
79.	4	2	1	12	11	27	29	1	2	2	2
80.	3	2	1	12	11	27	30	1	2	2	2
81.	4	2	3	13	11	23	30	1	2	2	2
82.	3	2	2	15	13	27	28	1	2	2	2
83.	2	2	4	14	13	24	29	1	2	2	2
84.	3	2	3	9	10	25	31	0	1	2	2
85.	4	2	1	16	12	23	25	1	2	2	1
86.	3	2	2	13	12	21	25	1	2	2	1
87.	1	2	3	12	12	26	27	1	2	2	2
88.	2	1	3	14	10	26	31	1	1	2	2
89.	4	2	4	9	13	14	25	0	2	1	1
90.	4	2	4	11	13	24	30	0	2	2	2
91.	2	3	2	15	11	23	29	1	2	2	2
92.	3	2	3	12	9	20	23	1	1	2	1
93.	5	3	4	15	12	26	30	1	2	2	2
94.	3	5	1	14	12	24	24	1	2	2	1
95.	1	2	4	13	12	19	31	1	2	2	2
96.	4	2	4	13	13	24	26	1	2	2	2
97.	4	2	2	15	13	11	30	1	2	1	2
98.	2	2	2	14	11	27	30	1	2	2	2
99.	4	2	4	14	12	20	26	1	2	2	2
100.	3	3	2	15	9	28	28	1	1	2	2
101.	4	2	1	15	10	27	29	1	1	2	2
102.	3	2	1	15	8	26	31	1	1	2	2
103.	5	2	3	8	13	15	21	0	2	1	1
104.	3	5	1	15	9	28	28	1	1	2	2
105.	4	2	2	13	11	29	31	1	2	2	2
106.	4	2	1	15	10	18	29	1	1	2	2
107.	3	2	4	8	11	20	26	0	2	2	2
108.	3	5	1	12	11	29	26	1	2	2	2
109.	4	5	2	14	11	24	27	1	2	2	2
110.	2	2	4	12	11	28	32	1	2	2	2
111.	4	2	2	11	12	16	23	0	2	1	1
112.	2	2	2	16	10	24	33	1	1	2	2

Respondent	Age	Marital Status	Occupation	Place of Birth	Socio-demographic factors	Maternal Factors	Institutional Factors	Place of Birth - Coded	Socio-demographic factors - Coded	Maternal Factors - coded	Institutional Factors - Coded
113.	3	1	3	10	13	8	26	0	2	1	2
114.	4	2	2	12	12	19	23	1	2	2	1
115.	4	2	2	18	10	25	28	1	1	2	2
116.	3	3	4	16	12	20	28	1	2	2	2
117.	3	2	1	18	9	24	23	1	1	2	1
118.	3	2	3	16	13	26	27	1	2	2	2
119.	3	3	3	12	12	23	28	1	2	2	2
120.	3	2	1	14	10	26	29	1	1	2	2
121.	4	2	99	14	13	20	28	1	2	2	2
122.	4	2	1	18	12	25	27	1	2	2	2
123.	2	2	1	16	11	22	28	1	2	2	2
124.	2	2	4	10	13	17	30	0	2	1	2
125.	3	3	4	9	13	17	26	0	2	1	2
126.	3	2	1	17	10	25	29	1	1	2	2
127.	3	2	4	8	12	21	25	0	2	2	1
128.	2	2	1	18	11	18	26	1	2	2	2
129.	3	2	4	7	11	16	22	0	2	1	1
130.	3	2	4	9	13	20	30	0	2	2	2
131.	2	2	4	14	12	17	25	1	2	1	1
132.	4	4	5	16	10	24	24	1	1	2	1
133.	2	2	3	7	12	15	22	0	2	1	1
134.	4	2	4	7	12	10	22	0	2	1	1
135.	4	2	4	9	13	21	27	0	2	2	2
136.	4	2	4	11	12	20	28	0	2	2	2
137.	2	2	2	17	10	27	23	1	1	2	1
138.	2	1	1	10	12	17	23	0	2	1	1
139.	4	2	3	8	12	27	30	0	2	2	2
140.	1	2	1	17	13	21	34	1	2	2	2
141.	1	2	1	17	10	30	29	1	1	2	2
142.	3	1	1	16	12	25	31	1	2	2	2
143.	5	3	3	18	12	30	28	1	2	2	2
144.	3	2	2	14	14	28	28	1	2	2	2
145.	4	2	3	10	11	27	28	0	2	2	2
146.	3	4	2	9	13	23	26	0	2	2	2
147.	4	2	2	18	13	26	26	1	2	2	2
148.	3	2	1	13	11	26	25	1	2	2	1
149.	2	3	3	18	13	30	32	1	2	2	2
150.	3	2	1	14	14	27	21	1	2	2	1

Respondent	Age	Marital Status	Occupation	Place of Birth	Socio-demographic factors	Maternal Factors	Institutional Factors	Place of Birth - Coded	Socio-demographic factors - Coded	Maternal Factors - coded	Institutional Factors - Coded
151.	4	2	1	12	11	26	29	1	2	2	2
152.	2	2	1	15	13	22	32	1	2	2	2
153.	3	2	1	8	13	22	24	0	2	2	1
154.	4	2	1	10	12	25	28	0	2	2	2
155.	2	2	1	16	13	30	30	1	2	2	2
156.	3	2	1	18	14	26	32	1	2	2	2
157.	4	2	2	10	12	19	25	0	2	2	1
158.	2	2	4	11	11	15	24	0	2	1	1
159.	2	2	2	11	10	20	23	0	1	2	1
160.	3	2	2	10	8	18	27	0	1	2	2
161.	3	3	2	12	11	19	26	1	2	2	2
162.	2	2	2	10	10	22	28	0	1	2	2
163.	4	2	4	11	10	22	30	0	1	2	2
164.	3	2	1	9	9	18	28	0	1	2	2
165.	3	2	4	11	8	18	21	0	1	2	1
166.	4	2	1	10	10	21	23	0	1	2	1
167.	4	2	3	13	11	19	28	1	2	2	2
168.	3	1	2	12	11	23	30	1	2	2	2
169.	3	2	1	10	13	16	26	0	2	1	2
170.	4	2	2	13	13	21	26	1	2	2	2
171.	4	2	1	7	13	23	26	0	2	2	2
172.	3	2	2	11	9	23	25	0	1	2	1
173.	3	2	1	10	12	17	23	0	2	1	1
174.	3	2	1	14	14	14	28	1	2	1	2
175.	4	2	2	13	13	25	29	1	2	2	2
176.	2	2	3	6	14	10	20	0	2	1	1
177.	2	2	1	12	14	26	25	1	2	2	1
178.	3	2	4	12	12	12	25	1	2	1	1
179.	3	2	3	10	11	16	17	0	2	1	1
180.	2	2	1	14	11	21	33	1	2	2	2
181.	4	2	1	14	11	18	30	1	2	2	2
182.	3	3	4	16	8	22	28	1	1	2	2
183.	3	2	4	9	10	23	27	0	1	2	2
184.	4	2	1	10	11	20	23	0	2	2	1
185.	3	4	2	12	10	16	27	1	1	1	2
186.	3	2	1	11	14	20	25	0	2	2	1
187.	2	3	4	13	13	20	30	1	2	2	2
188.	2	2	1	12	11	14	29	1	2	1	2

Respondent	Age	Marital Status	Occupation	Place of Birth	Socio-demographic factors	Maternal Factors	Institutional Factors	Place of Birth - Coded	Socio-demographic factors - Coded	Maternal Factors - coded	Institutional Factors - Coded
189.	2	2	1	9	14	18	27	0	2	2	2
190.	2	2	3	9	14	13	25	0	2	1	1
191.	3	2	3	13	13	21	27	1	2	2	2
192.	2	1	2	18	9	20	25	1	1	2	1
193.	4	2	3	16	11	23	27	1	2	2	2
194.	3	2	3	11	11	22	24	0	2	2	1
195.	3	2	3	12	14	20	25	1	2	2	1
196.	4	2	2	11	13	20	28	0	2	2	2
197.	4	2	1	15	11	28	31	1	2	2	2
198.	4	2	1	14	12	27	27	1	2	2	2
199.	1	2	3	10	12	23	25	0	2	2	1
200.	3	1	1	16	13	27	27	1	2	2	2
201.	3	2	2	16	11	30	30	1	2	2	2
202.	4	5	1	16	9	30	30	1	1	2	2
203.	2	2	1	14	12	27	27	1	2	2	2
204.	2	1	1	15	13	28	25	1	2	2	1
205.	3	1	1	7	10	12	23	0	1	1	1
206.	4	2	2	13	14	19	27	1	2	2	2
207.	3	2	1	14	12	27	27	1	2	2	2
208.	3	2	2	18	14	29	30	1	2	2	2
209.	3	2	3	7	14	12	23	0	2	1	1
210.	3	2	1	18	13	28	32	1	2	2	2
211.	2	2	1	7	9	26	24	0	1	2	1
212.	4	2	1	9	8	25	26	0	1	2	2
213.	3	2	1	11	11	22	33	0	2	2	2
214.	4	2	1	14	13	27	29	1	2	2	2
215.	3	2	1	14	12	27	27	1	2	2	2
216.	4	2	1	8	11	19	23	0	2	2	1
217.	3	2	1	8	9	25	23	0	1	2	1
218.	3	2	1	12	10	25	27	1	1	2	2
219.	3	2	2	11	9	21	29	0	1	2	2
220.	3	2	1	11	10	27	30	0	1	2	2
221.	3	2	1	14	9	18	25	1	1	2	1
222.	3	2	4	8	10	14	25	0	1	1	1
223.	3	2	1	12	9	17	21	1	1	1	1
224.	3	2	1	14	11	24	26	1	2	2	2
225.	3	2	1	11	9	22	26	0	1	2	2
226.	3	3	1	13	9	21	23	1	1	2	1

Respondent	Age	Marital Status	Occupation	Place of Birth	Socio-demographic factors	Maternal Factors	Institutional Factors	Place of Birth - Coded	Socio-demographic factors - Coded	Maternal Factors - coded	Institutional Factors - Coded
227.	2	2	1	8	10	16	22	0	1	1	1
228.	3	2	4	11	10	23	27	0	1	2	2
229.	2	2	1	9	9	26	25	0	1	2	1
230.	5	2	1	8	9	18	22	0	1	2	1
231.	2	5	1	15	8	30	30	1	1	2	2
232.	4	1	3	9	14	11	29	0	2	1	2
233.	3	2	1	12	14	25	27	1	2	2	2
234.	3	2	4	17	12	26	32	1	2	2	2
235.	5	2	4	12	12	21	29	1	2	2	2
236.	4	2	1	16	12	25	32	1	2	2	2
237.	2	2	3	14	14	24	29	1	2	2	2
238.	5	1	1	18	14	29	28	1	2	2	2
239.	4	2	4	16	13	28	32	1	2	2	2
240.	3	2	1	18	13	28	29	1	2	2	2
241.	5	2	1	9	11	24	25	0	2	2	1
242.	2	2	1	9	10	23	23	0	1	2	1
243.	2	2	1	9	10	21	23	0	1	2	1
244.	3	2	1	7	13	10	27	0	2	1	2
245.	2	2	1	13	14	11	25	1	2	1	1
246.	3	2	1	10	11	22	29	0	2	2	2
247.	3	2	1	10	9	20	28	0	1	2	2
248.	4	2	1	11	12	24	27	0	2	2	2
249.	5	2	1	11	11	26	29	0	2	2	2
250.	5	2	1	6	13	11	22	0	2	1	1
251.	2	2	1	18	11	24	32	1	2	2	2
252.	3	1	1	10	12	22	30	0	2	2	2
253.	4	2	3	11	9	26	28	0	1	2	2
254.	4	2	1	14	12	19	29	1	2	2	2
255.	2	5	1	16	10	29	30	1	1	2	2
256.	5	2	1	13	12	26	26	1	2	2	2
257.	2	5	1	15	10	28	29	1	1	2	2
258.	3	1	1	10	9	23	30	0	1	2	2
259.	2	2	4	18	12	25	32	1	2	2	2
260.	2	1	1	10	9	22	30	0	1	2	2
261.	3	1	1	11	13	17	27	0	2	1	2
262.	4	2	1	10	10	26	30	0	1	2	2
263.	4	1	4	15	11	23	23	1	2	2	1
264.	2	2	1	16	12	23	29	1	2	2	2

Respondent	Age	Marital Status	Occupation	Place of Birth	Socio-demographic factors	Maternal Factors	Institutional Factors	Place of Birth - Coded	Socio-demographic factors - Coded	Maternal Factors - coded	Institutional Factors - Coded
265.	3	2	1	13	12	27	33	1	2	2	2
266.	2	2	1	13	11	25	31	1	2	2	2
267.	4	2	1	14	11	26	35	1	2	2	2
268.	3	2	1	13	11	27	28	1	2	2	2
269.	3	2	1	12	11	25	27	1	2	2	2
270.	2	2	1	15	10	24	33	1	1	2	2
271.	3	2	1	9	12	22	29	0	2	2	2
272.	2	2	1	9	10	19	26	0	1	2	2
273.	2	2	1	9	9	20	21	0	1	2	1
274.	3	2	1	8	11	24	25	0	2	2	1
275.	1	2	4	6	13	17	24	0	2	1	1
276.	2	1	1	9	9	26	24	0	1	2	1
277.	2	2	2	8	8	26	29	0	1	2	2
278.	2	2	1	7	14	18	22	0	2	2	1
279.	2	2	1	10	13	22	24	0	2	2	1
280.	3	2	3	8	11	20	24	0	2	2	1
281.	2	2	1	10	12	15	27	0	2	1	2
282.	4	2	4	12	10	20	27	1	1	2	2
283.	3	3	1	14	11	24	26	1	2	2	2
284.	2	1	2	13	10	22	27	1	1	2	2
285.	2	2	3	12	10	24	30	1	1	2	2
286.	4	2	1	13	14	20	27	1	2	2	2
287.	4	2	1	13	13	11	21	1	2	1	1
288.	3	2	1	14	12	23	30	1	2	2	2
289.	3	2	3	13	12	20	31	1	2	2	2
290.	4	3	4	13	14	26	23	1	2	2	1
291.	3	2	1	16	13	10	27	1	2	1	2
292.	2	2	1	12	14	21	28	1	2	2	2
293.	1	2	1	12	14	24	21	1	2	2	1
294.	1	2	1	10	13	14	24	0	2	1	1
295.	4	1	1	11	14	9	29	0	2	1	2
296.	3	2	1	12	13	20	29	1	2	2	2
297.	4	2	1	14	14	26	24	1	2	2	1
298.	1	2	2	10	14	27	24	0	2	2	1
299.	1	1	1	9	14	27	20	0	2	2	1
300.	4	1	1	12	14	19	28	1	2	2	2
301.	2	2	1	14	12	27	27	1	2	2	2
302.	4	2	1	13	14	18	25	1	2	2	1

Respondent	Age	Marital Status	Occupation	Place of Birth	Socio-demographic factors	Maternal Factors	Institutional Factors	Place of Birth - Coded	Socio-demographic factors - Coded	Maternal Factors - coded	Institutional Factors - Coded
303.	2	2	1	14	12	27	27	1	2	2	2
304.	2	1	1	13	11	26	28	1	2	2	2
305.	3	1	1	8	14	13	17	0	2	1	1
306.	3	2	1	14	11	25	30	1	2	2	2
307.	3	2	1	12	14	30	21	1	2	2	1
308.	4	2	1	14	12	12	34	1	2	1	2
309.	2	2	1	14	12	27	27	1	2	2	2
310.	3	2	1	16	13	30	36	1	2	2	2
311.	5	2	1	9	13	12	26	0	2	1	2
312.	3	2	4	16	9	24	32	1	1	2	2
313.	2	2	1	10	14	29	25	0	2	2	1
314.	4	1	2	11	14	11	22	0	2	1	1
315.	3	2	1	14	12	27	27	1	2	2	2
316.	3	2	1	16	10	19	27	1	1	2	2
317.	3	3	4	13	14	26	23	1	2	2	1
318.	3	2	4	12	11	18	24	1	2	2	1
319.	4	3	4	12	12	12	24	1	2	1	1
320.	3	2	1	14	12	27	27	1	2	2	2
321.	3	2	1	13	11	22	30	1	2	2	2
322.	3	5	4	10	11	20	20	0	2	2	1
323.	4	5	4	12	11	25	24	1	2	2	1
324.	4	3	2	13	13	12	25	1	2	1	1
325.	3	5	2	13	11	20	27	1	2	2	2
326.	2	2	4	12	11	21	21	1	2	2	1
327.	3	2	1	10	12	22	22	0	2	2	1
328.	2	2	1	9	14	14	24	0	2	1	1
329.	2	2	1	6	14	15	26	0	2	1	2
330.	3	2	3	10	10	20	26	0	1	2	2
331.	3	2	1	7	14	12	22	0	2	1	1
332.	4	4	3	7	13	13	29	0	2	1	2
333.	3	2	1	6	13	17	22	0	2	1	1
334.	4	3	4	13	14	26	23	1	2	2	1
335.	2	2	2	8	13	16	25	0	2	1	1
336.	3	2	1	7	11	19	27	0	2	2	2
337.	2	2	1	9	14	12	22	0	2	1	1
338.	3	2	2	8	14	13	22	0	2	1	1
339.	5	2	1	7	11	18	28	0	2	2	2
340.	2	4	3	14	12	27	28	1	2	2	2

Respondent	Age	Marital Status	Occupation	Place of Birth	Socio-demographic factors	Maternal Factors	Institutional Factors	Place of Birth - Coded	Socio-demographic factors - Coded	Maternal Factors - coded	Institutional Factors - Coded
341.	3	3	3	10	12	22	22	0	2	2	1
342.	2	3	4	13	14	26	23	1	2	2	1
343.	1	5	3	15	12	24	24	1	2	2	1
344.	2	1	1	9	11	23	29	0	2	2	2
345.	2	2	3	15	14	30	32	1	2	2	2
346.	1	2	3	10	12	21	20	0	2	2	1
347.	3	2	1	15	12	29	29	1	2	2	2
348.	4	2	1	9	12	17	29	0	2	1	2
349.	3	2	1	14	12	27	27	1	2	2	2
350.		3	4	13	14	26	23	1	2	2	1