

An Analysis on the Factors Affecting Fertility Rates across the U.S.

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Abstract:

This paper analyzes the fertility rate or the number of live births per 1,000 women aged 15-44 years old. The research is based off of census data from the Statistical Abstract of the United States from 1990 to 2009. The purpose of researching fertility and birth rates is to explain the slight fluctuations during this time frame. This study looks into the factors as to why this change has occurred, such as race, education, marital status, economic impact, age, and region. The results from over the past 20 years have proven that these demographic and geographic factors have both affected the variations of the fertility rates across the U.S.

JEL Classification: J12, J13

Keywords: Fertility, ethnicity, marital status, education, economic impact

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1.0 INTRODUCTION

Fertility rates capture the number of live births per 1000 women aged 15-44 years old. The factors that affect the fertility rates in the United States that are reflected in this paper are race, age, education, economic impact, and marital status. This paper specifically focuses on if higher education, increase in remarriages, age at first marriage and race influence fertility rates across each different state of the U.S. Society has changed overall since the late 20th century. Therefore, studying the effects of attendance and completion of college attendance, the increases in divorces and the age at which it occurs, differences in the major races, and age at which people marry/re-marry all determine why there have been fluctuations in the fertility rates over the past few decades.

In seeking to explain the factors impacting fertility rates, researchers have concluded that the socio-demographic variables are the most influential, which have been the main cause in the changes in the family unit during the past 2 decades. Demographic trends play out differently in each state and region, with some areas showing increases in population and diversity together. United States as a whole from 1990 to 2000 has already experienced a significant increase in the median age, which helps in explaining the U.S.'s large population growth in just one decade. Therefore, since the current growth of population is driven by fertility, it is extremely important to capture the precise factors that affect these rates in the U.S.

Furthermore, with divorces increasing tremendously, approximately two-thirds of women get remarried. Since this number is so high, there are more women getting remarried within their prime reproductive years. Therefore, the births following remarriage may comprise a greater percentage of the total births than at a previous time. Societal norms also have caused there to be an increase in fertility rates. Besides remarriage, the other factors, such as obtaining a higher

education, race, influence of the present state of the economy, and births from teenage mothers are all looked into in order to determine how significantly each will affect fertility rates in the U.S. Also, this paper focuses on one slight difference that had not been previously analyzed, because it breaks down all the variables by state. Therefore, the tests along with the data revealed in this paper are determined to explain what exactly are causing the changing patterns of fertility from 1990 to 2009.

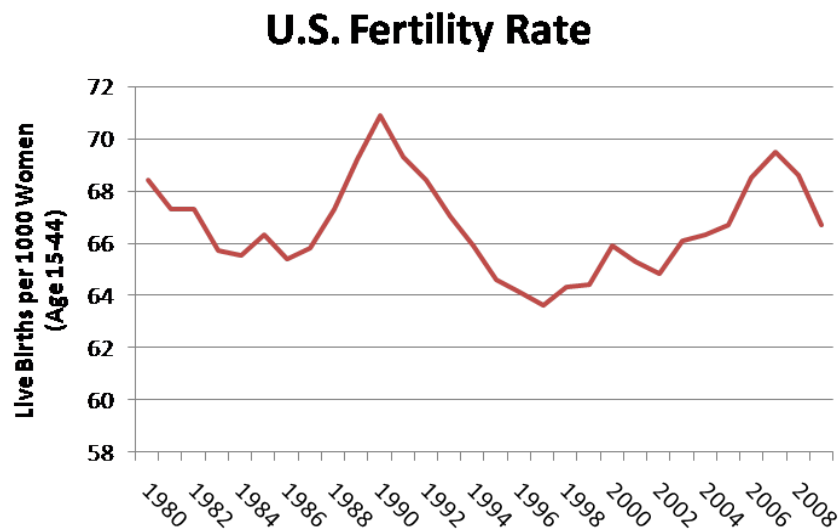
The rest of the paper is organized as follows: Section 2 gives a brief literature review. Section 3 outlines the empirical model. Data and estimation methodology are discussed in section 4. Finally, section 5 presents and discusses the empirical results. This is followed by a conclusion in section 6.

2.0 TREND

Figure 1 shows the United States fertility rates overall in the past 30 years. There was a sudden decline in 1990 until 1996 due to a policy focus on reducing teenage pregnancy, which was fairly successful. The decrease in teenage pregnancies is also represented in Figure 2. Birth rates for teenagers declined for each ethnicity as well. Therefore, it can be assumed that changes in fertility rates are affected by the trend of the percentage of teen mothers. The American Public Health Association has also cited in their research that countries with a lower fertility tend to be the more developed countries. The United States fertility rate fluctuations continue to prove this because when the economy was doing well during the 90's that was when the U.S. saw the greatest decline. However, the other significant decline was from 2007 and 2009 during the Great Recession presenting that certain economic impacts will negatively affect fertility. Furthermore, different races were affected. Hispanics, whose employment levels and household

wealth were particularly hard hit by the Great Recession, have experienced the largest fertility declines of the nation's three major racial and ethnic groups. Even though the United States is still a developed country, short-term economic costs in terms of lost jobs and economic growth will still have long-term demographic impact as measured by the number of children born to those in their 20's and 30's due to the parents realization that having more children decreases rather than increases their standard of living. Further, this age group has recently faced the problem of delaying marriages and household formations due to the intensity of establishing careers and moving out of their parent's homes. Overall, fertility is largely controlled by economics and human desires.

Figure 1: Fertility Rates in United States from 1980-2009



Source: Center for Disease Control National Center for Health Statistics

Figure 2: Birth Rates for Teens by Race in the U.S

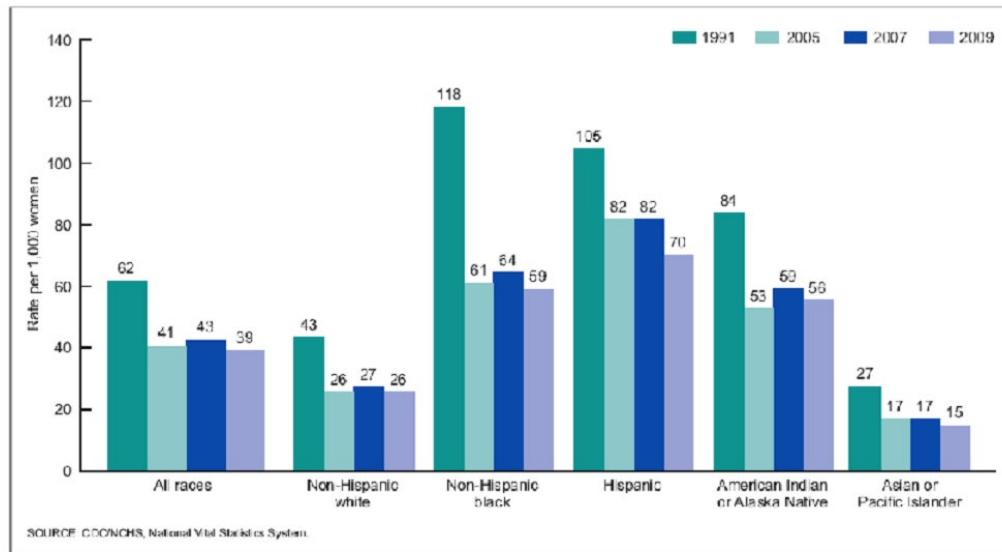


Figure 3. Birth rates for teenagers aged 15–19 years, by race and Hispanic origin: United States, 1991, 2005, 2007, and 2009

Source: Census Bureau Data- National Vital Statistics Reports

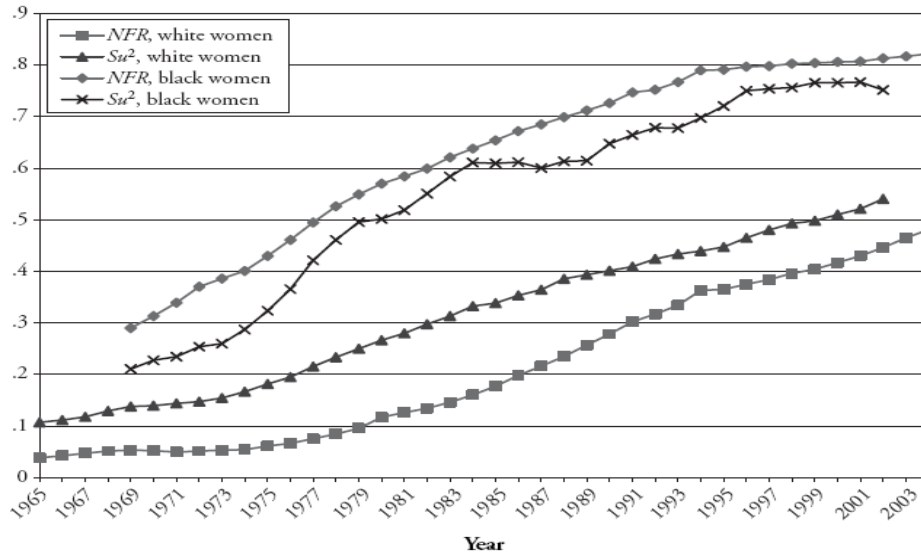
Figure 3 and Table 1 both demonstrate how increases in nonmarital births affect fertility rates.

Figure 3 graphically shows that for both black and white women in their early 20's more children are being born outside of marriage. This does not however explain how there is an increase in births because figure 3 proves that as nonmarital births increase marital births decrease.

Therefore, confirming that fertility rates are not being affected but instead just the rate of marriages.

Figure 3 Nonmarital Fertility Rate Proportioned to Unmarried Women by Race

Figure 1. Nonmarital Fertility Ratio (NFR) and the Proportion Unmarried, Squared (Su^2): Black Women and White Women Aged 20–24



Source: Demography

Table 1: Birth rates for Unmarried and Married Women 1980-2009

Year	Births to unmarried women			Birth rate for married women ³
	Number	Rate ¹	Percent ²	
2009	1,693,658	50.5	41.0	85.7
2008	1,726,566	52.5	40.6	86.8
2007	1,715,047	52.3	39.7	88.7
2006	1,641,946	50.6	38.5	88.0
2005	1,527,034	47.5	36.9	87.3
2004	1,470,189	46.1	35.8	87.6
2003	1,415,995	44.9	34.6	88.1
2002	1,365,966	43.7	34.0	86.3
2001	1,349,249	43.8	33.5	86.7
2000	1,347,043	44.1	33.2	87.4
1999	1,308,560	43.3	33.0	84.8
1998	1,293,567	43.3	32.8	84.2
1997	1,257,444	42.9	32.4	82.7
1996	1,260,306	43.8	32.4	82.3
1995	1,253,976	44.3	32.2	82.6
1994	1,289,592	46.2	32.6	82.9
1993	1,240,172	44.8	31.0	86.1
1992	1,224,876	44.9	30.1	88.5
1991	1,213,769	45.0	29.5	89.6
1990	1,165,384	43.8	28.0	93.2
1985	828,174	32.8	22.0	93.3
1980	665,747	29.4	18.4	97.0

¹Births to unmarried women per 1,000 unmarried women aged 15–44 years.

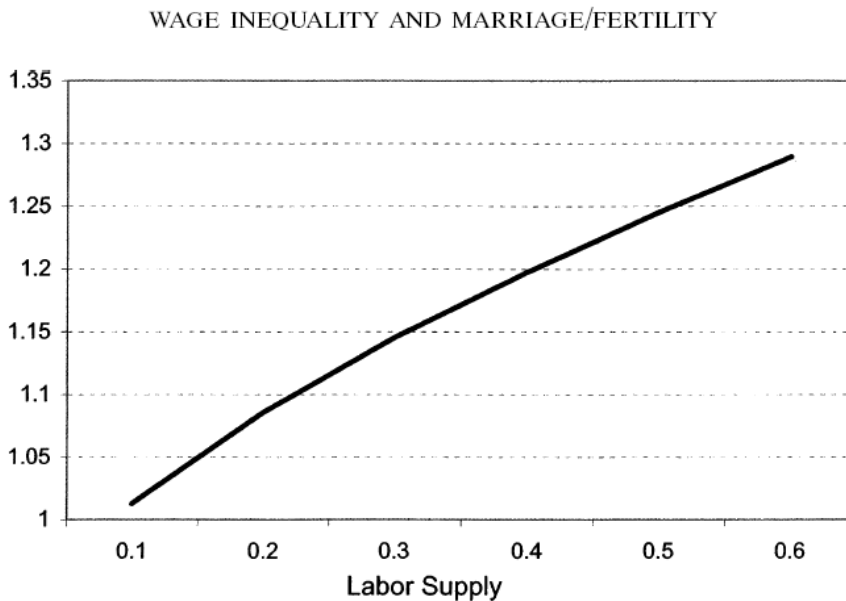
²Percent of all births to unmarried women.

³Births to married women per 1,000 married women aged 15–44 years.

Source: Census Bureau Data- National Vital Statistics Reports

Figure 5 further exemplifies how delaying marriages and households affects fertility by including education and wages. Women who put off having children tend to be of higher productivity and thus have both higher household incomes and fewer children further proving that women who continue education after high school will delay childbearing. However, in general it's usually difficult to determine if economic changes are causing fertility changes, since the other social and cultural factors may also be at play, such as changes in women's labor force participation, increase in divorce, and contraceptive methods. Historical evidence though shows that there is a link between all these factors as well as economic cycles that affect fertility, especially for younger women because of their luxury of postponing fertility until better economic times prevail. Therefore, tying in all the graphs together represent the factors overall which affect fertility rates in the U.S.

Figure 4: Wage Inequality and Fertility Graph



Source: Review of Economic Dynamics

3.0 LITERATURE REVIEW

Fertility rates are affected by a variety of reasons. Looking first at the rise of nonmarital births, Emrisch (2009) stated that an increase in the number of births to unmarried women were not caused by any major change in underlying fertility behavior, but instead because of a decrease in the number of women married, which in turn increased the birth rate of unmarried women. Women aged 20-24 contributed to over one-half of births for unmarried women, which means that the increase in nonmarital births was the largest among women of this age. Since this is the main years for childbearing and women are taking longer to get married this shows this is not necessarily increasing the fertility rate overall. Women aged 35-39 contribute to the lowest percentage of nonmarital births at a total of 5%. Lastly, the number overall of women who are childbearing outside of marriage have drastically increased since the early 1900's. According to Stockard (2008) in 1940, only 3.8% of all births in the U.S. were out of marriage, but by 2005 this had rose to 36.9%. Also suggested by Stockard (2008) other explanations involving factors affecting fertility rates include changes in social attitudes, and generous welfare policies.

Younger women are more likely to have nonmarital births than older women. This study also looks at the mate availability factor. The more available men, the chances of marriage, and thus of childbearing within marriage are greater. Mate availability is also particularly crucial to black women because black children more often grow up in single parent families. Black women are also more unlikely to marry outside of their race more so than white women. There are many other factors as well that have an affect other than women who are childbearing while not being married.

Also suggested by Wineberg (1990) increases in divorces, age at first birth, race, education, duration of first marriage, and age at first marriage and second marriage all contribute

to the fertility rate in the United States over the past couple of decades. For both whites and blacks, approximately half of the women give birth in the second marriage, and most of these occur within the first 24 months of the remarriage. With the divorce rate steadily increasing and becoming more common (one out of every 2 marriages end in divorce), more women are likely to remarry. Also contended by Wineberg (1990) of the women divorced, 70% get remarried. Since the second marriage usually happens during the prime reproductive years, there is a greater chance the birth rate will increase for remarriages, therefore, increasing the fertility rate in the U.S. Of that 70%, approximately 39% of the total births will occur after the second marriage. Women ages 30-39, about 30% of their births occurred after the second marriage. There are other negative assumptions that contribute to the births after remarriage including the problems regarding parent-child relationships, the affect it has on the new marriage, and can potentially put a hold on the women's career in the labor force. In short, having a new child to validate the marriage is an important determinant of childbearing in remarriage. Also, race is still a key factor for remarriage rates as well because of the facts showing that whites were significantly more likely to have a child in remarriage than blacks. Ermisch (2009) suggests that race plays a somewhat significant role in that there has been a large increase in the percentage of births to unmarried white women.

In addition, Ermisch (2009) contends that women whose first marriage lasted a short time are more likely to give birth in the second marriage. The older the women is when she ends her first marriage, the less likely she may be to have a birth in the next marriage, because there is a higher likelihood that she completed childbearing already. Also, the means by which the marriage ended matters because women who ended it by divorce will consider childbearing differently than those women whose husbands died. Widows have 44% more likeliness to have a

child due to their feelings of childlessness and loneliness; therefore, they view children as beneficial. Those that get divorced may be reluctant to give up their autonomy; therefore, they will wait the longest before childbearing. Race plays into affect again because results show that whites have a greater percentage of their total births after remarriage than blacks do. Whites are also more likely to give birth by 60 months after remarrying than blacks. However, results show that this gap is steadily decreasing and this pattern proves to continue in the future. Therefore, overall this study implies that the fertility rate after remarriage has significance on the total fertility of women in the U.S. and concludes that the societal impact should not be underestimated.

Wineberg (1990) again states that age is one of the greatest factors affecting fertility after remarriage. Women who are remarrying before the age of 22 have a 36% greater chance of giving birth in the second marriage than those remarrying between the ages of 22 and 26. The number of children a woman already has when entering the new marriage is relevant to the chance of childbearing. Therefore, having 2 or more children at remarriage are less likely to have a child in the new marriage, but those women who have zero or one child are likely to give birth in the second marriage supporting the contention that children usually authenticate adult status due to the societal pressures. Also, those women whose marriage lasted fewer than 4 years have significantly increased the risk of giving birth than those marriages that lasted from 4-7 years. In conclusion, those that need to have a child in order to confirm the marriage as a completed family have a higher probability of giving birth in remarriages compared to those that don't feel the need to have a child in order to make it a "real" marriage.

Furthermore as Brand (2011) stated as college attendance expands, more women are attending college from backgrounds that before made college unlikely. Educated women delay

the start of childbearing and have fewer children overall. They believe that there are opportunity costs, in which women weigh their time, energy, and commitment. It has also become more of a cultural norm for women to feel the need to work in society. Highly educated women postpone parenthood and marriage, whereas less-educated women postpone only marriage. Therefore, nonmarital births have increased dramatically among disadvantaged less-educated women. As again affirmed by Brand (2011) “Marriage has become something of a luxury good” more so for advantaged women. Also the availability of childcare gives women the option to utilize this in order to continue to work after childbearing. The statistics prove that of those women with some college by age 19, roughly one half completed college by age 23, and two-thirds completed college by their 40’s. Parent’s income and encouragement have very big impacts as well. College goers are more likely to have families with high incomes, highly educated parents, and fewer siblings than noncollege women. Therefore, confirming that the number of children decreases as women’s propensity for college increases.

Lastly, DeLeire (2011) during the early to mid 1990’s argued a large number of women gained eligibility for Medicaid, which showed a slight increase in the percent of pregnancies. However, after research and analysis the relationship proved there is none between the Medicaid expansions and fertility rates in the U.S. Furuola (2010), however, looked into the tradeoff relationship between the quantity and the quality of children. Parents tend to enhance the quality of their children while decreasing their quantity. Parents maximize their utility subject to the budget constraints meaning that an increase in the quality of children would be more costly to the parents who have more children. This went hand in hand with fertility and GDP showing that when the per capita GDP was lower than \$22,000, there was a negative relationship between total fertility rate and GDP in the country. Therefore, while the GDP or the wealthier people

grew and the standard of living kept increasing the fertility kept declining, but this only occurred when it reached the threshold value of \$22,000. This also concludes that there is not just one significant factor affecting the fertility rate, but instead there is a multitude of relationships tied together with fertility rates in the U.S. over the past few decades.

4.0 DATA AND EMPIRICAL METHODOLOGY

4.1 Data

This study uses annual data from 1990 to 2009. The data was obtained from the United States Census Bureau website. Publicly available statistical abstracts were provided as panel data broken down by states for each year. Summary statistics for the cross-sectional data of the 50 states for 1990 and 2009 are given in Table 2 and 3 respectively.

Table 2 Summary Statistics for 1990

Variable	Obs.	Mean	St. Dev.	Max.	Min.
MR	152	9.844079	9.994109	4.7	99
DR	141	4.349645	1.341088	2.2	11.4
TN MTHRS	153	11.56536	3.238955	5.7	21.3
UNMR WMN	153	33.34771	9.009623	13.5	64.9
UNEM WMN	153	5.859477	2.098886	2.2	12.7
LCOST	153	152.2092	50.55237	92.03	327.19
HS DEGREE	153	60.97804	26.14928	19.35	88.33
BA DEGREE	153	20.85915	5.041623	11.43	39.07
PRF DEGREE	153	8.485752	3.616448	3.91	30.99
FR	153	64.42549	7.189746	49.8	89.9

Table 3 Summary Statistics for 2009

Variable	Obs.	Mean	St. Dev.	Max.	Min.
MR	51	8.239216	6.951290	40.90000	4.700000
DR	45	3.722222	.920940	33.23389	11.42749
TN MTHRS	51	9.958824	2.621463	16.50000	5.700000

UNMR WMN	51	40.21569	7.084924	55.80000	19.40000
UNEM WMN	51	7.852941	1.839604	12.70000	3.500000
LCOST	51	208.6561	37.38509	327.1900	135.0000
HS DEGREE	51	24.83883	3.719295	35.01201	19.35044
BA DEGREE	51	18.48568	4.515208	33.23389	11.42749
PRF DEGREE	51	9.831889	4.860424	30.99179	3.913018
FR	51	66.92157	7.440116	88.40000	50.80000

4.2 Empirical Model

Using Brand and Davis (2001) model this paper adapted and modified its model under its study of fertility based on solely education. Other models include different variations of these variables while also including more specific variables that best fit their models. Davis' model includes variables such as race, parent's income, number of siblings, rural residence, southern residence, religion, college-preparatory track, and parent's encouragement versus friend's plans in determining the fertility rates. However, this model focuses less on education and more on the overall fertility rate factors.

This is the overall model used within this paper:

$$FR = \beta_0 + \beta_1MR + \beta_2DR + \beta_3TNMTHRS + \beta_4UNMRWMN + \beta_5UNEM\ WMN + \beta_6LCOST + \beta_7HSDEGREE + \beta_8BADEGREE + \beta_9PRFDEGREE + \beta_{10}HISP + \beta_{11}NONHISPWT + \beta_{12}NONHISPBL$$

Fertility rate is the dependent variable, therefore is used as an endogenous variable. The definition in this paper is consistent with the National Vital Statistics report stating it's the number of live births per 1,000 women aged 15-44 years old. Recent studies have indicated that the general fertility rate has dropped 3 percent in 2009 since the previous year. Declines in the number of births have been reported to happen amongst all the largest races, for all age groups,

and for unmarried women in the U.S. since 2008. According to Stockard et al. (2008) this study adopted and modified based on their focus on family structure, school enrollment, and race. In addition to this model, we have added teenage pregnancies, childbearing in remarriages, and the cost of living, while also analyzing all of these factors from panel data based on each state.

Therefore, the independent variables consist of thirteen variables all obtained from the United States Census Bureau under the national statistics. Appendix A and B provide the data source, acronyms, descriptions, expected signs, and justifications for using the variables. First, MR (marital rate) shows the number of marriages for each state based on the total population. Second, DR (divorce rate) expresses the number of divorces for each state based on the total population. Third, TNMTHRS (teen mothers) represents the rate of births to mothers aged 15-19 years old. Fourth, UNMRWMN (unmarried women) demonstrates the rate of births to unmarried women by state. In 2009, the percent unmarried was at 41.0% overall in the United States. Fifth, UNEMWMN (women unemployed) states the number of women unemployed of the civilian labor force by state. Sixth, LCOST (cost of living) is based on the single-family housing price index, which represents the annual percentage change in home values in the fourth quarter of the year shown relative to the fourth quarter of the previous year by state. Seventh, HSDEGREE (high school diploma) shows the number of women who have graduated high school by age 25 by state. Eighth, BADEGREE (Bachelors Degree) represents the number of women who have received a BA by the age of 25 by state. Ninth, PRFDEGREE (Professional degree) shows the number of women who have obtained a Masters or Doctorate by the age of 25 by state. Tenth, HISP (Hispanic) shows the number of births of Hispanic origin by state. Eleventh, NONHISPWT (Non-Hispanic White) demonstrates the number of births of Non-Hispanic

Whites by state. Twelfth, NONHISPBL (Non-Hispanic Black) shows the number of births of Non-Hispanic Black origin by state.

5.0 EMPIRICAL RESULTS

After running multiple regressions using a range of variables chosen, the results are provided below in Table 4. Looking at the two different years 1990 and 2009 proves that the variables are vigorously dissimilar when running a regression model based on significant p-values. In 1990, after comparing different variations of inputs, there were more significant p-values than in 2009 concluding that 1990 did not have equivalent factors affecting fertility rates. In 2009, the major difference in comparison to 1990 was that divorce rates became a significant factor. Based on the overall fertility rate comparison, there was a larger fluctuation following 1990, whereas in 2009 the rates showed a slightly lesser fluctuation.

After interpreting the results overall, age, marital status, and education proved to be the most influential factors. Higher education affects fertility based on the fact that the more women attend college, the longer the delay of childbearing for both years. The Professional degrees continued to grow more and more significant over the decade further indicating that women are valuing higher education more so than childbearing during the years to obtain an education. Also, nonmarital births have an affect due to more women putting off marriage after college. The more it's grown to be socially acceptable the greater the significance it has on fertility rates. In the results of the regression, from 1990 to 2009 the marital rate was not the significant factor anymore but instead was the births to unmarried women. In addition, teenage pregnancies also became insignificant proving further that age of women childbearing is changing and more women are having children later. The cost of living did not represent to have an impact;

however, this could be due to the data being based on a single family house index. The data may not have been appropriate for the model being used. Also, the unemployment rate did not have an effect as well further proving that the economy had no affect on fertility since the recession. Furthermore, in seeking to consider other variables, contraceptives could have been a potential factor. However, the data for this was unable to be gathered, but still should be contemplated about when determining the differences in fertility rates from 1990 to 2009. Therefore, the higher the education, the more the divorce rates increases childbearing after remarriage, and an increase in the acceptance of nonmarital births all influence the changes in fertility rates over the years. The empirical estimation results are presented in Table 4.

Table 4: Regression Results for the Fertility Rates of the Different States of the U.S.

Variables	1990		2009	
	Coefficient	P-value	Coefficient	P-value
MR	0.128632	0.0570*	-0.120184	0.3398
DR				
TN MTHRS	1.095282	0.0127**	0.857000	0.2073

UNMR WMN	-0.111341	0.5794	-0.465124	0.0208**
UNEM WMN				
LCOST				
HS DEGREE				
BA DEGREE	1.743829	0.0104***	-0.210268	0.4415
PRF DEGREE	-2.773601	0.0345**	-0.635999	0.0087***
HISP				
NONHISP WT				
NONHISP BL				
Constant	33.90052	0.0020***	88.22239	0.0000***

Note: ***, **, and * denotes significance at the 1%, 5%, and 10% respectively. Standard errors in parentheses

6.0 CONCLUSION

In summary, the results of the regression model exemplify that overall fertility is dependent on education, divorce rates, rise in nonmarital births, and the decline in teenage pregnancies. Race did not have a significant impact on fertility according to the regression, however, Stockard et al. (2008) states that whites and blacks have different dynamics when it comes to education and nonmarital births. For whites, they place a greater delay of both marriage comes to childbearing. However, the different ethnicities remains insignificant due to the fact that all the races have seen a decline throughout each individual major race, further showing that this is an overall decline in the fertility across the United States, which is not due to any one specific race. Teenage pregnancies, which will ultimately increase fertility rates, have declined over the past 20 years. The results represent the overall picture that fertility is dependent on

education, age, and marital status. This presumes that the recent decline of fertility rates over the past few years is not due to the factors such as cost of living, but instead to the increase in higher education, a decline in teenage pregnancies, and a rise in divorces and nonmarital births. Therefore, the additional variables assumed to be insignificant for the fertility rate model.

Appendix A: Variable Description and Data Source

Acronym	Description	Data Source
FR	Fertility rates as a number of live births per 1,000 women aged 15-44 years old by state	US Census Bureau
MR	Marital Rate- based on the total population area	US Census Bureau
DR	Divorce Rate- based on the total population area	US Census Bureau
TN MTHRS	Rate of births to teen mothers by state	US Census Bureau

UNMR WMN	Rate of births to unmarried women by state	US Census Bureau
UNEM WMN	Percent of women unemployed of the civilian labor force by state.	US Census Bureau
LCOST	Cost of living- the single-family housing price index represents the annual percentage change in home values in the fourth quarter of the year shown relative to the fourth quarter of the previous year by state.	US Census Bureau
HS DEGREE	Persons over 25 years who have obtained a High School diploma by state	US Census Bureau
BA DEGREE	Persons over 25 years who have obtained a Bachelors degree by state	US Census Bureau
PRF DEGREE	Persons over 25 years who have obtained a Professional degree (Master's and Doctorate) by state	US Census Bureau
HISP	Number of births to Hispanic origin by state	US Census Bureau
NONHISP WT	Number of births to Non-Hispanic White origin by state	US Census Bureau
NONHISP BL	Number of births to Non-Hispanic Black origin by state	US Census Bureau

Appendix B: Variables and Expected Signs

Acronym	Variable Description	What it captures	Expected Sign
MR	Marital Rate	Rate of marriages based on the total population area	+/-
DR	Divorce Rate	Rate of divorces based on the total population area	+/-
TN MTHRS	Teen Mothers	Rate of births to teen mothers by state	+
UNMR WMN	Unmarried women	Rate of births to unmarried women by state	-
UNEM WMN	Unemployed women	Percent of women unemployed of the civilian labor force by state.	+/-

LCOST	Cost of living	The single-family housing price index represents the annual percentage change in home values in the fourth quarter of the year shown relative to the fourth quarter of the previous year by state.	—
HS DEGREE	High School diploma	Persons over 25 years who have obtained a High School diploma by state	+
BA DEGREE	Bachelors degree	Persons over 25 years who have obtained a Bachelors degree by state	—
PRF DEGREE	Professional degrees	Persons over 25 years who have obtained a Professional degree (Master's and Doctorate) by state	—
HISP	Hispanic	Number of births to Hispanic origin by state	+
NONHISP WT	Non-Hispanic White	Number of births to Non-Hispanic White origin by state	+/-
NONHISP BL	Non-Hispanic Black	Number of births to Non-Hispanic Black origin by state	+/-

Appendix C: Regression Results

1990

Dependent Variable: FR
Method: Least Squares
Date: 04/16/12 Time: 08:45
Sample: 1 51
Included observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BA_DEGREE	1.743829	0.652236	2.673617	0.0104
TN_MTHRS	1.095282	0.421891	2.596124	0.0127
UNMR_WMN	-0.111341	0.199419	-0.558328	0.5794
PRF_DEGREE	-2.773601	1.271804	-2.180840	0.0345
MR	0.128632	0.065840	1.953716	0.0570
C	33.90052	10.32344	3.283841	0.0020
R-squared	0.239863	Mean dependent var		61.96667
Adjusted R-squared	0.155403	S.D. dependent var		6.228440
S.E. of regression	5.724058	Akaike info criterion		6.437364
Sum squared resid	1474.418	Schwarz criterion		6.664638
Log likelihood	-158.1528	Hannan-Quinn criter.		6.524212
F-statistic	2.839967	Durbin-Watson stat		1.926573
Prob(F-statistic)	0.025958			

2009

Dependent Variable: FR
Method: Least Squares
Date: 04/16/12 Time: 08:44
Sample: 1 51
Included observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MR	-0.120184	0.124558	-0.964889	0.3398
PRF_DEGREE	-0.635999	0.231875	-2.742857	0.0087
BA_DEGREE	-0.210268	0.270776	-0.776538	0.4415
TN_MTHRS	0.857000	0.669881	1.279331	0.2073
UNMR_WMN	-0.465124	0.194062	-2.396779	0.0208
C	88.22239	9.663066	9.129855	0.0000

R-squared	0.470649	Mean dependent var	66.92157
Adjusted R-squared	0.411832	S.D. dependent var	7.440116
S.E. of regression	5.705983	Akaike info criterion	6.431038
Sum squared resid	1465.121	Schwarz criterion	6.658312
Log likelihood	-157.9915	Hannan-Quinn criter.	6.517886
F-statistic	8.001942	Durbin-Watson stat	2.278172
Prob(F-statistic)	0.000018		

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