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## SOCIAL AND DEMOGRAPHIC DRIVERS IMPACTING FAMILY PLANNING AND FAMILY SIZE IN BURAYDAH CITY, SAUDI ARABIA

by

Sami Abdulkarim Alwulayi

A thesis submitted to the Graduate College in partial fulfillment of the requirements for the degree of Master of Science Geography Western Michigan University April 2020

Thesis Committee:

Gregory Veeck, Ph.D., Chair Kathleen Baker, Ph.D. Adam Mathews, Ph.D. © 2020 Sami Abdulkarim Alwulayi

## SOCIAL AND DEMOGRAPHIC DRIVERS IMPACTING FAMILY PLANNING AND FAMILY SIZE IN BURAYDAH CITY, SAUDI ARABIA

Sami Abdulkarim Alwulayi, M.S Western Michigan University, 2020

The goal of this research is to identify factors impacting changes in family size for medium-size cities in Saudi Arabia. Since the initial comprehensive development plans were adopted in the 1970s, Saudi society has changed rapidly in many different ways, and demographic change is one of the most noticeable. This mixed methods research is based on an online survey conducted in the summer of 2019 of 560 married couples and their families living within the 29 neighborhoods of Buraydah City, Saudi Arabia. Specifically, this research examines socioeconomic and demographic conditions related to family planning, as well as collecting perspectives on contemporary issues such as the environment and the future economy of Saudi Arabia to determine if views on these subjects are also related to family planning practices. Results indicate that fertility rates in Buraydah City are slightly higher than larger cities in Saudi Arabia such as Riyadh and Jeddah. Levels of education, income, and housing play major roles in the change in fertility rates. In contrast to previous studies, women's employment doesn't have an impact on the fertility rate.

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Sami Abdulkarim Alwulayi

# TABLE OF CONTENTS

ACKN	IOWLEDGMENTSii
LIST (	OF TABLESv
LIST (	OF FIGURESvi
CHAP	TER
I.	INTRODUCTION1
	Statement of Problem2
	Organization of Thesis4
II.	BACKGROUND
	City of Buraydah5
III.	REVIEW OF LITERATURE
	Variable Population Growth Issues12
	Development Impact on the Saudi Community12
	Socio-economic Development Impacts13
	Economic and Political Situation15
	The Impact of Population Growth Upon the Economy and Environment15
	Government Efforts to Change the Population Growth17
IV.	METHODOLOGY
	Data Collection
	Survey
	Compilation of Data and Analysis21

# Table of Contents—Continued

CHAPTER

V.R	RESULTS		
	GIS Analysis		
	Demographic and Socio-economic Frequency		
	Descriptive Statistics for Likert-scale Data		
	Variations in Satisfaction, Perspectives, Demographics, and Economic and Environmental Concerns		
	Mean Variations in Demographics, Satisfaction, Perspectives, and Economic and Environmental Concerns with Compare to the Number of Children		
	Correlation Analysis45		
	Regression Analysis45		
VI. E	DISCUSSION AND CONCLUSION47		
	GIS Analysis		
	Discussion of Descriptive Statistics47		
	Discussion of Likert-scale Data and Student's T-test Results		
	Variable Mean Responses for Demographic Variables Related to Differences Regarding the Number of Children Per Family50		
	Factors That Impact the Number of Children Per Family51		
	Conclusions		
APPENI	DICES		
А.	HSIRB Approval Letter		
B.	Arabic Survey		
C.	English Survey		
REFERENCES			

# LIST OF TABLES

5.1	Demographic Variables and Frequency for Buraydah Sample: 2019	27
5.2	Socio-economic Frequency for Buraydah City Sample: 2019	30
5.3	Descriptive Statistics for Likert-scale Satisfaction and Perspectives Rankings for Buraydah Sample: 2019	34
5.4	Group Statistics of Student's Independent Samples T-test for Buraydah Sample: 2019	37
5.5	ANOVA Results of Demographics, Satisfaction, Perspectives, and Environmental Concerns Responses Amongst the Number of Children	42
5.6	Regression Results	46

# LIST OF FIGURES

1.1	Social and Demographic Indicators for the Kingdom of Saudi Arabia1	
2.1	A Demographic Composition of Buraydah City and Saudi Arabian National Mean	
2.2	Location Map of Buraydah City7	
2.3	Typical Neighborhood Street in Buraydah City Before 19708	
2.4	"Assadh" an Old Neighborhood in Buraydah City9	
2.5	Typical 35 Years Old House (Villa)	
2.6	Modern Small House "Duplex"	
2.7	Typical Contemporary Apartment Building10	
2.8	Old Dates Market in Buraydah City11	
2.9	Dates market in Buraydah City11	
5.1	Satellite Images for Buraydah City, Saudi Arabia 1984 and 201625	
5.2	Spatial Variance Based on Family Size in Buraydah City, Saudi Arabia	
5.3	Spatial variance based on monthly income in Buraydah City, Saudi Arabia	
5.4	Significant Mean Differences between Males and Females for Buraydah Sample 2019	

#### CHAPTER I

### INTRODUCTION

In 1970, leadership in the Kingdom of Saudi Arabia promulgated the first comprehensive development plan which subsequently led to many changes in Saudi society. Population growth rates were high from 1960, peaking at 6.3% in 1982, and characterized since then largely by decreasing population growth rates to a low of 2.03% in 2017 (The World Bank Group, 2018). The total fertility rate is an essential indicator for population change. In short, the Saudi Arabian fertility rate has been declining since 1980. The total fertility rate for Saudi women declined from 7.2 in 1980 to 2.3 in 2018 (General Authority for Statistics, 2019) (Figure 1.1).



*Figure 1.1: Social and demographic indicators for the Kingdom of Saudi Arabia: 1960 - 2017. Source: World Bank, 2018.* 

#### Statement of Problem

Family size is a matter of great importance, not only for a country at large but also for the health and the welfare of individuals, families and communities (Ahmad, 2010). As Saudi Arabia becomes increasingly developed, birth and death rates have declined as a result of improved healthcare and living conditions, which has resulted in lower population growth (Alwelaie, 2017). Moreover, developing countries are generally characterized by significant population growth, with the birth rates in the underdeveloped countries being usually higher than those of developed nations. For example, in 2016, the fertility rate in the United Kingdom was 1.8 children per woman, and 2.53 for Saudi Arabia, while that of Nigeria was 5.53 children per woman (Statista, 2019). On the other hand, death rates have declined because of an improvement in education and health care services (Alwelaie, 2017). However, studies show change to the fertility rate is more complicated than being a simple response to improving living conditions and declining mortality (Weeks et al, 1999). In fact, fertility rates and family size can be impacted by many diverse factors such as culture and housing quality (Yacoub, 2004). Birth rates remain higher in third world nations because of several factors such as limited access to family planning techniques, the perception of children as sources of security during old age, and encouragement from tradition to have a large family (Bakilana, 2016).

Various socio-cultural factors and beliefs have greatly influenced the choice of family size in Saudi Arabia, and this is equally true for most Middle Eastern countries. Marriages usually occur at an early age leading to a significant rise in the population. The average marriage age in Saudi Arabia in 2018 is 20.4 years for females and 25.9 years for males. (General Authority for Statistics, 2019). Education levels have increased while the financial situation of many householders has improved, which has increased the possibility of people thinking about

the quality of life for their children rather than following a tradition that encourages having many children regardless of financial assets.

In 2016, Saudi Arabia announced a new comprehensive development plan called the "Saudi Vision 2030" that introduced policies aimed at diversifying the economy (i.e. to move away from oil sales) with a focus on improving housing, human development, and quality of life (Saudi Vision 2030, 2020). The relationship between the population and economic development is different from place to place, just as it is different from time to time. This fluidity increases the need for contemporary studies related to change in family size and fertility rates to avoid population challenges such as population aging or a lack of available affordable labor.

Buraydah City is the administrative capital of the Al-Qassim Region of Saudi Arabia and is one of the most important agricultural regions in the country. The Al-Qassim Region is the fourth largest region in Saudi Arabia with a population of 1,215,858, of which about 619,739 live in Buraydah City (General Authority for Statistics, 2019). Buraydah City had a 3.67% population growth rate between 2011 and 2016, higher than the nationally average for Saudi Arabia. The average family size in 2009 was 6.24, and household formation rate' was 2.9 in the same year.

This study will address three general questions: 1) Is there a relationship between socioeconomic factors and family size? 2) Is there an identifiable population trend in Buraydah City? 3) Do environmental and economic concerns affect family planning decisions? These latter issues include satisfaction with the family's financial situation and the impact of culture and

<sup>&</sup>lt;sup>1</sup> The average annual increase in the number of households (*Riyadh Urban Observatory*, 2020).

religion on family size as well as personal beliefs about birth control and related issues.

A mixed methods approach will be used to explore the relationships among family size and socioeconomic factors, environmental concerns, and personal beliefs based on the personal responses to the survey which was developed specifically for this study rather than using only data from the census. The units of analysis for the research will be individual respondents of households living in Buraydah City who completed the survey. All three of these questions will be examined by using data from the online survey distributed through Qualtrics software which was widely distributed with the help of a prominent member of each extended family known as the "dean". The family's dean is the person in charge of the family and in constant contact with family members. In other words, the family dean is the head of the extended family (Al-Othman, 2016). The methods and location of this research are based largely on those employed in previous studies conducted in the nations of the Middle East, especially the Gulf Countries, also concentrating on fertility trends and family size (Khraif, 2001; Mahboub et al., 2014).

#### Organization of Thesis

The following thesis consists of five additional sections (II-VI). Chapter II will provide background information about Buraydah City including historical and demographic data about the city. Chapter III will provide a discussion of the literature related to the relationships among fertility rates, population growth, and family size. Chapter IV will detail the data collection and analytic methods used in this research. Chapter V will provide all important results of this study. Chapter VI, the final chapter, will conclude with a discussion of the results and some additional observations drawn from data and data collection process, including shortcomings and suggestions for future research.

#### CHAPTER II

### BACKGROUND

#### City of Buraydah

Buraydah City, the capital city of the Al-Qassim Region is located in the middle of Saudi Arabia in a desert environment with limited water resources where desalinated water is the most important source for water in the region (Al-Qassim Municipality, 2019). The climate of Al-Qassim Region is hot and dry in summer and cold and rainy in winter, and the average rainfall is only 200 mm per year (Qassim University, 2016). The average family size for Buraydah City was 6.2 people in 2017 while the average family size in Riyadh City was 5.7 in 2017. Also, the growth rate in the number of households from 2012 to 2017 was 2.2% while in Riyadh City the growth rate in the number of households was 3.05% between 2012 and 2017. Moreover, the Al-Qassim Region where Buraydah is located has a total fertility rate of 2.5, while it is 2.3 in the Riyadh Region and also 2.3 in the Mecca Region (General Authority for Statistics, 2019). The infant mortality rate in 2017 was 12.2 per 1,000 live births for Buraydah City and the child mortality rate is 14.7 per 1,000 live births.

The urban "footprint" of Buraydah City has grown from only 40 square miles in 1980 to 352.1 square miles in 2012, and the 2017 population density within Buraydah City is 1,890 person per square mile (Buraydah Urban Observation, 2019). The average household monthly income in Buraydah City is 9,526 SR in 2017 (\$2539 USD) which is lower than the average

household monthly mean income for Saudi Arabia which is 11,984 SR (\$3194 USD) (General Authority for Statistics, 2019) (Figure 2.1).



*Figure 2.1: The demographic composition of Buraydah City compared to the Saudi Arabian national mean.* 

## Source: General Authority for Statistics, 2019

Buraydah City, the location of the study, is located in the center of the Al-Qassim Region at latitude 26° 20 and longitude 53° 58 and is the capital of the Al-Qassim Region. Currently, the total area of Buraydah City is 352 m<sup>2</sup> square miles with a population of 668,525 people. 75% of the total population in Buraydah City are Saudi citizens and 25% are foreign workers (Ministry of Municipal and Rural Affairs, 2017). Records indicate that Buraydah City first appeared in a written document in the year 1577 as a small settlement that had continuous grown until today. Buraydah is an important agricultural center for Saudi Arabia, especially for the production of dates and wheat (Ministry of Municipal and Rural Affairs, 2017).



Figure 2.2: Location map of Buraydah City.

Source: Author, 2019.

The housing design for residential housing in Buraydah has changed through time since the start of the economic development era in 1970. In the past, houses tended to be smaller, randomly sited on their lots, and unplanned vis-à-vis other houses and properties. This lack of planning created neighborhoods with narrow and winding streets (Al-Qassim Municipality, 2019; Al-Ribdi, 1986). Economic growth starting in 1970 has changed the housing design from the smaller traditional houses mostly built from adobe to initially large houses made of cement. However, most recently, the housing design is shifting again from large houses to smaller modern houses and apartments that have become more affordable housing choices (Figures 2.3 - 2.7).

In Al-Qassim, there are more than 7,330,878 palms which produce more than 1 million tons of dates a year and the largest market for dates in the world is located in Buraydah City, the capital of Al-Qassim Region. The date market is an important historical and cultural institution and one of the features for which Buraydah City is associated (Buraydah Urban Observation, 2019).



Figure 2.3: Typical neighborhood street in Buraydah City before 1970.

Source: Alfarss, 2015.



Figure 2.4: "Assadh" an old neighborhood in Buraydah City.

Source: Okaz, 2018.



Figure 2.5: Typical 35 years old house (Villa).

Photographed by author, 2019.



Figure 2.6: Modern small house "duplex".

Photographed by author, 2019.



Figure 2.7: Typical contemporary apartment building.

Photographed by author, 2019.



Figure 2.8: Old dates market in Buraydah City.

Source: Alfarss, 2015.



Figure 2.9: Dates market in Buraydah City

Source: Alriyadh, 2012.

#### CHAPTER III

### **REVIEW OF LITERATURE**

#### Variable Population Growth Issues

Different studies and articles about the relationship between population change and socioeconomic factors indicate different results and reasons for this change. This calls for more detailed investigation, especially in this era of globalization and fast-growing economies. On one hand, the world's population is 7.7 billion people, which creates many questions and concerns about the problems people may face in the future related to the sustainability of food and water resources. On the other hand, countries that have low population growth rates may also face problems such as a lack of sufficient affordable labor. Governments planners and nongovernmental organizations (NGO) need to understand the location specific dynamics of population growth in order to apply this understanding to future economic plans. Studies show how variable population growth may lead to problems ranging from high unemployment rates or a lack of sufficient workers (Kroll & Kabisch, 2012). This study will be correlational, in that, it seeks to understand the relationship between total fertility, socioeconomic factors and environmental concerns reported by the head-of-household for a large sample of households living in Buraydah City, Saudi Arabia collected during the summer of 2019 when the online survey was completed.

#### Development Impact on the Saudi Community

Khraif conducted an early study in Saudi Arabia examining the effect of multiple factors such as income, work status, age, and other factors based on a large random sample of 5388 Saudi women in 2001. The study shows marked differences between urban areas and rural areas where females living in rural areas have a mean of 5.25 children while females living in urban areas have a mean of 4.16 children. Moreover, the study found the women's fertility is affected most by age at marriage with the number of children increasing if marriage happens at a younger age. Additional factors linked to the family size include: woman's education level, the type of housing, homeownership status, and the parent's response to a child death in the family. Families who had lost two or more children tend to have a mean of 9.5 children while families with higher incomes tend to have fewer children than low income families.

Mahboub et al. (2014) completed a study in 2014 of Saudi women living in Riyadh, the capital city of Saudi Arabia. The study focuses on the effects of woman's health status, woman's employment rates, and socioeconomic status on fertility. The study found the fertility of Saudi women living in Riyadh was influenced by age at marriage, the education level for women, and overall household income. The Mahboub et al. study shows an interesting effect counter to other studies related to income where women in Riyadh City who report higher incomes tend to have more children. Also, women's employment has a positive impact on fertility hypothesized to be a result of a new extended motherhood leave policy in the Kingdom of Saudi Arabia.

#### Socio-economic Development Impacts

Yacoub (2004) investigates the effects of economic development factors (such as education, and income) on population dynamics in Ramallah, Palestine. Based on a random stratified sample of 400 married women, Yacoub (2004) found an inverse relationship between the educational level of parents and the number of children in the family. Parents with higher education levels tend to have fewer children compared to parents representing lower education

levels. Moreover, considerable research showed women's employment status has the most significant impact on fertility, with a mean fertility rate for working women of 2.3, while the mean fertility rate for non-working women is 4.8. Another study directed at this relationship focuses on economic effects, but in an economic recession situation in developed countries. Social and economic factors also affect the degree of food safety concerns in China. Veeck, Veeck & Zhao (2015) studied how people in Nanjing have different degree of concern for food safety based on the demographic differences in income, education, and age. A survey based on a stratified sample of 337 households was conducted to gather data and was analyzed using statistical techniques including principal component analysis (PCA) and analysis of variance (ANOVA). Results show that, after considering factors such as education, income, and food safety concerns, the sources of information related to food safety vary due to differences in the demographic factors such as education level or age. Kaddouri and Ghannam (2014) examined the fertility rate in Iraq through a variety of variables such as parent's educational level, place of residence, and employment status. Their results show that absolute income and the longer-term financial situation both affect the total fertility rate; higher-income families have fewer children compared to lower income families. Also, there is an inverse relationship between education levels and fertility rates in Iraq.

Moreover, the study shows employed women, and women who live in cities, tend to have fewer children in comparison to unemployed women and women who live in rural areas. Sahwail (2014) investigated the social-economic factors that affect fertility rates in Palestine, based on a random stratified sample of 400 married women, living in three different localities, including a village and a refugee camp. This study includes a survey that involves asking respondents the number of children they desire, as well as collecting data on the education level of parents,

among other questions. Results show that parents who have higher education levels have fewer children and also desire fewer children, while parents who report low education levels tend to have more children and also desire to have more in the future due to cultural tradition.

### Economic and Political Situation

In investigating the impact of women's employment on fertility rates. Sobotka, Skirbekk, & Philipov (2011) reviewed three periods of economic recession (1930, 1970, and 1990) in East Asia and within the European Union by incorporating different variables including GPD and unemployment rates in their analysis. The results are different for East Asia and Europe, but, in the both cases, the most significant factor correlating to women's fertility rate is women's employment status, which affects birth rates in the European Union countries slightly more than for those in East Asia. Fayyad (2012) investigated the fertility rate in Iraq and how it changed through time due to changing economic and political situations. The study found the total fertility rates in Iraq changed due to economic and political situations besides individual socioeconomic factors such as income and education.

#### The Impact of Population Growth Upon the Economy and Environment

There are many studies that show how population growth can either support the economy or lead to more problems. Moise (2015) examines the effects of population growth on the economy of Algeria by investigating unemployment rates and changing demand for goods and services. The results show that population growth creates a high demand for products and services, which increases spending. In Algeria, Moise found population growth supported economic development. Another study by Karra, Canning, & Wilde (2017) simulates the effect of changing fertility rates in Nigeria and how different scenarios will affect the economy. Income per capita, level of education, and female participation in the workforce are the most critical variables identified in this study. The study shows an interesting result, lowering the total fertility rate to one child per woman could increase per capita income by 100% by 2060.

Simulation-based studies on low fertility rates often indicate that the economy will grow, with future women getting better educations and income levels improving because more people are able to work at higher paying positions. Juma, Wang, & Li (2014) focused on the impacts of population growth in areas proximate to Lake Victoria in Kenya between 1990 and 2012. Population growth created higher demand that led to the expansion of both urbanization rates and agricultural production. Still, population growth had a negative effect on the environment due to the use of more wetlands for farming, which increased pollution in the lake, with more pesticides used in the farms to provide more food.

Cruz & Ahmed (2017) research the benefits of a growing population. Variables such as income and change in fertility rates were considered. Data were obtained from different countries reporting high birth rates between 1950 and 2010. The study indicates that an increase in the working population can lead to economic development and a decrease in poverty rates. Furuoka (2010) examined the relationship between population growth and economic development, by investigating the demographic history of the Philippines between 1950 to 2007, testing which factors are most associated with demographic change. The analysis of data including GPD concluded that the fertility rate tends to move lower with increasing economic development.

#### Government Efforts to Change the Population Growth

Spencer (1959) focused on the solutions that the Chinese government adopted to solve the problems associated with very fast population growth rate on the supply of food and goods. The study found that the Chinese government created a one-child policy to reduce population growth by radically reducing the fertility rate to achieve economic development goals. A study by Cohen, Dehejia, & Romanov (2007) examining the impact of child subsidies and child rearing costs, shows that the child subsidies provided by government successfully encouraged an increase in the fertility rates in Israel. The study concludes Israel could increase birth rates up to 12% in 2003 if the government didn't decrease the child subsidy. Moreover, the study indicates that the fertility rates in developing countries show a different response to income increases which tends to boost fertility rates.

The relationship between population growth and economic change varies from one place to another. In some cases, economic development leads to better education status, which tends to lower fertility rates. In other cases, economic growth leads to the provision of government subsidies such as child subsidies, which leads to an increase in fertility rates. Still, there is a lack of enough research on the effects of economic development on fertility rates for many of the nations of the Middle East. With the many challenges that these countries currently face, there is a need for more research, in order to facilitate economic plans, including the formation of clear family planning agendas.

Evidence generally shows that, as the economy of a country develops, there is an associated decrease in fertility rates with a commensurate decrease as well in mean family size. However, with a developing economy, where there is an increase in mean income levels, the above studies indicate that there are additional factors that come into play for a complete

exploration for the reduction in fertility rates. These factors include improving levels of female education and increasing jobs opportunities for women. Currently, individuals tend to desire children only for sociocultural purposes, not for economic purposes as in the past. This means at the present time, people prefer to delay pregnancy and have smaller families (Agree, 2018). Parents' perception of the quality of life for children has also changed. Traditions encouraging having a large family without giving attention to children's quality of life have shifted to new ideas where available resources are focused on fewer children.

In response to the above concerns, this research adopts a mixed methods research design to explore the relationships between economic development, culture, environmental concerns, and fertility rates at the household scale. This research will use both qualitative and quantitative data. These include reconnaissance in the research community of Buraydah City, Saudi Arabia as well completion and analysis of the online survey to be discussed in the next section.

#### CHAPTER IV

### METHODOLOGY

#### Data Collection

The survey instrument was approved by the Western Michigan University Western Michigan University Human Subjects Institutional Review Board (HSIRB) in March 2019 (Appendix A). Funding from Imam Muhammad ibn Saud Islamic University supported travel for fieldwork in Buraydah during summer 2019. Before starting the online survey, a pretest was conducted on the survey by sending it to close friends and family in order to determine any issues related to understanding the questions or technical issues with the use of Qualtrics. The survey was built using Qualtrics Software and distributed online to participants in Buraydah City. Family's deans in Buraydah City helped quietly by distributing the survey within their families which created a stratified snowball sampling technique which proved to be quite successful.

During the summer of 2019, I traveled to Buraydah many times because I live in Riyadh City. These many visits allowed me to observe the development and growth of the city, also to meet with most of the deans of the extended families that helped distribute the survey. Moreover, the observation of the housing development in the city was an important part of the travel since access to adequate affordable housing is an issue throughout the city as well as the whole country and there is a shift from large houses to smaller houses and apartments (Al-Ribdi, 1986). All surveys were anonymous. Surveying began on May 1<sup>st</sup>, 2019 and concluded on August 1<sup>st</sup>, 2019.

A total of 1306 surveys were collected, but only 560 surveys were completely filled out and considered useful for subsequent analysis.

## Survey

Again, the survey used in this research (Appendix B in Arabic and C in English) was created to obtain information about location, perspectives regard family planning, satisfaction about the government health care services and the financial situation, environmental concerns, and demographics. Again, the goal of this survey is to explore the relationships among family size and socioeconomic factors, culture, and environmental concerns, as well as to measure the impact of these factors on family planning and size. The survey contains questions organized with four themes: (1) location, (2) marriage and family planning, (3) environmental and economic outlook, and (4) demographics.

The first section contains questions about the location of the household within the City of Buraydah. The second section contains questions about cultural aspects of family planning such as the desire for having children. Some aspects of culture may be tied to religion; for instance, the Islamic faith encourages large families. The third section contains questions about economic and environmental concerns in Buraydah City with the aim of determining if there are relationships among general economic environmental concerns and the desire for having children. In the environmental section, there are four questions from the New Ecological Paradigm (NEP) scale (Anderson, 2012) while the other questions are related to Buraydah's environmental challenges such as frequent sandstorms. The fourth and last section collects demographic data such as the age and education level of the head of the household and the spouse. The New Ecological Paradigm scale shows that the best number of categories for a satisfactory rating or the recommended number of categories is seven. Therefore, to have high

reliability, this survey will also incorporate Likert-type questions that offer respondents seven choices for their responses. All participants had to read and agree to the research consent form before participating in the survey.

Additional data in this study is obtained from different government resources including the General Authority for Statistics, and the Qassim Urban Observatory. The target population is Saudi households who live in Buraydah City, Saudi Arabia. Only Saudi citizens who are married or were previously married are included because only these citizens can get full access to government services including housing programs, low interest loans, higher education scholarships, and various other subsidies. Single people who have never been married were excluded because the survey has questions related to family planning and the number of desired children. The survey was distributed via social media applications including WhatsApp and Snapchat. Also as mentioned previously, the deans of several extended families were valuable for their role in distributing the survey to their family members in Buraydah City.

#### Compilation of Data and Analysis

Once data were collected using the Qualtrics Survey software, they were downloaded to an Excel file format to be analyzed. Data collected were coded and analyzed using SPSS version 26. A variety of tests are used such as ANOVA, Student's t-test for comparison of means, Spearman's rank correlation coefficient, and multivariate regression OLS tests are used in the following analysis. The 0.05 level of significance is selected to determine the factors that affect the actual number of children per family which is the main dependent variable of this study.

The first hypothesis is that there is a spatial pattern throughout the city related to family size and family income. This hypothesis was tested by using GIS to find if large families and

higher income families tend to concentrated in the old traditional neighborhoods (city core) while new smaller families with lower income families tend to live in the new neighborhoods which can be found in the city's periphery.

The second hypothesis assumes a positive correlation between household monthly income and the number of children. That is, I hypothesize that families with higher income will have more children. This hypothesis was tested using Spearman's rank correlation coefficient, and OLS linear regression to analyze the relationship and the impact of the income on the number of children. Also, a Student t-test for comparison of means was used to analyze the differences in income between males and females.

The third hypothesis relates to housing issues and how these are associated with the number of children per family because the housing program is an important part of the Saudi Vision 2030 (Saudi Vision 2030, 2020). The relationships between housing type and homeownership and family size will be analyzed by using a one-way ANOVA test.

The fourth hypothesis concerns my assumption that the education level of the household will impact the number of children. This hypothesis will be tested using the Student t-test for comparison of means to determine the differences between males and females.

The fifth hypothesis is that women's employment has a relationship with the number of children. This hypothesis will be tested by using multiple comparison ANOVA for comparison of means to determine the differences in the actual number of children between women who work for the government, a company, or own their own business, and women who don't work.

The sixth hypothesis tests for relationships among family size and opinions related to environmental and economic concerns. This hypothesis will be tested by using a one-way ANOVA test.

#### CHAPTER V

## RESULTS

#### GIS Analysis

Again, a total of 1306 sample surveys were collected, but, 560 sample surveys were completely filled out by Saudis citizens who are married or had been married who also live in Buraydah City, Saudi Arabia. In order to determine the spatial distribution of the sample, a map was made using ArcMap 10.7.1 GIS software. The map contains six areas, each area was constructed by aggregating similar neighborhoods based on history and features by using satellite images from 1980 to 2016 (Figure 5.1). Area #1 is the city's core that contains the older houses and neighborhoods where houses usually have a traditional style, smaller size, and randomly sited on their lots. Areas #2 and #5 are transitional neighborhoods that grew between the 1980s and 2000s. The transitional neighborhoods typically have large houses. Areas #3, #4, and #6 are new neighborhoods with new modern houses, usually duplex style, which started to grow after 2000.

Satellite Images of the Study Site Buraydah City, Saudi Arabia 1984 and 2016.



*Figure 5.1: Satellite Images for Buraydah City, Saudi Arabia 1984 and 2016. Source: (Google Earth, 2020).* 

Within the six areas, nine percent of the participants live in area #1, eight percent of the participants live in area #2, thirty-three percent of the participants live in area #3, six percent of the participants live in area #4, eleven percent of the participants live in area #5, and thirty-four percent of the participants live in area #4. eleven percent of the participants live in area #1 is 5.50 with a standard deviation of 3.845, the average number of children in area #2 is 5.26 with a standard deviation of 3.479, the average number of children in area #3 is 5.25 with a standard deviation of 3.591, the average number of children in area #4 is 5.24 with a standard deviation of 3.438, the average number of children in area #5 is 5.36 with a standard deviation of 2.621, and the average number of children in area #6 is 5.21 with a standard deviation of 3.341. However, the spatial pattern for the children number is not statically significant, (F (5, 551) = 0.071, p = 0.996).



Figure 5.2: Spatial variance based on family size in Buraydah City, Saudi Arabia.

Source: Author, 2019.

## Demographic and Socio-economic Frequency

Table 5.1 summarizes the demographic details of survey participants. Sixty-eight percent of the participants were male, and thirty-two percent were female. Among the 560 participants, there was only one participant who is divorced and one participant who is widowed, all other participants are currently married. Twenty-five percent of the participants have 0 to 2 children, twenty-seven percent have 3 to 5 children, thirty-six percent have 6 to 9 children, and eleven percent of the participants have 10 or more children. Moreover, less than one percent of the participants are younger than 20 years old, while ten percent are in their 20s, twenty-nine percent are in their 30s, thirty percent are in their 40s, twenty-two percent are in their 50s, and eight percent are 60 years old or older. The majority of participants (eighty-five percent) reported using or had used birth control, while fifteen percent haven't used birth control. The majority of the participants (sixty-five percent) have at least a two years college diploma or a bachelor's degree, while thirteen percent have a master's degree or PhD, sixteen percent have a high school diploma.

Gender	Frequency	Percent
Male	380	67.9
Female	180	32.1
	Std. Deviation	0.467
Number of Children	Frequency	Percent
0-2	140	25

 Table 5.1: Demographic Variables and Frequency for Buraydah Sample: 2019
3 - 5	154	27.5	
6-9	203	36.3	
10 +	60	10.7	
	Std. Deviation	0.96975	
Age	Frequency	Percent	
18-19	2	0.4	
20s	58	10.4	
30s	164	29.3	
40s	168	30	
50s	122	21.8	
60+	46	8.2	
	Std. Deviation	1.128	
Do you use family planning	Frequency	Percent	
techniques?			
Yes	475	84.8	
No	83	14.8	
	Std. Deviation	0.356	
Type of family planning product?	Frequency	Percent	
Tablets	377	67.3	
Injections	3	0.5	
Helix or similar	95	17	

Table 5.1 – Continued

Table 5.1 – Continued

	Std. Deviation	1.201
What is your highest level of	Frequency	Percent
education?		
Elementary school	18	3.2
Middle school	13	2.3
High school	91	16.3
College	363	64.8
Higher education	71	12.7
	Std. Deviation	0.803

#### Source: Derived from surveys

Table 5.2 provides the economic indicators of the sample participants. Eleven percent of the participants have a monthly income of less than 6,000 S.R (\$1,599), twenty-eight percent have a monthly income of 6,000 (\$1,599) to 11,999 S.R (\$3,198), thirty-two percent have a monthly income between 12,000 S.R (\$3,198) and 17,999 S.R (\$4,797), seventeen percent have a monthly income between 18,000 S.R (\$4,797) to 24,999 S.R (\$6,663), and eleven percent have a monthly income of more than 24,999 S.R (\$6,663). There are also differences in income based on the neighborhood (Figure 5.3). Moreover, sixteen percent of the participants currently do not work, sixty-eight percent work for the government, eight percent work for a company, and eight percent own a business. Sixty-four percent of the participants reported that they own the house they live in, twenty-seven percent are renting the house they live in, and nine percent live in a house owned by the survey participant's family. Also, fifty-nine percent of the participants live in villas, twenty-six percent live in apartments, fourteen percent live in duplexes, and one percent

live on farms. Furthermore, most of the participants (fifty-nine percent) reported that they want to have more children, twenty-six percent do not want to have more children, and fifteen percent skipped the question.

Income	Frequency	Percent
0-5,999 S.R (\$1,599)	63	11.3
6000 .SR - 11,999 S.R (\$1,599 - \$3,198)	157	28
12,000 S.R - 17,999 S.R (\$3,198 - \$4,797)	180	32.1
18,000 S.R - 24,999 S.R (\$4,797 - \$6,663)	98	17.5
25,000 S.R and more (\$6,663)	62	11.1
	Std. Deviation	1.157
Householder employment	Frequency	Percent
Does not have a job	91	16.3
Works for government	379	67.7
Works for company	45	8
Own a business	45	8
	Std. Deviation	0.695
Do you own the house you live in, or it's a rented house?	Frequency	Percent
Owned	360	64.3
Rented	151	27
Family house	49	8.8
	Std. Deviation	0.65

Table 5.2: Socio-economic Frequency for Buraydah City Sample: 2019

## Table 5.2 – Continued

Type of house	Frequency	Percent
Villa (Typical Large House)	332	59.3
Apartment	143	25.5
Duplex	77	13.8
Farm	8	1.4
	Std. Deviation	1.028

Source: Derived from surveys



*Figure 5.3: Spatial variance based on monthly income in Buraydah City, Saudi Arabia. Source: Author, 2019.* 

#### Descriptive Statistics for Likert-scale Data

In the 7-point Likert-scale format for the majority of questions included in section 3 and 4 of the survey, a "1" represents total satisfaction or strongly agree with a specific aspect of the respondent's perspectives, satisfaction, and environmental concerns while a "7" represents total dissatisfaction or strongly disagree. Moreover, in some cases, the Likert-scale was collapsed

from 7 points to 5 points by aggregating the second point (agree or satisfied) with the third point (slightly agree or slightly satisfied), and fifth point (slightly disagree or slightly dissatisfied) with the sixth point (disagree or dissatisfied) to assure significant numbers of responses in each category.

The mean score for the statement (Having a child is important) is 1.28/5, with a standard deviation of 0.698. The mean score for the statement (Children are a source of social security for the parents in the future) is 1.25/5, with a standard deviation of 0.588. The mean score for the statement (The financial situation of the family should be considered before having a child) is 2.47/5, with a standard deviation of 1.494. The mean score for the statement (Having more than one child is important) is 1.29/5, with a standard deviation of 0.643. Moreover, the mean score for the statement (Does your quality of life affect your desire to have more children) is 2.05/5, has a standard deviation of 1.235 (Table 5.5).

Furthermore, the mean score associated with high satisfaction with the free healthcare services for children is 1.89/5, with a standard deviation of 1.198. The mean score associated with satisfaction with the free healthcare services for the participants is 1.82/5, with a standard deviation of 1.249. The mean score associated satisfaction about the participant's economic situation is 1.8/5, with a standard deviation of 1.285 (Table 5.3).

In addition, the participants were asked to answer seven questions reflecting their degree of environmental concern where the participants were asked to agree or disagree with the statements provided in the survey (Appendix B and C). First, the mean score for the statement (Humans have the right to modify the natural environment to suit their needs) is 1.89/5, with a standard deviation of 1.16. Second, the mean score for the statement (When humans interfere with nature it often produces disastrous consequences) is 2.09/5, with a standard deviation of 1.134. Third, the mean score for the statement (Humans are seriously abusing the environment) is 1.67/5, with a standard deviation of 0.992. Fourth, the mean score for the statement (The so-called "ecological crisis" facing humankind has been greatly exaggerated) is 2.17/5, with a standard deviation of 1.271. Fifth, the mean score for the statement (Overtime, sandstorms increased and become stronger in the last decade) is 1.71/5, with a standard deviation of 1.105. Sixth, the mean score for the statement (Human activities such as logging and urban expansion contribute to the increase of sandstorms) is 1.53/5, with a standard deviation of 1.039. Finally, the participants were asked if they think the natural environment is better than what it was 20 years before, where (1) refers to much better and (5) refers much worst. The mean score for the last question is 3.19/5, with a standard deviation of 1.526 (Table 5.3).

	r			1
	Ν	Range	Mean	Std. Deviation
Having a child is important?	560	4	1.28	0.698
Children are a source of social security for the parents in	560	4	1.24	0.588
the future				
The financial situation of the family should be	560	4	2.47	1.494
considered before having a child				
Having more than one child is important	560	4	1.29	0.643
Does your quality of life affect your desire have more	560	4	2.05	1.235
children?				
How satisfied are you about free healthcare services for	560	4	1.89	1.198
your children				

 

 Table 5.3: Descriptive Statistics for Likert-scale Satisfaction and Perspectives Rankings for Buraydah Sample: 2019

Table 5.3 – Continued

How satisfied are you about free healthcare services you	560	4	1.82	1.249
are eligible for?				
How satisfied are you about your economic situation?	560	4	1.8	1.285
Humans have the right to modify the natural	560	4	1.89	1.16
environment to suit their needs.				
When humans interfere with nature it often produces	560	4	2.09	1.134
disastrous consequences.				
Humans are seriously abusing the environment.	560	4	1.67	0.992
The so-called "ecological crisis" facing humankind has	560	4	2.17	1.271
been greatly exaggerated.				
Overtime, sandstorms increased and become stronger in	560	4	1.71	1.105
the last decade.				
Human activities such as logging and urban expansion	560	4	1.52	1.039
contribute to the increase of sandstorms.				
Over time, do you think the natural environment is	560	4	3.19	1.526
better than what it was before 20 years?				

Source: Derived from surveys.

Variations in Satisfaction, Perspectives, Demographics, and Economic and Environmental

Concerns

The sample was next divided into two subgroups: male and female respondents living in Buraydah City, Saudi Arabia. A Student's independent samples t-test was calculated to test for differences in demographic indicators such as the actual number of children and amount of education, satisfaction about the free healthcare and family economic situation, perspectives about the family, and environmental concerns. No significant differences were found between the means of most of the variables with the exception of six variables. First, there was a significant difference between male and female respondents when it came to the actual children number, male respondents (M = 1.418, SD = 1.01) and female respondents (M = 1.1397, SD =(0.84) conditions; t (555) = 3.39, p = 0.002. Second, there was a significant difference in the education level between male respondents and female respondents, male respondents (M = 3.92, SD = 0.71) and female respondents (M = 3.6, SD = 0.93) conditions; t (554) = 4.07, p = 0.000. Third, there was a significant difference in the satisfaction of with the household's economic situation between male respondents and female respondents, male respondents (M = 1.88, SD =1.34) and female respondents (M = 1.63, SD = 1.14) conditions; t (558) = 2.29, p= 0.031. Fourth, there was a significant difference in agreement with the statement (Having a child is important) between male and female respondents, male respondents (M = 1.25, SD = 0.64) and female respondents (M = 1.34, SD = 0.80) conditions; t (558) = -1.29, p = 0.016. Fifth, there was a significant difference in agreement with the statement (The so-called "ecological crisis" facing humankind has been greatly exaggerated) between male and female respondents, male respondents (M = 2.26, SD= 1.28) and female respondents (M = 1.99, SD = 1.21) conditions; t (558) = 2.39, p = 0.019. Sixth, there was a significant difference in the mean scores for the statement (Human activities such as logging and urban expansion contribute to the increase of sandstorms) between males and females, males (M = 1.45, SD = 0.95) and females (M = 1.69, SD = 1.83) conditions; t (558) = -2.39, p = 0.01 (Table 5.4 and Figure 5.4).

	Gender	N	Mean	Std. Deviation
Children	Males	378	1.418	1.01181
	Females	179	1.1397	0.84637
What is your highest level of	Males	378	3.92	0.711
education?				
	Females	178	3.6	0.935
How satisfied are you about your	Males	380	1.88	1.34
economic situation?				
	Females	180	1.63	1.143
Having a child is important?	Males	380	1.25	0.64
	Females	180	1.34	0.806
The so-called "ecological crisis"	Males	380	2.26	1.288
facing humankind has been greatly				
exaggerated.				
	Females	180	1.99	1.219
Human activities such as logging and	Males	380	1.45	0.955
urban expansion contribute to the				
increase of sandstorms.				
	Females	180	1.69	1.183

Table 5.4: Group Statistics of Student's Independent Samples T-test for Buraydah Sample: 2019

Source: Derived from surveys



*Figure 5.4: Significant Mean Differences between Males and Females for Buraydah Sample 2019.* 

Source: Derived from surveys

Mean Variations in Demographics, Satisfaction, Perspectives, and Economic and Environmental Concerns when Compared to the Number of Children

A one-way ANOVA analysis was conducted to compare demographics such as age and income, satisfaction, perspectives, and environmental concerns with the dependent variable the number of children in the following categories (0) = 0 to 2 children, (1) = 3 to 5 children, (2) = 6 to 9 children, (3) = 10 or more children. Significant differences were found for eleven variables. There was a significant effect of the age of respondent on the number of children p <.05 level for the age categories (F (3, 553) = 155.72, p = 0.00). Post-hoc Fisher's LSD test indicated that the mean scores for four types of families (families having 0 to 2 children, families having 3 to 5 children, families having 6 to 9 children, and families having 10+ children) are significantly

different with regards to the participant's age, families who have 0 to 2 children (M = 2.72 SD = 0.66), families who have 3 to 5 children (M = 3.78 SD = 0.90), families who have 6 to 9 children (M = 4.38 SD = 0.87), and families who have 10 children or more (M = 5.07 SD = 0.86) (Table 5.5).

There was also a significant effect for the family monthly income on the number of children at p < .05 level for the five income categories (F (3, 553) = 18.36, p = 0.00). Post-hoc Fisher's LSD test indicated that the mean scores for four types of families (families having 0 to 2 children, families having 3 to 5 children, families having 6 to 9 children, and families having 10+ children) are significantly different with regards to the family monthly income. Moreover, the post-hoc Fisher's LSD test showed significantly different values among families who have 0 to 2 children (M = 2.33 SD = 0.95) which was significantly different than families who have 3 to 5 children (M = 2.91 SD = 1.15), families who have 6 to 9 children (M = 3.2 SD = 1.96), and families who have 10 children or more (M = 3.13 SD = 0.99). Also, the post-hoc Fisher's LSD test showed to families who have 6 to 9 children (M = 3.2 SD = 1.96). However, there was exception for families who have 10+ children (M = 3.13 SD = 0.99) as there is no significant difference compared to families who have 3 to 5 children (M = 2.91 SD = 1.15) and families who have 10+ children (M = 2.91 SD = 1.15) as the families who have 10+ children (M = 3.13 SD = 0.99) as there is no significant difference compared to families who have 3 to 5 children (M = 2.91 SD = 1.15) and families who have 10+ children (M = 2.91 SD = 1.15) as the families who have 10+ children (M = 2.91 SD = 1.15) as the families who have 10+ children (M = 2.91 SD = 1.15) as the families who have 10+ children (M = 2.91 SD = 1.15) as the families who have 10+ children (M = 2.91 SD = 1.15) as the families who have 10+ children (M = 2.91 SD = 1.15) as the families who have 10+ children (M = 2.91 SD = 1.15) and families that have 6 to 9 children (M = 3.2 SD = 1.19).

There was a significant effect of education level on the number of children at the p<.05 level for the five education levels categories (F (3, 549) = 3.41, p = 0.01). The post-hoc Fisher's LSD test revealed a significant difference between families who have 6 to 9 children (M= 3.68 SD = 0.90), families who have 0 to 2 children (M= 3.95 SD = 0.68), and families who have 3 to 5 children (M= 3.88 SD = 0.68).

There is also a significant effect related to house ownership status on the number of children at the p < .05 level for the three house ownership categories used in the study (owned= 1, rented= 2, family house= 3) (F (3, 553) = 51.05, p = 0.00). The post-hoc Fisher's LSD test revealed a significant difference between families who have 0 to 2 children (M= 1.94 SD = 0.65), families who have 3 to 5 children (M= 1.42 SD = 0.63), families who have 6 to 9 children (M= 1.21 SD = 0.51), and families who have 10+ children (M= 1.15 SD = 0.40) when comparing three types of home ownership status.

Also, there was a significant effect of the type of house on the number of children at the p<.05 level for the three types of house categories (vila= 1, apartment= 2, and duplex=3) (F (3, 545) = 9.27, p = 0.00). The post-hoc Fisher's LSD test showed a significant difference between families who have 0 to 2 children (M= 2.01 SD = 0.80), families who have 3 to 5 children (M= 1.72 SD = 1.11), families who have 6 to 9 children (M= 1.52 SD = 1.07), and families who have 10+ children (M= 1.32 SD = 0.91) with respect to house types. Also, those respondents reporting 3 to 5 children (M= 1.72 SD = 1.11) are significantly different than families who have 10+ children (M= 1.32 SD = 0.91).

Moreover, there was a significant statistically relationship among respondents who agree with the statement "The financial situation of the family should be considered before having a child" and the actual number of children per sample household at the p < .05 level for the five levels of agreement (F (3, 553) = 8.4, p = 0.00). The post-hoc Fisher's LSD test showed a significant difference between families who have 0 to 2 children (M= 1.96 SD = 1.26), families who have 3 to 5 children (M= 2.45 SD = 1.53), families who have 6 to 9 children (M= 2.75 SD = 1.51), and families who have 10+ children (M= 2.63 SD = 1.51).

There was also a significant effect of the self-reported satisfaction of the participant's economic situation on the number of children at the p < .05 level for the five levels of satisfaction (F (3, 556) = 3.67, p = 0.01). The post-hoc Fisher's LSD test showed a significant difference between families who have 0 to 2 children (M= 2.11 SD = 1.39), families who have 3 to 5 children (M= 1.77 SD = 1.30), families who have 6 to 9 children (M= 1.68 SD = 1.21), and families who have 10+ children (M= 1.62 SD = 1.12).

Furthermore, there were significant differences for reported environmental concerns on the number of children. First, there was a significant effect in terms of agreement with the statement "Humans are seriously abusing the environment" at the p < .05 level for the five levels of agreement (F (3, 553) = 4.27, p = 0.00). The post-hoc Fisher's LSD test showed significant differences between families who have 0 to 2 children (M= 1.86 SD = 1.16), families who have 6 to 9 children (M= 1.56 SD = 0.89), and families who have 10+ children (M= 1.42 SD = 0.64). Also, families who have 3 to 5 children (M= 1.75 SD = 1.03) are significantly different in terms of agreement with the above statement as compared to families who have 10+ children (M= 1.42 SD = 0.64).

Second, there are significant differences in terms of agreement with the statement "The so-called ecological crisis facing humankind has been greatly exaggerated" at the p < .05 level for the five levels of agreement (F (3, 553) = 2.7, p = 0.04). The post-hoc Fisher's LSD test showed significant differences between families who have 0 to 2 children (M= 2.39 SD = 1.34), families who have 3 to 5 children (M= 2.05 SD = 1.25), and families who have 10+ children (M= 1.92 SD = 1.03).

Third, there were also significant differences in agreement with the statement "Human activities such as logging and urban expansion contribute to the increase of sandstorms" at the

p < .05 level for the five levels of agreement (F (3, 553) = 3.45, p = 0.01). The post-hoc Fisher's LSD test showed a significant difference between families who have 3 to 5 children (M=1.71 SD = 1.17), families who have 6 to 9 children (M= 1.42 SD = 0.97), and families who have 10 children (M= 1.28 SD = 0.64).

Fourth, there were significant differences with the agreement with the statement "Do you think the natural environment is better than what it was before 20 years" at the p < .05 level for the five levels of agreement (F (3, 553) = 3.44, p = 0.01). The post-hoc Fisher's LSD test showed a significant difference between families who have 3 to 5 children (M=2.88 SD = 1.5) and families who have 6 to 9 children (M= 3.4 SD = 1.49). The results of all the statistical test summarized above are presented in the Table 5.5.

Variable		(0) 0-2 Children	(1) 3-5 Children	(2) 6-9 Children	(3) 10 Children or more	F- Ratio (Probability > F)
Age <sup>a</sup>	Mean	2.72	3.78	4.38	5.07	155.726 (0.0001)
	Post Hoc Tests LSD	1,2,3	0,2,3	0,1,3	0,1,2	
557	N	140	154	203	60	
Income <sup>b</sup>	Mean	2.33	2.91	3.2	3.13	18.368 (0.0001)
	Post Hoc Tests LSD	1,2,3	0,2	0,1	0	
	N	140	154	203	60	
Level of education <sup>c</sup>	Mean	3.95	3.88	3.68	3.83	3.413 (0.017)
	Post Hoc Tests LSD	2	2			

Table 5.5: ANOVA Results of Demographics, Satisfaction, Perspectives, and Environmental Concerns Responses Amongst the Number of Children

553	N	139	152	203	59	
Homeownership <sup>d</sup>	Mean	1.94	1.42	1.21	1.15	51.05 (0.0001)
	Post Hoc Tests LSD	1,2,3	0,2,3	0,1	0,1	
556	N	140	154	203	60	
Type of house <sup>e</sup>	Mean	2.01	1.72	1.52	1.32	9.278 (0.0001)
	Post Hoc Tests LSD	1,2,3	0,3	2,3	0,1,2	
548	N	138	151	201	59	
The financial situation	Mean	1.96	2.45	2.75	2.63	8.405 (0.0001)
considered before having a child <sup>f</sup>	Post Hoc Tests LSD	1,2,3	0	0	0	
556	N	140	154	203	60	
How satisfied are you	Mean	2.11	1.77	1.68	1.62	3.677 (0.012)
about your economic situation <sup>g</sup>	Post Hoc Tests LSD	1,2,3	0	0	0	
556	N	140	154	203	60	
Humans are seriously	Mean	1.86	1.75	1.56	1.42	4.271 (0.005)
environment <sup>h</sup>	Post Hoc Tests LSD	2,3	3	0	0,1	
556	N	140	154	203	60	
The so-called	Mean	2.39	2.05	2.21	1.92	2.702 (0.045)
facing humankind has been greatly exaggerated <sup>i</sup>	Post Hoc Tests LSD	1,3	0		0	
556	N	140	154	203	60	

Table 5.5 – Continued

Human activities such as logging and urban expansion contribute to the increase of sandstorms <sup>j</sup>	Mean	1.56	1.71	1.42	1.28	3.454 (0.016)
	Post Hoc Tests LSD		2,3	1	1	
556	N	140	154	203	60	
Over time, do you think the natural	Mean	3.21	2.88	3.4	3.27	3.448 (0.017)
environment is better than what it was before 20 years <sup>k</sup>	Post Hoc Tests LSD		2	1		
556	Ν	140	154	203	60	

<sup>a</sup> Age categories, (1) = participants are younger than 20 years old, (2) = participants in their 20s,

(3) = participants in their 30s, (4) = participants in their 40s, (5) = participants in their 50s, and (6) = participants that 60 years old or older.

<sup>b</sup> Income categories, (1) = 0.5,999 S.R, (2) = 6000 - 11,999 S.R, (3) = 12,000 - 17,999 S.R, (4) = 18,000 - 24,999 S.R, and (5) = 25,000 S.R and more.

<sup>c</sup> Education level categories, (1) = elementary school, (2) = middle school, (3) = high school, (4) = two years college diploma or a bachelor's degree, and (5) = higher education.

<sup>d</sup> Homeownership categories, (1) =owned, (2) =rented, and (3) =family house.

<sup>e</sup> Type of house categories, (1) = villa, (2) = apartment, and (3) = duplex.

<sup>f</sup> The financial situation of the family should be considered before having a child categories, (1) = strongly agree, (2) = agree, (3) = neither agree nor disagree, (4) = disagree, and (5) = strongly disagree.

<sup>g</sup> How satisfied are you about your economic situation categories, (1) = extremely satisfied, (2) = satisfied, (3) = neither satisfied nor dissatisfied, (4) = dissatisfied, and (5) = extremely dissatisfied.

<sup>h</sup> Humans are seriously abusing the environment categories, (1) = strongly agree, (2) = agree, (3) = neither agree nor disagree, (4) = disagree, and (5) = strongly disagree.

<sup>1</sup> The so-called "ecological crisis" facing humankind has been greatly exaggerated categories, (1) = strongly agree, (2) = agree, (3) = neither agree nor disagree, (4) = disagree, and (5) = strongly disagree.

<sup>j</sup> Human activities such as logging and urban expansion contribute to the increase of sandstorms categories, (1) = strongly agree, (2) = agree, (3) = neither agree nor disagree, (4) = disagree, and (5) = strongly disagree.

<sup>k</sup> Over time, do you think the natural environment is better than what it was before 20 years categories, (1) = much better, (2) = slightly better, (3) = about the same (4) = slightly worse, and (5) = much worse.

Source: Derived from surveys

#### Correlation Analysis

A Spearman's rank-order correlation was run to determine the relationship between the number of children with demographics, perspectives, satisfaction, and environmental concerns which showed five variables have a relationship with the number of children. First, family monthly income has a weak positive correlation with the number of children which was statistically significant (r = .288, p = 0.001). Second, the participant's age has a strong positive correlation with the number of children which was statistically significant (r = .680, p = 0.001). Third, the level of education has a very weak inverse correlation with the number of children which was statistically significant (r = .087, p = 0.04). Fourth, the average score of the statement "The financial situation of the family should be considered before having a child" has a weak positive correlation with the number of children which was statistically significant (r = .202, p = 0.001). Fifth, the average score of the statement "Having more than one child is important" has a very weak inverse correlation with the number of children which was statistically significant (r = .202, p = 0.001). Fifth, the average score of the statement "Having more than one child is important" has a very weak inverse correlation with the number of children which was statistically significant (r = .209, p = 0.01).

#### Regression Analysis

Finally, an OLS multiple linear regression test was conducted to investigate whether a set of independent variables including the type of homeownership, monthly income, and education level could significantly predict the participant's number of children (Table 5.6). The results of the regression indicated that the model explained 23.2% of the variance and that three independent variables were significant predictors of the number of children per respondent, (F (3,549) = 55.286, p = .001). Homeownership status, monthly income, and education level contributed significantly to the model, homeownership status (b= 2.612, p= .001), monthly income (b= .554, p=.001), and education level (b= -0.524, p=.001). The final predictive model was:

Number of children= 3.972 + (2.612\*Homeownership) + (0.554\*Monthly income) + (-10.554\*Monthly income

0.524\*Education level).

	Unstandardized		Standardized	t	Sig.	R Square
	Coefficients		Coefficients			
	B Std.		Beta			
		Error				
(Constant)	3.972	0.632		6.283	0	
Homeownership	2.612	0.279	0.379	9.364	0	.232
Monthly Income	0.554	0.125	0.193	4.441	0	
Level of Education	-0.524	0.168	-0.127	-3.109	0.002	

Table 5.6: Regression Results

a Dependent Variable: Number of Children

*b* Source: Derived from survey

#### CHAPTER VI

#### DISCUSSION AND CONCLUSION

The results of my spatial data analysis build on the Buraydah City survey reveal a wide array of details regarding the diversity of Saudi households in Buraydah City including variability in demographics, socioeconomics, family perspectives, and economic and environmental concerns, as well as the relationship with of these factors and the number of children per family. The following section will discuss the results of each statistical test and the implications of these findings for Buraydah City as well as for Saudi Arabia as a whole.

#### GIS Analysis

The GIS analysis reveals that lower income families and larger families remain concentrated within the inner city, while families with fewer children and higher incomes are concentrated in the city's periphery. Perhaps the city's periphery is attractive for small families and families who have higher incomes due to the lower housing prices compared to those in the inner city. Also, the city's periphery or suburban regions provide residents with better amenities including the serenity that can't be found in the loud bustling CBD. These Buraydah City results indicate an opposite situation as compared to Munich or Hamburg in Germany where large families tend to concentrate in the suburbs (Kroll & Kabisch, 2012).

#### Discussion of Descriptive Statistics

The descriptive statistics derived from the 560 viable surveys provide an interesting "snapshot" of the Saudi households in Buraydah City including their demographics, and

47

perspectives on family, as well as their economic and environmental concerns. The majority of the participants in the survey were male (360 cases), with females accounting for about half that many (180 cases), with a mean age for men and women of between 30 years old and 40 years old. The majority of the participants have 6 to 9 children which is slightly higher than the average family size in Riyadh City, the capital of Saudi Arabia (General Authority for Statistics, 2018). I cannot explain the skewed gender ratio of respondents, with males making up 67.9 percent of the sample, because I used a stratified snowball sampling technique and the survey was distributed randomly. Moreover, the t-test results show mean differences between males and females based on the number of respondent's children, where male participants (M = 1.418, SD = 1.01) have more children than female participants (M = 1.1397, SD= 0.84) probably due to the fact that male participants (M = 3.49, SD= 0.954), and the fact that males participated more in the survey.

The analysis shows that most (84.8%) of the participants use, or have previously used contraceptives, and the majority also use or have used birth control pills for birth control (67.3%). Moreover, most of the participants (64.8%) have a two years college diploma or a bachelor's degree but male respondents report a slightly higher level of education (M = 3.92, SD = 0.711) as compared to female respondents (M = 3.60, SD = 0.935) which is the opposite of the usual situation in Saudi Arabia where females are more likely to have a bachelor's degree (General Authority for Statistics, 2018). The majority of the participants (32%) have a monthly income of 12,000 S.R - 17,999 S.R (\$3,198 - \$4,797) similar to the findings of the government census of 2018 (General Authority for Statistics, 2018), and 67.7 percent of the participants have a government job. Moreover, most of the participants own their houses (64.3%) and live in villas (59.3%).

#### Discussion of Likert-scale Data and Student's T-test Results

When analyzing the means for the Likert-type scale variables there were small differences among the participant groups with respect to perspectives about family, satisfaction with government-provided free healthcare, the current economic situation, and environmental concerns. The mean Likert values for "Having a child is important", "Children are a source of social security for the parents in the future", and "Having more than one child is important" stayed within values that represented "strongly agree". However, the mean Likert values for "The financial situation of the family should be considered before having a child", and "Does your quality of life affect your desire have more children" stayed within values that represented "agree" but not "strongly agree".

Moreover, the mean Likert values for "How satisfied are you about the free healthcare services for your children", "How satisfied are you about free healthcare services you are eligible for", and "How satisfied are you about your economic situation" stayed within values that represented "satisfaction". These results provide some concrete evidences that government healthcare services work efficiently. Furthermore, the mean Likert values for "Humans have the right to modify the natural environment to suit their needs", "When humans interfere with nature it often produces disastrous consequences", "Humans are seriously abusing the environment", "The so-called ecological crisis facing humankind has been greatly exaggerated", "Overtime, sandstorms increased and become stronger in the last decade" and "Human activities such as logging and urban expansion contribute to the increase of sandstorms" also all remain within values that represented "agree". Also, the mean Likert values for "Over time, do you think the natural environment is better than what it was before 20 years" stayed within values that represented "worst". There is significant evidence about environmental degradation and

49

desertification (Ministry of Environment, Water and Agriculture of Saudi Arabia, 2016; Alwelaie, 1985) which support the participants perceptions regarding environmental change in Saudi Arabia and the Middle East over the last 20 years.

Variable Mean Responses for Demographic Variables Related to Differences Regarding the Number of Children Per Family

The results of a one-way ANOVA indicated that there are significant variations in participant's age, monthly income, participant's education level, house ownership status, and type of house, when comparing the number of children per family amongst four categories of the number of children (0) 0 to 2 children, (1) 3 to 5 children,(2) 6 to 9 children, and (3) 10+ children. The results of a post-hoc Fisher's LSD test showed differences among the means of the four categories for the number of children per family where the mean number of children increases with the participant's age. Also, the families who have 6 to 9 children and families who have 10 or more children have slightly higher scores than families who have fewer children. Moreover, the results of a post-hoc Fisher's LSD test showed variance between the means of families who have 6 to 9 children, families who have 0 to 2 children, and families who have 3 to 5 children based on the participant's educational level, however, these differences are small. Further, house ownership and house type also showed significant mean differences among groups with different numbers of children. The post-hoc Fisher's LSD test revealed families who have 0 to 2 children tend to live in rented houses, while larger families largely own their own houses. Also, the post-hoc Fisher's LSD test showed a significant difference between families who have 0 to 2 children who tend to live in apartments and larger families that tend to live in large houses (villas).

Moreover, the post-hoc Fisher's LSD test showed differences among the means of the number of children and the level of agreement with the statement "The financial situation of the family should be considered before having a child". Results show that families who have 0 to 2 children and families who have 3 to 5 agree more with the statement as compared with responses of those with larger families. Also, results from the post-hoc Fisher's LSD test showed differences among the means for groups with different numbers of children and the level of satisfaction about the participant's economic situation. Participants with more children are more satisfied with their economic situation than participants with fewer children.

Furthermore, post-hoc Fisher's LSD test showed a significant difference between respondents with different numbers of children and the average score of the statement "Humans are seriously abusing the environment", however, the differences are small. Similar small but statistically significant differences were found with the average scores for the statements "The so-called ecological crisis facing humankind has been greatly exaggerated", and the average score of the statement "Human activities such as logging and urban expansion contribute to the increase of sandstorms". The post-hoc Fisher's LSD test showed variance between the means of the numbers of children and the average score of the statement "Do you think the natural environment is better than what it was before 20 years". Results show that families who have 6 to 9 children believe the environment is worse than it was in time past while families who have 3 to 5 children actually believe the environment is slightly better.

#### Factors That Impact the Number of Children Per Family

The results of Spearman's rank-order correlation showed that the participants age has a strong positive correlation with the number of children which logically can be a normal result of a longer marriage. Also, family monthly income and the average score of agreement with the

statement "the financial situation of the family should be considered before having a child" have a weak positive correlation. These results are counter to the findings of other studies (Kaddouri & Ghannam, 2014; Khraif, 2001). Moreover, the level of education and the average score of agreement with the statement "Having more than one child is important" both have a very weak and inverse correlation with the actual reported number of children per household. The result of the impact of education is similar to the results of past studies (Yacoub, 2004; Kaddouri & Ghannam, 2014; Sahwail, 2014).

The results of the multiple regression analysis showed an interesting trend in that participants who own their houses and have higher incomes and lower levels of education are more likely to have more children. However, the model only explained 23.2% of the variance, the regression analysis refers an interesting an interesting result which relates to findings of other studies (Yacoub, 2004; Kaddouri & Ghannam, 2014; Sahwail, 2014).

#### **Conclusions**

The government of Saudi Arabia has been focusing on improving education, housing, healthcare services, while enhancing the quality of life in agreement with the current development plans (United Nations Development Programme, 2020; Ministry of Economy and Planning, 2019). Especially, the latest comprehensive development plan "Saudi Vision 2030" aims to create a higher quality of life so as to decrease the ratio between average annual per capita income and the average housing unit price to 5 times (Saudi Vision 2030, 2020). It appears that the development plans in Saudi Arabia have already achieved some of these goals such as increasing educational levels and homeownership among Saudi citizens, as well as providing affordable accessible free healthcare. Survey results indicate that the majority of the respondents of this research are satisfied with healthcare. Satisfaction with healthcare is

52

positively related to the number of children per family. Moreover, it is not surprising that most of the participants agree that having children is important because the culture. Islamic faith encourages people to get married and have children. The Saudi community is considered to be a conservative Muslim community which may be associated with the fact that the Saudi average family size is 6 to 7 members. If the economic and political situation in Buraydah City continues along the same traditions, increasing the percentage of homeownership, and increasing the education level, will help keep the fertility rates from dropping below the replacement fertility rate.

To close, the purpose of this research was to investigate whether family size is impacted by the demographics, socioeconomics, and environmental and economic concerns. Based on the findings of this research, it can be concluded that the household's monthly income, housing type and status, and educational level have all impacted the family size. However, women's employment has no impact on the family size. It is not clear why is this the case, but possibly this could be due to the policies provided for female workers such as extended maternity leave.

Finally, it must be noted that 87% of the cities in Saudi Arabia have a population under 100,000 inhabitants, four times smaller than Buraydah City. This suggests the need for more studies about the small communities since the majority of cities in Saudi Arabia are small cities. Also, it may be interesting to investigate the impact of those factors included in this research the age of the first birth and the time interval between births. The collection of more information about the demographic situation in all different types of communities in the country will lead to more efficient development plans as well helping to solve any subsequent issues related to population growth.

53

# APPENDIX A

HSIRB Approval Letter

# WESTERN MICHIGAN UNIVERSITY



Institutional Review Board FWM00007042 IR800000254

Date: March 12, 2019

To: Gregory Veeck, Principal Investigator Sami Alwulayi, Student Investigator for Thesis

From: Amy Naugle, Ph.D., Chair. MM Naug

Re: IRB Project Number 19-02-34

This letter will serve as confirmation that your research project titled "Economic Development Effects on the Family Size in Buraidah City" has been **approved** under the **exempt** category of review by the Western Michigan University Institutional Review Board (IRB). The conditions and duration of this approval are specified in the policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes to this project (e.g., *add an investigator*, *increase number of subjects beyond the number stated in your application*, *etc.*). Failure to obtain approval for changes will result in a protocol deviation.

In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the IRB for consultation.

The Board wishes you success in the pursuit of your research goals.

A status report is required on or prior to (no more than 30 days) March 11, 2020 and each year thereafter until closing of the study. The IRB will send a request.

When this study closes, submit the required Final Report found at https://wmich.edu/research/forms.

Note: All research data must be kept in a secure location on the WMU campus for at least three (3) years after the study closes.

> Office of the Vice President for Research Research Compliance Office 1903 W. Wichigan Ave., Kalamazoa, Mi 45008-5450 Press: (2003) 187-6230 nov. (2003) 187-6276 wearch. with Adu/Presearch/vampliance/takb

> > CAMPLE SITE: Room 251 W. Walwood Hall

### APPENDIX B

Arabic Survey

# الدوافع الاجتماعية والديمو غرافية التي تؤثر على تنظيم الأسرة وحجم الأسرة المملكة العربية السعودية

القسم الأول: Start of Block

السلام عليكم و رحمة الله و بركاته ,شكراً على تقديمك المساعدة لي في تحقيق اهدافي التعليمية .أنا سامي الوليعي طالب دراسات عليا اود القيام بتحقيق حول اثر النمو الاقتصادي و القلق البيئي على تغيير التركيبة الاسرية في مدينة بريدة للحصول على درجة الماجستير في الجغرافيا .يهدف هذا البحث الى تحديد العوامل المؤثرة على حجم الاسرة مما قد ينعكس على مصلحة المجتمع اذا ما تم تحديد هذه العوامل و معالجتها .المشاركة طوعية تماماً و يمكنك رفض او ايقاف المشاركة في الاسترية في الاستيان في الاستيان Q1. للمشاركة و جميع البيانات سرية

Q2 تم تصميم هذا الاستبيان لجمع معلومات عن المواطنين أرباب الاسر ,هل انت مواطن سعودي؟

🔾 نعم (1)

(2) ע 🔿

Q3 هل تسكن في مدينة بريدة؟

🔾 نعم (1)

(2) ע 🔿

Q4 الحي الذي تسكن فيه؟ )اذا لم تجد اسم الحي الذي تسكن فيه اختر الاقرب اليك(

▼ الشروق) ...1 (الساده (31)

Q5 حالتك الاجتماعية؟

🔾 متزوج\ة (1)

🔾 مطلق\ة (2)

🔾 أرمل\ة (3)

) اعزب\ عزياء (4)

Q6 العمر عند الزواج؟

▼ او اکثر ) ...1 (15-19 55 (9)

Q7 الفارق العمري بين الزوجين بالسنوات

(30) 30 ... (1) 1 🔻

Q8 عدد الابناء

▼ لا يوجد اطفال (51) ... 17 (49)

Q9 هل تستخدمون او استخدمتم من قبل وسائل منع الحمل؟

(1) نعم (1)

(2) ע 🔿

Q10 نوع وسائل منع الحمل؟

▼ وسائل منع حمل اخرى ) ...1 (أقراص او حبوب (4)

Q14 ما مدى رضاك عن الخدمات الصحية المقدمة للاطفال؟

🔾 تمام الرضا (18)

🔾 راض إلى حد ما (19)

🔿 راضٍ بعض الشيء (20)

🔿 لا راض ولا غير راض (21)

🔾 مستاء قليلا (22)

🔿 مستاء إلى حد ما (23)

) غير راض للغاية (24)

59

Q15 ما مدى رضاك عن الخدمات الصحية المجانية؟



Q16 ما مدى رضاك عن وضعك الاقتصادى او المادى؟

🔾 تمام الرضا (11)

🔾 راض إلى حد ما (12)

🔾 راضٍ بعض الشيء (13)

🔿 لا راض ولا غير راض (14)

مستاء قليلا (15)

🔾 مستاء إلى حد ما (16)

🔾 غير راض للغاية (17)

Q38 ما هو المستوى التعليمي للزوج؟ 🔾 لم يذهب الى المدرسة من قبل (1) ) الابتدائية (2) 🔾 المتوسطة (3) 🔾 الثانوية (4) 🔘 المرحلة الجامعية (5) دراسات عليا (6) Q17 هل ترغب في الحصول على اطفال؟ (1) نعم (1) (2) ע 🔾 🔿 تجاوز السؤال (4) Q18 لماذا تود الحصول على اطفال 🔾 اسبب دينية (1) 🔾 اسباب اجتماعية (2) 🔾 اسباب شخصية (3) 🔾 اخرى (4) \_\_\_\_\_

61

🔿 تجاوز السؤال (6)

#### Q19 لماذا لا تريد اطفال؟



Q20 الحصول على طفل امر مهم

🔾 موافق بشدة (18)

🔾 أوافق (19)

🔾 أوافق إلى حد ما (20)

🔾 لا أوافق ولا أعارض (21)

🔾 أعارض إلى حد ما (22)

🔾 أعارض (23)

🔾 أعراض بشدة (24)

Q21 الابناء مصدر أمن الاجتماعي للوالدين في المستقبل

موافق بشدة (18)
 أوافق (19)
 أوافق إلى حد ما (20)
 لا أوافق ولا أعارض (21)
 أعارض إلى حد ما (22)
 أعارض (23)
 أعراض بشدة (24)

Q22 يجب على ارباب الاسر النظر في الأمور المالية قبل الاقدام على الحصول على طفل

🔾 موافق بشدة (11)

🔾 أوافق (12)

🔾 أوافق إلى حد ما (13)

🔾 لا أوافق ولا أعارض (14)

🔿 أعارض إلى حد ما (15)

🔾 أعارض (16)

🔾 أعراض بشدة (17)
Q23 الحصول على اكثر من طفل امر مهم

🔾 موافق بشدة (11)

🔾 أوافق (12)

🔾 أوافق إلى حد ما (13)

🔾 لا أوافق ولا أعارض (14)

🔾 أعارض إلى حد ما (15)

🔾 أعارض (16)

🔾 أعراض بشدة (17)

القسم الأول :End of Block

القسم الثاني :Start of Block

Q24 بشكل عام و حسب ما تتوقع ,ما هو العدد الامثل لأفراد الاسرة مع الابوين؟

▼ (فقط الام و الاب ) 2 (1) ... 31 (30)

هل رغبة الوالدين في الحصول على ابناء تتأثر اذا ما كانت البييئة و الضروف التي سوف يعيش فيها الابناء اقل من مستوى حياة Q25 الوالدين؟

موافق بشدة (18)
 أوافق (19)
 أوافق إلى حد ما (20)
 لا أوافق ولا أعارض (21)
 أعارض إلى حد ما (22)
 أعارض (23)

) أعراض بشدة (24)

القسم الثاني :End of Block

القسم البيئي :Start of Block

Q26 يحق للبشر تعديل البيئة الطبيعية لتناسب احتياجاتهم

🔾 موافق بشدة (11)

🔾 أوافق (12)

🔾 أوافق إلى حد ما (13)

🔾 لا أوافق ولا أعارض (14)

🔾 أعارض إلى حد ما (15)

🔾 أعارض (16)

🔾 أعراض بشدة (17)

Q27 .عندما يتدخل البشر مع الطبيعة ، فإنه ينتج عنه في كثير من الأحيان نتائج كارثية

موافق بشدة (11)
 أوافق (12)
 أوافق إلى حد ما (13)
 لا أوافق ولا أعارض (14)
 أعارض إلى حد ما (15)
 أعارض (16)
 أعراض بشدة (17)

Q28 .البشر يسيئون استخدام البيئة بشكل خطير

🔾 موافق بشدة (11)

🔾 أوافق (12)

🔾 أوافق إلى حد ما (13)

🔾 لا أوافق ولا أعارض (14)

🔿 أعارض إلى حد ما (15)

🔾 أعارض (16)

🔾 أعراض بشدة (17)

Q29 .إن ما يسمى "الأزمة البيئية "التي تواجه البشرية مبالغ فيها إلى حد كبير

موافق بشدة (11)
 أوافق (12)
 أوافق إلى حد ما (13)
 لا أوافق ولا أعارض (14)
 أعارض إلى حد ما (15)
 أعارض (16)
 أعراض بشدة (17)

Q30 العواصف الرملية او العواصف الغبارية اصبحت اكثر حدة و قوة من السابق

🔾 موافق بشدة (11)

🔾 أوافق (12)

🔾 أوافق إلى حد ما (13)

🔾 لا أوافق ولا أعارض (14)

🔾 أعارض إلى حد ما (15)

🔾 أعارض (16)

🔾 أعراض بشدة (17)

Q31 تساهم الأنشطة البشرية مثل قطع الأشجار و الاحتطاب والتوسع العمراني في زيادة العواصف الرملية او الغبارية

موافق بشدة (11)
 أوافق (12)
 أوافق إلى حد ما (13)
 لا أوافق ولا أعارض (14)
 أعارض إلى حد ما (15)
 أعارض (16)
 أعراض بشدة (17)

Q32 بشكل عام ، هل تعتقد أن البيئة الطبيعية المحيطة افضل من السابق؟

🔾 موافق بشدة (18)

🔾 أوافق (19)

🔾 أوافق إلى حد ما (20)

🔾 لا أوافق ولا أعارض (21)

🔿 أعارض إلى حد ما (22)

🔾 أعارض (23)

🔾 أعراض بشدة (24)

القسم البيئى :End of Block

بيانات ديموغرافية :Start of Block

## Q33 العمر

▼ و اکبر )1 (19-15 80 (14)
Q34 الجنس
(1) ذکر (1)
) انثى (2)
Q35 هل سبق لك ان ذهبت الى المدرسة
(1) نعم (1)
(2) とつ
Q36 ما هو مستواك التعليمي؟
الابتدائية (1)
) المتوسطة (2)
) الثانوية (3)
(4) الجامعة (
دراسات عليا (5)

Q37 المستوى التعليمي للزوجة

لم تذهب الى المدرسة من قبل (1)
 الابتدائية (2)
 المتوسطة (3)
 الثانوية (4)
 المرحلة الجامعية (5)
 دراسات عليا (6)

Q39 نوع ملكية المنزل الذي تسكن فيه؟

🔾 منزل ملك (1)

🔾 منزل مستأجر (2)

🔾 منزل العائلة (3)

Q40 نوع المسكن؟

🔾 فلة او منزل شعبي (1)

🔾 شقة (2)

🔿 مزرعة (4)

🔿 دبلوکس (5)

وظيفة رب\ة الأسرة )المشارك في الأستبيان ( Q41 - لا يعمل (3) - وظيفة حكومية (4) - وظيفة في القطاع الخاص (5) - اعمال حره و تجارة (6)

#### Q42 وظيفة الزوجة

غير موظفة (2)
 موظفة حكومية (3)
 موظفة في القطاع الخاص (4)
 اعمال حره و تجارة (5)

Q43 وظية الزوج

غير موظف (1)
 موظف حكومي (2)
 موظف في القطاع الخاص (3)
 اعمال حرة و تجارة (4)

Q44 الدخل الشهري للعائلة )بالريال السعودي(

- 🔾 اقل من 3000 ريال (1)
  - ) الى 3000 3000 (2)
  - (4) 5000 8000 (4)
- (5) الى 11000 (5)
- (6) الى 14000 (6)
- (7) الى 14000 17000 (7)
- (8) الى 21000 (8)
- ) الى 24000 24000 (9)
- (10) 24000 27000 الى 🔘
- (11) 27000 30000 (11)
- 🔾 اکثر من 30000 ریال (12)

بيانات ديموغرافية :End of Block

# APPENDIX C

English Survey

# Social and Demographic Drivers Impacting Family Planning and Family Size in Buraydah City, Saudi Arabia

**Start of Block: Economical** 

## Q1 Dear Participant:

Thank you for taking the time to assist me to achieve my educational goals. My name is Sami Alwulayi and I am a graduate student at Western Michigan University. For my master's degree in geography (M.S) research, I wish to investigate how the economic development and the environmental concern change the family planning decision in Buraydah City. This survey aims to understand the current demographic situation in Buraydah City and how it might change in the future also, to identify the reasons for family demographic changes. Your name is not required. If you choose to participate in this project, please answer all questions as honestly as possible. Participation is strictly voluntary and you may stop participating in this survey at any time you wish.

Q2 This survey is made to collect data about Saudi families, are you Saudi citizen?

 $\bigcirc$  Yes (5)

O No (6)

Skip To: End of Survey If This survey is made to collect data about Saudi families, are you Saudi citizen? = No

## Q3 Do you live in Buraydah city?

 $\bigcirc$  yes (1)

O No (4)

#### *Skip To: End of Survey If Do you live in Buraydah city? = No*

Q4 Neighborhood (in case your neighborhood is not listed, please choose the nearest neighborhood to you.)

▼ Asadah (4) ... Al-showroq (34)

Q5 What is your marital status?

 $\bigcirc$  Married (1)

 $\bigcirc$  Widowed (2)

 $\bigcirc$  Divorced (3)

 $\bigcirc$  Never married (5)

Skip To: End of Survey If What is your marital status? = Never married

#### Q6 Age when you got married

▼ 15-19 (1) ... older than 65 (11)

Q7 Age years between you and your spouse?

▼ 0 (6) ... 7 (13)

## Q8 The number of children you have?

▼ 0 (51) ... 50 (50)

Display This Question:

*If What is your marital status? = Married* 

## Q9 Do you use family planning techniques?

▼ yes (1) ... no (2)

Display This Question:

*If Do you use family planning techniques? = yes* 

Q10 Type of family planning product?

 $\bigcirc$  tablets (1)

 $\bigcirc$  injections (2)

 $\bigcirc$  Helix or similar (3)

Q14 How satisfied are you about free healthcare services for children

- $\bigcirc$  Extremely satisfied (1)
- $\bigcirc$  Moderately satisfied (2)
- $\bigcirc$  Slightly satisfied (3)
- $\bigcirc$  Neither satisfied nor dissatisfied (4)
- $\bigcirc$  Slightly dissatisfied (5)
- $\bigcirc$  Moderately dissatisfied (6)
- $\bigcirc$  Extremely dissatisfied (7)

- Q15 How satisfied are you about free healthcare services you are eligible for?
  - $\bigcirc$  Extremely satisfied (15)
  - $\bigcirc$  Moderately satisfied (16)
  - $\bigcirc$  Slightly satisfied (17)
  - $\bigcirc$  Neither satisfied nor dissatisfied (18)
  - $\bigcirc$  Slightly dissatisfied (19)
  - $\bigcirc$  Moderately dissatisfied (20)
  - $\bigcirc$  Extremely dissatisfied (21)

Q16 How satisfied are you about your economic situation?

- $\bigcirc$  Extremely satisfied (1)
- $\bigcirc$  Moderately satisfied (2)
- $\bigcirc$  Slightly satisfied (3)
- $\bigcirc$  Neither satisfied nor dissatisfied (4)
- $\bigcirc$  Slightly dissatisfied (5)
- $\bigcirc$  Moderately dissatisfied (6)
- $\bigcirc$  Extremely dissatisfied (7)

**End of Block: Economical** 

**Start of Block: Cultural** 

## Q17 Do you want to have more children

O No (2)

Display This Question: If Do you want to have more children = Yes

#### Q18 What is the reason?

 $\bigcirc$  Religious reasons (8)

- $\bigcirc$  Social reasons (9)
- $\bigcirc$  Personal desire (10)
- Other (11)\_\_\_\_\_

Display This Question: If Do you want to have more children = No

## Q19 What is the reason?

- $\bigcirc$  Social reasons (5)
- $\bigcirc$  Health reasons (6)
- $\bigcirc$  Financial reasons (7)
- $\bigcirc$  Personal desire (8)
- Other (9)\_\_\_\_\_

Q20 Having child is important?

 $\bigcirc$  Strongly agree (1)

- $\bigcirc$  Agree (2)
- $\bigcirc$  Somewhat agree (3)
- $\bigcirc$  Neither agree nor disagree (4)
- $\bigcirc$  Somewhat disagree (5)
- $\bigcirc$  Disagree (6)
- $\bigcirc$  Strongly disagree (7)

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Q21 Children are a source of social security for the parents in the future

Strongly agree (1)
Agree (2)
Somewhat agree (3)
Neither agree nor disagree (4)
Somewhat disagree (5)
Disagree (6)
Strongly disagree (7)

Q22 The financial situation of the family should be considered before having a child

 $\bigcirc$  Strongly agree (1)

 $\bigcirc$  Agree (2)

 $\bigcirc$  Somewhat agree (3)

 $\bigcirc$  Neither agree nor disagree (4)

 $\bigcirc$  Somewhat disagree (5)

O Disagree (6)

 $\bigcirc$  Strongly disagree (7)

Q23 Having more than one child is important

Strongly agree (1)
Agree (2)
Somewhat agree (3)
Neither agree nor disagree (4)
Somewhat disagree (5)
Disagree (6)
Strongly disagree (7)

Q24 In general, what do you think is the optimal number of family members including the parents?

 $\checkmark$  2( only the parents) (1) ... more than 22 (21)

Q25 Does the possible quality of life affect your desire have more children?

 $\bigcirc$  Strongly agree (1)

O Agree (2)

 $\bigcirc$  Somewhat agree (3)

 $\bigcirc$  Neither agree nor disagree (4)

 $\bigcirc$  Somewhat disagree (5)

O Disagree (6)

 $\bigcirc$  Strongly disagree (7)

**End of Block: Cultural** 

**Start of Block: Environmental** 

Q26 Humans have the right to modify the natural environment to suit their needs.

$\bigcirc$ Strongly agree (8)
O Agree (9)
$\bigcirc$ Somewhat agree (10)
$\bigcirc$ Neither agree nor disagree (11)
$\bigcirc$ Somewhat disagree (12)
O Disagree (13)
O Strongly disagree (14)

Q27 When humans interfere with nature it often produces disastrous consequences.

Strongly agree (8)
Agree (9)
Somewhat agree (10)
Neither agree nor disagree (11)
Somewhat disagree (12)
Disagree (13)
Strongly disagree (14)

Q28 Humans are seriously abusing the environment.

 $\bigcirc$  Strongly agree (8)

 $\bigcirc$  Agree (9)

 $\bigcirc$  Somewhat agree (10)

 $\bigcirc$  Neither agree nor disagree (11)

 $\bigcirc$  Somewhat disagree (12)

 $\bigcirc$  Disagree (13)

 $\bigcirc$  Strongly disagree (14)

Q29 The so-called "ecological crisis" facing humankind has been greatly exaggerated.

 $\bigcirc$  Strongly agree (8)

 $\bigcirc$  Agree (9)

 $\bigcirc$  Somewhat agree (10)

 $\bigcirc$  Neither agree nor disagree (11)

 $\bigcirc$  Somewhat disagree (12)

 $\bigcirc$  Disagree (13)

 $\bigcirc$  Strongly disagree (14)

Q30 Sandstorms increased and became stronger.

 $\bigcirc$  Strongly agree (8)

 $\bigcirc$  Agree (9)

 $\bigcirc$  Somewhat agree (10)

 $\bigcirc$  Neither agree nor disagree (11)

 $\bigcirc$  Somewhat disagree (12)

 $\bigcirc$  Disagree (13)

 $\bigcirc$  Strongly disagree (14)

Q31 Human activities such as logging and urban expansion contribute to the increase of sandstorms.

Strongly agree (4)
Agree (5)
Somewhat agree (6)
Neither agree nor disagree (7)
Somewhat disagree (8)
Disagree (9)
Strongly disagree (10)

Q32 Over time, do you think the natural environment is better than before?

 $\bigcirc$  Much better (11)

 $\bigcirc$  Moderately better (12)

 $\bigcirc$  Slightly better (13)

 $\bigcirc$  About the same (14)

 $\bigcirc$  Slightly worse (15)

 $\bigcirc$  Moderately worse (16)

 $\bigcirc$  Much worse (17)

**End of Block: Environmental** 

**Start of Block: Demographic** 

#### Q33 Age

▼ 15-19 (1) ... older than 65 (11)

Q34 Gender?

 $\bigcirc$  male (1)

 $\bigcirc$  Female (2)

Q35 Have you ever gone to school?

 $\bigcirc$  Yes (4)

O No (5)

Display This Question: If Have you ever gone to school? = Yes

Q36 What is your highest level of education?

▼ Elementary school (2) ... Higher education (6)

Display This Question: If What is your marital status? = Married And Gender? = male

#### Q37 Wife's educational level?

 $\checkmark$  lower than primary school (1) ... higher education (5)

Display This Question: If What is your marital status? = Married

#### Q38 Husband's educational level?

 $\checkmark$  lower than primary school (1) ... higher education (5)

Q39 Do you own the house you live in, or it's a rented house?

 $\checkmark$  rented (1) ... family house (3)

#### Q40 Type of house

 $\blacksquare$  apartment (1) ... farm (3)

#### Q41 Householder employment

 $\checkmark$  does not have a job (1) ... own a business (4)

Display This Question: If What is your marital status? = Married And Gender? = male

Q42 Mother's employment

 $\blacksquare$  does not have a job (1) ... own a business (4)

Q43 Family monthly income

▼ Less than \$3000 (1) ... more than \$37,000 (13)

**End of Block: Demographic** 

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