This is to certify that the
dissertation entitled

AN ANALYSIS OF FACTORS AFFECTING CHINA'S
POPULATION PLANNING PROGRAM:
CASES FROM JIANGSU AND JIANGXI PROVINCES

presented by

Laurie Gasahl

has been accepted towards fulfillment
of the requirements for the

Ph.D. degree in Geography

Jack F. Williams
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March 7, 2006
Date

AN ANALYSIS OF FACTORS AFFECTING CHINA'S POPULATION PLANNING PROGRAM: CASES FROM JIANGSU AND JIANGXI PROVINCES

By

Laurie Gasahl

A DISSERTATION

Submitted to
Michigan State University
In partial fulfillment of the requirements
For a degree of

DOCTOR OF PHILOSOPHY

Department of Geography

2006

ABSTRACT

AN ANALYSIS OF FACTORS AFFECTING CHINA'S POPULATION PLANNING PROGRAM: CASES FROM JIANGSU AND JIANGXI PROVINCES

By

Laurie Gasahl

China, the world's most populous country, has experienced tremendous demographic change over the last three decades. What has been the mechanism for this change? This dissertation examines the spatial relationships between birth rates and economic development at the county level in two Chinese provinces, Jiangsu and Jiangxi. These two provinces were selected because they represent the contrasting conditions evident in China today. Jiangsu, a coastal province, represents the richest, most developed part of China; Jiangxi, an interior province, represents the less wealthy, less developed part of China. Research questions explore the relationship between birth rates and improvements in education, improvements in income, urbanization, and distance from the provincial capital, respectively. Exploring the spatial relationships of these socio-economic variables and birth rates provides a means to analyze the success of China's population planning programs. Both quantitative and qualitative research methods are utilized such as multi-variate analysis, geographic information systems, and focus groups. Multi-variate analysis reveals weak statistical relationships between the socio-economic variables and birth rates. For example, income changes in Jiangsu have a weak negative correlation with birth rates (i.e., as incomes increase birth rates decrease). Distance from the provincial capital has a weak positive correlation with birth rates (i.e., as distance increases, so, too, do birth rates). Collectively, the statistical analyses reveal,

however, that China's demographic transition is heavily influenced by governmental interaction, namely its population policies including the one-child per couple policy. To understand the human dimensions of China's population planning programs, a qualitative research method (i.e., the focus group) is used. Six focus groups were conducted in two Michigan locations (East Lansing and Grand Rapids) in the fall of 2004 with participants who were born in China. Age and gender characteristics were used to organize focus groups and these characteristics had an influence on perceptions about China's population planning programs. The focus group discussions provide Chinese perceptions about China's population planning policies, something that is largely lacking in the literature. Overall, this dissertation represents one more small contribution to the growing collection of scholarship about China and its population issues.

DEDICATION

In memory of Ann Rogalla Portenga (1954-2005), dear friend who lost her courageous battle with cancer the same day this dissertation was successfully defended. Ann, an alumnus of the University of Michigan, was, nonetheless, proud of this MSU Spartan's accomplishments. Though she did not live to see the final product, her enthusiasm for and strong support of this project was unwavering.

ACKNOWLEDGMENTS

A community of MSU faculty, GVSU colleagues, acquaintances, and family members has played an invaluable role in the writing of this dissertation. This author would like to thank the following people for their much appreciated support and encouragement.

Many thanks to my dissertation committee members – Professor Nan Johnson, Professor Assefa Mehretu, and Professor Robert Thomas for the suggestions and guidance they each offered as this dissertation project proceeded from a vague idea to this final product. A special expression of gratitude is extended to Professor Jack Williams, chairman of my dissertation committee. Professor Williams is the kind of mentor every graduate student wishes they had on their side. His unbounded patience, frank honesty, and great wisdom helped me reach this milestone. Thank you seems so inadequate considering the time and energy he has devoted to this project, but it is offered, nonetheless, wholeheartedly.

Many colleagues at GVSU contributed to this project. Thank you to Peimin Ni Geling Shang, and Yan Yu for helping me better understand China. Thank you to Soon Hong and Neal Rogness from the Statistics Center for explaining procedures in terms that were understandable even to a novice. Dean Erica King and Ron Poitras offered their own unique forms of support through release time from teaching and encouragement that was unwavering. Finally, a special thanks to Edwin Joseph – GIS Genius. Edwin never doubted that I would eventually understand GIS and responded to all my questions and crises with the same level of good humor.

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The help offered from Mr. Li, a scientist from Lanzhou now living in Muskegon, is immeasurable. Over gallons of tea at his restaurant, Mr. Li helped me translate the data from Chinese to English. His patience as I struggled with characters was always appreciated. Thank you, also, to the staff at the China Data Center in Ann Arbor for the GIS base maps.

Finally, thanks to my family is given. To my mother (Judy Swanson) and parents-in-law (George and Eleanor Gasahl) I offer many thanks. Their unconditional love was evident time and again as they celebrated all accomplishments, no matter how small. Thank you to my children (Tracy and Henry) for understanding why I needed to work when playing would have been much more fun. Finally, special thanks to my husband (George) for knowing when to push me onward and also, wisely, when to take a break. He taught me how to eat an elephant (one bite at a time) and would not accept quitting as an option.

The successes of this dissertation are shared with all of you. The shortcomings of this dissertation are mine alone.

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KEY TO ABBREVIATIONS

ACPOP	Actual Population
ACPOP/DOCS	Ratio of Population to Doctors
ADPF	Adjusted Professionals
ADPF/ACPOP	Ratio of Adjusted Professionals to Actual Population
ADPF/REM	Ratio of Adjusted Professionals to Rural Employment
CBR	Crude Birth Rate
CCP	Chinese Communist Party
DOCS	Doctors
EMP	Employment
EXED	Expenditures for Education
EXED/POP	Per Capita Education Expenditures
GIS	Geographic Information Systems
INUR	Average Wage pf Fully Employed Staff and Workers
PCIR	Per Capita Income Rural Population
POP	Population 2001
PRC	People's Republic of China
PRIST	Student Enrollment in Primary Schools
PROF	Professionals
PROF/POP	Ratio of Professionals to Population
PROF/REM	Ratio of Professionals to Rural Employment
REGST	Student Enrollment in Secondary Schools
REM	Total Rural Employment

SEC	Secondary Employment
SEC/EMP	Proportion of Labor Force Engaged in Secondary Sector Activities
SEC/REM	Proportion of Labor Force Engaged in Secondary Sector Activities in Rural Areas
ST/EMP	Proportion of Labor Force Engaged in Secondary and Tertiary Sector Activities
ST/REM	Proportion of Labor Force Engaged in Secondary and Tertiary Sector Activities in Rural Areas
STU	Students
STU/POP	Crude Enrollment Rate
STU/ACPOP	Crude Enrollment Rate
TERT	Tertiary Employment
TERT/EMP	Proportion of Labor Force Engaged in Tertiary Sector Activities
TERT/REM	Proportion of Labor Force Engaged in Tertiary Sector Activities in Rural Areas
TFR	Total Fertility Rate

Chapter 1 – Introduction

Background of Study

The idea for this dissertation topic developed in 1995 during this author's first trip to China.[1] At that time, she was struck by two common occurrences. The first was the number of people who proudly proclaimed they had limited their family size to one child, even if that child was a girl. From university professors to businessmen and tour guides, time and again, people pointed out that they had observed the population policy of China, namely the one-child per couple policy. The second occurrence was the frequency when, in a more private setting, women confided to this author their desire to have a second child. Both occurrences provoked more thoughts about China and the implications of the population policy.

In 1997, the author returned to China for a second time. During that time, her interest was further piqued about the population policy. Again, it was the many conversations with a wide range of people that offered new insight regarding China's population policies. This time, as with the first, there were certain conversations that were more memorable than others. In particular, two conversations with two professors from Shanghai's East China University of Science and Technology offered additional enlightenment about China's one-child policy. One professor felt it important to explain why the policy was so necessary. Using his own experience as an example, he explained that large families were quite commonplace in China during

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the 1950s. While not referring specifically to Chairman Mao's philosophy regarding population growth, the professor noted the government had encouraged couples to have large families.[2] He confided, with some embarrassment, that both he and his wife had many siblings (his wife had more than ten). He further elaborated on the hardship large families created and that if China was to develop it needed to slow its population growth. A different conversation with a different professor reiterated what the first had said (e.g., the necessity for a population policy), but his elaboration was also troublesome. He seemed to think the reason China had too many people was because some people (whom he referred to as "low quality people") had more than one child. In particular, he was referring to rural couples with large families. This professor blamed the rural people for much of China's problems. Was that true? Why would rural people violate the population policy? Questions seemed to develop and few answers were offered. When this author left China, she was even more perplexed about the population policies.

Finally, in 2001, this author made her third trip to China. As with the previous trips, this, too, provided some interesting insights. First, while having conversations with various Chinese college students at Shanghai's East China Normal University, the author was surprised to discover that many students had a sibling even though these students had been born after the one-child policy had been introduced. While it is understood these conversations reflect a very small part of China's total population (and, hence, one should not draw too many conclusions from them), it seemed odd that so many students had siblings. What about the one child per couple policy? The other pertinent observation from this visit occurred while traveling

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through Yunnan Province. This author was fortunate enough to make an impromptu visit to a primary school in a rural area. The school had about fifteen students but most were boys. When the teacher was asked where the girls were, he quickly said they had not come to school that day. Was that really the case, or were there simply not very many young girls in this tiny rural area? Again, there seemed to be relevant issues that needed to be explored as they pertained to China's population policies.

Each trip to China also produced one common other occurrence. On every flight back to the United States, it was observed that some of the passengers on the airplane were Chinese infants who had been adopted by Western parents. The vast majority of these infants were girls who were leaving China for a new life in the United States. Why were so many Chinese girls leaving? Was this, too, a product of the one-child policy?

Organization of the Dissertation

This dissertation is organized into seven chapters. The first chapter lays the foundation for the dissertation by identifying the problem statement and research objectives. Eight research questions are identified that examine the success of China's population policies from two different perspectives. Questions that rely on quantitative methods consider the role of economic development and how development (or lack of) influence birth rates. Questions that rely on a qualitative method examine the human dimension of China's population policies. Together, the two research methods explore the magnitude of China's population policies. Included in this chapter is a description of China's demographic history. Finally, this chapter

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concludes with an overview of the study area, focusing on China's physical and cultural geography in general, and, in Jiangsu and Jiangxi specifically.

The second and third chapters are a review of the literature that is organized around four broad categories: population theory, population policies, China's population and policies, and regional studies of China's population. The first category examines the evolution of population theory particularly from the 1950s to the present. The underlying question that has been asked over the decades is what factors contribute to the decline of fertility in a society? Although most scholars agree that economic development is a key component of demographic change, many questions still exist regarding, specifically, which socio-economic variables are key to demographic change. While economists influenced the early literature on population theory, contemporary literature includes input from feminists and environmentalists. The second category explores the evolution of population policies. Today, most population policies tend to be anti-natal in nature. They oftentimes integrate economic development into the policy. However, there is no consensus on how population policies can be used to address the population problem and little work exists on the theoretical foundation of population policies. These first two categories explore the theoretical approaches in the literature and are the subject of the second chapter.

The third category of the literature review focuses specifically on scholarship that pertains to China's population and policies for the country as a whole. This section begins with a description of the evolution of China's population policies and, then, identifies scholarship that describes China's demographic structure. The final

category of the literature review describes regional studies of China's population and highlights some of the current research that pertains to specific places in China. Collectively, these last two categories of the literature review explore applied research as it pertains to all or a part of China. Chapter Three concludes with an assessment of the goals for this study.

The fourth chapter describes the methodology used in this research. This dissertation utilizes both quantitative and qualitative research methods. Correlation and multi-variate analyses are used for the quantitative aspect of this study while focus groups are used for the qualitative aspect. A variety of socio-economic variables are analyzed in Chapter Five; these variables are defined in Chapter Four. GIS is used to sort, analyze and layer demographic and socio-economic data. A rationale for GIS use is included in this chapter because GIS provides a comparative spatial interpretation of the factors that affect the success of China's population planning program. Various quantitative analyses are conducted at the county level for Jiangsu and Jiangxi, thus a rationale for using correlation and regression analyses is included. The fourth chapter concludes with a description of the use of focus groups. In essence, focus groups are group interviews. Focus groups create concentrated conversations that might otherwise never occur and allow this researcher the opportunity to learn about key issues as they pertain to China and its population policies.

The fifth chapter deals with the statistical component of the dissertation, as it explains the results of the quantitative research methods. Four research questions are identified and different types of multi-variate analyses are conducted for the

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quantitative component of this research. Correlation and regression methods are used to explore relationships between crude birth rates and various independent variables for Jiangsu and Jiangxi. Questions one through three utilize multiple regression methods with specific variables (e.g., education, income, and location data) to identify possible predictors in crude birth rates for Jiangsu and Jiangxi. Question four uses proximity analysis to determine how distance interacts with changes in crude birth rates in Jiangsu and Jiangxi. Maps are included in this chapter to further illustrate key spatial relationships.

The sixth chapter summarizes the qualitative data for this research. To better understand the spatial patterns of the extent of success of China's population policies, one cannot forget the human dimensions of population growth. How have these policies affected the Chinese? A qualitative research method (i.e., focus groups) is utilized to glean pertinent information about China's population policies. Six focus groups were conducted in two Michigan communities (East Lansing and Grand Rapids) in 2004. Each focus group discussed questions from four broad categories. The results of these conversations are summarized using age and gender criteria as the organization framework. Chapter Six provides background information about the focus group participants followed by an analysis of the focus groups discussions.

The final chapter of this dissertation is the summary and conclusion. The results from the two research methods (i.e., quantitative and qualitative) are briefly summarized to provide the reader with a synopsis of each chapter. In addition, an assessment of various research methods used for this research is included. This

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chapter concludes by identifying further questions that might be useful for later research based on the findings of this scholarship.

Problem Statement

Many questions had been raised that pertained to China and its population policies. Now the challenge was to take these questions and turn them into a viable dissertation topic. China's one-child per couple policy had created hardships for some of its population, but were there any merits to the policy? Previous experience indicated a negative correlation between birth rates and levels of economic development (i.e., high birth rates corresponded with low levels of development). How significant was this relationship? What if the relationship between birth rates and economic development were examined at a sub-provincial level (i.e., at the county level)? What provinces would serve as a case study for examining the relationship between birth rates and development? What data could be used to explore this topic? What do the Chinese say about China's population policies? Should this dissertation incorporate two very different types of research methods (i.e., quantitative and qualitative research methods)?

How could all of these questions be explored in a dissertation? This dissertation examines the spatial relationships between birth rates and economic development in two provinces, Jiangsu and Jiangxi, to determine the extent of success of China's population policies. The two provinces represent the contrasting regions of eastern China. They were selected to illustrate the diverse array of demographic and socio-economic conditions that can be found there today. Jiangsu is a coastal province; Jiangxi is an interior province (see Figure 1.1 and Table 1.1 for the location

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of China's provinces). Both have a portion of their border along the Chang Jiang (Yangzi River), China's longest river. While these two provinces share some

Figure 1.1: Administrative Units of China

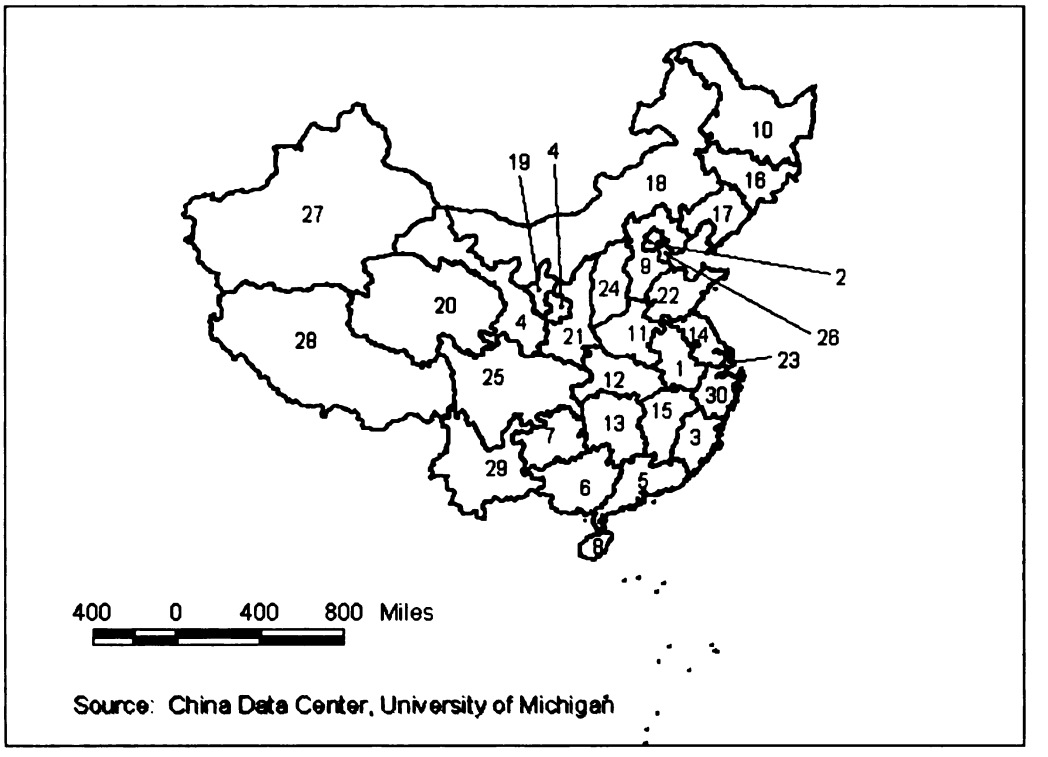

Table 1.1: Administrative Units of China

Name	Province	Name	Province
1	Anhui	16	Jilin
2	Beijing	17	Liaoning
3	Fujian	18	Nei Mongol
4	Gansu	19	Ningxia Hui
5	Guangdong	20	Qinghai
6	Guangxi Zhuang	21	Shaanxi
7	Guizhou	22	Shandong
8	Hainan	23	Shanghai
9	Hebei	24	Shanxi
10	Heilongjiang	25	Sichuan
11	Henan	26	Tianjin
12	Hubei	27	Xinjiang
13	Hunan	28	Xizang
14	Jiangsu	29	Yunnan
15	Jiangxi	30	Zhejiang

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common characteristics, they are also different enough to offer an interesting comparison in a case study. Jiangsu represents the richest, most developed part of China; Jiangxi represents the less wealthy, less developed part of China. A more thorough description of these two provinces is provided in the study area section of this chapter.

Quantitative and qualitative methods are employed for this research. The quantitative method utilizes various multi-variate analyses to analyze data from 2002 statistical yearbooks, published by the National Bureau of Statistics in China. The data display a variety of demographic and socio-economic characteristics. To fully understand the spatial relationships between the data, a Geographic Information System (GIS) is used to map spatial patterns. In addition, focus groups are used to gather information about China's population policies; the participants are Chinese currently living in the United States. This qualitative research method provides another way to assess the success of China's population policies.

Research Objectives

Many questions are considered in this dissertation. They examine the success of China's population policies from two different research perspectives using quantitative and qualitative methods. Questions that rely on quantitative methods consider the role of economic development and how development (or lack of) influences birth rates. These questions focus on specific aspects of development (e.g., improvement in education, the role of incomes, and the role of geographic location) and use multi-variate analyses to measure the extent of success of the population policies using crude birth rates as a dependent variable. Crude birth rates are used

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because it is assumed that higher birth rates indicate the population policies are less successful, whereas lower birth rates indicate the population policies are more successful. In addition, spatial patterns of the data are analyzed using GIS software. Questions that rely on a qualitative method examine the human dimension of China's population policies. These qualitative questions analyze Chinese perceptions of population policies and use focus groups as a research tool. Together, the two research methods explore the magnitude of China's population policies. The following list of questions captures the main research objectives for this dissertation. Questions one through four employ quantitative methods; questions five through eight employs a qualitative method.[3]

1. How do improvements in education influence crude birth rates in the counties of Jiangsu and Jiangxi?
2. How does income impact crude birth rates in the counties of Jiangsu and Jiangxi?
3. How does location (i.e., rural versus urban) influence crude birth rates in the counties of Jiangsu and Jiangxi?
4. What impact does distance from the provincial capital have on crude birth rates in the counties of Jiangsu and Jiangxi?
5. How did people in China learn of the one-child per couple policy and what happened to couples when they had more than one child?
6. Why was the one-child per couple policy necessary and what is most misunderstood about the policy, especially by Americans?

7. What are the advantages and disadvantages of the one-child population policy?
8. Do gender or residential variations for the minimum age of marriage create problems in China?

Demographic History

Pre-PRC Era

China has been one of the most populous countries in the world for more than two thousand years. It is also one of the world's oldest civilizations, and, for much of its history, has been isolated from the rest of the world. This isolation allowed Chinese civilization to flourish and also, during times of political stability, fostered periods of high population growth. China's population rose and fell along with the dynastic cycle. For example, in the 14th century when dynasties changed from the Yuan to the Ming, China's population was between 65 to 80 million.[4] By the 17th century when the Qing dynasty began, the population had grown to 120 million.[5] The early Qing dynasty marked a century of political stability. This stability would produce tremendous consequences. Within two hundred years, China's population had grown to 300 million.[6] This unchecked population growth caused concern for Qing officials. Too many people led to increased pressure on resources, rebellion among the population, and, for those who needed to escape the realities of life, opium addiction. By the mid-19th century, China's population had grown to over 430 million.[7] As China's population continued to grow, so, too did poverty in the countryside. At the beginning of the 20th century, China's population climbed to 450 million.[8]

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PRC Era[9]

On October 1, 1949, the PRC was established under the leadership of the Chinese Communist Party (CCP). China's population continued to experience tremendous growth during the second half of the 20th century. There have been five censuses conducted (1953, 1964, 1982, 1990, and 2000) since the CCP took control. While the early censuses have been criticized because data were "corrected," the latter censuses (i.e., since 1982) have been considered more reliable, though still not problem-free. One of the most notable trends observed when one examines the last half-century of data is the very rapid demographic transition China has experienced. For example, in 1953, China's overall population was approximately 594 million with a birth rate of 37/1000 and a death rate of 14/1000. This implies a natural increase rate of 23/1000 or 2.3% annually. The 1964 census showed China's overall population had increased to 694 million with a birth rate of 43.37/1000 and a death rate of 10.04/1000. The death rate had dropped while the birth rate had actually increased. This, again, implies a very high natural growth rate of 3.33% annually. Even taking into account the fact that data were corrected, one can see that China was facing a new demographic dilemma. There were far too many people in China. By 1982, China's population had surpassed the one billion mark with a birth rate of 22.28/1000 and a death rate of 6.6/1000. The natural growth rate of 1.57% annually was still high, but had begun to decrease. The 1990 census showed China's population had grown to 1.1 billion with a birth rate of 21.06/1000 and a death rate of 6.67/1000. The birth rate had continued to drop during the 1980s while the death rate had increased slightly. The rate of increase had also dropped slightly to 1.44%

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annually. By 2000, China's population had grown to 1.26 billion with a birth rate of 14.03/1000 and a death rate of 6.45/1000. The rate of increase dropped below one percent. China's natural growth rate had dropped to the same level as a more developed country (i.e., a low growth rate). The crude birth rate in 2001 was 13.38/1000, while the crude death rate was 6.43/1000. The natural growth rate was still decreasing. What factors are responsible for this demographic transition? Is it simply a product of the population policies first implemented during the 1970s?

While China's recent demographic history implies a decline in natural growth rates, crude birth rates and crude death rates do not clearly explain the magnitude of change. Crude birth rates and crude death rates are just that (i.e., crude) because these data are affected by age structure. "Young" populations (i.e., those with a median age below twenty years old) will have higher birth rates and lower death rates than "old" populations (i.e., those with a median age above thirty years old). The effects of age are uncorrected when using crude data. Age-adjusted rates, such as the total fertility rate (TFR) and life expectancy at birth give a better picture of the evolving demographic situation.[10] For example, between the 1960s and the 1980s, China's TFR fell from over six children per woman to about two children per woman.[11] In the 1990s, China's TFR dropped below replacement level of 2.1 children per woman. When one considers TFR, China's experience is one of the most impressive declines ever recorded in a national population. Conversely, in 1980, China's life expectancy at birth for both sexes was 64.0 years; by 2001, it had risen to 71.8 years.[12] Again change has been impressive.

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Throughout the second half of the 20th century, China had consistently recorded more men than women. For example, sex ratios for the five census years were 107.56 (1953), 105.46 (1964), 106.30 (1982), 106.60 (1990), and 106.74 (2000) number of males for every 100 females. Have there always been more men than women in China or have women traditionally been undercounted? Some scholars have concluded there are more men than women in China because female infants are more often aborted or killed at birth. Other scholars, however, have concluded that women have been undercounted.[13] At the end of 2001, China had a population of 1.28 billion. The proportion of male population was 51.46% and the proportion of female population was 48.54%. The sex ratio for China was 106.30 males for every 100 females.

Variations in birth rates, death rates, and growth rates become more evident when one examines specific parts of China. For example, urban Shanghai's birth rate, 5.02/1000, was China's lowest in 2001 whereas rural Qinghai's birth rate, 19.06/1000, was China's highest. For that same period, coastal Jiangsu had a birth rate of 9.03/1000 and inland Jiangxi had a birth rate of 15.44/1000. Variations in death rates are not quite as significant, but there are some interesting patterns. For instance, two interior provinces, Ningxia Hui and Yunnan, have death rates of 4.84/1000 (China's lowest) and 7.57/1000 (China's highest) respectively. Jiangxi had a lower death rate than Jiangsu, with rates of 6.06/1000 and 6.62/1000 respectively. Variations in the natural growth rate range from a -0.095% for Shanghai to a high of 1.21% in Qinghai. Sex ratios also display more variation when examined at the sub-national level. For example, coastal Shandong had the lowest sex ratio with 102.50

males for every 100 females whereas inland Guangxi had the highest sex ratio with 112.73 males for every 100 females in 2001. Jiangsu and Jiangxi had 102.55 and 108.16 males, respectively, for every 100 females. Sex ratio variations become more alarming when one considers age groups. For example, the 0-4 years age group had a sex ratio of 120.17 males for every 100 females. Males outnumber females through all age groups until age 70. The 70-74 years age group has a sex ratio of 94.66 males for every 100 females.

China's overall age structure has experienced change, too, in the last half-century. For example, in 1953 almost 60 percent of China's population was in the 15-64 years age group, while 36 percent of the population was under 15 years and less than five percent were over 64 years. A decade later (in 1964) the 0-14 years age group had risen to 40 percent while the 15-64 years and 65 years and over age groups had experienced a slight decline. China's high birth rate in the late 1950s and early 1960s explains this shift in age structure. By 1982, when the third census was conducted, another shift occurred. The 0-14 years age group had decreased while the 15-64 years and 65 and over years age groups had increased.

These increases can be attributed to a few important factors. First, the baby boomers from the 1950s and 1960s had reached adulthood. Demographic momentum would propel the birth rate for the next several decades. Also, a larger proportion of the population was living longer (i.e., life expectancies were on the rise). Therefore, the number of elderly people was increasing. The next two censuses (1990 and 2000) continued the trend first identified during the 1982 census; the 0-14 years age group would continue to decline while the 15-64 years and 65 years and older age groups

would continue to increase. Growth has been most significant in the 65 years and older age group. In 1990, this group represented almost six percent of China's population; by 2000 the elderly represented almost seven percent of the total population. Unfortunately, data for these age groups at the provincial level are not easily available. The only age information available at the provincial level in the 2002 statistical yearbooks is for the population age 6 years and over and population age 15 years and over. One could calculate the population in the 0-14 years age group by subtracting the number of 15 years and over from the total population size. Calculating the 65 and older age groups is not possible from this data source. Needless to say, these same data are not available at the county and city levels from this source.

The June 2004 issue of *Population Bulletin* was devoted to China's current population trends. A wide variety of demographic characteristics were described in that issue including many of the same fertility and mortality trends described in the above paragraphs. In addition, the June 2004 issue identified new trends for China. Three key trends were observed. First, China's low fertility rate will ensure rapid population aging in this century. Second, open markets and trade have widened income and health gaps. Third, policy changes and economic growth have spurred labor migration. Are there other looming problems that have been created because of this rapid demographic transition? The skewed sex ratio may represent one other area of concern. What other problems loom? How does the CCP view population growth today? Have population policies changed over the last half-century? These are questions that will be explored in subsequent chapters. However, before these

questions can be addressed, one must understand the physical and cultural characteristics of China. That is next topic to explore.

The Study Area

China's physical geography has shaped its settlement pattern for thousands of years. Mountainous regions have prohibited large settlements of people while rivers have been magnets for dense settlement. Temperate climate regions have long been populated, whereas arid and frigid regions have been sparsely populated. China has the distinction of being the world's fourth largest country (in area), thus one would expect to find a wide variety of landforms, hydrological systems, and climate regions available. While this is true, it is also fair to say that certain geographical features tend to prevail and severely limit the areas available for settlement. "China is a mountainous country, with hills, mountains, and high plateaus occupying about 65 percent of the total land area."[23] In other words, only about one-third of China's total land area is suitable for settlement, and that area is concentrated in the eastern third of the country.

China's hydrological systems include some of the world's greatest rivers such as the Chang Jiang and the Huang He (Yellow River). River valleys have long attracted large numbers of people, thus population densities are high in areas with adequate water resources. Unfortunately, large concentrations of people have dramatically altered the quality of these water resources. The scope of environmental degradation goes beyond the purpose of this research, but the problems are, especially in eastern China, ubiquitous and catastrophic.[24] Rivers continue to play a key role in China's development, especially along the Chang Jiang where the Three Gorges Dam

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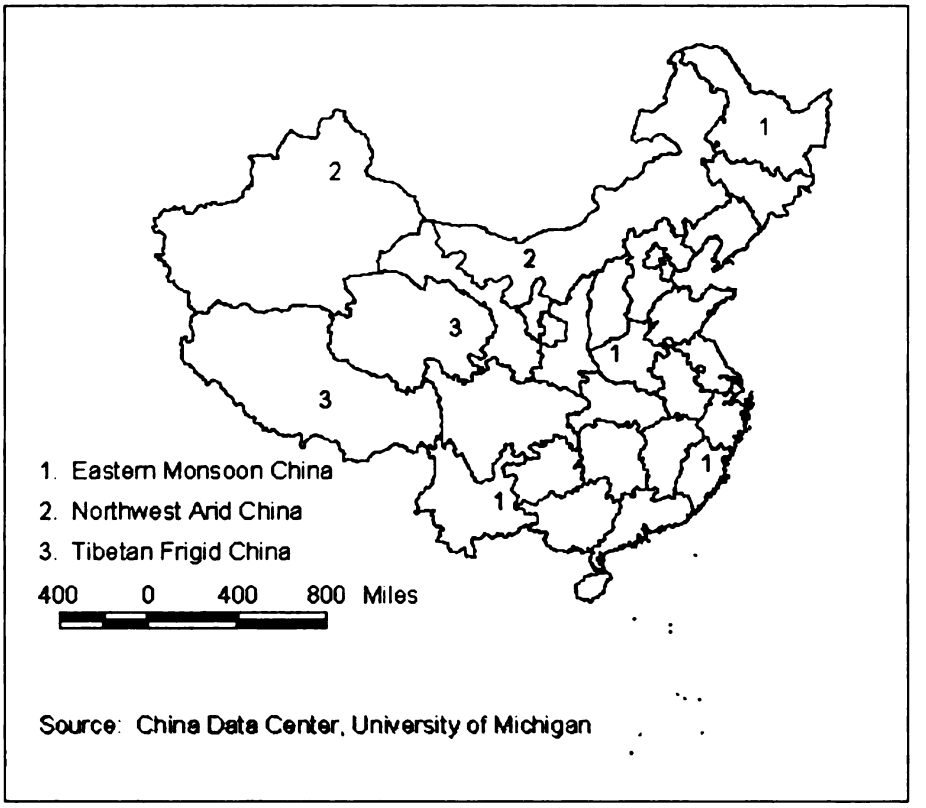
It is evident that China's topography limits overall settlement. Climate, too, has shaped settlement patterns. China is located in the mid-latitudes, thus one would expect temperate climates to prevail. Unfortunately, mountain ranges ring China's border and prevent moist air from entering, thus dry conditions prevail throughout much of the country. At its broadest, China can be described as having a humid climate in the eastern third of the country with arid and semi-arid climates in the western two-thirds. However, even in humid China problems associated with low precipitation prevail. The only part of humid China where water is truly abundant is in southeastern China, where some of the largest concentrations of population exist. When one combines these various elements of physical geography (i.e., landforms and climate) together, China can be divided into three natural realms: Eastern Monsoon China, Northwest Arid China, and Tibetan Frigid China (see Figure 1.2 for the natural realms).[25] Eastern Monsoon China is characterized by low to moderate elevations with humid climates. Not surprisingly, this is also China's most populous region. Jiangsu and Jiangxi are located here. Northwest Arid China is characterized by dry climates with moderate to high elevations and Tibetan Frigid China is characterized by cold and dry climates with extremely high elevations. Until recently, these latter two regions have had low population densities. However, because population pressure continues to stress the carrying capacity of land in eastern China, these western areas have experienced a rise in population growth.

Figure 1.2: Natural Realms of China



Given its large population, one would expect China's cultural geography to be complex. In reality, though, China displays a surprising degree cultural homogeneity, especially in Eastern Monsoon China. China has fifty-six ethnic groups, but more than ninety-one percent of China's population are Han people. Therefore, Han culture is the dominant culture. A written language unifies Han culture, though regional dialects differ. Major streams of thought (e.g., Daoism, Confucianism, and Buddhism) have shaped gender roles and attitudes; as a group, the Han are quite conservative. They appreciate humbleness and cherish obedience. Filial piety (i.e., respect of elders) is the duty of Han. The other fifty-five ethnic minorities collectively represent less than nine percent of China's total population.[26] Ethnic minorities differ from the Han most often by religious affiliations or languages spoken; yet still share

some cultural characteristics with the Han, such as filial piety. Ten of China's ethnic minority groups (including the Uyghur and Hui) are Muslim. Most ethnic minorities are located in remote parts of China (i.e., Northwest Arid China, Tibetan Frigid China, and the more rugged lands of Eastern Monsoon China).

Conflicts between Han and non-Han people are more frequent today and can be attributed to population pressure as Han people migrate into these non-Han regions. Internal migration has changed the ethnic composition for some of China's political units. Today, China has twenty-two provinces,[27] and four government-controlled municipalities – Beijing (the national capital), Shanghai, Tianjin, and Chongqing.[28] In addition, five autonomous regions exist – Nei Mongol (Inner Mongolia), Ningxia Hui, Xinjiang Uygur, Xizang (Tibet), and Guangxi Zhuang. These five autonomous regions were specifically created to give limited autonomy to their respective dominant ethnic groups (e.g., Mongolian, Hui, Uygur, Tibetan, and Zhuang). In recent years, as population pressure increases, Han are becoming more numerous in these autonomous regions. There are also two special administrative regions (SARs) – Xianggang (Hong Kong) and Macao.[29] Movement into SARs, especially Xianggang, is tightly controlled. The administrative structure of China also includes smaller areal units. Presently, China has 332 prefectures and 2053 counties. Jiangsu has 13 prefectures and 58 counties while Jiangxi has 11 prefectures and 80 counties.[30] Figure 1.3/Table 1.2 and Figure 1.4/Table 1.3 identify the administrative units for Jiangsu and Jiangxi. Counties can be further subdivided into towns and townships. However, the smallest administrative unit used for this research is counties.

The CCP has strongly shaped China's development. When they took control of the government in 1949, the economy was in a shambles. Hunger and poverty were endemic, much of the population was illiterate, and women's rights were largely unknown. The economy was predominantly agrarian. Added to this was the burgeoning population. In the last half-century, many changes have occurred. Hunger has largely disappeared, women are equal (at least in theory), education is compulsory, and the economy has improved dramatically. While these changes have been applauded, they have come at a tremendous human cost. Poor planning decisions, such as the Great Leap Forward (1958-1961) or the Cultural Revolution (1966-1976) left millions dead. In addition, China's population policies have averted the birth of millions more.

The greatest legacy of the CCP, though, involved dramatic policy changes begun in the late 1970s. Under the leadership of Deng Xiaopeng, China introduced two key policies: the family responsibility system (an agrarian reform) and the one-child per couple population policy. These two policies have transformed China, not necessarily all for the better. The Chinese government introduced the family responsibility system in1979, which ended the collectivization of agriculture. Farmers now lease agricultural land from the government and have more freedom in terms of what to produce. Agricultural reform has helped China shift from a country that imported foodstuffs to feed its population to a country that now exports surplus agricultural products. This is a remarkable feat. Agricultural reform has also created new problems. Ironically, the need for the labor of sons is even stronger now that agriculture has embraced capitalism. A family's economic success rests on the labor

of all its members. Therefore, the one-child per couple population policy created hardships for rural people. In addition, the burden of agriculture is increasingly falling on older people or women as young people migrate to urban areas. Migration creates new problems because many of these migrants lack *hukou*. In rural areas, the suicide rate for women has risen significantly in the last few decades. In less than thirty years, China has switched from an agrarian based economy with a population problem (too many young people) to an industrial based economy with new population problems (skewed sex ratios and a growing elderly population).

Industrial activity has also changed in the last few decades. China closed some unprofitable industrial centers (namely state-owned industries), placed more emphasis on township and village enterprises, and promoted the development of foreign-funded industries (especially in the southeast).[31] While these changes have helped improve the overall economy of China, there are also many problems. Older, industrial areas (such as the northeast) have experienced problems with unemployment as state-owned industries have closed. The gap between urban and rural residents has increased. Migration continues to be a problem, and is not limited just to remote regions in China. Migration has propelled the growth of cities, especially in coastal areas. Today, in spite of tight central government control, China's cities are growing fast, especially in Eastern Monsoon China. As of 2001, the urban-rural structure was 37.7% and 62.3% respectively. This represents an almost 15% increase in urbanization since 1985.[32] Rapid urbanization will continue to change China, and Chinese culture. Young Chinese may not be as duty-bound as their parents or grandparents. Collectively, the reforms introduced by the CCP have a

mixed record. They have improved the quality of life for some, but they have also created a variety of regional imbalances. In some parts of China (mostly coastal provinces), the economy is flourishing. Unfortunately, interior China has reaped fewer benefits from the economic improvements.

Post-Mao reforms changed China. These reforms were necessary to create jobs for China's huge population, but they opened the door to new problems. The leadership of the CCP had to revise their ideological course and introduce market forces to create jobs, produce food, and use raw materials more efficiently. Ironically, the world's largest communist government has embraced capitalism. How do these reforms affect population growth? This dissertation focuses on the relationship between birth rates and socio-economic changes for two Chinese provinces. Collectively, Jiangsu and Jiangxi represent the contrasting regions of eastern China. They were selected to illustrate the diverse array of demographic and socio-economic conditions that can be found in China today. Therefore, a bit of information about these two provinces is necessary.

Jiangsu[33]

Jiangsu, located on the Yellow Sea, is an east coast province that has experienced tremendous economic development in the last two decades. Its neighboring provinces and municipalities are Zhejiang, Anhui, Shandong, and Shanghai. The climate of Jiangsu is humid subtropical and the topography is dominated by plains and river basins, especially the Lower Chang Jiang Basin (or Yangtze River). The Grand Canal is still visible and actively used in this province from Suqian in the north to Wuxi and Suzhou in the south. Many large lakes also dot

the landscape and include Tai Hu, Gaoyou Hu, and Hongze Hu. Jiangsu has 13 municipalities and 58 cities and counties.[34] Jiangsu is one of China's most populous provinces. The year-end 2001 population was 73.55 million with a birth rate of 9.03/1000 and a death rate of 6.62/1000. Jiangsu's birth rate was lower than China's national average (13.38/1000) and its death rate was slightly higher than China's

Figure 1.3: Administrative Units of Jiangsu

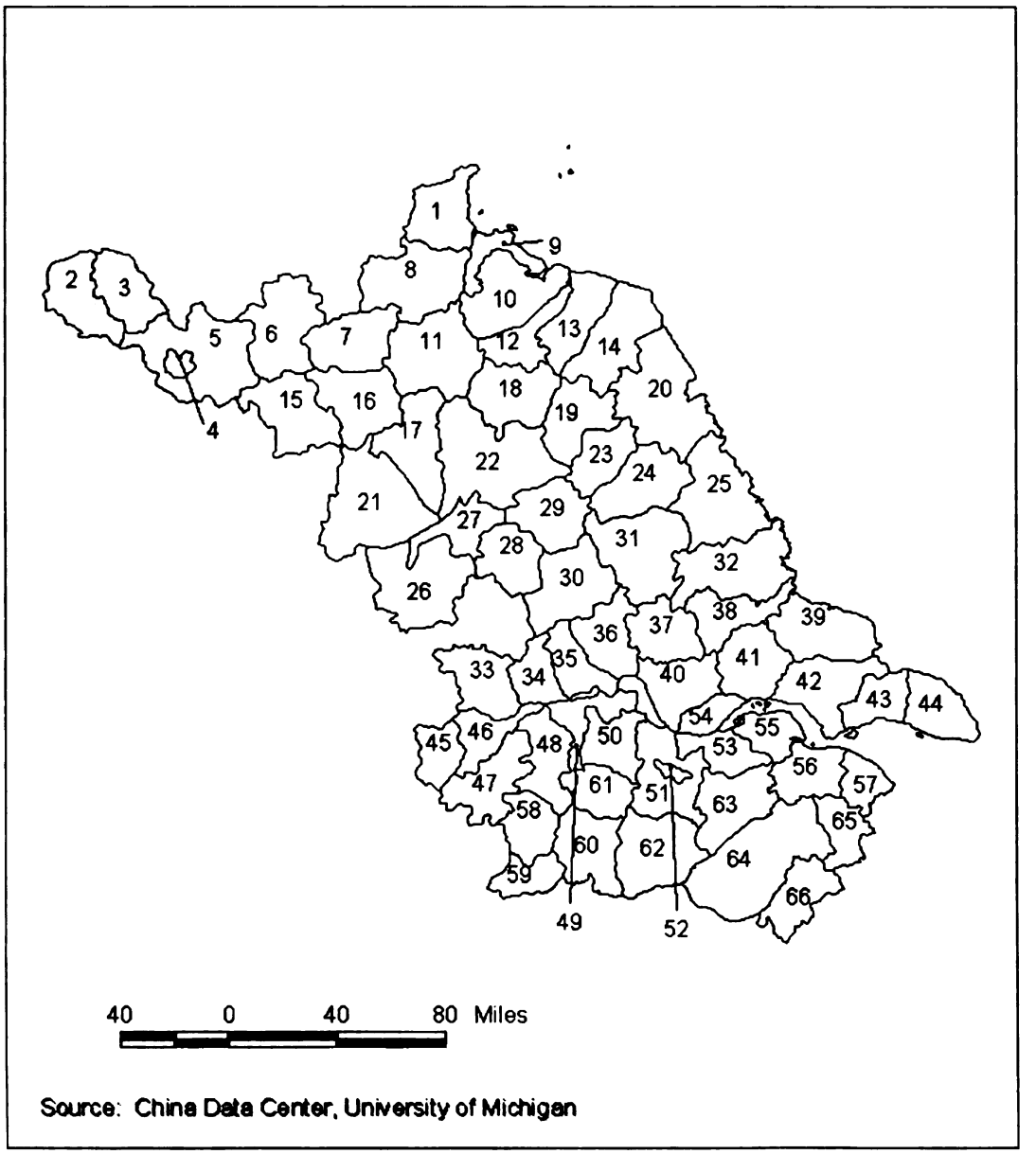


Table 1.2: Administrative Units of Jiangsu

Number	Name	Number	Name	Number	Name
1	Ganyu	23	Jianhu	45	Jiangpu
2	Feng	24	Yancheng (city)	46	Nanjing (city)
3	Pei	25	Dateng	47	Jiangning
4	Xuzhou (city)	26	Xuyi	48	Jurong
5	Tongshan	27	Hongze	49	Dantu
6	Pi	28	Jinhu	50	Danyang (city)
7	Xinyi (city)	29	Baoying	51	Wujin
8	Donghai	30	Gaoyou	52	Changshou (city)
9	Lianyungagn (city)	31	Xinghua (city)	53	Jiangyin (city)
10	Guanyun	32	Dongtai (city)	54	Jingjiang
11	Shuyang	33	Luhe	55	Zhangjiagang (city)
12	Guannan	34	Yizheng (city)	56	Changshu (city)
13	Xiangshui	35	Yangzhou (city)	57	Taicang
14	Binhai	36	Jiangdu	58	Lishui
15	Suining	37	Taizhou (city)	59	Gaochun
16	Suqian (city)	38	Hai'an	60	Liyang
17	Siyang	39	Rudong	61	Jintan
18	Lianshui	40	Taixing	62	Yixing (city)
19	Funing	41	Rugao	63	Wuxi (city)
20	Sheyang	42	Nantong (city)	64	Suzhou (city)
21	Sihong	43	Haimen	65	Kunshan (city)
22	Huaiyin (city)	44	Qidong (city)	66	Wujiang

national average (6.43/1000). The ethnicity of Jiangsu is predominantly Han; Hui (one of China's ten Muslim groups) represent the largest ethnic minority in the province.

Jiangsu is one of China's most developed provinces and has emerged, in the last decade, as an economic powerhouse for China. The economy of the province is diversified and includes both agricultural and industrial activities. A wide variety of agricultural and industrial crops are grown including rice, wheat, peanuts, soybeans, tea, cotton, jute, and silk cocoons. In addition, many industrial products are manufactured within the province by both state-owned and foreign-owned industries. In recent years, traditional industries, such as machinery, electronics, chemicals, and

motor vehicles, have been coupled with the development of high tech industries and include production of fax machines, computers, and mobile communication equipment. Much of Jiangsu's success is attributed to its location on the east coast of China, with access to nearby economic zones (including some within the province, such as Suzhou) and Shanghai (China's largest city). Some of China's most important and populous cities (such as Nanjing, Suzhou, and Wuxi) are in this province. This province was selected because the demographic and socio-economic conditions of Jiangsu represent the richest, most developed part of China.

Jiangxi[35]

Jiangxi is an interior province in southeastern China that has experienced far less spectacular economic development in the last few decades. Its neighboring provinces are Fujian, Guangdong, Hunan, Hubei, Anhui, and Zhejiang. The climate of Jiangxi is the same as Jiangsu's climate (humid subtropical), but the topography is much different. Mountains and hill lands are the main landform found in Jiangxi and include the Mufu Shan and Juiling Shan in the northwest, the Huaiyu Shan in the northeast, the Wuyi Shan in the southeast, and the Luoxiao Shan in the southwest. In essence, Jiangxi is a province surrounded by mountains on most of its borders. The northern border of this province is shaped by the Chang Jiang (Yangtze River) and a large lake (Poyang Hu) is also found there. The topography is much more rugged in Jiangxi. The province is comprised of 11 municipalities and 80 cities and counties. The year-end 2001 population was 41.86 million with a birth rate of 15.44/1000 (higher than China's average) and a death rate of 6.06/1000 (lower than China's

average). Although the majority of the population in Jiangxi is Han, this province has a more diverse ethnic population that includes Hui, Miao, and Yao people.

This province puts a heavy emphasis on agriculture and farmers produce a diverse array of agricultural and industrial crops, such as rice, wheat, tea, peanuts,

Figure 1.4: Administrative Units of Jiangxi

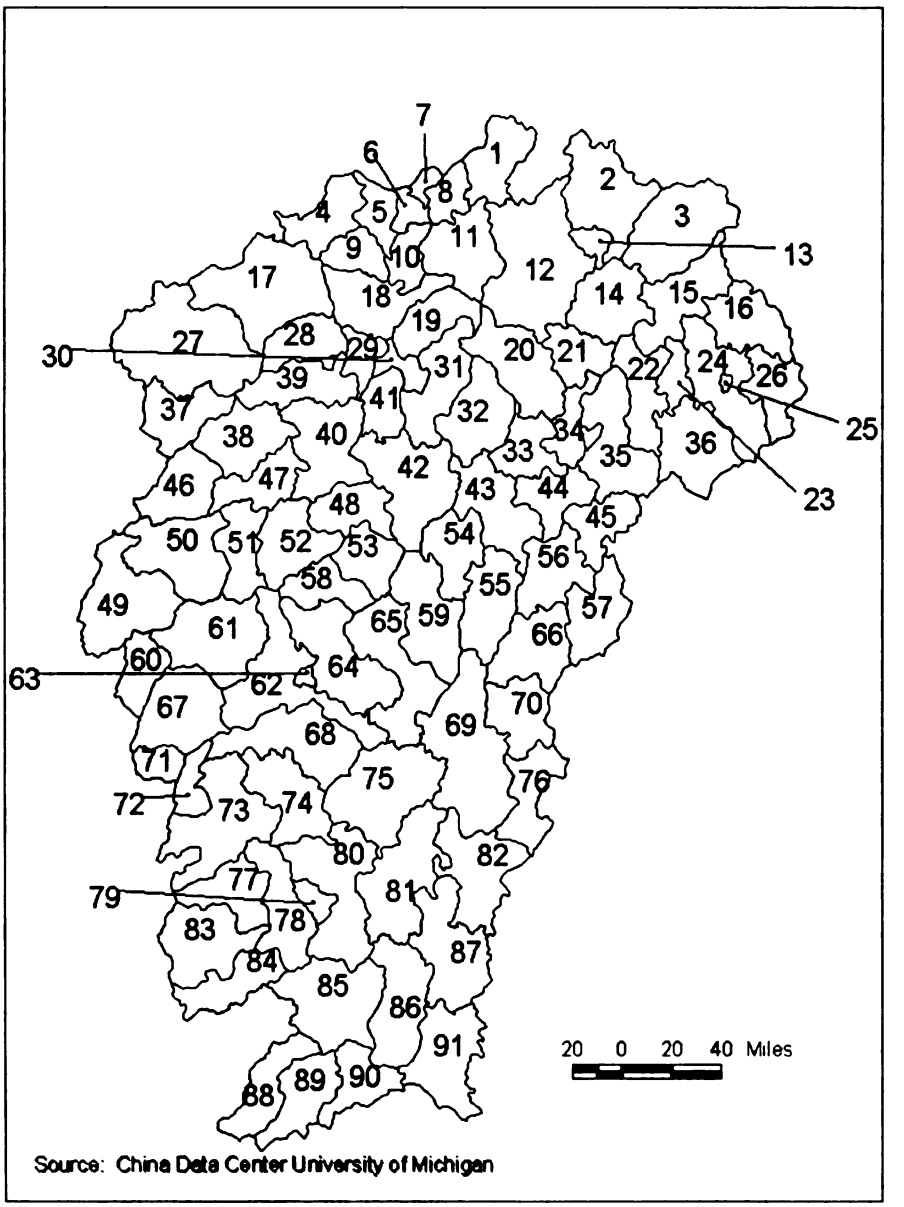


Table 1.3: Administrative Units of Jiangxi

Number	Name	Number	Name	Number	Name
1	Pengze	31	Nanchang	61	Anfu
2	Fuliang	32	Jinxian	62	Ji'an
3	Wuyuan	33	Dongxiang	63	Ji'an (city)
4	Ruichang (city)	34	Yujiang	64	Jishui
5	Juijiang	35	Guixi	65	Yongfeng
6	Juijiang (city)	36	Qianshan	66	Nanfeng
7	Juijiang	37	Tonggu	67	Yongxin
8	Hukou	38	Yifeng	68	Taihe
9	De'an	39	Fengxin	69	Ningdu
10	Xingzi	40	Gao'an	70	Guangchang
11	Ducheng	41	Xinjian	71	Ninggang
12	Boyang	42	Fengcheng (city)	72	Jinggangshan (city)
13	Jingdezhen (city)	43	Linchuan (city)	73	Suichuan
14	Liping	44	Jinxi	74	Wan'an
15	Dexing	45	Zixi	75	Xingguo
16	Yushan	46	Wanzai	76	Shicheng
17	Wuning	47	Shanggao	77	Shangyou
18	Yongxiu	48	Zhangshu (city)	78	Nankang
19	Xinjian	49	Pingxiang (city)	79	Ganzhou (city)
20	Yugan	50	Yichun (city)	80	Ganzhou (city)
21	Wannian	51	Fenyi	81	Yudu
22	Yiyang	52	Xinyu (city)	82	Ruijin
23	Hengfeng	53	Xin'gan	83	Chongyi
24	Shangrao	54	Chongren	84	Dayu
25	Shangrao (city)	55	Yihuang	85	Xinfeng
26	Guangfeng	56	Nancheng	86	Anyuan
27	Xiushui	57	Lichuan	87	Huichang
28	Jing'an	58	Xiajiang	88	Quannan
29	Anyi	59	Le'an	89	Longnan
30	Nanchang (city)	60	Lianhua	90	Dingnan
				91	Xunwu

sugar beets, tobacco, fruits (including sub-tropical crops such as oranges), and cotton. Industry has been part of the economy of Jiangxi and one city (Jingdezhen) is famous for its porcelains. There is a good industrial base throughout the province, but the overall economic conditions are not as good as those found in Jiangsu. This province was selected because the demographic and socio-economic conditions of Jiangsu represent the less wealthy, less developed part of China.

With the problem statement and research objectives identified, as well as background information described, one can now consider the literature available as it pertains to population, population policy, and China. A literature review is the foci of the next two chapters.

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[1] The official name for this country is the People's Republic of China (PRC). For the sake of convenience, whenever China is used in this dissertation, it refers to the People's Republic of China.

[2] In essence, Chairman Mao proclaimed that people are a resource.

[3] These questions will be further expanded in Chapter 6.

[4] Spence, Jonathan D. *The Search for Modern China* (New York: W.W. Norton and Company, 1990): 93.

[5] Ibid: 7.

[6] Ibid: 93

[7] Ibid: 296.

[8] Ibid: 296.

[9] Unless otherwise noted, all data in this section were taken from *China Statistical Yearbook* (Beijing: China Statistics Press, 2002): 93-98.

[10] Total fertility rate refers to the number of births per women of reproductive age (i.e., 15-45 years old).

[11] Riley, Nancy E. "China's Population: New Trends and Challenges," *Population Bulletin* 59(2): 11.

[12] Ibid: 9.

[13] See Coale and Banister (1994), Evans (2001), Johansson and Nygren (1991), Smith (1994), and Yong and Lavely (2003) for more information.

[23] Zhao Songqiao, *Geography of China: Environment, Resources, Population, and Development* (New York: John Wiley and Sons, Inc., 1994): 5.

[24] Two books that are particularly useful for exploring China's environmental crisis include Vaclav Smil's 1993 book (*China's Environmental Crisis*) and Harry Wu's 1995 book (*Bitter Winds*).

[25] Zhao Songqiao, *Geography of China: Environment, Resources, Population, and Development* (New York: John Wiley and Sons, Inc., 1994): xvii.

[26] As of 2000, 91.59% of China's population was Han, with 8.41% identified as a minority nationality. The five largest minority nationalities are Zhuang, Manchu, Hui, Miao, and Uygur. *China Statistical Yearbook* (Beijing: China Statistics Press, 2002): 95, 97.

[27] China claims there are actually twenty-three provinces within its political realm, with number twenty-three being Taiwan.

[28] In 1997, the eastern part of Sichuan was designated a government controlled municipality centered on the key city of Chongqing.

[29] Hong Kong, a former British colony, was reunited with China in 1997 with much fanfare. Macao, a former Portuguese colony, was reunited with China in 1999. Because they are relatively recent additions to China's political geography, little data are available. Therefore, they will not be included in any statistical analysis of China at the provincial level.

[30] China Statistical Yearbook (Beijing: China Statistics Press, 2002): 3.

[31] Township and village enterprises (TVEs) involve introducing industrial activities to rural areas. The purpose for establishing TVEs is twofold. First, TVEs provide another source of income to rural areas so there is less reliance on agriculture solely. Also, TVEs are supposed to help stem the flow of illegal movement to urban areas by rural people.

[32] In 1985, the urban-rural structure was 23.7% and 76.3% respectively. *China Statistical Yearbook* (Beijing: China Statistics Press, 2002): 30.

[33] Statistical information comes from *Jiangsu Statistical Yearbook* (Beijing: China Statistics Press, 2002) and *China Statistical Yearbook* (Beijing: China Statistics Press, 2002).

[34] One city and two counties were not included in the spatial analyses: Tongzhou city (part of the Nantong municipality), Yandu county (part of the Yancheng municipality), and Suyu county (part of the Suqian municipality).

[35] Statistical information comes from *Jiangxi Statistical Yearbook* (Beijing: China Statistics Press, 2002) and *China Statistical Yearbook* (Beijing: China Statistics Press, 2002).

Chapter 2 – Theoretical Approaches to Population and Policy: A Review of the Literature

Scholars from a variety of disciplines including geography, sociology, economics, and history have investigated the topic of population and population policy, both as a theory and, in some cases, specifically as it pertains to China. None of them encompasses the whole topic, nor are these the only disciplines interested in population and policy. Each scholar has explored the topic through the lens of his or her discipline. For example, geographers often focus on the spatial aspects of population, while demographers and economists analyze statistical or theoretical aspects of population. Historians view changes in population over time. Individually, each discipline adds to the greater knowledge by contributing their part to the overall puzzle. Chapters Two and Three review the literature from two different perspectives. This chapter explores the evolution and theoretical base of literature that pertains to population and population policy theory. It will assess what has been accomplished thus far and also identify the "holes" that still exist. It will begin by exploring the broadest area of research – population theory. This will be followed by the next broad category – population policy. Chapter three continues the literature review by exploring the scholarship that pertains to China's population and policies. This chapter concludes with an assessment of the regional studies of China's population and identifies the goals of this present study.

Population Theory

At the dawn of the eighteenth century, Malthus wrote an essay that is still the theoretical framework of anti-natal views found in the literature today. Malthus proclaimed population was growing much more rapidly than Earth's food supply and that, eventually, population increase would outstrip the development of food. The gist of his argument was that population grew geometrically while food production grew arithmetically. He concluded disasters (e.g., famine, disease, war) would occur because of this rapid population growth. Malthusian theory has its share of critics. Perhaps most notable is Marxist theorist Friedrich Engels. Engels claimed it was economics (e.g., capitalism) that caused problems, not overpopulation. He argued that the world possessed sufficient resources to eliminate global hunger and poverty, if only these resources were shared equally. Marxist theory would establish the theoretical framework for much of the pro-natal view. Many geographers consider Malthusian beliefs unrealistically pessimistic, because they are based on a belief that the world's supply of resources is fixed rather than expanding (Rubenstein, 1999). Among geographers, though, theoretical differences exist as it relates to population theory. Pro-natal and anti-natal frameworks still establish the parameters for population theory.

The main question asked when one considers the role of population theory is what factors contribute to the decline of fertility in a society? Much of the current literature revolves around demographic transition theory, first described by Robinson (1930) and later modified by Notestein (1945). In essence, this theory suggests that as

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a society modernizes, death rates decline followed later by a decline in birth rates. The factors that contribute to a decline in birth rates remain questionable. Can a decline in birth rates be achieved simply through family planning and population policy or does the decline involve societal changes (e.g., changes in income distribution, increase in education levels, empowerment of women, etc.)? Notestein and Lorimer both explored the dimensions of population growth in Schultz's *Food for the World* (1945). Their work identified the signs of overpopulation, with particular attention paid to food shortages. Their work also espoused the dominant theme that is still present in the literature today, namely that "too many people are bad" for the planet.

The concern about rapid population growth began with Malthus, but the contemporary concern about rapid population growth was raised by Coale and Hoover (1958). Their seminal work sounded the alarm for the emerging population crisis in the less developed world. The gist of their argument was that too many people hinder development and exacerbate poverty. Development rested on controlling population growth, so modern social scientists began to promote family planning (i.e., birth control) as the most effective way to slow population growth. Family planning became the basis of most countries' population control policies in the 1960s.

Geographers also began to explore the dimensions of population theory. Trewartha (1969) explored contemporary world population distribution and density. The biological composition of population (with shades of Huntington and Semple's biological determinism, especially as it pertained to race) and socio-economic

characteristics (i.e., education/literacy, marital status, rural/urban residency, economic well-being, and composition of labor force) were introduced as characteristics to be considered when studying population. Woods (1979) described the role geographers could play in the field of population studies. He pointed out the strength of geographers in this field (namely that geography is a spatial science), but unfortunately his plea seemed to fall on deaf ears because little in the literature has been written from a geographer's point of view.

The global population growth rate reached a zenith in the late 1960s and the literature reflected concern about this growth. Meadows, Meadows, Randers, and Behrens (1972) wrote for the Club of Rome and, again, espoused the argument that "too many people are bad" for the planet. This informal organization of 70 members explored the predicament of humankind. They identified five basic factors that would determine and limit growth (population, agricultural production, natural resources, industrial production, and pollution) and five major trends for the planet (accelerating industrialization, rapid population growth, widespread malnutrition, depletion of nonrenewable resources, and environmental deterioration). They concluded that if the rate of growth continued at its present level, the limits to growth would be reached within the next one hundred years. While an alarm was sounded, little of substantive value was offered as a method to resolve the problem.

In the early 1970s, some scholars began to identify factors that would affect fertility decline. Goldscheider (1971) assessed the role of modernization, particularly the correlation between increased industrialization and decline in fertility. Schultz (1974), Robinson (1975), and Caldwell (1978) each explored the relationship between

compulsory education and the demand for children. Schultz criticized the one-sided technocratic view that had prevailed (i.e., the push for birth control) and proposed that both the "supply and demand" roles of children needed further elaboration and quantitative study.

Caldwell, in particular, began to explore the importance of mass education and the concept of "wealth-flow theory." In essence, "wealth-flow theory" looked at the economics of children. In less developed societies, children were viewed as an economic asset in that they were a source of income through their labor and provided social security for elderly parents. As a country modernized (and the need for an educated society increased), the economic advantages of children diminished because of compulsory education. Compulsory education oftentimes acted as the impetus to make children an economic liability. Caldwell would continue to explore "wealth-flow theory" and the importance of mass education for the next few decades. Caldwell (1980) proposed that mass education in less developed countries had probably greater implications for changing family relationships and declining fertility than it had in the West. He also made a distinction between education of males and females. Caldwell (1982) began to move toward a restatement of demographic transition theory, but argued that zero population growth (ZPG) was not the end of the transition. He claimed that the patterns of western societies could not be assumed to exist everywhere. Caldwell (1997) argued that there have not been two fertility transitions (one in the West and one in developing countries), but rather a progression of transitions. Therefore, he suggested a need to develop a unifying theory as it pertained to global fertility transition. The unifying theory of fertility would embody

long-term underlying economic and demographic trends, ideas and ideologies, legitimation, and assistance in access to contraception. Caldwell's contribution to demographic theory was celebrated at a symposium held in Australia in 1996. Jones, Douglas, Caldwell, and D'Souza (1997) explored that symposium in their book.

In 1974, the first world population conference was held in Bucharest (subsequent conferences were held in Mexico City in 1984 and Cairo in 1994). A new approach for addressing the population problem emerged from this 1974 conference, namely that development was the best contraceptive. The Bucharest conference had contentious issues, in particular the North-South debate regarding population problems. "South" seemed to infer less developed countries, particularly in the southern hemisphere, and the debate was that there were too many people in the south (at least as far as the north was concerned). The Bucharest conference would appear in the literature for the rest of the 1970s. Salas (1976), Tapinos and Piotrow (1978), Wolfson (1978) and Singh (1979) each produced a post-Bucharest analysis and looked at different approaches to the population problem. These new approaches would include socio-economic policies, empowerment of women, multi-lateral approaches to program development (including a World Population Plan of Action), and the role of family planning.

Birdsall (1977) examined the multiple relationships between population growth and economic development and noted two interrelated categories of research. One category focused on the consequences of fertility while the other category looked at the determinants (including biological determinants) of fertility. While many scholars would explore the biological determinants of fertility, they are beyond the

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scope of this paper and will not, thus, be explored. As the 1970s ended, Simon (1977, 1996) articulated a view not shared by the majority of scholars. He supported the pro-natal point of view in regards to population theory, namely that population growth does not threaten economic development. Simon argued that population growth is good for economic development and that people are the ultimate resource.

The 1980s saw the continued evolution of population theory. Easterlin (1980) explored the relationship between generation size, personal welfare, and birth patterns while Keyfitz (1982) explored the consequences of population change, including the new challenge created by an ever-aging population. Cleland and Rodriguez (1988) compared the effects of a wife's education versus a husband's education on fertility and concluded that adult literacy was one of the strongest correlates of fertility decline. Development was taking on new dimensions and they were being incorporated into population theory.

In 1984, the second world population conference was held in Mexico City. It, too, had some contentious issues, namely the new attitude toward population proposed by some countries including the U.S. (i.e., population growth is neither good nor bad) and the fiscal challenge created when the U.S. withdrew funds that previously supported International Planned Parenthood and the U.N. Fund for Population Activities (UNFPA) because these agencies included abortion as a form of family planning. The issues and challenges of population growth first raised at this conference would continue to appear in the literature in work by Johnson (1987), Crane and Finkle (1989), Sadik (1991), Cassen and Bates (1994), and Johnson (1994) as they analyzed the legacy of the Mexico City conference.

Literature from the 1990s saw some new twists in the role of population theory, particularly as it pertained to dominant theories (especially the Coale-Hoover model) and the relationship between people and the environment. Chenais (1992) provided an excellent overview of the evolution of demographic transition theory. He made a good argument regarding the role of migration and how it is not part of demographic transition theory. He also questioned whether the European experience was unique rather than the norm. Most importantly, however, was his concern regarding dominant theories of population change. Chenais concluded that the dominant theories (e.g., the Coale-Hoover model) were not able to account for economic development over the last few decades and how that development has affected population theory. Neurath (1994) examined the evolution of population theory from Malthus to the Club of Rome. He claimed the "Limits of Growth" debate proposed by the Club of Rome was an international conspiracy by some big-time capitalistic-imperialistic plutocrats who warned of big catastrophes if steady growth of population continued. Stokes (1995) also reviewed demographic transition theory and argued for the importance of institutional factors in fertility decline, especially as they pertained to organization of agricultural production, involvement of women in agriculture, and institutions of patriarchy and gerontocracy. Kirk (1996) explored the dynamics of demographic transition theory and concluded that no two countries have followed identical paths to transition because there are so many possible combinations of nuptiality, fertility, mortality, and migration at each stage of the transition. Friedlander, Okun, and Segal (1999) continued the discussion and outlined the evolution of transition research from classic demographic transition

theory (e.g., Thompson, Notestein) to the emerging issue of rapid population growth in developing countries (e.g., Coale, Easterlin, and Caldwell).

The relationship between people and the environment became more apparent in the literature in the 1990s. This population-environment debate was explored through the theories of many, including Malthus, Meadows, Simon, Coale, and Caldwell. Dasgupta (1995) questioned whether overpopulation caused poverty or poverty caused overpopulation. His paper explored the interconnectedness of population growth, poverty, and the state of the local resource base and concluded that the oft-expressed fear that rapid population growth will accompany deteriorations in living standards had not been born out by experience so far, at least not when judged from the vantage of the world as a whole. Cartledge (1995) and Zuckerman and Jefferson (1996) followed a more conventional line of argument as it pertains to people and the environment (i.e., that too many people are bad). Livernash and Rodenburg (1998) discussed the population-environment debate (e.g., sustainable development) and explored the issue of overpopulation. Pebley (1998) reviewed past demographic thinking about population and the environment and suggested reasons for the limited scope of demographic research in this area. She also described more recent demographic research on the environment and suggested several newer areas for demographic research. Unfortunately, she ignored the role geography has played in environmental studies and spatial analysis. Literature about population theory was becoming more fragmented.

In 1994, the third world population conference was held in Cairo. Akin to its predecessors, this conference had a fair share of controversy, but this time much of

the contentious issues were raised prior to the actual conference. Sensitive issues that pertained to abortion, improvement in the status of women, and adolescent fertility were at the heart of the controversy. Unlike the earlier conferences, the Cairo conference concluded on an optimistic note with a program of action on population and development. The program of action focused on reproductive health and the empowerment of women rather than a demographic rationale for population policy. Johnson (1995) explored the details of the Cairo conference, including the events leading up to the conference, while McIntosh and Finkle (1995) questioned whether the Cairo conference represented a new paradigm. Singh (1998) also explored the outcome of the Cairo conference, reiterated that population and development must embrace women, and stressed that non-governmental organizations (NGOs) will continue to play an important role in population policy along with the mobilization of resources.

As the twentieth century ended, the literature embraced a few more concepts, especially as it pertained to further research on population theory, feminism and population theory, and demographic transition. Obermeyer (1997) and Greenhalgh (1997) both supported the need for more qualitative methods and cross-disciplinary practices to understand population processes. Krishnaraj, Sudarshan and Shariff (1998) explored the challenges of gender and development while Silliman and King (1999) explored feminist perspectives on population, environment, and development. Macunovich (2000) synthesized two hypotheses first advanced by Easterlin in 1980. In particular, she explored the relationship between total fertility rate, relative cohort size, and infant mortality in selected developing countries and concluded that the

underlying motivation for fertility decline is associated with the increase in relative cohort size (e.g., Easterlin was right). Wilson (2001) continued to explore the convergence of demographic patterns around the world and concluded that the convergence has progressed so that a large majority of the world's population is demographically "modern" but that this change has progressed more rapidly than economic development. Bongaarts (2002) examined current trends and patterns in fertility in the developed world, with particular emphasis on the effect and implications of changes in the timing of childbearing. Most analysts attribute low and delayed fertility to the difficulties women in contemporary industrialized societies face in combining childrearing with their education and a career, and to a rise in individualism and consumerism. These recent trends in childbearing are part of a larger process of social and demographic change sometimes referred to as the second demographic transition. The very low fertility observed in most post-transitional societies is a relatively new and unexpected development. Will this pattern also be replicated in the developing world as modernization progresses?

The March 2004 issue of *Population Bulletin* focused on transitions in world population. Both sides of the population issue were explored, namely too many people in some countries with the potential for too few people in other places. The staff at the Population Reference Bureau explored a variety of issues that pertain to world population transitions and described the effects socio-economic change (e.g., education, income, and gender) have on population. Some non-traditional ways to assess wealth were also suggested. Variables that pertained to ownership of certain consumer goods (such as a refrigerator, television, radio, car, motorcycle, or bicycle)

might be more reflective of overall improved economic conditions than increases in traditional measures, such as per capita income. Eberstadt (2004) identified four unanticipated trends in global demography. They were: (1) the rapid spread of sub-replacement fertility (identifying China as the most important case in point); (2) unnatural gender imbalances (again, citing China's current situation); (3) sustained increases in mortality (because of increases in HIV/AIDS); and (4) America's "demographic exceptionalism" (i.e., the role of immigration).

Thus far, the literature has shown there was not a consensus as it pertained to population theory and related issues. Many variables influenced the demographic transition of a country as it changed from high population growth to low population growth, and no single model can be used to explain demographic transition for all places. While many scholars agree that compulsory education was an important component that influenced demographic transition, the literature also indicated other important socio-economic variables, such as the empowerment of women and increases in income, have played a role. However, another important factor to consider has been the role of formal population policy and how it has influenced the overall demographic transition. That is the next topic to explore.

Population Policies

The role of population policies first began to appear in the literature in the late 1960s. As work from various scholars sounded the alarm about too many people, some scholars started to propose the need for population policies, most often anti-natal in nature. Much of the early literature focused on either the ethical issues of population policies or the objectives of population policies with little (if any)

emphasis on the theory of population policies. Callahan (1971) looked at general issues that a population policy would address, such as elimination of starvation, more rapid economic development, and improvement in quality of life. He also considered pertinent ethical issues of population policy, such as whether or not a government could use positive or negative incentive programs to limit population growth, and if it would be ethically right for a country to do nothing in lieu of excessive population growth. Callahan suggested governments have a right to go beyond family planning to reduce excessive population growth, but if implemented the policies should try to respect freedom of choice.

Berelson (1971, 1975) contributed to the growing debate by defining population variables and behavioral variables. He asked how much, if any, of the current controversy about population policy is traceable to such institutional pressures and personal disparities? He coined the following acronyms to represent three viewpoints regarding population policy: FAMPLAN (voluntary fertility control), DEVDEV (economic development), and ACCRIT (academic contributions, especially from demography). Berelson and Lieberson (1979) sought to explain ethical implications of government interventions on population growth. They concluded there is not a one-size-fits-all approach to this challenge.

Overbeek (1976) explored a variety of dimensions of the population challenge. His chapter on population policy seemed to mimic what the Chinese government had implemented (or soon would implement) to slow population growth. In particular, Overbeek explored a variety of institutional reforms that would decrease fertility, including the use of propaganda, media campaigns, fertility education,

increasing the age of marriage, and greater spacing between births. Overbeek also discussed the use of both positive and negative incentives in a population policy.

The shift toward an integrated policy between population and development became more commonplace in the literature starting in the late 1970s. Snodgrass (1978), Miro and Potter (1980), Warwick (1982), Ghosh (1984), Demeny (1988), Roberts (1990), and Goldscheider (1992) explored various aspects of wedding development planning with population policy. While there was no consensus in terms of what development planning and population policy entailed nor any theoretical foundation for this newly merged policy, one criterion that seemed to transcend this literature was that population policies should not use coercion as a method of implementation.

As the role of population policy evolved, scholars explored issues that went beyond the ethical aspects of any population policy or the policy-development debate. Leisinger and Schmitt (1994) concluded that more needed to be done to slow population growth, yet they showed that the population policy debate had many facets. While most policies tended to be anti-natalist, they also looked at the pro-natalist view of this topic. They explored a variety of issues that pertained to the population policy debate, and questioned how many people are too many. Pritchett (1994) explored why fertility differences prevail. In essence, he argued that high fertility is not simply a matter of inadequate contraceptive methods. Rather, he showed that high fertility primarily reflects desired birth targets of couples. Fertility choices are conditioned by social, educational, cultural, and economic conditions. Therefore, the challenge of reducing fertility is the challenge of reducing people's

fertility desires, not reducing "unwanted" fertility. Improvements in mortality (e.g., lower infant mortality rates), income, and education will accompany fertility transitions in the contemporary developing world. Some scholars might argue that Pritchett's proposal is not unique (e.g., to achieve fertility reductions one must change desires and improve contraceptive access). His evidence reveals, however, that fertility reduction will occur when fertility desires change and contraceptive access does not matter. Expansion of female education appears to be a key to fertility reductions. Bender and Leone (1995) continued to explore the many sides of the population problem and identified the many contradictions present in population policies through the writings of different scholars. For example, some scholars argued that feminists detracted from population control efforts while others proclaimed that the feminist agenda was necessary for transforming population policies. Sen, Germain and Chen (1994) broadened the policy spectrum and explored the concepts of health, empowerment, and rights to population policy. Presser (1997) introduced the nexus between gender and policy, though she noted that gender issues do not necessarily correspond with feminist research (i.e., she encouraged a feminist perspective but did not endorse the feminization of population and development issues). Furedi (1997) showed that population policies can be seen through many lenses. Robinson (1997) noted that population policy continued to be largely ad hoc with no real theoretical foundation, and uncertainty remained regarding the most basic macro-economic questions (i.e., the role of population growth in the development process and what government policies are appropriate under what conditions). He analyzed the last three decades of the economic theory of fertility

and surmised that the economic theory of fertility had not yet fully explained the fertility-decision process. In short, Robinson concluded that greater conceptual clarity in the theoretical framework is needed, with more precision in specification regarding the actual measurement of basic variables such as demand, supply, and cost. Recently, Grant (2000) pointed out that much of the technical literature seldom (if ever) has mentioned formal population policy as part of the solution to the population problem.

Overall, the literature reveals that there are many different views on the role of population policies, but no consensus on how population policies can be used to address the population problem and little work on the theoretical foundation of population policies. By the 1980s, reference to China's population policy (e.g., the one-child per couple policy) began to appear more frequently in the general literature, sometimes as an example of what is not appropriate for a population policy and at other times with lukewarm acknowledgment that the policy was working. Literature that pertains to China's population and policies will be explored in the next chapter.

Chapter 3 – China's Population and Policy: A Review of Applied Research

The previous chapter examined the theoretical base of scholarship as it pertains to population and population policy. No review of literature would be complete without an assessment of applied research as it pertains to China's population and population policies. Therefore, this chapter explores applied research from two units of scale. First, scholarship that explores the nature of China's population and population policies for the country, as a whole, is described. This is followed by an assessment of regional studies (i.e., studies that focus on specific areal units) within China. Finally, this chapter concludes with a description of the goals of this present study. However, before one assesses the applied research, a summary of the evolution of China's population policies is in order.

Population Policies of the PRC

In 1949, when the CCP took control of the government, China was burdened with high birth rates and high death rates. In spite of this, the government encouraged couples to have many children. The CCP regarded a large population as an asset and viewed birth control as a means of slaughtering the people without drawing blood.[1] In 1949, Mao said:

> It is a very good thing that China has a big population. Even if China's population multiplies many times, she is fully capable of finding a solution...revolution plus production can solve the problem of feeding the population...of all things in the world, people are the most precious resource.[2]

Although China's population was over a half billion strong in 1953, Mao promoted population policies that were pro-natalist. Even when scholars raised concern about too many people, they were oftentimes ignored and sometimes imprisoned for their criticisms of the government. In the 1950s, Chinese people were encouraged to have large families because people were viewed as a necessary (and expendable) resource in the nuclear age. This pro-natalist view added 300 million people to China's population over the next three decades. This does not mean, however, that family planning was banned. In 1953 some health authorities began to support birth control. It was not until the One Hundred Flowers Campaign in 1957, though, that an open discussion of the population problem was allowed in academic circles. Unfortunately, the political liberalism of the One Hundred Flowers Campaign was short-lived.

With the advent of the Great Leap Forward, birth control campaigns were halted and some advocates were purged from the CCP. Ma Yinchu, a Beijing sociologist who questioned China's unrestrained population growth, was condemned in 1958 as bourgeois and Malthusian. The Great Leap Forward marked a brief period of slow population growth, but this was due mainly to high death rates caused by the famines of 1958-1960. By 1961 birth rates were again on the rise so the CCP reconsidered family planning methods, including deferred marriages (i.e., marrying long after the minimum age of marriage had been reached), no extra food rations for families with five or more children, abortion, and sterilization after the birth of a third child. In 1962, the government stated, "Two is just right, three is too much and four is definitely wrong."[3] Support of family planning was again interrupted with the

advent of the Cultural Revolution in 1966, though oral contraceptives and abortion would be available and routinely used as a form of family planning by 1968.

By the 1970s, population size was becoming an issue of concern even among those in Mao's inner circle. This marks the point when the government shifted toward an anti-natalist policy. The first anti-natal policy (*wan, xi, shao*) focused on three components – later marriage, fewer children (limiting family size to no more than three children) and greater spacing between births.[4] In 1972, incentives were instituted for those who were sterilized and penalties were placed on families with more than three children. Penalties included the loss of residential status (i.e., *hukou*) and food rations.[5] In 1973, a hierarchy of responsibility was established for promoting the birth control campaign. At the national level, the Ministry of Health formulated and promulgated regulations and distributed contraceptives. China's Family Planning Commission is part of this ministry. At the provincial level, health departments promoted birth control while at the local level (county and city levels) health divisions provided birth control training and services. The goals of this collective hierarchy were to elevate the status of women, encourage late marriages and discourage large families.

To overcome the challenges of a large population the *renkou lilun* (population theory) was published in 1977. *Renkou lilun* represented the first systematic and comprehensive disclosure about China's population growth since the 1950s. The theory cited several benefits for lowering population growth. First, a lower rate of population increase would help accelerate the development of a socialist society and provide a more rapid realization of the four modernizations.[6] Slower population

growth would emancipate women and create new generations of Chinese who would be morally, intellectually, and physically better. Use of contraceptives was encouraged to control the rate of population growth. Media campaigns, education programs, and loyal cadres (including elder sister-in-laws and barefoot doctors) all promoted family planning. The teachings of ancient philosophers, such as Confucius and Mencius, came under attack because of their encouragement of large families (i.e., the more sons the more blessings) and their view of women as subservient (i.e., males are exalted, females are demeaned).[7] Finally, to ensure slower population growth, a population policy that promoted planned reproduction was deemed necessary. Therefore, the population policy was again modified in 1978.

The one-child per couple policy, first tested in Sichuan Province, became a national policy in 1979. This policy involved a variety of incentives and disincentives to promote family planning. Incentives included cash awards, priority allocation of resources such as housing, and preferential placement of the only child in education facilities. Disincentives included steep fines, denial of job promotions, and, at its worst, forced abortion and sterilization. Deferred marriages were still encouraged and free contraceptives were also distributed. The 1979 population policy created hardships in the countryside where approximately three-quarters of the population lived. Rural families were oftentimes forced to hide pregnant women and not register the births of their babies, especially if that child was a girl or was born disabled. In 1984, the CCP acknowledged that the 1979 policy had created a "big hole" in Chinese society, and thus, modified the one child policy. The "big hole" was replaced with a "small hole," i.e., a range of exceptions.[8] Now rural families could

have two children, if the first child was a girl or had a disability. Ethnic minorities were allowed even greater freedom in regards to the population policy and could have more children although they had long enjoyed exemption from China's earlier population programs and policies. The 20th century ended with China's one-child per couple population policy still in place and largely unchanged since 1984.

In March 2002 China's Family Planning Commission announced a modification of the population policy. Rather than focusing on birth quotas, the policy would continue to support family planning and work to improve the overall health and welfare conditions for women and children.[9] While not explicitly stated, many interpreted this modification as the end of the one-child per couple policy. The one-child per couple population policy may have been relaxed, but the legacy of the population policy will affect China for many decades to come. The population policies have played a significant role in China's recent demographic transition. Throughout history, though, the physical environment has long restricted Chinese population distribution while traditional cultural values have encouraged population growth. Therefore, a brief assessment of the physical and cultural geography of China is in order.

China's Population and Policies

There was very little written about China's population or policies prior to the 1980s. Part of the reason for this lack of literature was because China was isolated from most of the rest of the world from the time the Communist government took control of the country in 1949 until the early 1970s. The U.S. reestablished diplomatic relations with China after Nixon visited the country in 1972. By the mid-

1970s (especially after Mao's death in 1976), China opened up not only to the U.S. but also to the rest of the world. Suddenly, more literature about China's population, and its subsequent policies, began to appear. The sheer size of China's population was one reason for the sudden interest. During the 1970s, China's population was quickly approaching the one billion mark. Clearly, the size of China's population was an issue of global interest. The implementation of a draconian population policy was cause for additional interest in China. The Chinese government had begun a modernization program prior to Mao's death. The four modernizations had targeted specific areas of Chinese society, namely agriculture, industry, science/technology and the military. The Chinese government knew it must address the issue of China's population size if modernization was to succeed. Therefore, the one-child per couple policy was introduced in 1979 along with various economic reforms that encouraged modernization and economic development. The Chinese government viewed its population policy as a necessity that would not only have a positive affect for China, but would also benefit the planet. The population policy represented a post-Mao change in cultural values in China. People were no longer the ultimate resource; rather, too many people hindered China's success for modernization (i.e., the official view of population shifted from pro-natal to anti-natal). The one child per couple policy was viewed critically, especially by Western societies. Ignorance for why the policy was necessary coupled with basic misunderstanding of the policy fueled much of the interest in China's population and policies.

Isolation was not the only problem that plagued scholarly research, though, as it pertained to China. There were also some problems associated with Chinese data.

Data collected before the 1980s were oftentimes inaccurate because of poor collection methods or data that were "adjusted" by the Chinese government. Literature written before 1980 was oftentimes based on weak databases and, thus, had limited value. Therefore, books or journal articles written through the 1970s that might compare a variety of countries in less developed regions of the world would not include China in the analysis because of problems with the data. After 1980, data collection methods had improved and many analyses of China's late twentieth century demographic conditions began to appear in print. Coale (1984) looked at demographic data from 1952 to 1982 while Bannister (1987) described and explained population changes in China from 1949 to 1985. Coale and Li (1987) explored fertility in China's provinces from 1940 to 1982 and Coale, Li, and Han (1988) analyzed the distribution of interbirth intervals in rural China from the 1940s to the 1970s. While the literature showed an increase in statistical analysis, a spatial analysis of the data was still missing.

An early translation of various documents from China that pertained to Chinese approaches of family planning can be found in Dunn (1978). His work predates the implementation of the one-child policy, so much of this volume focused on the role of later marriage, greater spacing between births, and fewer children. Tien (1980) and Scharping (2000) also translated the population policy from Mandarin to English, but offered no analysis of the policy. In addition, journals such as *Beijing Review* and *Population and Development Review* would publish excerpts from China's population policy whenever the policy was amended. China's population policies were sometimes included in work that embraced a wide variety of topics that

pertained to population issues. One such example can be found in the book by Liu, Song, and others (1981) that examined problems and prospects of China's population. The chapter that covered population policy (by Hou Wenrou) described the evolution of population policy from 1949 (when no policy existed) until 1981 (when the one child per couple policy had been in place).

By the early 1980s, scholars were beginning to explore China's one-child policy. Schubnell (1984) explored a variety of population policies in selected Asian countries, including China. The chapters written by Liu Zhang and Y.Y. Kueh examined China's situation. Liu supported the government policy and stated population growth must conform to the economic and social development as envisaged by China's unified state planning. He also supported autonomous regions' formulation of their own family planning policies and the various successful outcomes of the government policy, namely a steady decline of female fertility, changes in the overall age structure of the country, and a decrease in the natural growth rate. Kueh explored population growth and economic development in China, 1952-1982.

Tien (1984) examined the impact of population planning and socio-economic change in China. He contributed to the on-going controversy by exploring whether family planning programs or socio-economic change are the necessary and sufficient stimulants of falling birth rates and noted that in some areas of China, where "induced fertility transition" has made the greatest progress, there had also been profound change in the socio-economic structure. He concluded that both socio-economic change and population planning programs had shaped China's recent fertility

transition. A problem that still plagues statistical analysis of Chinese data was also noted by Tien, that statistics on literacy and education, occupation, labor-force participation by sex, income, etc. are extremely scarce at the provincial level or lower (e.g., county level). Tien would continue to contribute to the literature on China's population policy. Tien (1988) interviewed the head of China's Family Planning Commission (Wang Wei) and identified the challenges the government faced with the current population policy. Probably the most important acknowledgment from this interview was that Wang admitted the one-child policy was apparently too strict for couples and that numerous exemptions had been added to the provincial regulations. Tien (1989) interview Peng Peiyun (head of China's Family Planning Commission) who reiterated the challenge the one-child policy created (i.e., that limiting family size to one child for rural families was extremely difficult). Peng, too, admitted that second births had actually been more numerous than permitted and that second thoughts on the policy guidelines for a second child had taken place. In essence, she hinted that the one-child ideal may have seen its day. What is probably most interesting about these two interviews was what was admitted, namely that the government was unhappy with the progress made by the one-child policy and that unhappiness was played out in the change of leadership at the Family Planning Commission. Even the government had acknowledged that the policy was too harsh. Tien (1991) and Tien, Zhang, Ping, Li and Liang (1992) explored China's strategic demographic initiatives (SDI). In essence, these works examined China's demographic transition and explored such issues as population and development, the global economy, and environmental degradation.

The intricacies of China's one-child policy continued to be explored by a variety of scholars including Croll, Davin, and Kane (1985), Song, Tuan, and Yu (1985), Greenhalgh (1986), Wolf (1986), Kane (1987), Basov (1987), Hardee-Cleaveland and Banister (1988), Zeng (1989), Scotese and Wang (1995), Milwertz (1997), Cooney and Li (1994), Gu (1997), Skinner and Yuan (1998), Wang (1999), Winckler (2002) and Greenhalgh (2003). The divide between how scholars perceived China's population policy emerged at this time. Scholars from Western societies oftentimes included an assessment of the human rights abuses that the policy permitted, while scholars from Eastern societies (particularly China) largely ignored this issue. This divide can still be found in the literature today. Wolf (1986) maintained that changes in the Chinese family were largely the result of direct and forceful government intervention. Hardee-Cleaveland and Banister (1988) focused on the negative aspects of the one-child policy during the mid-1980s. Zeng (1989) was highly critical of Hardee-Cleaveland and Banister's scholarship in particular. He concluded that they had ignored an important policy change in their article – the proportion of rural couples officially entitled to have two children had increased substantially. Zeng thought the best policy China should follow would be a two-child policy with late and well-spaced births. He would not be alone in this opinion. Bongaarts and Greenhalgh (1985) also explored alternatives to the one-child policy and they, too, concluded that a two-children alternative would not only be more beneficial to China but that, in the long run, the overall demographic growth would even out to the same levels as the one-child program. Gu (1997) not only showed support for China's policy, but also thought the China model would be good for the

world. In regards to the sticky issue of human rights, he included a quote by Karen Oppenheim Mason:

> Human rights, while fundamental, are also conditional.... In countries with rapid population growth and scarce resources, a large number of children may be perceived as a threat to the current or future well being of society. In this situation, governments may justify limiting individual reproductive freedom on the grounds that uncontrolled childbearing threatens the collective welfare.

Greenhalgh (2003) struck a balance on the subject of population policy. Although the Western discourse on China's birth control program, especially portrayed by the media, tended to demonize China's totalitarian and coercive population program, Greenhalgh stressed the parallels between the discourses and practices of China's socialist form of development planning and the capitalist forms of development planning pursued in much of the third world.

The late 1980s saw the emergence of literature that placed China's population policy in context with much broader issues that pertained to population. Poston and Gu (1987) examined the relationship between socioeconomic development, family planning, and fertility among the twenty-eight sub-regions of China using data from the 1982 Census. Their overall conclusion was that China's recent fertility declines should not be seen as due solely to successful family planning programs. Poston (1986), Poston and Yaukey (1992), Goldstein and Wang (1996), Wang (1999) and Peng and Guo (2000) also examined the many facets of demographic change in China. A variety of characteristics such as birth rates, death rates, ethnicity, and migration were explored at the national or provincial level in their work. Data were acquired from the 1982 Census for some of the early research, and data were acquired from the 1990 Census for the latter research.

Birdsall and Jamison (1983) examined factors that influenced fertility in China. While they agreed that the government policy had successfully slowed population growth, they also considered the relationship between income and fertility. Among their conclusions was an acknowledgment that China's fertility decline was correlated with income increases as early as 1975 (i.e., before the one-child per couple policy was implemented). The nexus between fertility declines and improvements in socio-economic conditions would dominate much of the literature at the end of the twentieth century and can be explored in work by Feeney, Wang, Zhou, and Xiao (1989), Linge and Forbes (1990), Lavely and Freedman (1990), Wang and Hull (1991), Mahadevan, Tuan, Yu, and Sumangala (1994), Geping and Li (1994), and Lee and Wang (1999). Li and Choe (1997) created a model that could be used to analyze characteristics of women who have a second birth in China. They concluded that women's background characteristics influence the probability of a second birth significantly and strongly, but that place of residence is the most important background characteristic for determining whom will have a second child.

Any literature review would be remiss if it did not also describe, briefly, the scope of literature one might refer to as "sensational topics." These topics tend to transcend the academic literature and sometimes find their place in literature for the general public. Usually, the sensational topics focus on the more draconian or negative outcomes of China's population policy and tend to emphasize female infanticide, skewed sex ratios, and abandonment of children. For example, both Mosher (1983) and Aird (1990) explored the dilemma of forced abortion as a way to enforce the one-child per couple population policy. Coale and Banister (1994)

explained the problem of "missing girls" in China and explained their absence was most likely due to female infanticide. However, Smith (1994) showed there was no evidence of elevated female infant mortality or high numbers of stillbirths (as Coale and Banister had argued) from the first pregnancy, but did acknowledge that sex ratios were unusually high. Sex ratios were also discussed in Johansson and Nygren (1991) and Zeng, Tu, Gu, Xu, Li and Li (1993). Arnold and Liu (1986) examined son preference in China and its effects of fertility and family planning behavior. A different slant on the sex preference was explored in Lavely, Li, and Li (2001) with their focus on Meifu women (a group that traces family lineage through female ancestors). The problem of abandonment, especially of female infants, was explored in Johnson (1996) and Johnson, Huang, and Wang (1998). Evans (2001) looked at the issue of abandoned girls from a slightly different perspective. Her book looked at adoption of Chinese girls by Western couples. Evans book was a personal testimony of her family's success with the Chinese adoption process. She included an assessment of the one-child population policy, but did not focus solely on the negative consequences of the policy (e.g., forced abortions, female infanticide, etc.). Rather, Evans pointed out that the abuses associated with the population policy came from overzealous local officials, not from the national government.

In 2000, China conducted its fourth census. Lavely (2001) wrote some first impressions from the 2000 census. The Fall 2003 issue of *The China Review* was dedicated to articles that analyzed various results from the 2000 Census. For example, Chan (2003) described various achievements and limitations associated with China's 2000 Census. In particular, he noted that a new category had been added to

the Census that counted, for the first time, the "temporary population" in China. People who lack *hukou* (see Chapter 1 for definition) make up China's "temporary population." The addition of this new category was important because it showed the Chinese government was trying to get an accurate count of the population. Chan noted limitations with data from China were still problematic, but concluded that, despite limitations, the Chinese data (from the Census and also from statistical yearbooks) provide a snapshot of China's demography and economic development. Yong and Lavely (2003) explored the issue of China's missing girls and the effect it will have on population growth. Li and Sun (2003) offered a preliminary examination of China's mortality data. The most recent literature has explored some of the important trends that have emerged in China. Riley (2004) explored general trends and challenges related to China's population. In particular, she looked at current social issues in China and how demographic events have affected those issues. Topics she explored included birth planning policies, "missing girls," changes in age structure, population and the environment, and growing inequality among regions. She also noted that China's experience gives demographers a unique opportunity to evaluate the effects of tough policies and birth planning in addition to socioeconomic influences on fertility. Thus far, the literature about China's population has focused on the country as a whole. The last category of the literature review will focus on research for a particular region or province within China. The regional study is one of the newest areas of research and, fortunately, yields much opportunity for exploration.

Regional Studies of China's Population

Much of the early literature for regional studies used data from the 1982 One per Thousand Fertility Sampling Survey, the 1982 Census, the 1988 Chinese Two per Thousand Fertility Survey, or the 1990 Census. For example, Freedman, Xiao, Li and Lavely (1988) used 1982 data and explored reproductive behavior in the rural units of four provinces (Hebei, Henan, Liaoning, and Sichuan). Zhao (1997) used 1982 data to challenge conventional thinking about Chinese fertility, especially as it pertained to historical trends. Bogg (1998) analyzed sex ratios in six counties in Yunnan while Murphy and Wang (2001) used the 1988 data to understand patterns of infant mortality. Collectively, this data, while most fruitful, has become quite dated. Therefore, a need exists to utilize the most recent data acquired.

As the twentieth century ended, more scholarship about specific Chinese provinces began to appear in the literature. White (1987) explored the effects of the one-child policy in Hubei. His chapter was included in Lampton's (1987) book that explored policy implementation in post-Mao China. Kaufman, Zhang, Qiao, and Zhang (1989, 1992) analyzed family planning services in rural parts of Fujian and Heilongjiang. Greenhalgh (1993) explored the peasantization of the one-child policy in Shaanxi. Her chapter was included in Davis and Harrell's (1993) book that explored various aspects of the Chinese family in the post-Mao era. Greenhalgh, Zhu, and Li (1994) reassessed the effect of socio-economic changes in Shaanxi. Their study showed that improvements in economic development played a significant role in lowering fertility. Qian (1997) examined the progression to second births based on data collected in four rural counties in Hebei and Shandong. Scharping

(2000) translated policy amendments in two areas (Liaoning and Tibet). His work did not include any analysis of the policy changes. Short, Ma, and Yu (2000) described patterns of sterilization in eight Chinese provinces (Liaoning, Jiangsu, Shandong, Henan, Hubei, Hunan, Guangxi, and Guizhou). Short, Zhai and Xu (2001) analyzed how the one-child policy might influence the quality of childcare in the same eight provinces (i.e., Liaoning, Jiangsu, Shandong, Henan, Hubei, Hunan, Guangxi, and Guizhou). Yao and Zhang (2001) examined interregional income inequality between 1978 and 1995. Lastly, Yang explored changes in the hukou system and its effects on labor segmentation in Wuhan, a city in Hubei.

Geographers have also left their mark in the regional studies of China. Akkerman and He (1998) identified the importance of small-area analysis (or sub-provincial analysis) and explored fertility patterns in Guangdong. Iredale, Belek, Wang, Guo, and Hoy (2001) looked at the ethnic population in Beijing. Overall, however, geographers have made limited contributions to the literature. Williams (2002) explained why so few geographers choose to study China today and explored sub-fields of geography that still offer much opportunity for additional scholarship. He showed that in North America the study of China geography has remained under the shadow of the area-studies tradition. This tradition of geography has focused on empirical studies rather than engage in theoretical debates. Today, geographers tend to concentrate on the other traditions of geography, especially the earth science tradition (i.e., physical geography) and the spatial tradition (i.e., geographic methods such as Geographic Information Systems/GIS). Williams concluded that while the situation has improved in recent years, North American geographers are still seriously

deficient in the study of China's physical geography, and in the human geography sub-fields of cultural, historical, social, population, and political geography. Edmonds (2002) also explored North American geographers' interest (or lack of) in China. He used articles from *The China Quarterly* to support his findings. In essence, Edmonds noted that during the last three decades research on China's demography or geography are down approximately two percent. In 1969 thirteen percent of the articles in *The China Quarterly* dealt with geography or demography while in 2002 eleven percent of the articles covered these same topics. He noted, however, that interest in China's economic geography has seen an increase in scholarship as have articles relating to identity and place. Chan and Unger (2002) noted that more articles are being written in English, including articles that originated in China. They also noted that the subject matter of these articles is increasing. Articles no longer focus solely on the undercurrents of dissatisfaction among sectors of Chinese society who felt them unfairly losing out amidst the economic reforms of the 1980s. Clearly, there is still much opportunity for additional research and many areas within China have yet to be explored.

Goal for Present Study

The previous literature review reveals some interesting research opportunities. First, there is no universal agreement on what factors are most important for affecting a decline in birth rates for a country. While some scholars emphasize the importance of education, other scholars indicate that birth rates have declined across the planet oftentimes without improvement in overall socio-economic conditions. Therefore, it would seem appropriate that this dissertation consider a wide variety of socio-

economic variables, in addition to the formal population policies, to analyze which variables seem to play a significant role in reducing China's birth rate.

The role of population policy is important, but it is not the sole explanation for China's dramatic decline in birth rates. Some scholars have shown that China was actually experiencing a decline in its birth rate before the implementation of the one-child policy. Also, the policy was modified throughout its tenure. While the policy is most often referred to as a one-child policy, the reality in China was different. In rural China, the policy was, in essence, a two children policy (provided the first child was a girl and a reasonable period of time was maintained between births). Thus an assessment of China's population policy is a necessary part of this dissertation.

Analysis of the literature also reveals that Eastern or Western viewpoints traditionally influence the scholarship as it pertains to China's one-child population policy. Eastern perspectives tend to focus on the family/community while Western perspectives stress the individual. These contrasting viewpoints oftentimes create bias in the literature. For example, scholars from the east (especially from China) tend to look at the policy as a necessary step toward economic development. They view the hardships endured by a few as necessary for the betterment of the whole. Scholars from the west (especially from the U.S.) tend to include an assessment of the draconian nature of the population policy (i.e., a violation of individual rights). Although this writer is a Westerner, she has tried to look at China's population policy from both cultural perspectives (i.e., the concerns of the individual from the Western perspective with the community-based concerns from the Eastern perspective). This blending of viewpoints is a new trend in the current literature.

Finally, the literature review reveals that there is a plethora of opportunities available for additional scholarship about China, especially at the provincial and sub-provincial (e.g., county) level. First, much of the present literature examines China at the macro or national level or, at best, the provincial level. More studies are needed at the local or county level. Second, while there has been recent scholarship that examines data from the 2000 census, most of the literature uses data from the 1990 census or earlier. Official publication of the 2000 census data was delayed, only portions of the data were released in English, and questions still remain regarding the accuracy of this data. However, the general consensus is that the data from China are improving in reliability and are a valuable resource. Data from other sources, including statistical yearbooks, has been largely ignored, yet these data provide another glimpse at China's demographic and economic changes. With more data sources now available, the time is ripe to delve into this once mysterious country. Third, relatively little comparison between provinces exists in the current literature. Most of the scholarship presently available looks at China as a whole or analyzes demographic and socio-economic characteristics for a single province (or portion of a province). This dissertation will analyze various socio-economic variables that have influenced declines in birth rates for two provinces (Jiangsu and Jiangxi) at the county level and compare the results. The data is recent (from 2002 Statistical Yearbooks), so it will provide a more current assessment of China's situation. In addition, a GIS will be used to provide both a statistical and spatial analysis of China's demographic transition at the county level as it pertains to Jiangsu and

Jiangxi provinces. It is this scholar's goal that her dissertation will serve as another modest contribution to the literature.

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[1] Sunglin, Chai. *Population and Population Policy in Mainland China* (Chengchi: Asia and the World Form, 1977): 9.

[2] Yuan, Tien H. Population Theory in China (White Plains: M.E. Sharpe, Inc., 1980): 8.

[3] Sunglin, Chai. *Population and Population Policy in Mainland China* (Chengchi: Asia and the World Form, 1977): 16.

[4] The translation of this phrase is later marriages (*wan*), greater spacing between births (*xi*), and fewer children (*shao*).

[5] *Hukou* refers to household registration or official permission to reside in an area other than their residence.

[6] The four modernizations are improvements in agriculture, industry, education, and defense.

[7] Yuan, Tien H. *Population Theory in China* (White Plains: M.E. Sharpe, Inc., 1980): 64.

[8] Yuan, Tien H. "A Talk with China's Wang Wei," *Population Today* 16:6-8.

[9] "New Law Supports Family Planning," *Beijing Review* (March 7, 2002).

Chapter 4 – Methodology

This dissertation utilized both quantitative and qualitative research methods. Correlation and multi-variate (e.g., regression) analyses represented quantitative methods while focus groups were used as the qualitative method. The synthesis of quantitative and qualitative research methods has become quite common in contemporary scholarship and enabled this researcher to conduct a thorough analysis of the topic.

Regression analysis was selected for the quantitative method because it is, by far, the most common method used in geographic analysis.[1] *SPSS*, a statistical software package, was used to conduct the correlation and regression analyses. Also, a geographical information system (GIS) software package, *ArcView,* was used to complement correlation and regression analyses. *ArcView* allowed this researcher to analyze the statistics with correlation and regression methods, and, more importantly, map the spatial qualities of the data. While *ArcView* has long been a familiar resource for geographers, researchers outside of the field of geography have only recently discovered its usefulness.

Statistical analyses were conducted at the county level for two Chinese provinces, Jiangsu and Jiangxi. The analyses explored the relationship between crude birth rates and a variety of socio-economic variables. The socio-economic variables were selected to represent education, income, and location characteristics of the two

provinces. Together *SPSS* and *ArcView* were used to analyze how these socio-economic variables influenced crude birth rates at the county level in Jiangsu and Jiangxi.

The qualitative research method used in this dissertation was focus groups. Focus groups provided an opportunity for this researcher to collect original impressions from Chinese people currently living in the United States as these pertained to China and its population policies. Oftentimes, contemporary literature about China's population policies does not include the voices of those most affected by these policies, namely the Chinese. Therefore, the focus groups provided an innovative way to assess the success of China's population policies and also allowed Chinese-born citizens an opportunity to express their opinions on the subject. Together, these quantitative and qualitative research methods were used to examine both the spatial and human dimensions of China's population and policies from a variety of angles.

Correlation and Regression: Quantitative Methods

The Data Set

Data for this research came from two statistical yearbooks published in Beijing by the Chinese. Specifically, the yearbooks used were the following: *2002 Jiangsu Statistical Yearbook* and *2002 Jiangxi Statistical Yearbook.* The first yearbook was published in both English and Chinese while the latter yearbook was published only in Chinese. Therefore, one of the first tasks completed was to translate the data from Chinese to English for Jiangxi. The Jiangsu and Jiangxi statistical yearbooks included a section of data that pertained to the counties of these

provinces. Hence, the data that were selected for this research were dictated by what was available at the county level in the two provinces.

Each yearbook was organized in the same general way and provided data about the population and economy. Specific information in subsections varied depending upon the yearbook. For example, one might expect education statistics to include information about the number of students enrolled in schools, the number of teachers employed, or the number of schools in the county. The two yearbooks included some of these data, but there were variations between the datasets. The *2002 Jiangsu Statistical Yearbook* lacked information about the number of schools and the number of teachers employed in the counties while the *2002 Jiangxi Statistical Yearbook* lacked information about the number of schools in the counties. Finding data that were consistently available for the areal units occasionally created challenges. For the most part, though, data were available for the counties and were used for multi-variate analyses.

A variety of population and socio-economic data were available for analysis. Data that pertained to population, education, income, or location characteristics were selected. For the most part, data were measured in the same increments. Occasionally, there were differences between how data were measured for Jiangsu and Jiangxi. The most common difference was data that were categorized in increments of 10,000 for Jiangsu while Jiangxi data were actual numbers. The following list defines the data that were used to create variables for the statistical analyses, identifies the increments used for the data, and provides an explanation for why the data were relevant.[2]

1. **Population 2001 (POP)**: This is the total year-end 2001 population (10,000 persons). POP is selected because it is a basic demographic variable.

2. **Actual Population (ACPOP)**: This independent variable is the actual total year-end 2001 population. ACPOP is calculated by multiplying POP times 10,000. This variable was created so that further calculations could be completed, such as crude birth rates, for Jiangsu and Jiangxi.

3. **Births (BIRTHS)**: This is defined as the actual number of births annually. BIRTHS also is a basic demographic variable.

4. **Employment 2001 (EMP)**: This is the number of employed persons (10,000 persons). EMP is selected because it is a basic economic variable that showed the overall size of the labor force.

5. **Secondary Employment (SEC)**: This is the number of people employed in secondary industries (10,000 persons for Jiangsu/actual number for Jiangxi). Secondary industry involves the processing of primary products (i.e., industry). In China, this statistic also includes mining and quarrying, manufacture, water supply, energy supply, and construction. SEC is selected because it is a basic economic variable that showed the size of the labor force engaged in secondary sector activities.

6. **Tertiary Employment (TERT)**: This is the number of people employed in tertiary industries (10,000 persons for Jiangsu/actual number for Jiangxi). Tertiary industry traditionally provides goods and services of various kinds for production and consumption. TERT is selected because it is a basic economic variable that showed the composition of the labor force engaged in tertiary sector activities.

7. **Total Rural Employment (REM)**: This is the actual number of people employed in the rural labor force. Akin to EMP, REM included employment in all three sectors of the economy (e.g., primary, secondary, and tertiary activities) and is selected to represent the overall size of the rural labor force.

8. **Doctors (DOCS)**: This refers to the actual number of qualified professional medical workers (i.e., doctors) approved to practice by public health departments. DOCS represented an effective way to assess health conditions.

9. **Student Enrollment in Primary Schools (PRIST)**: This is the total number of students enrolled in primary schools (10,000 persons for Jiangsu/actual number for Jiangxi). PRIST is the equivalent of grades 1-6 in the U.S. All primary school students (i.e., students in urban areas, counties and towns, and rural areas) were included with this variable. PRIST is used as a measure of education conditions.

10. **Student Enrollment in Secondary Schools (REGST)**: This is the total number of students enrolled in regular secondary schools (10,000 persons for Jiangsu/actual number for Jiangxi). REGST is the equivalent of grades 7-12 in the U.S. All regular secondary school students (i.e., students in urban areas, counties and towns, and rural areas) are included with this variable. Similar to PRIST, REGST is used as yet another component of education.

11. **Students (STU)**: This variable is calculated by adding the number of PRIST with the number of REGST. This variable is created so that further calculations could be completed, such as crude enrollment rate.

12. **Professionals (PROF)**: This refers to the number of scientific and technical personnel with titles of medium or higher, and includes engineering, scientific research, health care, and teaching (10,000 persons). PROF is used to assess how education has influenced birth rates. This variable is used only for Jiangsu.

13. **Adjusted Professionals (ADPF)**: This statistic is created to represent a portion of the scientific and technical personnel in Jiangxi's counties. ADPF is calculated by adding together the actual number of healthcare workers with the number of teachers (both primary and secondary). Akin to PROF, ADPF is used to assess how education has influenced birth rates. This variable is used only for Jiangxi.

14. **Expenditures for Education (EXED)**: This refers to expenses appropriated from the government budget for education (in 10,000 yuan). EXED represented another way to examine education conditions in the two provinces.

In the past, scholars have been critical of data published by the Chinese because of population undercounts or inflation of variables that enhanced the image the Chinese tried to portray to the rest of the world. While this has certainly been a limitation for past analyses, some scholars are beginning to look at data published by the Chinese as a reliable source of information. In spite of some limitations of data from yearbooks or the census (such as inconsistencies of data available), the contemporary view of Chinese produced data is that it provides a snapshot of China's demography and economic development.[3]

Base maps used for the GIS analyses were made available through the China Data Center at the University of Michigan. The maps were downloaded from a website and were modified by this researcher. The most common map adjustment was to merge some of the areal units into slightly larger units that would correspond with the data. For example, Nanjing, the administrative capital of Jiangsu, was subdivided into three areal units on the base map. The yearbook, however, had all three areal units represented as one single entity. Therefore, the three sub-units of Nanjing were merged into one areal unit. The map for Jiangsu entailed more merging than did the map for Jiangxi. Since Jiangsu is a coastal province, the most common type of merge was to join islands in the East China Sea with their respective mainland counties. The GIS data provided the necessary information (i.e., the data identified which islands were associated with which counties) so that proper merges would be completed. Also, the Jiangsu map included two entities that are not part of Jiangsu province, namely Shanghai, a government-controlled municipality, and Chongming, a large island near the mouth of the Chang Jiang.[4] These two entities were deleted from the Jiangsu map. Once the maps were modified to correspond with the statistical data, they were saved as shape files and later used for further statistical analysis.

The Variables

A variety of China's population and socio-economic data were considered for analysis to determine their relationship with crude birth rates. A total of 16 variables were analyzed in this dissertation. The following list defines the population and socio-economic variables selected for analysis. This researcher calculated most

variables; variables available from the dataset are identified below. A more detailed rationale for variable selection is included in the next subsection: research questions.[5]

1. **Crude Birth Rate (CBR)**: This dependent variable is defined as the number of births per 1000 people. Dividing the actual number of births by the annual average population and multiplying that quotient by 1000 calculates this variable. CBR is selected as the dependent variable despite its inherent problems. CBR has limited usefulness because it does not distinguish differences in age or gender characteristics (i.e., it includes males and females of all ages). However, CBR is still used as a measure in statistical analyses because contemporary thought assumes improvements in socio-economic conditions have a negative influence on CBR. In other words, as socio-economic conditions improve, CBR will decrease. This variable is calculated for Jiangsu and Jiangxi using the above formula.

2. **Rate of Professionals to Population (PROF/POP):** Dividing the number of professionals by the population calculates this independent variable. It is assumed that the greater the number of professionals, the lower the overall CBR because more-educated people tend to have fewer children than less-educated people. PROF/POP is selected to assess the relationship between education and CBR. This variable is only used for Jiangsu.

3. **Rate of Professionals to Rural Employment (PROF/REM):** This independent variable measures the number of professionals to the overall rural labor force. As with PROF/POP, higher PROF/REM assumes lower CBR. PROF/REM is also selected to assess the relationship between education and CBR. This variable is only used for Jiangsu.

4. **Crude Enrollment Rate (STU/POP or STU/ACPOP):** Dividing the number of students by the total population and then multiplying that quotient by 100 calculates this independent variable. For Jiangsu, the data are measured in units per 10,000 whereas for Jiangxi actual data are available. Thus the formulae differ, slightly, for the two provinces. The formula for Jiangsu is STU/POP while the formula for Jiangxi is STU/ACPOP. STU/POP (or STU/ACPOP) is selected to assess access to education in the two provinces and how that access influences CBR.

5. **Per capita Education Expenditures (EXED/POP):** Dividing the expenses appropriated from the government budget for education (in 10,000 yuan) by the total population calculates this independent variable. EXED/POP is selected to assess the relationship between education and CBR.

6. **Rate of Adjusted Professionals to Actual Population (ADPF/ACPOP):** This independent variable measures the actual number of certain professionals (i.e., teachers and healthcare workers) to the overall actual population. Akin

to PROF/POP, ADPF/ACPOP is selected to assess the relationship between education and CBR. This variable is only used for Jiangxi.

7. **Rate of Adjusted Professionals to Rural Employment (ADPF/REM):** Akin to PROF/REM, this independent variable measures the actual number of certain professionals (e.g., teachers and healthcare workers) to the overall rural labor force. ADPF/REM is selected as another way to assess the relationship between education and CBR. This variable is only used for Jiangxi.

8. **Per Capita Income Rural Population (PCIR)**: This independent variable refers to the per capita net income of rural households (in yuan). PCIR is an economic variable used to examine the relationship between income improvements and CBR. Traditional theories assume that income improvements are negatively correlated with CBR (i.e., as incomes improve, CBR decrease). This variable is available in the datasets for Jiangsu and Jiangxi.

9. **Average Wage of Fully Employed Staff and Workers (INUR)**: This independent variable refers to the average wage per person for workers and staff of enterprises, institutions, and government agencies (in yuan). INUR is selected to represent the average income of urban population and, akin to PCIR, is also used to examine the relationship between income improvements and CBR. This variable is available in the datasets for Jiangsu and Jiangxi.

10. **Proportion of Labor Force Engaged in Secondary Sector Activities (SEC/EMP):** This independent variable is created by dividing the number of people employed in secondary sector activities (SEC) by the number of employed people (EMP). SEC/EMP is selected to assess the overall structure of the labor force. Traditional theories assume as a labor shifts from primary to secondary activities, CBR decline.

11. **Proportion of Labor Force Engaged in Secondary Sector Activities in Rural Areas (SEC/REM):** This independent variable is created by dividing the number of people employed in rural secondary sector activities (SEC) by the number of people employed in rural areas (REM). SEC/REM, like SEC/EMP, is selected to assess the overall structure of the labor force, but only in a specific area (i.e., rural areas).

12. **Proportion of Labor Force Engaged in Tertiary Sector Activities (TERT/EMP):** This independent variable is created by dividing the number of people employed in tertiary sector activities (TERT) by the number of employed people (EMP). TERT/EMP is also selected to assess the overall structure of the labor force. Again, traditional theories assume as labor shifts from primary to tertiary activities, CBR decline.

13. **Proportion of Labor Force Engaged in Tertiary Sector Activities in Rural Areas (TERT/REM):** This independent variable is created by dividing the number of people employed in rural tertiary sector activities (TERT) by the number of people employed in rural areas (REM). TERT/REM, like TERT/EMP, is selected to assess the overall structure of the labor force, but, again, in a specific area (i.e., rural areas).

14. **Ratio of Population to Doctors (ACPOP/DOCS):** Dividing the total population by the number of doctors (DOCS) calculates this independent variable. The actual population size is used because the data for DOCS is available as an actual number. ACPOP/DOCS is selected to assess the relationship between location and CBR. It is assumed that places that are largely rural would have fewer doctors than urban places. Traditional scholarship assumes rural areas have higher CBR than urban places.

15. **Proportion of Labor Force Engaged in Secondary and Tertiary Sector Activities (ST/EMP):** Adding the number of laborers in secondary sector activities with the number of laborers in tertiary sector activities then dividing that sum by the total number of employed persons calculates this independent variable. It is assumed that rural areas will have lower numbers of SEC and TERT laborers (i.e., more people will be employed in primary sector activities). ST/EMP is used to assess how location influences CBR.

16. **Proportion of Labor Force Engaged in Secondary and Tertiary Sector Activities in Rural Areas (ST/REM):** Adding the number of rural laborers in secondary sector activities with the number of laborers in tertiary sector activities then dividing that sum by the total rural labor force calculates this independent variable. Akin to ST/EMP, ST/REM is also used to assess how location influences CBR.

Research Questions

The underlying question asked was what factors are associated with a lower CBR in Jiangsu and Jiangxi? To answer this question, the CBR was used to measure fertility. While the CBR has limited usage in statistical analysis because it looks at the number of births per 1,000 people (i.e., it does not account for gender or age characteristics), it was selected as the basic measure to assess fertility because it was the only variable consistently available in the yearbooks. A gender specific variable, such as the general fertility rate, would be an ideal variable for this question.[6]

Professional demographers prefer to use the general fertility rate because it accounts for both age and gender characteristics. Unfortunately, information from the yearbooks regarding age and gender variations was not available, thus it was impossible to calculate a general fertility rate.

In spite of tremendous changes in the last few decades, China is still a developing country. Statistics about specific demographic and socio-economic conditions can be somewhat limited, either because they were not collected or, more realistically, they were not made available for public use. For example, the data for Jiangxi included the number of births and the total population per county; but the breakdown of population by gender and age was not available. The Jiangsu data identified the total number of men and women along with the total number of births by county but a breakdown of the data by age groups were not available. Data for CBR was available in the yearbooks, thus CBR was used to explore fertility patterns in the two provinces.

The next challenge was to determine which variables would be most useful for answering the research questions. How does one select factors that influence fertility? This proved to be the most difficult question to answer because any number of variables could be selected for analysis. Dozens of questions were asked so that the greatest amount of data could be collected. Many of the variables selected for multi-variate analyses examined economic characteristics. An underlying assumption about economic development has been that as people's lives improve, they have fewer children (because they no longer need the labor of their children); thus birth rates decline. Economies with higher proportions of the labor force in secondary and

tertiary activities should have lower birth rates. Thus, data that measured these employment conditions were selected to examine how economic improvements corresponded with lowering birth rates. For example, data about the total number of people employed (EMP), along with the number employed in a specific sector (e.g., secondary/SEC or tertiary/TERT) were selected for analysis. Creating variables that measure the proportion of the labor force (i.e., SEC/EMP or TERT/EMP) was one way to assess the relationship between economic improvement and fertility. Other researchers have used similar information to assess this relationship, so it seemed appropriate to select these variables.

Income has also played an important role in changing birth rates. Previous scholarship has shown that as incomes increase, birth rates decrease (Birdsall, 1977). China's development has not been universal and there is much regional contrast. Has this income variation between counties influenced CBR? In addition, different types of income (e.g., urban incomes/INUR and rural incomes/PCIR) exist. Is there a difference between how these types of incomes influence CBR?

Variables that assessed improvements in social conditions focused on health and education conditions. Health data, such as the number of doctors (DOCS) were available. Other scholars have used similar variables to assess the overall health situation of different places (Greenhalgh et al, 1994) and concluded that an improved social environment (e.g., more doctors, health care workers, or hospital beds) correlated with a decline in birth rates, so again, use of these data were appropriate. The creation of ratios (such as ACPOP/DOCS) was used to analyze how improvements in health conditions might influence CBR.

Improvements in education have long been cited as an important influence on declining birth rates (Schultz, 1974; Robinson, 1975, Caldwell, 1978-1982). This assumption focuses on the changing status of children (i.e., children are an economic liability, because they must be educated, rather than remain an economic asset, because of their labor potential). Education-related data included the number of primary and secondary students (PRIST or REGST). When the number of PRIST and REGST was added together, a new statistic was created (STU). Dividing the number of STU by the POP and multiplying that quotient by 100, created a new variable (STU/POP or crude enrollment rate). This variable was used to explore the relationship between access to education and CBR. Examining the amount of money invested in education can also assess improvements in education. Another new variable, expenditures on education (EXED/POP), was created and used as a non-traditional variable (i.e., not commonly used) to see if it influenced CBR. Finally, to assess how improvements in education correspond with lower birth rates, the rate of people who have been educated, that is people who are professionals (PROF/POP), was analyzed. The traditional assumption is that as a society becomes more educated (i.e., the greater the number of professionals), people will opt to have fewer children. Many earlier researchers have explored this particular aspect of education improvement and birth rate changes (Caldwell 1980).

Collectively, these variables were selected to shed light on how improvements in the socio-economic environment influenced CBR in Jiangsu and Jiangxi. Four research questions were devised and descriptive statistics were used for analysis. The

four research questions, along with an explanation of which variables were selected to address the questions, are as follows.

Question 1: How do improvements in education influence crude birth rates in the counties of Jiangsu and Jiangxi?

CBR was used as the variable to assess fertility in both provinces. Data for three variables at the county level in both provinces were available: the number of students enrolled in primary school (PRIST), the number of students enrolled in regular secondary schools (REGST), and the expenditures for education (EXED). Adding together PRIST and REGST calculated data for the total number of students; this new statistic was identified as students (STU). Data availability dictated further variable selection for this question.

Another way to assess education is examine the educational attainment of the adult population. Looking at the number of professionals in a society is one way to assess educational attainment. Data that identified those within the population who have a title of medium or higher in their field of expertise (i.e., those who have achieved a certain level of education) were used to create new variables. This data included personnel in the scientific and technical fields including engineering, scientific research, health care, and teaching. Jiangsu data included this number of professionals (PROF) in each county but this data were not available for Jiangxi. This was the most frustrating omission, because the number of professionals (i.e., educated people) was a key piece of information needed to assess the impact education has on CBR. Therefore, to compensate for this missing data, a new statistic was created for Jiangxi that looked at a portion of the population that would be considered professional, namely teachers and health care workers. This new variable

(ADPF) was created by summing the number of teachers (PRIT and SECT) with the number of doctors, nurses, and other health care workers (HEALTH) and was used as a way to assess, in part, the relationship between CBR and education. While this variable does not capture all educated people in Jiangxi's counties, it did give a crude estimate that was used for analysis.

Once data were selected, it was converted into rates or proportions. For both provinces, four variables were analyzed. The variables that were used to explore the relationship between education and CBR in Jiangsu were the number of professionals per population (PROF/POP), the number of professionals per rural labor force (PROF/REM), the crude enrollment rate (STU/POP times 100), and the per capita education expenditures (EXED/POP).

Two of these four variables were also analyzed for Jiangxi (STU/ACPOP and EXED/POP). Since data about PROF in Jiangxi were incomplete, substitute data were created (ADPF) to capture a portion of the educated population. Using this substitute, two new variables were created: the adjusted number of professionals per population (ADPF/ACPOP) and the adjusted number of professionals per rural labor force (ADPF/REM) Together, four variables per province were analyzed to assess the relationship between education and CBR.

Question 2: How does income impact crude birth rates in the counties of Jiangsu and Jiangxi?

Again, CBR was used as the dependent variable to assess fertility in both provinces. Two main independent variables were used to answer this question: per capita net income of rural households (PCIR) and average wage of fully employed staff and workers (INUR). Together, these two variables captured the role incomes

have on CBR. However, income is influenced by many other factors such as the education. Since education improvements had already been explored in the first question, it was not necessary to analyze those variables again. The breakdown of employment by sectors of the economy, though, would be another way to explore this question. One assumption that can be made is that workers in primary industries are paid at a lower rate than workers in secondary industries. China has used industrialization as a key way to modernize its economy. Therefore the proportion of the labor force engaged in secondary and tertiary activities would be another useful measure of the role incomes have on CBR. Data about sectors of the economy (i.e., SEC and TERT) along with employment totals (EMP) and the size of the rural labor force (REM) were identified for analysis. From this data, variables were created that measured the proportion of laborers in these two sectors. SEC/EMP AND TERT/EMP represent the rate of people employed in secondary and tertiary activities per total labor force respectively. However, data were also available for the number of people employed in rural areas. Therefore two additional variables were created (SEC/REM and TERT/REM). These new variables were the rate of people employed in secondary and tertiary activities per total rural labor force respectively. Collectively, these six variables (PCIR, INUR, SEC/EMP, TERT/EMP, SEC/REM, and TERT/REM) were analyzed to understand the relationship between income and CBR in the two provinces.

Question 3: How does location (i.e., rural versus urban) influence crude birth rates in the counties of Jiangsu and Jiangxi?

Again, CBR was used as the dependent variable to measure fertility for the counties in both provinces. While all 16 variables could be analyzed in terms of their

rural qualities, for this particular question three variables were selected for analysis. Employment data seemed a logical choice since rural areas would have a significantly higher proportion of workers engaged in primary sector activities. Even though employment variables had already been created and analyzed for the second question, employment variations are a defining difference between urban and rural areas. Rural areas would have a larger proportion of the labor force engaged in primary sector activities. Variables that focused on aspects of rural employment were selected for this question. Specifically, SEC/REM and TERT/REM, the rate of people employed in secondary and tertiary activities per total labor force, respectively, were again selected for analysis.

The last category of data that was transformed into a variable and used to answer this question measured the number of doctors (DOCS). Dividing the actual population by the number of doctors (ACPOP/DOCS) created a variable that showed the ratio of people to doctors. An underlying assumption would be that rural areas would have fewer doctors (and, hence, higher ratios of people-to-doctors) than urban areas. This new variable could then be used to assess the role of rural location and how it affects CBR. These three variables (SEC/REM, TERT/REM, and ACPOP/DOCS) were analyzed to understand the relationship between location and CBR in the two provinces.

Question 4: What impact does distance from the provincial capital have on crude birth rates in the counties of Jiangsu and Jiangxi?

Distance between each county and the capital city of each province (i.e., Nanjing and Nanchang) was compared with the CBR to answer this question. Although only two variables (distance and CBR) were used for this question, the two

variables provided sufficient information to assess how distance from the provincial capital influenced birth rates in the counties of Jiangsu and Jiangxi.

Once all the variables per question were identified, the next step in the research process was to begin the various statistical analyses. Three different types of analysis were conducted: correlation analysis, regression analysis, and GIS analysis. A brief description of each method follows.

Correlation Analysis

The purpose of correlation analysis was to identify which variables, individually, influenced crude birth rates. A bivariate analysis with *SPSS* was conducted with one dependent variable and one independent variable. Each of the socio-economic variables was individually identified as an independent variable and then correlated with crude birth rates to assess the strength of relationship between the two variables. Bivariate analysis was, thus, used to measure the strength of relationship between a specific independent variable and CBR. This statistical method identified which independent variables have a weak to very strong correlation with the dependent variable. Variables with a correlation less than 0.500 (or –0.500) were identified as having a weak correlation; thus, they were not included for any analysis in this research. Variables with a 0.500 to 0.799 (or -0.500 to –0.799) correlation were identified as having moderate correlation; variables with a 0.800 to 0.899 (or-0.800 to –0.899) were identified as having strong correlation; and, variables with a 0.900 to 0.999 (or –0.900 to –0.999) correlation were identified as having a very strong correlation. Only variables that displayed a moderate or higher positive correlation (i.e., 0.500 or higher) along with variables that displayed a moderate or

lower negative correlation (i.e., -0.500 or lower) were included in this dissertation. A table of correlation coefficients was created for the variables. Correlation analysis set the stage for the next type of statistical analysis: regression analysis.

Regression Analysis

Regression analysis was the next statistical method engaged for this research. *SPSS* was also used to conduct regression analyses and helped answer questions one through three. For each question, various methods of regression (i.e., forward, stepwise, or backward) were conducted. The backward method consistently produced usable results (i.e., few regressions were generated when the forward or stepwise methods were used). Collectively, these regressions helped this researcher formulate models of significant predictors of changes in crude birth rates for the counties in Jiangsu and Jiangxi provinces.

The first research question examined the relationship between crude birth rates and educational improvements. Therefore, the various regressions methods included all variables that applied to education. For Jiangsu, the dependent variable, CBR, was used for each of the regression methods (e.g., forward, stepwise, and backward) and four independent variables identified (PROF/POP, PROF/REM, STU/POP, and EXED/POP). A total of three regressions were conducted for Jiangsu to determine if a model could be identified that would show which variables were significant predictors of CBR. For Jiangxi, the dependent variable, CBR, was used for each of the regression methods and four independent variables were identified (ADPF/POP, ADPF/REM, STU/POP, and EXED/POP). A total of three regressions

were, again, conducted for Jiangxi to determine if a model could be identified that would show which education variables are significant predictors of CBR.

The second research question examined the relationship between crude birth rates and income. These regressions included all variables that applied to income, both in the household and in the community. For Jiangsu and Jiangxi, CBR was the dependent variable for each of the regression methods and six independent variables were identified (PCIR, INUR, SEC/EMP, SEC/REM, TERT/EMP, and TERT/EMP). Three regression methods were conducted for each province to determine if a model could be identified that would show which income variables were significant predictors of CBR.

The third research question examined the relationship between crude birth rates and residential location. These regressions included all variables that applied to residential locations (i.e., urban versus rural) and variables that might be susceptible to location. Again, for Jiangsu and Jiangxi, CBR was the dependent variable for each of the regression methods and three independent variables were identified (ACPOP/DOCS, SEC/REM, and TERT/REM). Akin to the first two questions, three regression methods were conducted for each province to determine if a model could be identified that would show which location variables were significant predictors of CBR.

Regressions less than 0.500 (or –0.500) were identified as weak; thus, they were not included for any analysis in this research. Regressions that were 0.500 to 0.799 (or -0.500 to –0.799) were identified as moderate; regressions that were 0.800 to 0.899 (or-0.800 to –0.899) were identified as strong; and, regressions that were

0.900 to 0.999 (or –0.900 to –0.999) were identified very strong. Again, only regressions that were moderate or higher (i.e., 0.500 or higher) along with regressions that moderate or lower (i.e., -0.500 or lower) were included for analysis in this dissertation.

The multi-variate analyses addressed the bulk of the quantitative aspect of this research. However, the data could still be portrayed in another manner that would provide additional insight. Therefore, a GIS (*ArcView*) was also utilized for the quantitative research to reveal the spatial dimensions of the data. *ArcView* not only provided a means to map the spatial properties of the data, it also could be used to map the residuals from the regression analyses.

GIS Analysis

ArcView was used to some extent for all four quantitative questions. For question one, all variables that pertained to educational characteristics were mapped; for question two, all variables that pertained to income characteristics were mapped; and, for question three, all variables that pertained to residential location were mapped. Dozens of maps were created so that the spatial dimensions of the data could be better explored. Only maps of variables that displayed a moderate or higher positive correlation (i.e., 0.500 or higher) along with maps of variables that displayed a moderate or lower negative correlation (i.e., -0.500 or lower) were included in this dissertation. In addition, maps of residuals for regression models were created. However, these maps were not included with this dissertation because none of the models produced results at a moderate level (i.e., 0.500 or higher and -0.500 or

lower). When data were mapped, the equal interval classification method was used to divide the range of attribute values into equal-sized subranges.

ArcView was most useful for addressing the fourth question. Fertility was measured in terms of crude birth rates and a map of each province was generated that displayed the spatial qualities of this data using standard deviations. As expected, the maps revealed notable differences in birth rates within the two provinces. The fourth question asked what impact distance from the provincial capital had on births? To answer this question, a proximity analysis was conducted. The proximity analysis began with the construction of polygons that were used to link the areal units (i.e., cities or counties). Polygon-to-polygon proximity analysis was a more logical choice for exploring this question rather than dot-to-dot analysis (i.e., placing dots throughout each county and analyzing how each dot interacts with the provincial capital). Polygon-to-polygon analysis viewed the entire county as one entity and the provincial capital city area as another entity. Therefore, all points within the county were viewed as one areal unit and could thus be analyzed in terms of how distance from the capital influences birth rates. Using distance increments of 20 miles from the capital, the maps for each province revealed the spatial relationship between distance and crude birth rates. All in all, *ArcView* proved to be a very useful tool for understanding the spatial dimensions of the data.

Focus Groups: A Qualitative Method

In addition to the statistical analyses, six focus groups were conducted between September and December 2004 for this dissertation. Focus groups have been used by researchers from a broad spectrum of academic disciplines to glean

pertinent information about issues. In essence, focus groups are group interviews. Group interviews offer many advantages over individual in-depth interviews. For example, focus groups provide a window into how others think and are a powerful means of exposing reality.[7] To understand the Chinese perspective about China's population policies, focus groups were selected as an ideal qualitative research method for this project. Focus groups are useful when investigating complex behaviors and motivations. The conversations in focus groups can reveal consensus or dissensus on a social issue that would not be evident from an individual in-depth interview. Focus groups are a friendly, respectful research method. These group discussions convey a willingness to listen without being defensive. All in all, focus groups are an innovative research method that is well-suited for this project.

An interview guide is used during a focus group so consistency of questions is maintained. Occasionally, though, a question develops that may have never occurred to the moderator before the discussion. If this occurs, it is acceptable to ask the question. It is recommended, however, that the question be asked once all questions in the interview guide have been addressed (i.e., asked at the end of the focus group).

Typically, there are six to twelve participants in a focus group who come from similar backgrounds and a moderator who facilitates the discussion by asking a set of predetermined questions from the interview guide (Morgan, 1998; Stewart and Shamdasani, 1990). Fewer than six participants in a focus group is discouraged, because the questions might generate too little discussion, while more than twelve participants is also discouraged because it becomes too difficult for every participant to speak to every question within the time frame allotted (usually one and one-half to

two hours). This researcher had little previous experience moderating focus groups, thus, she decided it would be better to have a smaller focus group, especially the first time. One common misconception about focus groups is that the moderator must be a professional moderator. In reality, it is quite common for the researcher to also act as the moderator. Therefore, this researcher decided she would take on the responsibility of moderating focus groups.

The first focus group, initially, was slated as a pre-test, so a smaller-sized group created an ideal setting to test the whole process. The discussion among participants of the first focus group was so lively that this researcher opted to use a smaller-sized focus group for the second one (which again, initially, was to act as a pre-test). After the second focus group was conducted, this researcher decided to maintain smaller-sized groups for the rest of the process because there were no problems encouraging discussion among the participants. Also, for comparison purposes it seemed important to keep all focus groups the same size. Five of the six focus groups were comprised of six participants; one focus group had five participants. This last focus group was smaller than the size normally recommended, yet, in this case size did not hinder discussion and the results were far from inconclusive.

A focus group entails much preparation before the actual group discussion commences. The steps involved in conducting the focus groups for this research included seeking permission to use human subjects, designing the discussion questions, recruiting participants, moderating the focus group discussions, and analyzing the results.

The focus group project began with an application to Michigan State University's (MSU) University Committee for Research Involving Human Subjects (UCRIHS). UCRIHS granted approval to conduct the focus groups in August 2004; a renewal to continue data analysis for one additional year was granted in July 2005. A copy of these documents is included in the appendix of this dissertation. As part of the UCRIHS application process, discussion questions were designed, as was the recruitment strategy, namely identifying Chinese-born people currently living in Michigan, to participate in the focus groups.

The strength of a focus group lies with questions that are carefully crafted and thoughtful. If the group is not focused (because the questions lack careful preparation) or the group does not engage in discussions, the focus group will not produce useful data. Therefore, much preparation went into the construction of the discussion questions. These questions would be the interview guide. Initially, almost 20 questions were identified for the focus groups. However, with guidance from the dissertation committee, the list of questions was winnowed to a more manageable number. A total of nine questions were asked during each focus group. The questions were organized into four broad categories. The first set of questions was designed to collect information about how people in China learned of the one-child per couple policy and what happened to couples when they had more than one child. The second set of questions assessed the necessity of the one child per couple policy and what was most misunderstood about that population policy, particularly by Americans today. The third set of questions looked at the advantages and disadvantages of the one child population policy. The last set of questions looked at

issues that pertained to the minimum age of marriage in China. Before the focus group ended, the participants were asked if there was anything else they would like to add to the discussion. The specific questions will be described in more detail in Chapter Six.

With the help of the dissertation committee, it was decided that focus groups would be conducted in two different Michigan communities, East Lansing and Grand Rapids. East Lansing was selected because it is home to MSU, while Grand Rapids was selected because it has a large Chinese community. The participants for the focus groups were recruited from two different Chinese associations. The East Lansing participants were recruited from the Chinese Student and Scholar Association (CSSA) at MSU while the Grand Rapids participants were recruited from the Chinese Association of West Michigan (CAWM). These Chinese communities not only represented different regions in Michigan, they also represented specific age groups. It was assumed that East Lansing participants would tend to be younger because the vast majority of members are in the U.S. for higher education purposes (at MSU). This group would represent those who were born around 1979 (i.e., when the one-child per couple policy was introduced). The Grand Rapids participants most likely would be middle-aged (or older) people who are in the U.S. for work purposes or as permanent residents. This group would represent those whose reproductive patterns were most affected by the population policy (i.e., they represented the generation that would obey the population policy).

The focus group participants were randomly selected from lists of candidates who had indicated a willingness to participate in the project. The CSSA participants

were contacted via email. This researcher sent an email to the president of CSSA, he forwarded a message to the membership, and respondents indicated their willingness to participate in the project. From their responses, a list was constructed and potential candidates were randomly selected for focus group participation. A copy of the initial email messages is included in the appendix of this dissertation (with the UCRIHS documents). The CAWM participants were recruited in the same general manner. This researcher asked two members of CAWM (one female, one male) to identify members that could be recruited to participate in this project. One focused her attention on female membership in CAWM; the other focused his attention on male membership in CAWM. From their initial contact, lists of potential candidates were constructed and used to randomly select participants. Participants were contacted by telephone to confirm their willingness to participate and given their specific focus group date. For all focus groups, each participant was paid fifteen dollars as a stipend for his or her participation in the project. It is normal practice to compensate focus group participants for their efforts.

Five of six focus groups were held on weekends. All East Lansing focus groups were held on Sundays at the MSU library (in a study room). Two were held in the morning, one was held in the afternoon. Sundays were selected as the ideal day for CSSA participation because it would not conflict with their regular class schedules. Two of the Grand Rapids focus groups were held on Saturdays. This day was selected because it would not conflict with work schedules. Both Saturday focus groups in Grand Rapids were held in the afternoon. One was held in the cafeteria at Chinese language school (while the participants' children were having their lessons);

the other was held in a GVSU classroom. The final focus group was held on a Friday morning in a private home in Grand Rapids. This location was selected because some of the participants had children in school and wanted to meet at a location close to their homes.

Initially, two of the six focus groups were slated as pre-tests while the other four were identified as regular focus groups. The pre-tests were designed so that any problems that developed during the focus group discussions could be identified and remedied. For example, members of the dissertation committee expressed some concern about whether the focus group participants would be able to join in the discussions, especially if the discussions were not conducted in a Chinese dialect. Therefore, one of the objectives of the pre-test was to see if the participants would be able to comfortably discuss the questions in English. If problems arose, modifications to the focus group process would be made. As it turned out, the language concern was not an issue. All of the focus group participants were fluent English speakers so no changes were necessary. Fortunately, no other problems surfaced during the pre-test focus groups. This meant that there were no differences between pre-tests focus groups and regular focus groups, thus all six focus groups were analyzed equally in this dissertation. Each focus group was tape- recorded and, for the three Grand Rapids focus groups, an assistant was also present to help run the tape recorder. This researcher moderated all six focus groups. After the focus groups were completed, a professional typist was hired to transcribe the tapes. The six focus groups provided a qualitative method of assessment that helped this researcher further explore the issues of population and population policy in China today without making

a special trip to China to collect the information. Additionally, the focus groups provided an opportunity for Chinese people to add their voice to the discussion as it pertained to China's population and population policies. Today, much of the literature written by Westerners about China's population policy issues lack Chinese input.

Each participant was asked to sign a consent form before the focus group could commence. In addition to being used to verify the participant had willingly (and voluntarily) agreed to participate in the focus group, the consent form had five questions that provided background information about the participant. These questions were asked to gather supplemental information about where the participants came from in China, how long they had lived in the United States, what their educational level and occupation was, and how many siblings they had. A summary of these questions will be provided in Chapter Six.

Each focus group was comprised of participants that were the same gender (i.e., all male focus groups or all female focus groups) and approximately the same age (i.e., college-aged participants or middle-aged participants). The rationale for this was to foster open discussion about topics that might be perceived as sensitive especially between strangers of the opposite sex, and to gather perceptions about China's population policies from two very different groups (i.e., one group that was expected to practice the one child policy and another group that was the product of that policy). Each focus group had its own unique personality. Some of the groups had participants that were quite talkative; others occasionally had a participant who tried to monopolize the discussion, whereas a few groups were more succinct in their

responses. In each focus group, participants helped each other. For example, while all of the focus group participants spoke fluent English, on occasion a word might be used that was unfamiliar to one of the group members. If this occurred, another focus group member would translate the problem word into Mandarin or tell the meaning of the word (again in Mandarin) so that the person could continue to participate in the focus group. As stated on the consent form, each focus group member was aware that they could waive answering a question if that question made them uncomfortable or they had nothing else to offer to the discussion. This option was rarely invoked. One thing that did surprise this researcher was the sincere gratitude expressed to her each time she conducted a focus group. The participants of the six focus groups consistently thanked her for her interest in China and the population issues of that country. Many of the focus group participants stayed after the official procedure ended to talk about the population issues in a more informal venue.

The last step for the focus group project is analysis of the results. Age and gender characteristics of the participants were used as the organizational framework for analyzing the results. In other words, the output from the discussions was first analyzed by the age of the participants, next analyzed by the gender of the participants. In some cases, there were evident differences to question responses that were influenced by age or gender. In other instances, though, neither age nor gender influenced the response to questions. A more in-depth analysis of the responses to the focus groups questions can be found in Chapter Six.

The methodology used in this dissertation was a synthesis of quantitative and qualitative research methods. A spatial analysis of the demographic, economic, and

social variables at the county level in two Chinese provinces (i.e., Jiangsu and Jiangxi) provide the basis for understanding one aspect of the overall impact of China population policies. That analysis is the subject of the next chapter. An examination of the human dimensions provides the basis for understanding another aspect of the overall success of China's population policies. That analysis is the subject of Chapter Six.

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[1] Rogerson, Peter A. *Statistical Methods for Geography* (Thousand Oaks: Sage Publications, 2001): xi

[2] Definitions for the data are from the statistical yearbooks. Acronyms for the variables are used for simplicity sake and are the creation of the author.

[3] Chan, Kam Weng. "Chinese Census 2000: New Opportunities and Challenges," *The China Review* (3:2): p. 3.

[4] Chongming is also part of Shanghai.

[5] Definitions for PCIR and INUR are from the statistical yearbooks. Acronyms for the variables are used for simplicity sake and are the creation of the author.

[6] To calculate this variable, one divides the number of births by the number of women in their reproducing years (i.e., 15-45 years old).

[7] Three texts were consulted on methodology of focus groups: Stewart and Shamdasani's *Focus Groups: Theory and Practice,* Krueger's *Developing Questions for Focus Groups,* and Morgan's *The Focus Group Guidebook.*

Chapter 5 – Spatial Patterns of Population Growth

Statistical Analyses

This chapter examines the quantitative part of the dissertation. Different types of multi-variate statistical analyses (e.g., correlation and regression methods) are conducted to explore the overall relationship between various socio-economic variables and crude birth rates for the counties of Jiangsu and Jiangxi. Next, four research questions are identified and statistical outputs are analyzed using regression methods. Questions one through three utilize multiple regression methods and target specific variables to identify possible predictors for changes in crude birth rates for the counties of Jiangsu and Jiangxi as they pertain to education, income, or location, respectively. Question four uses proximity analysis to determine how distance interacts with changes in crude birth rates for the counties of Jiangsu and Jiangxi. Maps are constructed for each correlation or regression and, where appropriate, are included in the text to further illustrate a concept. All maps are created with *ArcView*, a GIS software program.

Correlation Analysis

Before specific research questions could be asked, an appropriate demographic variable that would measure fertility changes must be selected. As previously described in Chapter Four, the variable that was ultimately selected to measure fertility was CBR. CBR was selected because it is the one variable that was

consistently available in the data sets. The next challenge was to identify a way to display the data. Various tables were constructed to show the statistical relationship between data. Geographical techniques were also used to create maps (with *ArcView*) that show the spatial characteristics of the data. For analysis purposes, variables were classified as having no relationship (0.00 to 0.199); weak relationship (0.200 to 0.499); moderate relationship (0.500 to 0.799); strong relationship (0.800 to 0.899); and, very strong relationship (0.900 to 0.999). Relationships with CBR can be positive or negative and all variables were analyzed. However, for this research, only variables with statistical relationships of 0.500 or higher (or –0.500 or lower) were included as maps in the text. Now that the parameters are established, the actual statistical analyses can commence.

The first task at hand is, thus, to calculate correlation coefficients for the data using CBR and each socio-economic variable. The variables used for the statistical analyses are described in Chapter Four. Table 5.1 shows the correlation coefficients for Jiangsu and Jiangxi data using CBR as one of the variables. After reviewing Table 5.1, it is evident the variables have little correlation with CBR in either province. All relationships were weak, but some interesting (and oftentimes predictable) patterns are evident. For each province, 13 variables were correlated with CBR. (Note: See Key of Abbreviations for acronym definitions). The Jiangsu variables are: PROF/POP, PROF/REM, STU/POP, EXED/POP, PCIR, INUR, SEC/EMP, SEC/REM, TERT/EMP, TERT/REM, ACPOP/DOCS, ST/EMP, and ST/REM. The Jiangxi variables are: STU/ACPOP, EXED/POP, ADPF/POP,

ADPF/REM, PCIR, INUR, SEC/EMP, SEC/REM, TERT/EMP, TERT/REM, ACPOP/DOCS, ST/EMP, and ST/REM.

Table 5.1: Correlation Coefficients

Variable	Jiangsu	Jiangxi
PROF/POP	-0.078	NA
PROF/REM	-0.076	NA
STU/POP	0.288	NA
STU/ACPOP	NA	-0.045
EXED/POP	-0.123	0.098
ADPF/POP	NA	0.008
ADPF/REM	NA	-0.153
PCIR	-0.245	-0.005
INUR	-0.158	0.108
SEC/EMP	-0.121	0.233
SEC/REM	-0.102	-0.013
TERT/EMP	-0.145	0.260
TERT/REM	-0.051	-0.073
ACPOP/DOCS	0.151	0.166
ST/EMP	-0.151	0.259
ST/REM	-0.089	-0.046

When analyzing the correlation between CBR and variables for Jiangsu, the results are weak. Most of the Jiangsu variables have no correlation with CBR. Four variables have a correlation close to zero (PROF/POP, PROF/REM, TERT/REM, and ST/REM). While the results are of limited value, in each instance, the variable is negatively correlated with CBR; that is, more for a particular variable meant lower CBR. For example, a higher proportion of professionals to population (PROF/POP) correspond with lower CBR. Seven variables have a correlation between 0.1 and 0.2. Six of these seven variables (EXED/POP, INUR, SEC/EMP, SEC/REM, TERT/EMP, and ST/EMP) have a negative correlation; only ACPOP/DOCS has a positive correlation (i.e., CBR increases along with higher ratios of population to doctors). Only two variables have a weak correlation with CBR (i.e., greater than 0.2 but less

than 0.5). STU/POP has a weak positive correlation with CBR (i.e., higher crude enrollment rate corresponds with higher CBR), whereas PCIR has a weak negative correlation (i.e., lower incomes correspond with higher CBR). Although these correlations are weak, the overall relationship (i.e., positive or negative) between socio-economic variables and CBR are not surprising. Places with lower levels of development correspond with higher CBR. Would the same be true for Jiangxi?

Most of the Jiangxi variables also have no correlation. Seven variables have a correlation close to zero (STU/ACPOP, EXED/POP, ADPF/POP, PCIR, SEC/REM, TERT/REM, and ST/REM). While the results are of limited value, six of the seven variables are negatively correlated with CBR; only ADPR/POP has a positive correlation. Akin to Jiangsu, the overall relationship between variables and CBR for Jiangxi are, for the most part, predictable. For example, lower incomes correspond with higher CBR or lower per capita spending on education corresponds with higher birth rates. One variable in this group, however, deviates from what would be expected. STU/ACPOP has a negative relationship with CBR. In Jiangsu, STU/POP has a weak positive correlation with CBR (i.e., higher crude enrollment rate corresponds with higher CBR), but for Jiangxi the relationship is inverse. Why would places with higher crude enrollment rates have lower CBR? One possible explanation might be attributed to greater success with acceptance or implementation of China's one-child per couple population policy in this province. Perhaps people have obeyed the strictness of the policy. Unfortunately, the data do not enable this researcher to verify that assumption.

Four of the Jiangxi variables have a correlation between 0.1 and 0.2. Again, some relationships are predictable while other relationships raise questions. For example, ADPF/REM has a negative correlation with CBR and ACPOP/DOCS has a positive correlation with CBR. Both of these relationships are expected. Places with a higher proportion of professionals should correspond with lower birth rates and places with a higher proportion of people to doctors should correspond with higher birth rates. However, some atypical relationships are also evident in Jiangxi. For example, INUR and ST/EMP have a positive correlation with CBR (i.e., higher incomes correspond with higher birth rates and higher proportions of the labor force engaged in secondary and tertiary activities correspond with higher birth rates). Again, the question of why emerges? Since the relationships are so poor, one should not dwell too long on why, but some possible explanations seem in order. First, one might question the strength of the data. Some of the data for areal units of Jiangxi (especially data for the major cities) were incomplete; thus that might impact statistical analysis. Another possible explanation, though, could be attributed to reaction against the population policy. In other parts of China (such as Guangdong province) as incomes have increased, so, too, have crude birth rates. People simply paid the penalties and had more than one child. Perhaps this has also occurred in Jiangxi. Finally, Jiangxi has a greater reliance on agriculture than Jiangsu. China identified exemptions for the one-child policy in the 1980s. One notable exemption involved first-birth patterns for rural couples. If the first child, for a rural family, was female the couple could have a second child. Perhaps the higher birth rates reflect a viable way for couples to have more than one child.

Three Jiangxi variables have a weak correlation with CBR (i.e., greater than 0.2 but less than 0.5). SEC/EMP, TERT/EMP, AND ST/EMP all have weak positive correlations with CBR (i.e., increases with each variable correspond with increase in birth rates). Again, while unexpected, the reason for the variation might be explained as a reaction against strict population policies (i.e., ignoring the one-child policy) or taking advantage of an exemption (i.e., a way to have more than one child) in that same policy. Unfortunately, the data do not enable this researcher to verify these assumptions.

Overall, use of correlation methods does not confirm contemporary scholarship. Individually, the data have little relationship with CBR for Jiangsu or Jiangxi. Would the data, collectively, exhibit stronger statistical relationships when regression analysis is used? That is the next topic to explore.

Regression Analysis

To test the strength of all the socio-economic variables with CBR, regression analysis is utilized. In each regression, CBR is the dependent variable and all other variables are identified as independent. Statistical tests are conducted using different regression methods (e.g., forward, stepwise, and backward) for Jiangsu and Jiangxi. The backward method for regression is selected for analysis because this method yields usable results (i.e., no models were generated when forward or stepwise methods were used).

For Jiangsu, when 11 independent variables (EXED/POP, STU/POP, SEC/EMP, SEC/REM, TERT/EMP, TERT/REM, ACPOP/DOCS, INUR, PCIR, PROF/REM, and PROF/POP) are analyzed using regression methods, many models

are generated that identify predictors for change in CBR. Using a backward procedure, the two models with the best statistical fit are first, one model that uses all 11 variables and, second, another model that uses 10 of the 11 variables. The first model (which uses all 11 variables) produces an R of .479 and an R^2 of .230. The second model removes ACPOP/DOCS from the formula to identify 10 variables as predictors for changes in CBR. This second model also produces an R of .479 with an R^2 of .229. Table 5.2 shows the coefficients for the first Jiangsu regression model while Table 5.3 shows the coefficients for the second Jiangsu regression model. Overall, the regressions show a weak statistical relationship between the socio-economic variables and changes in CBR.

For Jiangxi, the same statistical procedure is conducted. Again, regressions using 11 independent variables (EXED/ACPOP, STU/ACPOP, SEC/EMP, SEC/REM, ST/EMP, TERT/REM, ACPOP/DOCS, INUR, PCIR, ADPF/REM, and ADPF/ACPOP) generate many models that identify predictors for change in CBR.

Table 5.2: Coefficients for Jiangsu, Model 1 (11 Variables) with $R^2 = .230$

Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	7.083	2.269		3.122	0.003
SEC/EMP	12.707	8.844	1.331	1.437	0.156
SEC/REM	-7.385	6.427	-1.323	-1.149	0.255
TERT/EMP	-12.278	7.293	-0.539	-1.683	0.098
TERT/REM	9.293	6.047	1.179	1.537	0.130
INUR	0.000	0.000	-0.249	-0.807	0.427
PCIR	-0.001	0.000	-0.518	-1.652	0.104
ACPOP/DOCS	0.000	0.001	0.038	0.177	0.860
PROF/REM	-56.863	51.465	-0.742	-1.105	0.274
PROF/POP	263.595	181.818	1.000	1.450	0.153
STU/POP	14.335	7.334	0.355	1.955	0.056
EXED/POP	26.748	73.187	0.116	0.365	0.716

Table 5.3: Coefficients for Jiangsu, Model 2 (10 Variables) with $R^2 = .229$

Model	B	Std. Error	Beta	t	Sig.
2 (Constant)	7.149	2.219		3.221	0.002
SEC/EMP	12.198	8.292	1.278	1.471	0.147
SEC/REM	-7.127	6.207	-1.277	-1.148	0.256
TERT/EMP	-12.078	7.144	-0.531	-1.691	0.096
TERT/REM	9.133	5.927	1.158	1.541	0.129
INUR	0.000	0.000	-0.237	-0.788	0.434
PCIR	-0.001	0.000	-0.518	-1.667	0.101
PROF/REM	-57.804	50.753	-0.754	-1.139	0.260
PROF/POP	262.443	180.150	0.996	1.457	0.151
STU/POP	14.867	6.632	0.369	2.242	0.029
EXED/POP	25.940	72.421	0.112	0.358	0.722

Using a backward procedure, the two models with the best statistical fit are, again, one model that uses all 11 variables and, next, another model that uses 10 of the 11 variables. The first model (which uses all 11 variables) produces an R of .455 and an R^2 of .207. The second model removes ADPF/ACPOP from the formula to identify 10 variables as predictors for changes in CBR. This second model produces an R of .454 and an R^2 of .206. Table 5.4 shows the coefficients for the first Jiangxi regression while Table 5.5 shows the coefficients for the second Jiangxi regression. Overall, again, the regressions show a weak statistical relationship between the socio-economic variables and changes in CBR. Collectively, these first few regressions do not confirm contemporary scholarship. There are some relationships among the data, but they are weak at best. Would research questions that target specific variables for analysis identify stronger relationships? Questions that assess the role of education, income, and location are considered for analysis.

Table 5.4: Coefficients for Jiangxi, Model 1 (11 Variables) with $R^2 = .207$

Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	6.747	2.138		3.155	0.002
SEC/EMP	-2.841	2.655	-0.547	-1.070	0.288
SEC/REM	13.758	10.274	0.334	1.339	0.184
TERT/REM	-6.148	9.117	9.117	-0.156	0.502
ST/EMP	2.064	1.239	1.239	0.830	0.100
INUR	0.000	0.000	0.000	0.085	0.486
PCIR	0.000	0.001	0.001	0.070	0.551
ACPOP/DOCS	0.001	0.001	0.001	0.304	0.098
ADPF/REM	14.468	37.811	37.811	0.079	0.703
ADPF/ACPOP	-173.805	175.960	175.960	-0.521	0.326
STU/ACPOP	4.317	10.234	10.234	0.089	0.674
EXED/ACPOP	66.227	41.958	41.958	0.748	0.119

Table 5.5: Coefficients for Jiangxi, Model 2 (10 Variables) with $R^2 = .206$

Model	B	Std. Error	Beta	t	Sig.
2 (Constant)	6.657	2.114		3.149	0.002
SEC/EMP	-2.545	2.525	-0.490	-1.008	0.317
SEC/REM	12.287	9.477	0.298	1.297	0.199
TERT/REM	-4.371	7.803	-0.111	-0.560	0.577
ST/EMP	1.913	1.168	0.770	1.638	0.105
INUR	2.473E0-05	0.000	0.082	0.677	0.500
PCIR	0.000	0.001	0.079	0.693	0.490
ACPOP/DOCS	0.001	0.001	0.301	1.669	0.099
ADPF/ACPOP	-158.137	170.202	-0.474	-0.929	0.356
STU/ACPOP	6.063	9.111	0.124	0.665	0.508
EXED/ACPOP	60.709	39.189	0.686	1.549	0.125

Question 1: How do improvements in education influence crude birth rates in the counties of Jiangsu and Jiangxi?

To answer this question, specific variables are selected for regression analysis. Each variable focuses on some aspect of education in the province (again, definitions of these variables are found in Chapter Four). Variables for this regression include the crude enrollment rate (STU/POP or STU/ACPOP) and per capita funding for education (EXED/POP). One would expect to find places with a high proportion of STU/POP also have higher CBR or that high EXED/POP would have lower CBR.

The number of educated people in the province (PROF/POP or ADPF/ACPOP) is also selected for analysis. It is assumed that places with a large proportion of educated people would display lower CBR.

Four variables are used for regressions in each province. The Jiangsu variables are PROF/POP, PROF/REM, STU/POP, and EXED/POP; the Jiangxi variables are STU/ACPOP, EXED/ACPOP, ADPF/REM, and ADPF/ACPOP. Regressions are conducted for both provinces using CBR as the dependent variable. Although various methods (e.g., forward, stepwise, etc.) are used, backward regression methods yielded usable results (i.e., no models were generated when forward or stepwise methods were used).

Using a backward procedure, the model for Jiangsu finds all four variables together produce the strongest predictors CBR. However, the overall statistical output is quite weak. This regression model produced an R of .313 and an R^2 of .093. Collectively, these four variables (PROF/POP, PROF/REM, STU/POP, and EXED/POP) have a weak influence on CBR. Table 5.6 shows the coefficients for the Jiangsu regression. Using a backward procedure for Jiangxi data produce similar results. The four variables (STU/ACPOP, EXED/ACPOP, ADPF/REM, and ADPF/ACPOP) create a weak model. This regression model has an R of .267 and an R^2 of .071. Table 5.7 shows the coefficients for the Jiangxi regression.

Table 5.6: Coefficients for Jiangsu, Education Variables with R^2 = .093

Model	B	Std. Error	Beta	t	Sig.
Constant	5.493	1.171		4.689	0.000
PROF/REM	-12.099	24.309	-0.158	-0.498	0.620
PROF/POP	95.736	107.331	0.363	0.862	0.376
STU/POP	13.355	5.681	0.331	2.351	0.022
EXED/POP	-35.081	51.663	-0.152	-0.679	0.500

Table 5.7: Coefficients for Jiangxi, Education Variables with $R^2 = .071$

Model	B	Std. Error	Beta	t	Sig.
Constant	11.07	0.929		11.914	0.000
ADPF/REM	-11.898	31.495	-0.065	-0.378	0.707
ADPF/ACPOP	-254.551	132.623	-0.763	-1.919	0.058
STU/ACPOP	11.797	7.900	0.242	1.493	0.139
EXED/ACPOP	70.728	36.568	0.799	1.934	0.056

The results of these regressions do not confirm contemporary scholarship. The results indicate the variables selected have little significance in predicting differences in birth rates. Caldwell (1980) suggested improvement in education has significant influence on lowering birth rates. Did these regressions suggest otherwise? Not necessarily. First, one must look critically at the variables. At best, the variables simply give one an idea about the overall condition of education at a specific point in time. It does not indicate improvements in educational levels. Only one set of variables (PROF/POP and PROF/REM for Jiangsu; ADPF/POP and ADPF/REM for Jiangxi) look at the educational attainments of the population. Is this enough data for this question? Probably not. Although this research does not confirm contemporary scholarship because these two sets of variables have little influence upon birth rates, additional factors should be considered as they pertain to education in China.

China has, in the last several decades, made great strides toward improving educational opportunities for its population. Compulsory education is now part of life in China. Couple these contemporary educational advancements with a population that traditionally has emphasized the importance of education and one can conclude that today the Chinese are better educated than at any other time in history. Because education is so widely available (especially in these two provinces), it might be

difficult to ascertain the link between education and birth rates. It is probably safe to say that education has played a significant role in lowering birth rates, even if the data do not support that relationship. Therefore, while the results of these particular regressions do not indicate a significant statistical relationship between education improvement and birth rates, one should not conclude no relationship exists.

Question 2: How does income impact crude birth rates in the counties of Jiangsu and Jiangxi?

To answer this question, again, specific variables are selected for regression analysis. Each variable focuses on some aspect of income for the province. For example, per capita urban incomes (INUR) and rural incomes (PCIR) are included in these regressions. A common assumption is as income increases, CBR decreases. China's economy is experiencing phenomenal growth as the country continues to increase it industrial activity. One might assume laborers engaged in secondary or tertiary activities would earn more than laborers in primary sector activities, thus this could be used to assess improvements in incomes. Therefore, variables that measure the proportion of laborers in various sectors of the economy (SEC/EMP, TERT/EMP, SEC/REM, and TERT/REM) are selected for analysis. For each province, six variables are identified for regression analyses. The six variables are INUR, PCIR, SEC/EMP, TERT/EMP, SEC/REM, and TERT/REM. Regressions are conducted for both provinces using CBR as the dependent variable. Although various methods (e.g., forward, stepwise, etc.) are used; again, the backward regression method yields usable results (i.e., no models were generated when forward or stepwise methods were used).

Three sets of regressions for each province are conducted using the backward method. One set of regressions uses all of the data, a second set of regressions use INUR, PCIR, SEC/EMP, and TERT/EMP, while the third set of regressions use INUR, PCIR, SEC/REM, and TERT/REM. The first set of regressions (i.e., INUR, PCIR, SEC/EMP, TERT/EMP, SEC/REM, and TERT/REM) produces the best statistical results. However, the coefficients still reveal a weak model for understanding the relationship between income improvement and CBR change. For Jiangsu, the regression produces a model with an R of .364 and an R^2 of .133; for Jiangxi, the regression produces a model with an R of .339 and an R^2 of .115. Both regressions reveal that income improvement is a weak predictor of birth rates. Table 5.8 shows the coefficients for the Jiangsu regression and Table 5.9 shows the coefficients for the Jiangxi regression.

Overall, the results from these regressions do not confirm contemporary scholarship. The data show income improvements are a slightly better predictor of birth rates for Jiangsu than for Jiangxi. However, no definitive model emerged that revealed a strong statistical relationship between income and CBR. One would assume income improvements have far more influence on birth rates than the regressions reveal. Has income improvement had so little impact on birth rates in Jiangsu and Jiangxi? It is probably safe to say that income improvement plays a role in lowering birth rates, even if the data do not support that relationship. The two provinces selected for analysis may have already reaped the benefits of income improvement. Therefore, while the results of these particular regressions do not indicate a strong relationship between income improvement and birth rates, it does

Table 5.8: Coefficients for Jiangsu, Income Variables with $R^2 = .133$

Model	B	Std. Error	Beta	t	Sig.
Constant	10.467	1.171		8.942	0.000
PCIR	-0.001	0.000	-0.673	-2.428	0.018
INUR	-1.47E-05	0.000	-0.026	-0.125	0.901
SEC/EMP	7.494	8.059	0.785	0.930	0.356
SEC/REM	-1.774	5.986	-0.318	-0.296	0.768
TERT/EMP	-6.585	6.827	-0.289	-0.965	0.339
TERT/REM	2.333	5.249	0.296	0.444	0.658

Table 5.9: Coefficients for Jiangxi, Income Variables with $R^2 = .115$

Model	B	Std. Error	Beta	t	Sig.
Constant	9.011	1.342		6.715	0.000
PCIR	-2.57E-05	0.001	-0.005	-0.046	0.963
INUR	5.72E-05	0.000	0.189	1.717	0.090
SEC/EMP	-1.246	1.426	-0.240	-0.873	0.385
SEC/REM	11.508	9.511	0.279	1.210	0.230
TERT/EMP	2.276	1.192	0.520	1.909	0.060
TERT/REM	-10.276	7.643	-0.261	-1.345	0.182

not mean no relationship exists. Thus far, the data indicate that education and income have little influence on birth rates, should some other characteristic be considered? Does location influence birth rates? That will be the focus of the last two questions.

Question 3: How does location (i.e., rural versus urban) influence crude birth rates in the counties of Jiangsu and Jiangxi?

Specific variables are again selected for regression analyses to answer this question. Each variable is selected because location influences the variable (i.e., there would be notable differences that result from a rural or an urban location). Employment variables are again selected for analysis and include SEC/REM and TERT/REM. It is assumed rural areas have a greater number of employees engaged in primary sector activities, thus places with higher proportions of laborers in

secondary or tertiary sector activities could be assumed to be more urbanized. One additional variable is included because it assesses overall health conditions in the two provinces. ACPOP/DOCS measure the ratio of people to doctors. A basic assumption is that health conditions would be poorer in rural areas. Therefore a high ACPOP/DOCS indicates the place is less urbanized. Regressions are conducted for both provinces using CBR as the dependent variable and a combination of the variables (i.e., SEC/REM, TERT/REM, and ACPOP/DOCS). The backward method of regression still yields the most usable (albeit weak) results.

For Jiangsu, the regression produces a model with an R of .151 and an R^2 of .023; for Jiangxi, the regression produces a model with an R of .196 and an R^2 of .038. Both regressions reveal that location is a weak predictor of birth rates (although location is slightly more significant for Jiangxi than for Jiangsu). Table 5.10 shows the coefficients for the Jiangsu regression and Table 5.11 shows the coefficients for the Jiangxi regression.

Table 5.10: Coefficients for Jiangsu, Location Variables with R^2 = .023

Model	B	Std. Error	Beta	t	Sig.
Constant	7.102	0.770		9.218	0.000
SEC/REM	-0.065	1.157	-0.012	-0.056	0.956
TERT/REM	-0.006	1.332	-0.001	-0.004	0.997
ACPOP/DOCS	0.000	0.000	0.143	0.882	0.381

Table 5.11: Coefficients for Jiangxi, Location Variables with R^2 = .038

Model	B	Std. Error	Beta	t	Sig.
Constant	9.890	0.751		13.166	0.000
SEC/REM	6.074	6.688	0.147	0.908	0.366
TERT/REM	-5.728	6.256	-0.145	-0.916	0.362
ACPOP/DOCS	0.001	0.000	0.178	1.614	0.110

The results from this last set of regressions do not confirm contemporary research because residential location (i.e., rural or urban) does not appear to have any influence on birth rates. This is counterintuitive. Rural locations should have higher birth rates than urban locations. China's population policies allowed rural people more children. Thus location should influence birth rates. Perhaps another method of analysis is needed to examine the role of location and its impact on birth rates. What if distance is the variable that needs to be considered? Therefore a final question is asked that uses proximity analysis to examine the relationship between distance from the provincial capital and birth rates.

Question 4: What impact does distance from the provincial capital have on crude birth rates in the counties of Jiangsu and Jiangxi?

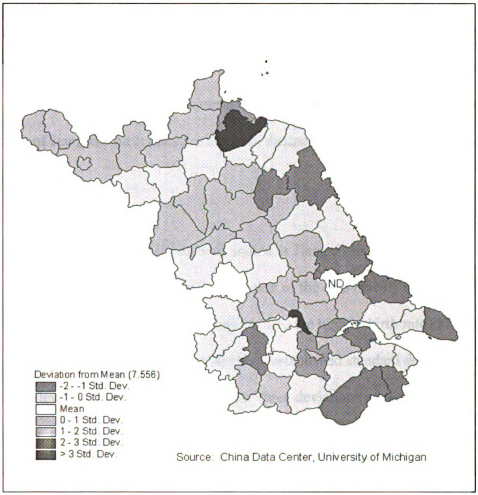
ArcView is a particularly helpful tool that is used for this question. A series of maps is used to explore the relationship between distance from the provincial capital and the crude birth rate. Using increments of twenty miles, a map is created for each province that shows the distance between the capital (i.e., Nanjing in Jiangsu and Nanchang in Jiangxi) and the respective areal units (i.e., cities or counties) in that province. The base map is layered with a second map that shows the CBR for each county. Data are displayed using standard deviations to show the spatial variations in birth rates. Standard deviations are used because they represent a familiar, and often used, method of assessment to show how data deviate from the norm. Discernable patterns of variation in birth rates are evident in these two provinces. Figure 5.1 shows the extent of variation in birth rates for Jiangsu province and Figure 5.2 shows the extent of variation in birth rates for Jiangxi province.

Jiangsu

Data from the statistical yearbook indicates Jiangsu has an average birth rate of 9.03 births/1000 people. Closer examination of the data reveals the lowest birth rate (5.50/1000) is found in the city of Dongtai and the highest birth rate (12.66/1000) is found in Guanyun County. When *ArcView* established standard deviations for the data, six levels of deviation are identified: two deviations are below the mean and four deviations are above the mean.[1] The mean is 7.556. When the standard deviations are mapped, two distinct spatial patterns can be observed. First, one can discern a slight north to south change in birth rates. Northern Jiangsu has a few more areal units (i.e., cities or counties) with birth rates above the norm whereas southern Jiangsu has a majority of areal units with birth rates below the norm. A second pattern of east to west variations can also be observed. Eastern Jiangsu (especially along the coast) has more areal units with birth rates below the norm while western Jiangsu has more areal units with birth rates above the norm. Therefore, if one divided Jiangsu into quadrants, the overall pattern of deviation from the norm would be lower birth rates in the northeast, southeast and southwest; higher birth rates in the northwest. At first glance, it appears distance from the capital (located in the southwest part of the province) influences CBR.

This overall pattern might be explained by exploring the economic geography of this province. For example, southern Jiangsu includes the provincial capital (Nanjing) in the southwest and the city of Suzhou in the southeast. Both cities are well established, very modern, and have long had large urban populations. It appears

Figure 5.1: Birth Rates for Jiangsu



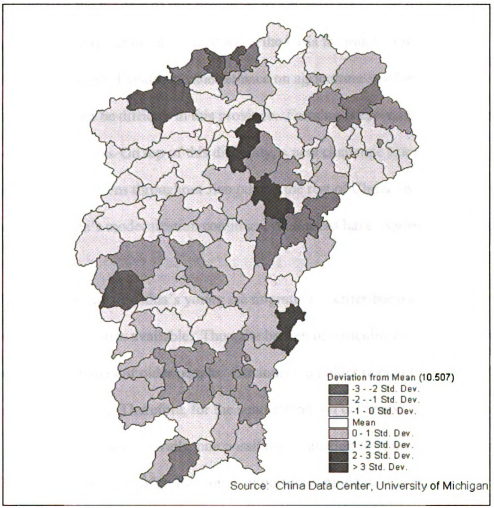
people in these cities have accepted smaller family sizes (perhaps because of economic changes), thus birth rates are very low. Birth rates are low to very low for almost all of the coastal counties of Jiangsu in the northeast and southeast. The only exception to this pattern is found in the far north where Guanyun and Ganyu counties and the city of Lianyungang have birth rates higher than the norm. Improvements in the economy of the coastal counties might explain these lower birth rates, whereas little economic improvement in the far northern places might explain why higher birth rates prevail. Northwestern Jiangsu has slightly higher birth rates; most of the

counties have birth rates one level above the norm. Higher birth rates in this region might be explained by the culture of this region. Northern Jiangsu is home to the *Subei* people.[2] The *Subei* are, in essence, the "hillbillies" of China and are oftentimes poor. Therefore, the poorer economy of this area might have influenced the birth rates. Overall, the data reveal variations in birth rates for Jiangsu. When the standard deviations of Jiangsu's birth rates are mapped, distinct patterns of spatial variation can be observed.

Jiangxi

Data from the statistical yearbook indicates Jiangxi has an average birth rate of 15.44 births/1000 people. Closer examination of the data reveals the lowest birth rate (4.29/1000) is found in the city of Juijiang and the highest birth rate (17.75) is found in the Nanchang County. When *ArcView* established standard deviations for the data, seven levels of deviation are identified: three deviations are below the mean and four deviations are above the mean.[3] The mean is 10.507. When the standard deviations are mapped, a distinct spatial pattern can be observed. The overall pattern reveals a north to south change in birth rates. Counties in the north have, for the most part, lower birth rates whereas counties in the south have, on average, higher birth rates. If a line were drawn through the province to divide it into two equal halves, one would notice that the southern half of the province has only two counties with very low birth rates (two deviations below the norm) and nine counties with low birth rates (one deviation below the norm). Again, one might conclude that distance from the capital (in the northern part of the province) influences CBR.

Figure 5.2: Birth Rates for Jiangxi



Perhaps more interesting, however, is an examination of birth patterns in the northern half of the province. While the majority of counties have birth rates below the norm, 18 places (counties or cities) have birth rates above the norm and the county with the highest birth rate for the province (four levels above the norm) is Nanchang. What might explain these exceptions to the overall pattern? Why are there counties with low or very low birth rates in the south? Why are the highest birth rates in Nanchang County?

Geography, again, might help explain the overall situation. A variety of mountains ring the borders of this province, so a rugged landscape is not uncommon. Jiangxi is also more reliant on agriculture as the basis for much of its economy. The combination of rugged landscape and reliance on agriculture is a formula for hardship that means life can be difficult in this province. Farming is especially difficult in some parts of Jiangxi. On top of this difficulty, a new challenge has affected agricultural populations throughout Jiangxi and the rest of China. In the last few decades, as China's modernization continues, rural areas have experienced an exodus of young adults.

Today, many of China's young are migrating to cities because of the economic opportunities available. Thus, the burden of agriculture is falling more and more on the shoulders of older people. Obviously, an older population would not have high birth rates. Therefore, for the southern region of Jiangxi, where agriculture in a rugged environment prevails, one possible explanation for lower birth rates might be that the population is older. Economic opportunity might also explain why birth rates are highest in Nanchang County, and other parts in the north. The provincial capital of Jiangxi is also named Nanchang. This capital city is located immediately west of the county of Nanchang. Because of its strategic location, Nanchang (county) might have greater economic opportunity available than other counties in the province. Economic opportunities would not be limited to secondary or tertiary activities, but might also include primary sector activities, including agriculture. Perhaps the young adults that are leaving rural areas (including those in southern Jiangxi) are part of the floating population in Nanchang.[4] Areas with large

populations of young adults have the potential to have higher birth rates. Other cities in the northern half of the province with higher birth rates include Jingdezhen, Linchuan (Fuzhou), and Shangrao. The birth rates in these cities are not as high as Nanchang County, but they, too, represent an anomaly from the overall pattern of lower birth rates in the north. Collectively, these cities act like magnets and attract young adults because of the economic opportunities available. The improved economic situation has influenced some of the neighboring counties, especially Nanchang. However, the improved economic conditions might prove to be a double-edged sword for this part of the province in that the money earned could have been used to pay any fines associated with violations of the population policies, akin to the Guangdong experience. As with Jiangsu, the data reveal variations in birth rates for Jiangxi. When the standard deviations of Jiangxi's birth rates are mapped, distinct spatial variations can be observed.

The two provinces reveal surprisingly similar results. Both Jiangsu and Jiangxi had distinct areas where CBR were clustered, including the Nanjing municipality (i.e., capital city and neighboring counties in Jiangsu) and Nanchang municipality (i.e., capital city and neighboring counties in Jiangxi). Since Nanjing and Nanchang are provincial capitals, at first glance it would appear that distance does not have any significant relationship with the rate of births. However, if the clustering of birth rates in the capital city areas is viewed as an anomaly, the overall pattern appears to be higher CBR occur as one moves away from the capital area. In other words, distance from the capital and the rate of births is positively interrelated; the rate of births increases as one moves further from the capital area. Not all cities

and counties in the two provinces display this pattern. There are areas within each province where the rate of births decreases rather than a steady increase even as distance increases. However, enough areas have higher CBR and it is those clusters that lead one to conclude that distance did, at least in some instances, influence birth rates in the two provinces. Akin to the results from the various regressions conducted for questions one through three, the conclusion drawn from this last question was weak.

Conclusion

Collectively, all of the statistical analyses described in this chapter yield results that are weak, at best. Even when one analyzes the variety of spatial relationships for some of the data, outliers oftentimes influence the interpretation of those spatial patterns and results are far from definitive. The quantitative results suggest that forces commonly associated with slowing population growth (e.g., improvements in education, improvements in income, urbanization) appear less important in China. The question that must be asked, then, is what has been responsible for slowing China's population growth? Obviously, China's population policies, especially the one-child per couple policy, have played a significant role in lowering birth rates. The overall pattern of low CBR in Jiangsu and Jiangxi provide statistical evidence of the population policy's success. While the one-child per couple policy has produced desired results (in that both CBR and TFR are low), the overall success of the policy, in terms of the human dimension, remains to be explored. Therefore, focus groups were conducted that provided a venue for Chinese people to

speak out about China and its population policies. The results of the focus groups are the subject of the next chapter.

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[1] The six categories of standard deviations were as follows: -2 deviations 5.225-6.391; -1 deviations 6.391-7.556; +1 deviation 7.556-8.722; +2 deviation 8.722-9.887; +3 deviations 9.887-11.053; +4 deviations 11.053-12.66.

[2] Translation of the word *Subei* means northern Jiangsu (*Su* for Jiangsu and *bei* for north).

[3] The seven categories of standard deviations were as follows: -3 deviations 3.43-5.789; -2 deviations 5.789-8.148; -1 deviation 8.148-10.507; +1 deviation 10.507-12.866; +2 deviations 12.866-15.225; +3 deviations 15.225-17.584; +4 deviations 17.584-17.75.

[4] The term floating population refers to migrants living in a region for which they are not registered.

Chapter 6 – Human Dimensions of Population Growth

The Focus Groups

The previous chapter reveals that interesting statistical relationships and spatial patterns could be discerned when studying demographic and socio-economic data for China's two provinces of Jiangsu and Jiangxi. It is evident, though, that something else has played a significant role in the lowering of birth rates; namely, China's population policies including the one-child per couple policy. To understand the spatial patterns of the extent of success of the population policies, one must also consider the human dimensions of population growth. How have these policies influenced the population? A qualitative research method (focus groups) is utilized to glean pertinent information about China and its population policies. The following sections provide background information about the focus group participants and an analysis of the focus groups discussions.

The Participants: Eyewitnesses to Population Planning

Six focus groups were conducted between September and December 2004 for this research. Three focus groups were conducted in East Lansing, Michigan and three focus groups were conducted in Grand Rapids, Michigan. The focus group participants were recruited from two different Chinese associations (CSSA and CAWM)[1]; in total, 35 people participated in this project. The focus group participants were asked to sign a consent form and also answered a few questions that would provide biographical information used to analyze discussion results. In

particular, the questions asked where the participant came from in China, how long he/she had lived in the United States, what his/her educational level and occupation were, and how many siblings he/she had. The age of the participants was not asked on the questionnaire. However, based on observation by this moderator the approximate age of each focus group participant was determined. Age ranges for each focus group are described in subsequent paragraphs in this section.

The focus groups participants came from a variety of provinces, municipalities, and an autonomous region in China. Six participants were from Shanghai, five participants from Beijing, and five from Jiangsu province. Hubei and Jilin provinces were each represented by three participants, while Shaanxi, Shandong, and Guangdong provinces each had two participants. Two participants hailed from Inner Mongolia, an autonomous region in northern China. Tianjin, Sichuan (Chongqing), Henan, Liaoning, and Hunan provinces were each represented by one participant. Overall, the focus group participants came from a variety of regions in eastern China.

The number of years each participant had lived in the United States ranged from as little as three months to as many as 19 years. This wide time range reflected the overall age of the focus group participants. One group of participants is presently in the United States for higher educational opportunities while the other group of participants has lived in the United States for a decade or longer. The wide time range created an opportunity to analyze the overall effects of China's population policies from two very different perspectives – those who were young adults when the population policies were first implemented and have since left China to live in the

United States, versus those who were born in China during the one-child per couple era.

The focus group participants were highly educated. All focus group participants had attended college and many of the CAWM participants had completed masters or doctorate programs. Most of the CSSA participants were currently enrolled in masters or doctorate programs at MSU. The occupations of the participants oftentimes reflected their educational achievements. For example, those who had earned a Ph.D. worked as college professors, scientists, or engineers. Participants who had identified themselves as housewives or stay-at-home mothers had also been trained as teachers or scientists. The fact that the participants are highly educated might be perceived as a problem because these participants do not represent the "average" Chinese person. However, this researcher thinks their high educational achievements should be viewed as an asset for this study. Because of their education, these participants have a better understanding of the population policies and they understand the dimensions of China's population dilemma. Most of the focus group participants hail from urban China – a place that becomes more different from rural China (where more than one-half of the population still lives) as development continues. This, too, is an advantage because China's one-child per couple policy was implemented with relative success in urban areas. Therefore, these participants have firsthand knowledge of the policies. Perhaps the only real disadvantage this group of participants had was little direct understanding of the challenges rural people experienced because of the population policies. In spite of this limitation, the focus

group participants did have a variety of experiences to share and collectively they provided valuable information and insights about China's population policies.

The number of siblings a participant had ranged from none to four. Five of the participants had no siblings and fourteen participants had one sibling. Nine participants had two siblings, five participants had three, and two participants had four. Therefore, the largest family size represented by focus group participants was a family of seven (two parents and five children). Not surprisingly, the greatest proportion of participants with one or no siblings occurred in the focus groups where participants were recruited from CSSA. Surprisingly, though, was the family size of focus group participants recruited from CAWM. Earlier experience might lead one to expect very large family sizes from people born in the 1950s and 1960s in China. However, the participants recruited from CAWM had family sizes more in line with American families of that same time. The average number of siblings for each focus group is identified in subsequent paragraphs in this section. Focus groups with fewer siblings are associated with the CSSA group whereas focus groups with more siblings are associated with the CAWM group.

Nine questions were asked during each focus group. The questions were organized into four broad categories. The first set was designed to collect information about how people in China learned of the one-child per couple policy and what happened to couples when they had more than one child. The second set of questions assessed the necessity of the one child per couple policy and what was most misunderstood about that population policy particularly by Americans today. The third set of questions looked at the advantages and disadvantages of the one child

population policy. The last set of questions looked at issues that pertained to the minimum age of marriage in China. Before the focus group ended, the participants were asked if there was anything else they would like to add to the discussion. The specific questions were as follows:

1. I am curious about how people in China learned about the one-child per couple population policy. Was everyone expected to observe the one-child per couple policy?
2. What happens to couples who do not stop with one birth?
3. We, in the U.S., have focused on certain negative aspects of the one-child per couple population policy in China. Why was it necessary to implement a one-child per couple population policy in China?
4. What do you think is most misunderstood about the Chinese one-child per couple population policy?
5. What are the advantages of the one-child population policy?
6. What are the disadvantages of the one-child population policy?
7. The People's Republic of China has identified a minimum age for marriage. The reason for this age requirement was to slow population growth. However, China's age of legal marriage is different for men and women. Is this considered unfair? Why or why not?
8. The government has also set a different minimum age for marriage for rural couples. This minimum age is lower than the one set for urban couples. Is this considered unfair? Why or why not?
9. Is there anything else you would like to add to today's discussion?

The responses to the questions proved to be interesting and sometimes quite varied. Some of the responses were universal (i.e., neither age nor gender appeared to be significant when these questions were answered). In other cases, though, some responses seemed to be associated more with gender, in other instances responses seemed to be associated with age. Therefore, the results were analyzed from three different perspectives. First, responses that seemed to transcend age and gender were analyzed as a single group. Next, the responses from the male participants were analyzed independently as were the responses from the female participants. Finally,

the responses of the young adults were analyzed independently as were the responses from the older adults.

Before commencing with the actual focus group analysis, a brief summary of the individual focus groups is in order. This researcher acted as the moderator for all six focus groups. The first focus group (held in September with CSSA participants) was made up of six men ranging in age from the early twenties to the mid-thirties. Four of the six participants were currently enrolled in various undergraduate or graduate programs at MSU while two participants were workers in the Lansing area. The students were seeking degrees mostly related to business (e.g., finance, marketing, or advertising), although one student was an engineering major. One of the six participants was a permanent United States resident, while the other five participants plan to return to China. The average number of siblings for this group was 1.33. Some of the participants were married and had, at most, only one child. This group of participants was quite talkative and the focus group lasted for two full hours.

The second focus group (held in October with CSSA participants) was comprised of six women ranging in age from the early twenties to the mid-thirties. Four of the participants were graduate students at MSU pursuing degrees in a wide range of subjects including engineering and physiology. The average number of siblings for this group was 1. Two of the participants were housewives. One of the participants had a child. Overall, this group was more succinct in their answers. The focus group lasted for just under one and a half hours.

The third focus group (also held in October with CSSA participants) was, again, comprised of six women whose ages ranged from early twenties to late thirties. Five of the participants were MSU students enrolled in either undergraduate or graduate programs pursuing degrees in subjects such as physiology and communications. The average number of siblings for this group was 1.16. One participant was a housewife. Some of the participants were married; one had a child while another was expecting her first child. This group, too, was more succinct with their answers and completed the focus group in just less than one and a half hours. Collectively, these first three focus groups were born either shortly before or shortly after the one-child population policy was implemented. Most participants had, at most, one or two siblings, but five participants had no siblings. These participants represented the first generation born during the one-child per couple era. This group's experience with the population policy was heavily influenced by what their parents had experienced. These groups do not remember a time in China when a population policy did not exist.

The fourth focus group (held in November with CAWM participants) was comprised of five men whose ages ranged from the mid-forties to the late fifties. The average number of siblings for this group was 1.66. All five participants were married and four of the five participants had children (the fifth participant was preparing for the birth of his first child in 2005). Interestingly, the four participants with children all have only one child (two had sons, two had daughters). Each participant pointed out that he had obeyed China's population policy even though he now lives in the United States. This group was quite articulate; each person

contributed significantly to the discussion, and, at one point, a rather heated debate erupted during the course of the focus group over terminology. This focus group concluded just short of two hours.

The fifth focus group (held in December with CAWM participants) was made up of six women ranging in age from late thirties to early fifties. The average number of siblings for this group was 2. All six participants were married and everyone had at least one child. One woman had three children, four women had two children, and one woman had one child. All focus group participants talked during this focus group, but one member was particularly articulate and shared much of her personal experiences. This focus group concluded after one and a half hours of discussion.

The final focus group (also held in December with CAWM participants) was also comprised of six women whose ages ranged from late thirties to mid-fifties. The average number of siblings for this group was 2. All six participants were married and everyone had at least one child. One woman had three children, two women had two children, and three women had one child. This focus group, too, had very good participation from all participants and concluded in less than two hours. Collectively, these last three focus groups represent the generation expected to obey the one-child population policy. All participants had siblings though, surprisingly, most had just one brother or sister.

In the following section, the results of the various focus groups are summarized and analyzed. For the sake of convenience, the focus groups conducted at MSU will be identified as young groups whereas the focus groups conducted in Grand Rapids will be identified as middle-aged groups.

Results of the Focus Groups

Question 1: I am curious about how people in China learned about the one-child per couple population policy. Was everyone expected to observe the one-child per couple policy?

Responses to this question were most influenced by the age of the participants, although gender did have some influence, especially when analyzing the depth of knowledge about exemptions to the one-child per couple policy. The age difference was most evident when assessing how people learned about the population policy. The young group participants pointed out that they were just babies (or in some instances not even yet born) when the policy began so they could not recall this time in China. However, they did think that the government distributed information about the policy with various documents. Most of their information about the policy came from their parents and later from news on television or in newspapers.

The middle-aged groups were young adults when the policy began, so they remember learning about the policy through a variety of sources such as newspapers, radio programs, or propaganda slogans. There were some interesting differences between the male and female responses in these middle-aged groups to this question. The men said they paid little attention to the policy because they were just teenagers at that time. One man in this group felt women of their age would know more about the details of the population policy because women were the ones who would raise the children (so they would need to know about it). Ironically, the women pointed out that they were in high school or college when the policy began so they, too, paid little attention to the details of the policy. It was not a topic they talked about as teenagers. In addition to learning about the policy from various media sources, such

as newspapers, radio or television programs, information about the policy was distributed to work units and at neighborhood meetings, but was not part of any curricula in their high schools. One woman pointed out that they were not allowed to have babies if they were in college, thus offering an explanation about why they did not need to know about the policy at that time.

All six groups agreed that most Chinese knew about the policy and that not everyone was expected to obey the one-child policy. Each group thought that the policy was implemented with more "success" in urban areas than in rural areas (because birth rates were lower in urban areas). The middle-aged women described how the policy was discussed for a few years before it was actually put in place and that there was a rush by many couples to have a baby before the policy began in 1979. Interestingly, the various female groups (both young and middle-aged) were much more knowledgeable about exemptions to the population policy. As one young female participant stated, "There are many, many ways to avoid the policy." As a group, the females were more apt to point out that ethnic minorities may have more than one child (though the middle-aged men also noted this) as can the first generation of only children (i.e., those born in the early 1980s). The young male group also knew of this latter exemption. Also if the first child had some sort of physical handicap or illness, the women knew a second child was allowed. One odd exemption that was noted by most of the groups was that if the parents were highly educated (i.e., had earned a Ph.D.) they could have a second child.[2]

For the most part, when women answered this question they shared their knowledge about the exemptions to the policy whereas the men identified only a few

of the exemptions that were allowed. The middle-aged women offered the greatest amount of information in terms of how people learned about the one-child policy and whether all were expected to observe it. The middle-aged men offered some information about how people learned about the one-child policy, but knew little about who could have more than one child. The three young groups knew little about how people learned about the one-child policy. Finally, the two young female groups were more knowledgeable about exemptions to the policy than the young male group.

Question 2: What happens to couples who do not stop with one birth?

While all six groups knew there were various rewards and penalties applied to couples who obeyed the policy versus those that had more than one child, the responses to this question were influenced most by the age of the participants. However, within the three middle-aged groups, gender also influenced responses. The middle-aged men did not remember much about specific rewards or punishments as they pertained to the policy, but pointed out that neither the rewards nor punishments were from the central government. They did know that fines for violating the policy varied by county and by province and that the fine was an economic hardship for the family.

At first, the middle-aged women proclaimed ignorance about the population policy because they were either high school or college students when the policy was first introduced. With that being said, though, they were more cognizant of the details of the policy, including the issuance of one-child certificates and the rewards people would receive from the government if they had only one child (the women made no distinction between the central government and the local government). They

knew about monetary rewards (though there was no consensus about the actual amount given) and the promise of a free education through high school for the one child. In addition, one group claimed if a couple had only one child, that child would not be drafted if a war occurred.

The middle-aged women also knew more about the penalties for violation of the policy, such as, the fines that were exacted, the job loss that would occur, or the forced acceptance of birth control (especially insertion of IUDs). A few women mentioned forced abortions, though specific details about abortions were not discussed. They noted that the penalties varied from area to area. The role of peer pressure was also discussed by some of the women. They described how the group would suffer if an individual violated the policy. For example, in the work unit, if everyone obeyed the policy, the entire work unit would receive a reward; but if even one person violated the policy, the whole work unit would suffer the penalty and not receive a reward. Peer pressure played an important role in enforcing the population policy.

The three young groups knew various rewards were associated with the one-child policy, such as bonuses for everyone if all obeyed the policy. They also knew about the penalties enacted if more than one child was born to a family and named some of the same disincentives that the middle-aged groups had identified such as fines, job losses, and forced abortions. However, the young groups viewed the penalties more as a matter of fact rather than a topic on which to dwell. This group seemed to have a more Machiavellian approach to the policy in that the necessity of the policy precluded penalties, thus the end justified the means.

There were some common denominators between the six focus groups, too, for this question. For example, each group described how powerful the policy was in the beginning and that, as time passed, the policy was modified. One group (young female) pointed out that in the first years, people were severely punished if they violated the policy, but after some years the government stopped doing that. They indicated that it was not the policy itself that prompted the government to change its tactics. Rather as the economy improved, more people were able to pay the fines. Thus improved economic conditions were the impetus behind the policy change. Both of the male groups concurred that as the economy improved, more people could pay the fine if the policy was violated. Interestingly, the two male groups also discussed the economic necessity of a second child (particularly in rural areas where the labor of a son was still desired). None of the female groups included this issue with this question.

Finally, there were a few observations that were exclusive to a single group. For example, the middle-aged men were more attuned to the legalities of the policy and pointed out that the government said the policy would be temporary. The legality of the policy would become a more pertinent issue with this group in a later question. On a different note, one of the participants in the young male group described how his parents suffered because they had a second child (him) and that he felt he has been a burden to his family. He felt guilty that his parents have sacrificed much for him.

Question two revealed that age was a more important factor than gender for answering this question. The young groups talked about penalties in more general

terms whereas the middle-aged groups (especially the two female groups) talked at great length about the rewards and penalties associated with the population policy.

Question 3: We, in the U.S., have focused on certain negative aspects of the one-child per couple population policy in China. Why was it necessary to implement a one-child per couple population policy in China?

This question produced one response not influenced by gender or age. All groups said China needed a population policy because there were too many people. Beyond this general agreement, though, some interesting variations in responses were recorded that can be correlated mostly with age. For example, the middle-aged groups were inclined to explain both why the population was so large and why government intervention was necessary. From mentioning that Ma was right after all (i.e., he had suggested in the 1950s that there were too many people in China and something must be done) to subtle criticism of Mao, who equated more power with more people and encouraged women to be "Hero Mothers" (i.e., have many children), the conditions were right for rapid population growth to occur.[3] Added to this dilemma was the aftermath of the Cultural Revolution; the stage was set for a government willing to take matters into its own hands and address the population explosion. While a few of the women claimed that people should be able to pick their ideal family size, they were not critical of the government for enacting the population policy and empathized with the government for having to make a hard decision. One woman even questioned whether the United States would have a population policy if its population were as large as China's population.

The young groups focused on the population policy in terms of how it would benefit future generations. The male group pointed out that the government needed to

implement the policy to improve the standard of living for the population. The policy was needed for sustainable development so it was viewed as a strategy for the future. The men defended the strict nature of the policy by justifying that it needed to be strict if improvements were to occur within fifty to eighty years. While the young women were not quite as passionate about the necessity of the policy, they, too, reiterated that the population policy was needed for development. They concurred that when the policy was introduced China had too many people and limited resources. The young groups viewed the population policy as modern and something that would not only help China, but also help the world.

Overall, the young groups and the middle-aged groups agreed that the policy was necessary because there were too many people in China and they supported the Chinese government for the bold initiative it undertook. The only significant difference between these two groups, in response to this question, was tied to age – the middle-aged groups focused on the past and identified reasons why the policy was necessary whereas the young groups focused on how the policy will improve their lives in the future.

Question 4: What do you think is most misunderstood about the Chinese one-child per couple population policy?

Again, age of the focus group participants seemed to be the most common factor that influenced responses to this question. The middle-aged groups were more critical of Americans overall ignorance of China, the plethora of false information in the United States about China's population policies, especially information that has focused on hot button issues such as forced abortions and female infanticide (which, they pointed out, were not a part of the policy), and how basic ideological differences

between the two countries have fueled the critical image of China's population policies. For example, the men were surprised Americans knew so little about China, even in general terms. One man commented that Americans only focus on the negative things about China and they do not want to see the positive side of things about China. He elaborated on this comment by pointing out that the media focuses on the killing of girls in the countryside and forced abortions. He admitted these practices did occur but also said, "There are some people who did bad things but that is not part of the policy. The central government did not ask people to force them to get abortions." Another middle-aged man wondered if the fact that Americans are predominantly Christian, while the Chinese are not, could be the real reason behind misunderstandings. The fact that China allows abortions as a form of birth control is contradictory to Christian teachings.

Some of the women also looked at the negative issues Americans focus on when it comes to the population policy. Both female groups brought up the subject of human rights violations. One woman talked about her neighbor and how that person was horrified by what the Chinese had done (again focusing only on the sensitive issues). The focus group participant tried to explain to her neighbor why the population policy was necessary, but the neighbor kept insisting that the policy was too harsh. This woman was frustrated because her neighbor simply would not accept why the policy was necessary. One of the positive aspects of the policy, she said, was the policy has given Chinese pride. She knew her neighbor would not understand that point. Another woman, though, offered a slightly different take on the population policy. She admitted that she was glad she lived in the United States and appreciated

the freedom she had here so that she could have more than one child. In China, she said, she would have stopped at one, but because she lives in the United States she felt free to have a second child. Interestingly, two of the three middle-aged groups (one male, the other female) were critical of how some Chinese have taken advantage of American sympathy against the policy and used that sympathy to seek refugee status. Others were critical of how some Chinese movie stars come to America to give birth to a second child so that they do not get punished when they return to China for having more than one child (because the newborn is an American citizen and, thus, not counted as part of China's population). The latter situation was particularly troubling because the group acknowledged that ordinary people can not come to America to give birth to a child so why should a movie star be given special privileges? One person compared the need for China's population policy to deer hunting in Michigan. She did not suggest that people in China should be hunted; rather she asked why do people hunt deer in Michigan? She concluded that deer are hunted in Michigan to keep the overall population manageable, and that is the goal of China's population policies.

The young groups were far more sympathetic toward Americans as they tried to explain why Americans misunderstood the one-child policy. As one young man said, "If you are not hungry you do not know the taste of hunger." In other words, Americans simply cannot understand why the policy was necessary. The young groups had their own rationales for the misunderstandings. For example, they were quick to point out that because China and America are so different from each other in terms of job structure, family responsibility, and history there is an inherent

misunderstanding about the policy. One young female group pointed out that most Americans just know Chinese cannot have a second child, but Americans do not know how it was in China before the policy was put in place or how effective the policy has been for China's development. The only real complaint one of these groups had about the misunderstanding was that, while China took on responsibility itself for its population burden, Americans fail to acknowledge the importance of this decision when they analyze China's population policies. Another group criticized the Western media for not portraying the whole situation very well, but rationalized that journalists from the West cannot have very close relations with people in China (so in essence, they took some responsibility for part of the misunderstanding). One young woman was astounded when she talked with American students and learned that American students assumed if someone in China had more than one child that child would be killed. She wondered why some Americans just pay attention to the disadvantages of the policy.

Overall, responses from the various focus group participants were influenced by age. The middle-aged groups were far more critical of general American ignorance about China. They seemed annoyed that Americans dwelt only on the negative aspects of the policy, including hot button issues such as abortion and infanticide. Clearly, the burden of blame fell on the shoulders of Americans when assessing the misunderstandings about the policy. Also, two of the middle-aged groups were critical of Chinese that took advantage of American sympathies and used that sympathy to their advantage. The young groups seemed more perplexed by the misunderstandings. They, too, were shocked by Americans' overall ignorance of the

one-child policy and questioned why Americans dwelt only on the negative aspects of the policy. However, they were much less inclined to put the entire blame on Americans for the misunderstanding. They pointed out the very real cultural differences between China and the United States as the root of the misunderstanding. This group was much more respectful toward Americans. Their naiveté (perhaps because most had only lived in the United States for a few years at best) also may have influenced their response to this question.

Question 5: What are the advantages of the one-child population policy?

Responses to this question marked the beginning of a subtle shift in attitude among all six focus groups. Up until this point, the various participants had been mostly supportive of China's population policies. However, with the commencement of this question, participants began to respond more critically to China's one-child policy. The most relevant example of this shift was in the rather succinct responses all six groups gave to this question. No group spent much time reveling in the advantages of the one-child policy. With the exception of one group (young female), the overall responses were limited to three broad categories that focused mostly on fewer people, economic growth, and education. The reason for these limited responses might be because the groups had already been talking about the necessity of the policy up until this point and assumed they had adequately addressed the advantages of the policy. One might also conclude the participants were also preparing for a discussion of the disadvantages of the policy (which would be the next question) and they knew that next question would introduce some uncomfortable issues. However, before analyzing the responses of question six, question five must

be addressed. Therefore, in the terms of how gender or age might have influenced their answers, responses to this question were most influenced by gender. Overall the male participants viewed the policy in terms of how it would benefit China, as a whole, while the female participants often viewed the policy in terms of how it specifically helped women. All of the female focus groups discussed the liberation of women as an advantage of the population policy while neither of the male focus groups even mentioned the liberation of women as they contemplated this question.

The two male groups looked at how the one-child policy has helped promote economic development. Terms such as sustainable development and "quality" children (i.e., better educated) were bandied. They described how the policy would help China save resources and have a better future. The middle-aged men claimed the policy reduces population. The four female groups also spoke of economic development, and how the policy will help create a prosperous future, yet they also were quick to point out how the policy has helped girls and women. For example, one of the young groups stressed that the policy now gives girls the same opportunities as boys while the other young group described how the policy has contributed to women's liberation because now women do not need to have many children. The middle-aged women also discussed how the policy has improved the status of women by allowing them more career opportunities and freedom (again from the need to have too many children). In addition, the middle-aged women pointed out that the policy has controlled population growth but that China's population was still growing (albeit more slowly). The young female groups were most apt to describe the educational opportunities associated with the one-child

policy; one of the groups had a brief discussion about changes in China's overall education system (i.e., education is no longer universally free, now it is only free until middle school). The overall emphasis on educational issues among this young group was not too surprising, given that this group was mostly comprised of MSU students. A rather charming benefit was noted by one of the young female participants in that she thought one advantage of the policy was that the only child would receive more love from his/her parents. Overall, gender differences influenced the responses to question five. The most notable observation, though, was the change in temperament of the groups. This change was a precursor to the next question.

Question 6: What are the disadvantages of the one-child population policy?

Without a doubt, responses to this question were most interesting and all participants contributed greatly to the discussions. Each focus group identified various economic and social challenges that the one-child policy has created. Analysis of the focus group responses revealed that both gender and age influenced how this question was answered. Gender was the most important division for responses in that male groups tended to look at the economic disadvantages of the policy first, whereas female groups focused on the social aspects of the only child first. Within the groups, though, age also influenced responses. For example, the middle-aged females were quicker to focus on the selfishness and spoiled characteristics of the only child while the young females talked about the loneliness of being an only child. All groups offered plenty of examples to illustrate the disadvantages of the one-child population policy.

The young males focused on financial burdens the one-child will face. Of great concern was the challenge of supporting an ever-growing elderly population. The middle-aged males reiterated concern about this economic challenge. How will fewer families support a growing elderly population? Although the question was asked, no solutions were offered. One young participant indicated that while the only child was the hope for a family, that hope could also put great stress on the child. He indicated that suicide rates have increased in China because of the pressure to excel. Another young man described the problems of the only child in regional terms. He noted that in 1999 the first wave of single children entered universities. Some of those students arrived at the university with laptop computers and cell phones while others, from the countryside, came only with a suitcase (the contents of which had been donated by the villagers). He noted that it is very hard for country people to catch up with the urban residents. The young male group was also concerned about overall gender imbalances (i.e., too many males; not enough females). The middle-aged men would elaborate on this topic. Their concern was not just that more men would not be able to marry, but also that a population with too many unmarried men will lead to social instabilities (including more crime) and may be a threat to the government. The young men mentioned one final disadvantage. They wondered what would happen if couples had no children, as parts of Europe and the United States already have done? They concluded that it would be a new phenomenon for China. For this group, the one-child policy has many disadvantages: some known, others as yet unknown.

While the middle-aged men were concerned first about the economic challenges the one-child policy created, they also looked at the legal issues of the policy. One man consistently referred to China's population policy as a law. When another man finally corrected him and pointed out that it was not a law, rather it was a policy a brief, but heated, discussion about terminology ensued. One asked, "What is the difference between a law and a policy in China?" More importantly, another noted, if educated men do not discern the difference between these two terms, how would people with far less education know the difference? This group concurred that while the government may say it is a policy, most Chinese interpret the one-child policy as a law. Anger that the government had coerced the population to do what it wanted surfaced. One man noted, "I have seen this policy set very bad precedent. The Chinese [government] always say in the name of public interest I can do this, I can do that, I can tear down your house. Anything to justify the means, but what kind of means do you use?" Clearly, this question had ignited passionate responses. The responses of the middle-aged men gave this researcher a brief glimpse at the discontent some Chinese have toward the one-child policy and also suggests underlying discontent with excessive government power in general. While the female groups would not explore the legalities of the one-child policy, they, too, had their own litany of disadvantages to discuss.

All of the female groups looked at the disadvantages of the population policy in terms of how it has impacted (or will impact) Chinese society. The young women were more attuned to the problems female infants face, whereas the middle-aged women talked frequently about the self-centered nature of only children. All of the

female groups identified the problems of abandonment, infanticide, and abortion of female infants in rural areas. The two young groups also discussed the desire for rural couples to have a son. Interestingly, neither of the young groups thought son-preference was unusual; they simply accepted it as a Chinese tradition. A young participant expressed concern about parents with only one child. She feared these parents would be lonely when they were elderly especially if their one child lived far away.

Three of the four female focus groups discussed the financial burden the one child will face; only one of the middle-aged groups failed to mention this problem. Fears about how the only child will support his or her parents and grandparents were discussed among one of the young groups. One of the participants used her real life example to illustrate this problem. She described how both sets of her grandparents live with her parents and this situation has created some hardships, especially since the grandparents quarrel with each other. The two young groups also described the loneliness of being an only child. They acknowledged that many children (especially only children) were spoiled because the family pays too much attention to them. Ironically, one young female pointed out that being an only child was a disadvantage. Her rationale was that the only child does not learn important life skills necessary as an adult because he or she had no siblings with which to practice on when young. She admitted that learning to share and cooperate was much harder to learn as an adult and that her friends with siblings just seemed to know how to interact with others much better. The middle-aged women most likely would have been surprised by this answer because they focused mostly on the self-centeredness of the one child.

Both middle-aged female groups stressed the spoiled nature of the only child. They talked about how the one child does not like to share and how that personality flaw will affect future relationships with their spouse and colleagues. They lamented the one child does not know how much parents and grandparents have sacrificed for him or her. Akin to the male groups, they were concerned about too many men and not enough women in China. The middle-aged women acknowledged that most Chinese probably do not want the one-child policy and thought the policy might change in the future. Some of the women were unaware of the changes that have taken place in China (since 2002) that have modified the one-child population policy. These two groups of women discussed regional variations of birth patterns in China and had many examples to illustrate their points. They discussed the problem of remote areas that have high birth rates. They talked about how people from the countryside preferred a traditional marriage (i.e., one that produced a few children). A few of the women were concerned about today's young urban couples (such as those from Shanghai) that do not want any children and how some of these urban couples do not even want marriage. For one of the groups, the conversation turned toward corruption and how that has influenced the one-child population policy. Corruption forced some people to not register births and the unregistered children represent yet another disadvantage of the one-child population policy. While the anger of these women did not match that of their male counterparts, they, too, articulated their frustrations about China's population policies and, again, gave this researcher a glimpse of reality.

Collectively, the six focus groups revealed many of the disadvantages associated with the one-child population policy. Gender was, by far, the most important characteristic that influenced responses. Male groups looked first at the financial burden the policy has exacerbated whereas female groups focused first on the quality of the one-child and how the policy will affect societal changes in China. The age of the focus group participants also influenced responses to this question. The young groups oftentimes looked at the loneliness of the one-child. This was not surprising, given that many of them are actually a product of the one-child policy. Two of the middle-aged groups (one male, the other female) revealed varying levels of anger about the policy and how it has hurt the Chinese. Question six proved to be one of the most pertinent questions asked during the focus group sessions.

Question 7: The People's Republic of China has identified a minimum age for marriage. The reason for this age requirement was to slow population growth. However, China's age of legal marriage is different for men and women. Is this considered unfair? Why or why not?

Considering the emotional answers that were given for question six, the responses to question seven seemed almost anti-climatic. Neither age nor gender influenced how participants answered this question. The resounding response heard from all six focus groups was that different age requirements for men and women to marry were not considered unfair. Traditional values universally influence how the Chinese view marriage, thus responses to this question were not shaped by age or gender.

The two male groups agreed that age differences for marriage were not a problem. One of the middle-aged men even pointed out that a wife must be younger than her husband because women develop earlier than men. Both male groups talked

about the responsibility of marriage. For example, one young man felt the age requirement encouraged responsibility, and said "You can't just have people, when they are young, going by intuition." Another young man said, "If you get married that means more responsibility on you right now and that limits your future." Yet another young man pointed out that every country has its own rules for marriage, therefore offering his support of the age requirements. Finally, one middle-aged man stated, "You have to be old enough to know your responsibilities, to take care of your wife, and also you need to have time to find a job."

All four female groups concurred that the different age requirements for marriage were fair. When this question was asked, the first response was oftentimes giggles from the women because they, too, thought girls matured at a younger age than boys. Therefore, they did not view this marriage requirement as a form of age discrimination. The middle-aged women offered some additional information about the age for marriage. They pointed out that Chinese law states a person must be eighteen years old before they can marry, but most Chinese ignore the law and follow the regulations (which set higher ages for marriage). Additionally, the various ages set for marriage are really at the discretion of the local government. Therefore, while the law may state one must be eighteen years old before marrying, the reality in China is that there are actually many different ages identified as the minimum age for marriage. This point was a reminder that many things are not quite as cut and dry as they seem in China. When it came to the issue of varying age requirements for marriage, one middle-aged woman gave the most succinct response to this question. She simply stated, "We never think about it."

Question 8: The government has also set a different minimum age for marriage for rural couples. This minimum age is lower than the one set for urban couples. Is this considered unfair? Why or why not?

Responses to question eight mirrored question seven's responses; varying age requirements for marriage of rural couples and urban couples were not viewed as a problem. Again, neither age nor gender influenced the responses. Educational opportunities were oftentimes cited as the reason why urban couples are older than rural couples when they marry. Since educational opportunities are limited in rural areas, it made sense to the various focus group participants that rural people could be younger than urban people when they marry. After all, they pointed out, there is not much else to do in the countryside. One young man even went so far as to state "A bachelor may make trouble, so I think it is wise [to have younger age requirements for marriage in rural areas]."

Urban people, on the other hand, took advantage of the educational opportunities available to them. Marriage, when they were students, was not an option. As one middle-aged man stated: "We did not even date when we were young. We did not even think about dates." This point of view would surface, again, during the focus groups with women. One middle-aged woman pointed out, "Students do not worry about dating because in China first you focus on studies, they cannot be interrupted with a social life. There is no temptation to get married earlier." Even young women concurred with this philosophy and pointed out that traditionally, college students did not marry while taking classes though they indicated this might be changing. In addition, even today in China, unmarried adult children still live at home with their parents. Traditional values still strongly shape

daily life in China. Collectively, a different age of marriage for urban people and rural people was a non-issue for these focus group participants. They did not view the age difference regulations as a form of discrimination.

Question 9: Is there anything else you would like to add to today's discussion?

There was one question that every focus group asked – why was this researcher interested in this topic? Usually, this question was answered simply by telling the participants about this researcher's goal to earn a Ph.D. from MSU and how the focus groups were part of the process toward completing her dissertation. Each focus group expressed much gratitude for looking at this topic and offered support for this work. In addition, the two middle-aged female focus groups expressed an interest in reading the dissertation once it was completed.

In terms of China's population policies, the comments from two focus group participants best sum up their views about the one-child policy. A middle-aged man stated: "We contributed so much to the cost, to the country, to China. We sacrificed so much." Did he think it was worth the sacrifice? The answer will remain unknown because he did not answer the question. Perhaps the comment one young female participant made actually answered that question. She said, "I think, through the population policy, China achieved a lot and make [sic] a great success. It is not a good policy, but we have to do that. We have no other choice being so poor, large population country. We had no choice."

Final Thoughts

The focus groups proved to be a rewarding experience. Each of the 35 participants contributed to the dialogue and the conversations were most productive.

However fruitful, though, this author acknowledges that 35 participants do not speak for 1.3 billion people in China today. Rather, the focus groups enabled this researcher to briefly explore the dynamics of China's population policies as perceived by these 35 individuals. The focus groups collectively provided valuable information about the human dimensions of China's population policies that statistical analyses would never reveal. The participants' comments shed light on different aspects of the spatial dimensions of China's population issues. All of the female groups understood the regional variations of birth patterns throughout China, and the middle-aged women, in particular, offered plenty of examples to further illustrate a point. The two male focus groups understood the economic challenges China's population polices have created especially for rural people. They are deeply concerned about how the Chinese will resolve these problems in upcoming decades. Collectively, the focus groups contributed greatly to this research project. At a minimum, they put a human face to China's population issues. For that alone, this researcher is most grateful.

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[1] Chinese Student and Scholar Association (CSSA) and Chinese Association of West Michigan (CAWM).

[2] Although this researcher could not verify the accuracy of this exemption, it is most likely true. A contemporary example better illustrates why this might be an exemption. Singapore, a country with a strong Chinese heritage, has encouraged pro-natal population policies among those in society with a higher education. The underlying assumption is that people who are highly educated will produce "quality" children. Since this pro-natal policy can already been seen in Singapore, it is not unlikely that the PRC has copied this exemption.

[3] Ma, a Beijing sociologist, began to promote family planning in the 1950s. Eventually he was criticized as bourgeois and imprisoned for his views at the end of the 100 Flowers Campaign (a brief period of openness and critical assessment of the CCP) in the late 1950s.

Chapter 7 – Summary and Conclusions

The purpose of this chapter is threefold. First, this chapter provides a summary of the dissertation so readers can get a brief synopsis of each chapter. Second, it provides an assessment of each chapter and, third, this chapter concludes with suggestions for further research. Overall, this dissertation examined China's population and policies from two different research perspectives. Questions that relied on quantitative methods considered the role of economic development and how development (or lack of) influenced birth rates. Research questions focused on specific aspects of development, including improvements in education, the role of incomes, and geographic location, and used multi-variate analyses to measure the extent of success of the population policies. The spatial patterns of the data were mapped with a GIS. This dissertation also utilized another research method, focus groups, to gather pertinent information about China's population policies. This qualitative method examined the human dimension of China's population policies. Focus group questions were organized into four broad categories and asked at six different focus groups in the fall of 2004. Together, the two research methods explored the magnitude of China's population and policies.

The Literature Reviewed and Assessed

Scholars from a variety of disciplines, including geography, sociology, economics, and history, have investigated the topic of population and policy, both as

a theory and, in some cases, specifically as it pertains to China. This vast array of scholarship has produced a body of literature that can be divided into four broad categories – population theory, population policies, China's population and policies, and regional studies of China's population. The key research questions and major characteristics of each category were identified in Chapters Two and Three. The following paragraphs provide a brief summary of each category.

Population Theory

The main question asked when one considers the role of population theory is which factors contribute to the decline of fertility in a society? Global concern about too many people was the foci of much scholarship during the mid-twentieth century and most of the literature emphasized demographic transition theory. Early scholarship (Coale and Hoover, et al) focused on methods to reduce birth rates, thus many embraced the distribution of contraceptive methods as the solution to the population problem. However, as time passed, this approach was viewed as too simplistic and much broader solutions to the population problem were proposed. The new solutions included more holistic approaches and research shifted from an emphasis on contraception to a new topic – development. Development included not only economic improvement, but also development (e.g., westernization) of the social environment. For example, Caldwell emphasized improvements in mass education (e.g., compulsory education) as a key solution to the population problem. Also, as a result of the 1994 population conference held in Cairo, empowerment of women was identified as another solution for the population problem. Scholars reiterated that population and development must embrace women, and helped usher in the feminist

perspective on population, environment, and development in the literature. The dimensions of the population problem expanded in the 1990s to include concern about the environment and overpopulation. The population-environment debate was explored through the theories of many, including Malthus, Coale and Caldwell. As the twenty-first century began, one could conclude that much has been written about population theory in the last fifty years, yet the literature revealed no consensus as it pertained to population theory and related issues. Scholars concluded that many variables influenced the demographic transition of a country as it changed from high population growth to low population growth, and no single model could be used to explain demographic transition in all places. While views on population theory were divided, views on population policies were more unified.

Population Policies

The basic questions in the literature that pertained to population policies explored the ethical nature of any such policies and the overall objectives of population policies. Most often, scholarship about population policies was anti-natal and focused on institutional reforms that would decrease fertility. By the late 1970s, though, population policies became more integrated with development policies. Overall, while there was no universal agreement in terms of what development planning and population policies entailed nor any theoretical foundation for this newly merged point of view, one criterion that seemed to transcend the literature was that population policies should not use coercion as a method of implementation. At the same time this viewpoint was being discussed in academic circles, China's government took drastic steps to slow its population growth and embraced a strict

population policy, the one-child per couple policy. The 1980s marked the beginning of a period of scholarship that pertained to China's population policies.

China's Population and Policies

Concern about the sheer size of China's population and the nature of its population policies drove research questions for the next category of literature. Scholarship about China's population was largely absent from the early literature (i.e., pre-1970s) because little was known about China in the 1950s and 1960s. This was the product of China's self-imposed isolation. If information about China did appear in the early literature, data were viewed quite skeptically because of problems with reliability. Mid-twentieth century data from China were viewed as unreliable because the CCP government often "adjusted" it. However, by the early 1980s, the Chinese began to release data that were more accurate. This new supply of data propelled research. For example, Tien was one of the first scholars to systematically explore China's population and policies. He contributed to the on-going debate regarding population planning and socio-economic change (i.e., what propelled demographic change) and concluded that China's fertility transition had been shaped by both population policy and socio-economic improvements. Later scholars would concur with his assessment. The nexus between China's fertility declines and improvements in socio-economic conditions would dominate much of the literature at the end of the twentieth century. Some of the literature in this category focused on the negative aspects of the one-child policy, including forced abortions and female infanticide. The focus on negative consequences created a divide between how scholars perceived China's population policies. Scholars from Western societies

oftentimes included an assessment of the human rights abuses that the one-child policy permitted, while scholars from Eastern societies (especially China) largely ignored this issue. The divide is still evident today. Overall, the scope of literature in this category examined China's demographic conditions for the country as a whole. Most of the data used for analyses are from the last three censuses (i.e., 1982, 1990, or 2000). Data from other statistical sources, such as statistical yearbooks, is still largely missing from the literature.

Regional Studies of China's Population

Regional studies of China's population represent the smallest amount of contemporary scholarship in the literature today. Information about specific Chinese provinces began to appear in the literature in the 1980s; these regional studies have tended to focus on a few key provinces, such as Jiangsu, Sichuan, and Guangzhou. Data for these studies have come from the last three censuses conducted in China (i.e., 1982, 1990, or 2000). Results from the most recent census have begun to appear in the literature, but there is still much opportunity for more research. As already mentioned, other data sources (i.e., statistical yearbooks) are still underrepresented in the literature. Therefore, the data presented in this dissertation and the provinces selected for study represent another small contribution to this last category of literature. It is evident, however, that many provinces have yet to be explored and a rich research agenda could be constructed from what is underrepresented in the literature.

Methodology Reviewed and Assessed

This dissertation utilized both quantitative and qualitative research methods. A complete description of the methodology was outlined in Chapter Four. Correlation and multi-variate (e.g., regression) analyses were used for the quantitative aspect of this dissertation. *SPSS*, a statistical software package, was used to conduct the correlation and regression analyses. Also, GIS software, *ArcView,* was used to complement the correlation and regression analyses. *ArcView* not only allowed analysis of the variables with correlation and regression methods, it also mapped the spatial qualities of the data.

The statistical analyses explored the relationship between crude birth rates and various socio-economic variables at the county level for two specific provinces, Jiangsu and Jiangxi. These two provinces were selected because they represent the contrasting regions of eastern China. Jiangsu is a coastal province that has experienced tremendous economic development in the last few decades, whereas Jiangxi is an interior province that still has a heavy reliance on agriculture. These provinces were selected to illustrate the diverse array of demographic and socio-economic conditions that can be found in China today.

Data for this dissertation came from two statistical yearbooks published in Beijing by the Chinese. Specifically, the yearbooks used were the following: *Jiangsu Statistical Yearbook* and *2002 Jiangxi Statistical Yearbook.* Sixteen variables were created or selected for analysis and the crude birth rate was used as the dependent variable for all statistical analyses. Although crude birth rate is not an ideal measure of fertility, because it does not account for age or gender variations, it

was used because it was available in the datasets (i.e., gender specific data such as the general fertility rate was not available in the datasets). Maps used for the GIS analyses were made available through the China Data Center at the University of Michigan. The maps were downloaded from a website and were modified by this researcher.

The underlying question asked in this dissertation was what factors currently influence crude birth rates in Jiangsu and Jiangxi provinces? Four research questions were identified (the specific questions will be identified in the next section of this chapter) and different types of multi-variate statistical analyses were conducted for the quantitative component of this dissertation. Correlation and regression methods were used to assess the relationship between birth rates and specific socio-economic variables. The first three questions utilized multiple regression methods with specific variables that pertain to education, income, and location, respectively, to identify possible predictors in birth rates for Jiangsu and Jiangxi. Question four used proximity analysis to determine how distance interacted with changes in birth rates in Jiangsu and Jiangxi.

The selection of research methods and variables for analysis are at the discretion of the individual researcher. The use of regression methods is quite common in geographic research, so it was a logical choice for this scholarship. However, the results from simple regression methods did not confirm contemporary scholarship in that the data did not reveal a relationship between improvements in the socio-economic environment and declining birth rates. More sophisticated regression methods, such as those that use logarithms, would be one way to further explore this

topic. Using age-specific fertility rates, such as the general fertility rate, would be another research venue. Finally, as more data become available, variables that measure aspects of economic improvement, such as per capita ownership of certain consumer goods (televisions, refrigerators, etc.), or aspects of education improvement (such as the teacher-student ratio) would yield yet another option for future research.

The qualitative research method used in this dissertation was focus groups. Six focus groups were conducted between September and December 2004 and they were held in two different Michigan communities, East Lansing and Grand Rapids. Each focus group was comprised of participants that were the same gender (i.e., all male focus groups or all female focus groups) and approximately the same age (i.e., college-aged participants or middle-aged participants). The rationale for this was to foster open discussion about topics that might be perceived as sensitive, especially between members of the opposite sex, and to gather perceptions about China's population policies from two very different groups (i.e., one group that was expected to practice the one-child policy and another group that was the product of that policy). In essence, focus groups are group interviews. Typically, there are six to twelve participants in a focus group who come from similar backgrounds and a moderator who facilitates the discussion by asking a set of predetermined questions. For this project, a total of thirty-five people were interviewed in the six focus groups (five focus groups had six participants while one focus group had five participants). Nine questions were asked during each focus group (the actual questions will be identified later in this chapter). The questions were organized into four broad categories. The first set of questions was designed to collect information about how people in China

learned of the one-child per couple policy and what happened to couples when they had more than one child. The second set of questions assessed the necessity of the one-child per couple policy and what was most misunderstood about that population policy particularly by Americans today. The third set of questions looked at the advantages and disadvantages of the one-child population policy. The last set of questions looked at issues that pertained to the minimum age of marriage in China. Before the focus group ended, participants were asked if there was anything else they would like to add to the discussion.

Focus groups provided an opportunity to collect original impressions from Chinese people currently living in the United States as it pertained to China and its population policies. Oftentimes, the contemporary literature on China's population policies does not include the voices of those most affected by these policies, namely the Chinese. Therefore, the focus groups provided an innovative way to assess the success of China's population policies and also allowed Chinese born citizens an opportunity to express their opinions on the subject. An assessment of the focus groups is found later in this chapter. Together, these quantitative and qualitative research methods were used to examine both the statistical and human dimensions of China's population and policies from a variety of angles.

What the Data Revealed

Four research questions were identified and different types of multi-variate statistical analyses were conducted for the quantitative component of this dissertation. An in-depth analysis of each research question was described in Chapter Five. The following section highlights the major findings for each of the four research

questions. Before the four research questions were addressed, two statistical methods (correlation analysis and regression analysis) were used to explore the overall relationship between the variables and CBR for Jiangsu and Jiangxi. First each variable was correlated with the dependent variable, CBR. Sixteen demographic, social, or economic variables were selected for analysis and only variables with a correlation of 0.500 or higher (or –0.500 or lower) were analyzed. Unfortunately, all correlations proved weak (i.e., none met the minimum correlation of 0.500 or –0.500).

To test the strength of all the variables together with CBR, regression analysis was utilized. Using a backward procedure, four models were created that identified the variables that act as predictors of birth rates in Jiangsu and Jiangxi. Two models used 11 variables (one model was for Jiangsu and the other model was for Jiangxi); the other two models used 10 variables (again, one model was for Jiangsu and the other model was for Jiangxi). These first four regressions produced weak models that identified predictors of birth rates for the two provinces. The results did not confirm contemporary scholarship. Would specific research questions produce better results?

Question 1: How do improvements in education influence crude birth rates in the counties of Jiangsu and Jiangxi?

To answer this question, specific variables were targeted for regression analyses. Each of the variables focused on some aspect of education in the province. Four variables were used for regressions in each province. The Jiangsu variables were PROF/POP, PROF/REM, STU/POP, and EXED/POP; the Jiangxi variables were STU/ACPOP, EXED/ACPOP, ADPF/REM, and ADPF/ACPOP. Using the backward method, regressions were conducted for both provinces with CBR as the

dependent variable. The regressions produced two models; these models were weak predictors for changes in birth rates in each province.

The results of these regressions also did not confirm contemporary scholarship. The results indicated the variables selected had little significance in predicting changes in birth rates. Previous scholarship had suggested improvements in education had a significant influence on birth rates. Did this research suggest otherwise? The short answer is no. China has, in the last several decades, made great strides toward improving educational opportunities for its population. Compulsory education is now part of life in China. Because education is so widely available, it might be difficult to ascertain the link between education and birth rates. It is probably safe to say that education has played a significant role in lowering birth rates, even if the data do not support that relationship. Therefore, while the results for this particular question do not indicate a relationship between educational levels and birth rates, it does not mean no relationship exists.

Question 2: How does income impact crude birth rates in the counties of Jiangsu and Jiangxi?

To answer this question, again, specific variables were selected for regression analysis. Each variable focused on some aspect of income for the province. For example, per capita urban incomes (INUR) and rural incomes (PCIR) were included in these regressions. Variables that measured the proportion of laborers in various sectors of the economy (SEC/EMP, TERT/EMP, SEC/REM, and TERT/REM) were selected for analysis. For each province, six variables were identified for regression analyses. The six variables were INUR, PCIR, SEC/EMP, TERT/EMP, SEC/REM, and TERT/REM. Regressions were conducted for both provinces using CBR as the

dependent variable. Although various methods (e.g., forward, stepwise, etc.) were used; again, the backward regression method yielded the most usable results. As with the previous question, the two models were weak predictors for changes in birth rates in each province.

Overall, the results from these regressions revealed that income improvement had little influence on birth rates. The data showed income improvements were a slightly better predictor of birth rates for Jiangsu than for Jiangxi. However, no definitive model emerged that revealed a strong statistical relationship between income and CBR. Has economic improvement had so little impact on birth rates? It is probably safe to say that economic improvement has played a role in lowering birth rates, even if the data do not support that relationship. Therefore, while the results of these particular regressions did not indicate a relationship between income and birth rates, it does not mean no relationship exists.

Question 3: How does location (i.e., rural versus urban) influence crude birth rates in the counties of Jiangsu and Jiangxi?

Specific variables were again selected for regression analyses to answer this question. Each variable was selected because location influenced the variable (i.e., there would be notable differences that result from a rural or an urban location). Employment variables were again selected for analysis and include SEC/REM and TERT/REM. One additional variable was included because it assessed overall health conditions in the two provinces. ACPOP/DOCS measured the ratio of people to doctors. Using the backward method, regressions were conducted for both provinces using CBR as the dependent variable. The regressions produced two models; these models were weak predictors for changes in birth rates in each province.

The results from this last set of regressions also revealed residential location (i.e., rural or urban) appeared to have any influence on birth rates. This is counterintuitive. Rural locations should have higher birth rates than urban locations. China's population policies allowed rural people more children. Thus location should influence birth rates. A final question was asked that used proximity analysis to examine the relationship between distance from the provincial capital and birth rates.

Question 4: What impact does distance from the provincial capital have on crude birth rates in the counties of Jiangsu and Jiangxi?

ArcView was a particularly helpful tool that was used to address this question. Using increments of twenty miles, a map was created for each province that showed the distance between the capital (i.e., Nanjing in Jiangsu and Nanchang in Jiangxi) and the respective areal units (i.e., cities or counties) in that province. The base map was layered with a second map that displayed the crude birth rate using standard deviations and proximity analysis was used to determine the relationship between distance from the capital city and birth rate changes.

The two provinces revealed surprisingly similar results. Both Jiangsu and Jiangxi had distinct areas where birth rates were high, including the Nanjing municipality (i.e., capital city and neighboring counties in Jiangsu) and Nanchang municipality (i.e., capital city and neighboring counties in Jiangxi). Since Nanjing and Nanchang are provincial capitals, it would appear that distance does not have any significant relationship with birth rates. However, if the high birth rates in the capital city areas were viewed as an anomaly, the overall pattern observed was one where birth rates generally increased as one moved away from the capital area. Not all cities and counties in the two provinces displayed this pattern. There were areas within each

province where the birth rates decreased rather than a steady increase even as distance increased. However, both provinces had a general pattern with higher birth rates found at points furthest from the capital, thus one could conclude that distance did influence birth rates.

What do the statistic analyses reveal? What are the trends? What predictions can be made from this research? Collectively, all of the statistical analyses yielded results that were far from definitive. A variety of spatial relationships were observed for some of the data, but interpretation of those spatial patterns were oftentimes influenced by outliers and produced results that were less than satisfactory. However, even if strong statistical relationships were revealed, they would be of limited usage. China's demographic situation is unique. Its demographic transition has been produced by both changes in the socio-economic environment and government interaction (i.e., population policies). Therefore, any significant findings would be limited to China and could not be applied to other places.

It was evident, after analyzing the data, that something else had played a significant role in lowering China's birth rates; namely, the one-child per couple population policy. While the population policy had produced the desired results (i.e., China's birth rate had decreased), the overall success of the policy, in terms of the human dimension, remained to be explored.

Eyewitnesses to Population Planning

To understand the spatial patterns of the extent of success of the population policies, one must also consider the human dimensions of population growth. How have these policies influenced the population? A qualitative research method (focus

groups) was utilized to glean pertinent information about China and its population policies. An in-depth analysis of each focus group question was described in Chapter Six. The following section highlights the major findings for each of the nine questions asked during each focus group.

Question 1: I am curious about how people in China learned about the one child per couple population policy. Was everyone expected to observe the one child per couple policy?

Responses to this question were most influenced by the age of the participants, although gender did have some influence, especially when analyzing the depth of knowledge about exemptions to the one-child per couple policy. For the most part, when women answered this question they shared their knowledge about the exemptions to the policy whereas the men identified only a few of the exemptions that were allowed. The middle-aged women offered the greatest amount of information in terms of how people learned about the one-child policy and whether all were expected to observe the policy. The middle-aged men offered some information about how people learned about the one-child policy, but knew little about who could have more than one child. The three young groups knew little about how people learned about the one-child policy. Finally, the two young female groups were more knowledgeable about exemptions to the policy than the young male group.

Question 2: What happens to couples who do not stop with one birth?

While all six groups knew there were various rewards and penalties applied to couples who obeyed the policy versus those that had more than one child, the responses to this question were influenced most by the age of the participants. The young groups talked about penalties in more general terms whereas the middle-aged

groups (especially the two female groups) talked at great length about the rewards and penalties associated with the population policy.

Question 3: We, in the U.S., have focused on certain negative aspects of the one child per couple population policy in China. Why was it necessary to implement a one child per couple population policy in China?

This question produced one response not influenced by gender or age. All of the groups said China needed a population policy because there were too many people and they supported the Chinese government for the bold initiative it undertook. Beyond this general agreement, though, some interesting variations in responses were recorded that can be correlated mostly to age – the middle-aged groups focused on the past and identified reasons why the policy was necessary whereas the young groups focused on how the policy will improve their lives in the future.

Question 4: What do you think is most misunderstood about the Chinese one child per couple population policy?

Again, age of the focus group participants seemed to be the most common factor that influenced responses to this question. The middle-aged groups were far more critical of general American ignorance about China. They seemed annoyed that Americans dwelt only on the negative aspects of the policy, including the hot button issues of abortion and infanticide. Clearly, the burden of blame fell on the shoulders of Americans when assessing the misunderstandings about the policy. The young groups seemed more perplexed by the misunderstandings. They, too, were shocked by Americans overall ignorance of the one-child policy and questioned why Americans dwelt only on the negative aspects of the policy. However, they were much less inclined to put the entire blame on Americans for the misunderstanding.

They pointed out the very real cultural differences between China and the United States as the root of the misunderstanding. This group was much more respectful toward Americans.

Question 5: What are the advantages of the one child population policy?

Responses to this question marked the beginning of a subtle shift in attitude among all six focus groups. Up until this point, the various participants had been mostly supportive of China's population policies. However, with the commencement of this question, participants began to respond more critically to China's one-child policy. The most relevant example of this shift was in the rather succinct responses all six groups gave to this question. No group spent much time reveling in the advantages of the one-child policy.

Question 6: What are the disadvantages of the one child population policy?

Collectively, the six focus groups revealed many of the disadvantages associated with the one-child population policy. Gender was, by far, the most important characteristic that influenced responses. Male groups looked first at the financial burden the policy has exacerbated whereas female groups focused first on the quality of the one-child and how the policy will affect societal changes in China. The age of the focus group participants also influenced responses to this question. The young groups oftentimes looked at the loneliness of the one-child. This was not surprising, given that many of them are actually a product of the one-child policy. Two of the middle-aged groups (one male, the other female) revealed varying levels of anger about the policy and how it has hurt the Chinese. Question six proved to be one of the most pertinent questions asked during the various focus group sessions.

Question 7: The People's Republic of China has identified a minimum age for marriage. The reason for this age requirement was to slow population growth. However, China's age of legal marriage is different for men and women. Is this considered unfair? Why or why not?

Considering the emotional answers that were given for question six, the responses to question seven seemed almost anti-climatic. Neither age nor gender influenced how participants answered this question. The resounding response heard from all six focus groups was that different age requirements for men and women to marry were not considered unfair. This researcher observed that traditional values still prevail and influence how the Chinese view marriage, but even these traditional values were not shaped by age or gender.

Question 8: The government has also set a different minimum age for marriage for rural couples. This minimum age is lower than the one set for urban couples. Is this considered unfair? Why or why not?

Responses to question eight mirrored question seven's responses; varying age requirements for marriage of rural couples and urban couples were not viewed as a problem. Again, neither age nor gender influenced the responses. Collectively, a different age of marriage for urban people and rural people was a non-issue for these focus group participants. They did not view the age difference regulations as a form of discrimination.

Question 9: Is there anything else you would like to add to today's discussion?

There was one question that every focus group asked this researcher – why was she interested in this topic? Usually, this question was answered simply by telling the participants about this researcher's goal to earn a Ph.D. from MSU and how the focus groups were part of the process toward completing her dissertation. Each focus group expressed much gratitude to this researcher for looking at this topic

and offered support for her work. In addition, the two middle-aged female focus groups expressed an interest in reading the dissertation once it was completed.

Assessment of Focus Groups

The use of focus groups proved to be one of the integral components of this dissertation. The conversations generated by the focus groups were both enlightening and poignant. The overall results of the focus groups proved to be satisfactory. However, if focus groups were used for further research, some modifications might be implemented.

First, it may not be necessary to separate future focus groups by gender. Although there were some interesting variations in responses to questions that appeared to be influenced by gender, one cannot help but wonder if separating the sexes also hindered some responses. For example, during the middle aged male focus group, one of the men asked where were the women? The middle-aged men knew little about how the population policy was first introduced and even admitted that women would know more about that topic because they were more affected by the policy. If middle-aged women had also been present at that focus group session, perhaps they would have reminded the men of things that occurred when the policy was first introduced and the men would have offered more information on that topic. Were other topics hindered by the separation of the sexes?

Second, dividing the focus groups by age was useful and would be done again. Many of the responses to questions were influenced by the age of the participants. While it might be interesting to put different age groups together in a single focus group, this researcher thinks that would, ultimately, restrict the frankness

of some conversations. Age is still considered a characteristic due great respect among the Chinese. Therefore if the ages were mixed in a focus group, younger members might be less inclined to disagree with older members out of respect for their age.

Focus group participants came from many different provinces in China, not just Jiangsu or Jiangxi, the two provinces analyzed in this dissertation. Although it would have been ideal to limit focus group participants to only those originally from Jiangsu or Jiangxi, this would have proved too restrictive. There simply are not many Chinese from these two provinces living in Michigan today.

Finally, while the overall nature of the questions asked during the focus groups proved satisfactory, a few questions remained that should have been asked. Many of the middle-aged participants had proudly announced that they had limited their family size to one child (i.e., basically observing the population policy even though they now live in the U.S.). Therefore, to further explore that issue, the following questions should have also been asked:

1. What factors influenced you, if any, to limit the size of your family?
2. Do you plan to return to China? How do these plans affect your views on the population policy?
3. Did the government's one child policy play a key role or were other factors involved?

These assessments are not meant to detract from the usefulness of the focus groups conducted. The wealth of information these conversations generated was invaluable and this researcher would encourage other scholars (especially

geographers) to explore this useful research tool. To date, geographers have not used focus groups to any great extent in their research. That would be one venue for further research. Other research opportunities are explored in the next section.

Need for Further Research

What needs to be done from here on to answer the questions raised in this scholarship? First, it is evident that more provinces should be explored at the county level in China. Although the results from the statistical analysis were less than satisfactory, the use of GIS revealed that significant spatial variations do exist in China today. It might prove interesting to look at a variety of provinces (from different parts of the country) as a case study or to explore the variations in socio-economic conditions for the entire country as a future research project.

Second, additional variables could be analyzed and the spatial patterns of those variables could be assessed. To date, statistical yearbooks have not been used to any great extent in the literature therefore this important resource could be used for future scholarship. Also, because statistical yearbooks are published annually, it might be interesting to explore the changes in socio-economic conditions over time (perhaps in the next five years or ten years) in selected counties or provinces. Further in-depth analysis of the 2001 census would be another venue for research. For example, the 2001 census collected information about birth histories of Chinese women. This more individualized date may be more accurate (i.e., have fewer errors) and represents another rich resource that could be used to analyze demographic data below the county level. The bottom line is that more data are becoming available about China and that will embellish further research.

Focus groups were extremely useful for gathering information. Focus groups conducted in other North American cities or, better yet, in China would provide another layer of useful information for future research. Perhaps organizing focus groups by geographic region from China (ex. Guangdong or Beijing) would prove revealing, too. The point is, there is much left to be explored.

Finally, this dissertation reveals other related topics that could be explored. For example, China's demographic transition has slowed population growth, yet the elderly population in China is rapidly increasing. How will China deal with this rapid expansion of the elderly population? What are the implications of the shift in age structure? Some scholars have expressed concern about China's skewed sex ratios. How will China deal with the skewed sex ratios? What are the implications of these skewed sex ratios? Development in China has produced widening income gaps. How will China deal with this issue and what are the implications of widening income gaps? Hopefully, this research has raised many questions, yet still reached its ultimate goal – one humble contribution to the overall literature base.

APPENDIX

UCRIHS INITIAL LETTER OF APPROVAL
Michigan State University

August 24, 2004

TO: Jack W. WILLIAMS
315 Natural Resources Bldg.

RE: **IRB# 940371** CATEGORY: EXPEDITED 2-6, 2-7
APPROVAL DATE: **August 8, 2004**
EXPIRATION DATE: **August 8, 2005**

TITLE: "AN ANALYSIS OF FACTORS AFFECTING THE SUCCESS OF CHINA'S POPULATION PLANNING PROGRAM: A CASE STUDY OF JIANGSU AND JIANGXI PROVINCES"

The University Committee on Research Involving Human Subjects (UCRIHS) review of this project is complete and I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, **UCRIHS approved this project.**

RENEWALS: UCRIHS approval is valid until the expiration date listed above. Projects continuing beyond this date must be renewed with the renewal form. A maximum of four such expedited renewals are possible. Investigators wishing to continue a project beyond that time need to submit a 5-year application for a complete review.
REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please include a revision form with the renewal. To revise an approved protocol at any other time during the year, send your written request with an attached revision cover sheet to the UCRIHS Chair, requesting revised approval and referencing the project's IRB# and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.
PROBLEMS/CHANGES: Should either of the following arise during the course of the work, notify UCRIHS promptly: 1) problems (unexpected side effects complaints, etc.) involving human subjects or 2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.
If we can be of further assistance, please contact us at (517) 355-2180 or via email: UCRIHS@msu.edu. Please note that all UCRIHS forms are located on the web: http://www.humanresearch.msu.edu
Sincerely,
Peter Vasilenko, Ph.D.
UCRIHS Chair

EMAILTO VP OF CSSA

9/3/2004

Dear CSSA VP,

Thank you for meeting with me yesterday. I am excited that you will be able to help me recruit students for my focus groups. Just a quick review of what I will need.

1. A pre-test focus group of male subjects. I would like to schedule that meeting for Sunday, September 19 at 11 AM. We will meet in W320 (a group study room in the library on the third floor/near the map library). The group will meet for no more than 2 hours and each of the 8 participants (including yourself if you want) will receive $15 for participation.

2. A focus group of female subjects. I would like to schedule that meeting for Sunday, October 17 at 11 AM. The meeting place and compensation are the same as above.

All focus group participants must be from the PRC. The purpose of the focus groups is to discuss various aspects of China's population policy.

For the pre-test focus group, you can simply select who you think would be a good participant (so I you want to ask 7 male friends from China to participate, that would be fine). I will pay you $20 for assembling the participants of this focus group (plus $15 is your participate). The focus group discussion will be tape recorded.

Please let me know what the response is from the members of the Chinese Student Association. Also, if you have any questions or need some help recruiting participants, please let me know. You can contact me via e-mail or phone me at home.

EMAILTO CSSA MEMBERS

9/13/2004

Dear CSSA group,

I've been asked by a Ph.D. candidate to organize and participate in a focus group. The purpose of the focus groups is to discuss various aspects of China's population policy. She would like organize the focus group this Sunday. September 19th and another one on October 17th. She Is WILLING TO pay Participants 15 dollars for 2 hours participation in one of the Focus group.

The only requirement she ask is that the participants be from the People's Republic of China.

IF you have time and interest in the discussion topic, please Reply to this email, I would be happy to provide additional needed information.

I look forward to hearing from you.

CONSENT FORM FOR FOCUS GROUP PARTICIPANTS

Dissertation Title: "An Analysis of Factors Affecting the Success of China's Population Planning Program: A Case Study of Jiangsu and Jiangxi Provinces."

This project is a focus group conducted by Laurie Gasahl, Ph.D. candidate in the Department of Geography at Michigan State University. In essence a focus group is a group discussion and will last for two hours. The purpose of the focus group is to obtain the viewpoints of Chinese people as it pertains to the People's Republic of China's population policies. The qualitative information collected during the focus group will be used for a dissertation. Participation in the focus group is voluntary. For whatever reason, you may refuse to participate in certain procedures or answer certain questions or discontinue participation at any time without penalty or loss of benefits

You will receive a $15 stipend for participation in the focus group.

An audio recording will be made during the focus group and a professional recorder will be present to take notes of the focus group. Your responses to focus group questions will be tape recorded. If you do not want to be recorded, you will not quality for the study and should not sign the consent form. The audio recording, written transcript of the focus group proceedings, and consent form will be kept in a locked cabinet in a private office in Western Michigan and will be destroyed three years after successful completion of Ms. Gasahl's dissertation.

Privacy will be protected to the maximum extent allowable by law. All measures will be taken to protect your confidentiality and you will not be identified by name in the dissertation. You may withdraw from the proceedings at any time prior to commencement of the actual focus groups session. We ask that you respect the privacy of other focus group participants and not disclose any information discussed during the focus group.

A signature on this form indicates you agree to participate in this project, agree with all of the procedures that have been outlined above, and agree to have your comments tape recorded.

I voluntarily agree to participate in the study.

_____

Signature and date

In preparation for the focus group session, please answer the following questions:

1. What province are you from in China? _____
2. How long have you lived in the U.S.? _____
3. What is your occupation in the U.S.? _____
4. What is your educational level? _____
5. How many siblings do you have? _____

UCRIHS RENEWAL LETTER OF APPROVAL
Michigan State University

June 27, 2005

TO: Jack W. WILLIAMS
315 Natural Resources Bldg.

RE: **IRB# 940371** CATEGORY: EXPEDITED 2-6, 2-7
APPROVAL DATE: June 26, 2005
EXPIRATION DATE: June 25, 2006

TITLE: "AN ANALYSIS OF FACTORS AFFECTING THE SUCCESS OF CHINA'S POPULATION PLANNING PROGRAM: A CASE STUDY OF JIANGSU AND JIANGXI PROVINCES"

The University Committee on Research Involving Human Subjects (UCRIHS) has completed their review of your project. I am pleased to advise that **the renewal has been approved.**

This letter notes approval for data analysis only.

The review by the committee has found that your renewal is consistent with the continued protection of the rights and welfare of human subjects, and meets the requirements of MSU's Federal Wide Assurance and the Federal Guidelines (45 CFR 46 and 21 CFR Part 50). The protection of human subjects in research is a partnership between the IRB and the investigators. We look forward to working with you as we both fulfill our responsibilities.

RENEWALS: UCRIHS approval is valid until the expiration date listed above. If you are continuing your project, you must submit an ***Application for Renewal*** application at least one month before expiration. If the project is completed, please submit an ***Application for Permanent Closure.***

REVISIONS: UCRIHS must review any changes in the project, prior to initiation of the change. Please submit an Application for Revision to have your changes reviewed. If changes are made at the time of renewal, please include an Application for Revision with the renewal application.

PROBLEMS: If issues should arise during the conduct of the research, such as unanticipated problems, adverse events, or any problem that may increase the risk to the human subjects, notify UCRIHS promptly. Forms are available to report these issues. Please use the IRB number listed above on any forms submitted with relate to this project, or on any correspondence with UCRIHS.

Good luck with your research. If we can be of further assistance, please contact us at (517) 355-2180 or via email: UCRIHS@msu.edu. Thank you for your cooperation.
Sincerely,
Peter Vasilenko, Ph.D.
UCRIHS Chair

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