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Applied economic and demographic analysis
by the David Eccles School of Business

Fertility rates in Utah
continue to decline,
but remain highest in
the nation.

Fertility in Utah since the Great Recession: The New Normal or a Pregnant Pause?

By Mike Hollingshaus, Mallory Bateman,
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Board-sponsored research

The Kem C. Gardner Policy Institute Advisory Board helps fund and guide research that helps people make INFORMED DECISIONS™. Each year the board prioritizes issues of importance to the Utah economy for the staff to research and share their findings. In 2017, the Advisory Board asked the Institute to analyze Utah's declining fertility rate.

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Kem C. Gardner Policy Institute and the David Eccles School of Business

Fertility in Utah since the Great Recession: The New Normal or a Pregnant Pause?

ANALYSIS IN BRIEF

Utah is currently experiencing strong economic growth and has clearly recovered from the Great Recession; however, it appears the recession has left a lingering imprint on the state’s demographics. Starting in 2008, fertility rates in the state began to significantly decline and those declines continue. While Utah continues to have the highest fertility rate, youngest population, earliest age at first marriage, and largest household size in the nation, the shifts that began in 2008 may indicate a new trend in fertility rates for the state. We conclude Utah’s lower fertility rate is likely not a pregnant pause, but rather a new normal. This report includes data and analysis on various aspects of fertility, external factors that may affect fertility rates, and potential policy implications for the broader population.

Key points include the following:

- Utah maintains the highest total fertility rate in the nation at 2.29 in 2015. The United States total fertility rate for the same year is 1.84.
- Between 2003 and 2015, Utah experienced its highest total fertility rate in 2007, peaking at 2.68.
- Utah’s total fertility rate and annual births have continued to decline since 2008. The rates generally increased throughout the preceding economic expansion, decreased with the onset of the recession, and have not yet begun to rebound.
- Data suggests that women are postponing, and on average, having fewer children throughout their lives. The age-specific fertility rates for each birth order decline over time, and are most pronounced for the first child (birth order 1).
- Utah’s age-specific fertility rates from 2003 to 2015 reveal decreases for mid-teens, late teens, and those in their early 20s, and slight increases to those in their late 30s and 40s.

- Declining fertility, coupled with an aging population, will impact the types of services needed in the future. Resources required for children’s health services, public schools, and pre-kindergarten programs will continue to grow, but the highest rates of increase will be for services utilized by seniors as the share of the population 65 years and older doubles to one in five Utahns.

External Factors Impacting Fertility

Factor	Data or Note
Marriage	Median age at first marriage in Utah has steadily increased over the past decade – from 22.1 in 2005 to 24.3 in 2015.
Education	The percent of births to Utah women with higher education degrees is increasing over time, from 26 percent to 32 percent.
Student Debt	Utah’s per capita student debt burden has increased by 285 percent between 2003 and 2015.
Housing	Utahns carry more housing debt than their national peers, and median home prices have been increasing since 2011.
Income	Household income has gradually increased since 2011, but by 2015 had not yet gotten back to peak levels from 2008.
Women’s Labor Force Participation	Women’s Labor Force Participation rates noticeably decline between the early 20s and late 40s. The lowest female participation rates have been shifting into older ages over time from 31 in 2007 to 34 in 2015.
LDS Religious Affiliation	As Utah becomes more religiously diverse, religious norms may exert less influence over behavior.

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Fertility in Utah since the Great Recession: The New Normal or a Pregnant Pause?

Introduction

Utah has long been distinguished as having the highest birth rate, youngest median age, largest family size, and youngest age of first marriage in the nation. These signature demographics are evidence that Utah continues to be the heart of the Mormon Culture Region even as it becomes more globally interconnected through markets, technology, and migrations of diverse populations.¹ While Utah maintains these distinctive demographic characteristics, it has also followed national and international trends. Fertility rates have fallen, median age has become older, family sizes have declined, and age of first marriage has risen.

The Great Recession, which began in late 2007 and reached its trough in mid-2009, reinforced and compounded many of these long run trends. As has been the case during other severe economic downturns, the number of births and fertility rates declined. Total births peaked in 2007 nationally and 2008 in Utah and have continued on an almost uninterrupted decline since. Fertility rates have followed a similar downward path to reach historically low rates in Utah, and thus far have not begun to rebound. For the foreseeable future, Utah will maintain a higher fertility rate than the nation. But will the fertility rate in Utah and the nation rebound to prerecession levels? How much of the decline is transitory, the aftermath of the Great Recession, and how much is a continuation of much larger and longer term trends? These are the central questions addressed in the research.

This report is organized into three major sections. First is a descriptive analysis of fertility declines since the onset of the Great Recession. Next is an examination of the economic and cultural context of longer term trends of decreasing fertility. Last is the identification and analysis of significant policy implications of decreasing fertility rates.

Declining Fertility since the Recession

Fertility measures the childbearing patterns and rates for a given population. There are multiple fertility rate variations, and these measures can result in divergent patterns over time. Age structure is a critical consideration in the interpretation of results.

Changes in the number of births is not necessarily an indicator of changes in the childbearing patterns of women. The number of births is strongly affected by the population composition—

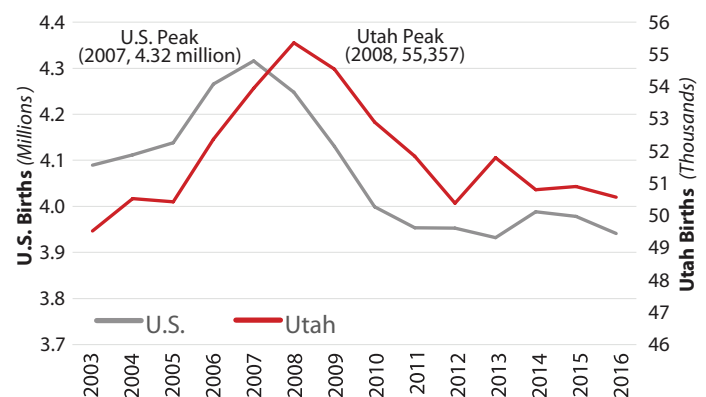
Table 1
Measures of Fertility

Common Fertility Measures and Terminology		
Measure	Acronym	Definition
Birth Rate		The number of live births per thousand of population per year.
General Fertility Rate	GFR	Total number of live births per 1,000 women of reproductive age (ages 15 to 49 years) in a population per year.
Total Fertility Rate	TFR	The average number of children a woman will have if she survives all her childbearing (or reproductive) years. Also the sum of the Age Specific Fertility Rates.
Age Specific Fertility Rate	ASFR	The number of live births (often per 1,000 women) in a specific age group for a specific point in time, usually a year.
Childbearing years		Ages 15 to 49 years in this report.

an increase in women of childbearing age will generally result in a corresponding increase in births.² Birth rates (per capita) can also increase because of changes in the number of women in peak childbearing ages rather than an acceleration in the rate of childbearing across ages. The birth rate, which is the number of live births per thousand of the entire population (including men) per year disregards the age and sex structure of a population, and can produce misleading results.

Patterns in total births reveal important general trends over a short period of time and are the primary determinant of the age structure of the future population. Figure 1 shows total

Figure 1
Births in Utah and the United States



Sources: National Center for Health Statistics; Utah Department of Health

live births for Utah and the United States from 2003 through 2016. Both nationally and in Utah, the Great Recession began near the end of 2007, and reached its trough in mid-2009. Prior to that time, there had been a sustained economic expansion and real estate bubble. The annual number of births increased during the economic expansion then began to decrease with the onset of the Great Recession.

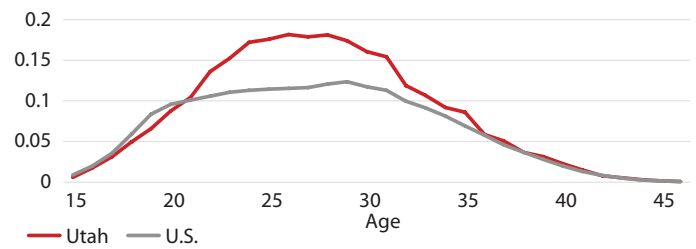
The general fertility rate (GFR) is the total number of annual births per 1,000 women of childbearing ages (generally defined as 15 through 49). This measure eliminates the male population from the calculation, but still does not completely account for the age structure of a population. Ages 15 through 49 is a wide range, and fertility is higher in certain ages within that range than others. This is particularly important for a state like Utah that has the youngest median age in the nation, resulting in a large share of women in the child bearing ages. In their most recent birth report, the National Center for Health Statistics computed the GFR for Utah as 78.0, which ranked it as number two behind South Dakota, with a GFR of 78.2. However, in the same report, Utah has the highest total fertility rate among all states.³

The total fertility rate (TFR) accounts for age structure changes and is the most precise measure of fertility, especially when comparing over time or between geographies.⁴ It is the sum of age-specific fertility rates for women in childbearing ages for a given year. An age-specific fertility rate (ASFR) is the number of babies born to all women in a population who are a certain age (or who fall within a range of ages) divided by the number of women in that group. It can be presented per 1,000 women, but often is left as a number between zero and one. For example, if every 25-year-old woman in Utah had given birth to a baby in 2014, the ASFR for 25-year-old Utah women in 2014 would be one. When the ASFRs for all women in a given age range in a certain year are added together, this number is the TFR. It normalizes age structure differences to create a comparable measure for all populations.

Conceptually, the TFR represents the number of children a hypothetical woman would have over her childbearing years if fertility rates remained constant over that time period. TFRs generally change each year because rates *do not* remain constant; childbearing decisions are continually influenced by economic, social, religious, political, and other forces. Using the TFR and ASFRs to analyze childbearing allows us to be sensitive to changes in the individual timing of these decisions (e.g., are women having children at later ages?) and the cumulative effects those changes have (e.g., are women having fewer children over their lifetimes?).⁵

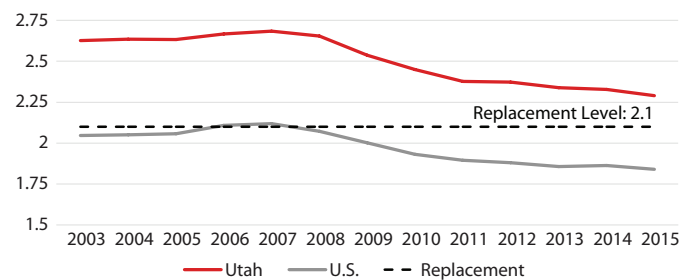
In modern, developed societies, the TFR required to replace the population (meaning that the population size would remain the same over time) is approximately 2.1. Assuming no migration,

Figure 2
Age Specific Fertility Rates, 2007



Sources: National Center for Health Statistics; Census Bureau 2000-2010 State Characteristics Intercensal Population Estimates File (2009 and Earlier); Vintage 2016 Postcensal Population Estimates Single Year of Age and Sex (2010-2015); Analysis by Kem C. Gardner Policy Institute

Figure 3
Total Fertility Rate



Sources: National Center for Health Statistics; Utah Department of Health

when a TFR is higher than 2.1 the population will grow.⁶ Fertility rates in the U.S. are below replacement (estimated TFR of 1.86 for 2016), but they have remained higher than many similarly-developed countries.⁷

Utah and the United States ASFRs in 2007 are shown in Figure 2. The horizontal axis represents the age of women, and the vertical axis represents the proportion of women in those that had a child. Generally, the rates start very low in the early years, rise to a peak around the late 20s, then decline over a longer period to the late 40s. The general shape of this curve is heavily influenced by biological, economic, and cultural factors. Adding up all the ASFRs yields the TFR, which in 2007 was about 2.7 for Utah and 2.1 for the United States, suggesting that a Utah woman would be expected to have 0.6 more children than a U.S. woman in 2007. Utah rates exceed those of the United States beginning at age 21, continuing through the age of 37 – peak child bearing years. Rates for the U.S. slightly exceed those for Utah for teens through 20 and are virtually the same for years beyond 37.

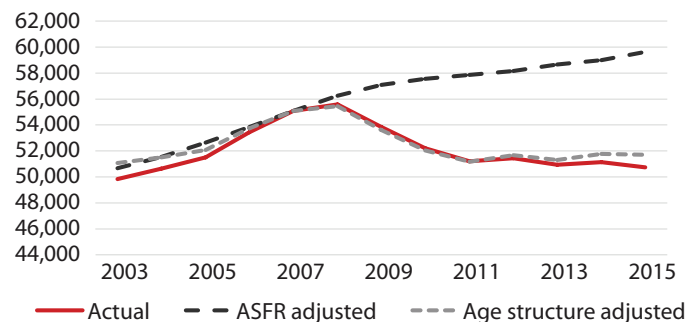
Figure 3 summarizes the higher TFRs for Utah women over the nation from 2003 through 2015. The TFR is a single number for each year, making it an effective measure for displaying trends and comparing populations over time. In this case, the rates generally increased over the prerecession boom then declined

with the onset of the recession. A similar pattern has been seen throughout other countries in the developed world.⁸ While the Utah rates appear somewhat flat in recent years, there is no direct indication they are beginning a return to pre-recession levels.

The Demographic Force of Fertility Rates

Recent declines in Utah births are the combined effect of fewer women in peak childbearing years and a continuous reduction of total fertility rates. One approach to disentangling these two factors is to simulate the impacts of different scenarios. Figure 4 illustrates three birth series over time; one of the series is actual births and two are simulated. Over the 2003-2015 period, the Utah total fertility rate peaked in 2007. The first simulation holds the Utah 2007 ASFRs constant to the actual population of Utah women every year, and identifies how many births would have occurred if the fertility rates did not decrease after the recession. The second simulation holds the 2007 age structure constant, and applies the actual annual rates to a hypothetical population.

Figure 4
Utah Actual and Simulated Births



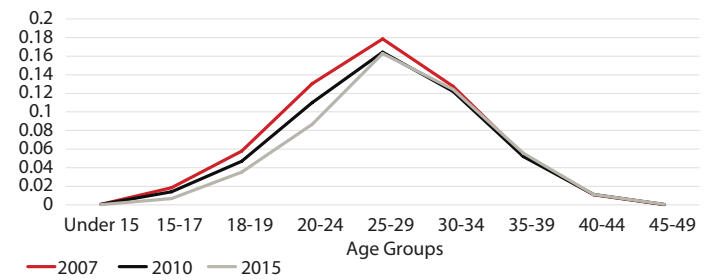
Sources: National Center for Health Statistics; Census Bureau 2000-2010 State Characteristics Intercensal Population Estimates File (2009 and Earlier); Vintage 2016 Postcensal Population Estimates Single Year of Age and Sex (2010-2015); Analysis by Kem C. Gardner Policy Institute

Together, these two simulations demonstrate that the changing age structure had some effect on the total births (they are lower than what they would have been). But, the ASFRs exert the most significant effect. Instead of the recorded 50,702 births in 2015, there would have been 59,592 if the 2007 fertility rate remained unchanged. Demographic forces, such as fertility rates, powerfully shape population processes. Recent declines in fertility rates have been the major cause of the decline in Utah births since 2008. Changes in behavior rather than age structure explain most of the recent and continuing decline in births.

Age Patterns

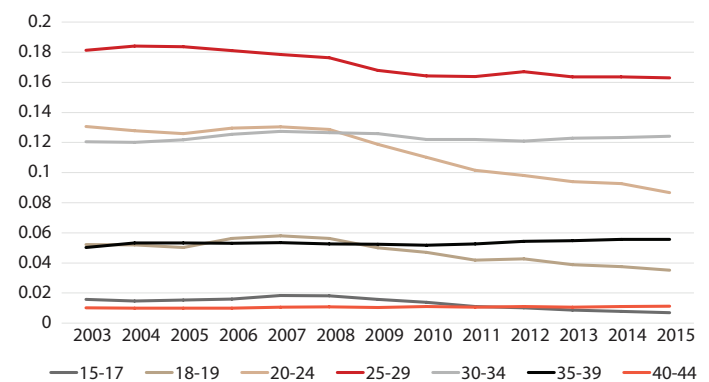
Age specific fertility rates for Utah in 2007, 2010, and 2015 are shown in Figure 5. These particular rates are “abridged,” meaning they have been calculated for age groups, rather than each year. This graph highlights the main patterns over time.

Figure 5
Utah Abridged Age Specific Fertility Rates



Sources: National Center for Health Statistics; Census Bureau 2000-2010 State Characteristics Intercensal Population Estimates File (2009 and Earlier); Vintage 2016 Postcensal Population Estimates Single Year of Age and Sex (2010-2015); Analysis by Kem C. Gardner Policy Institute

Figure 6
Utah Age Specific Fertility Rates by Age Category



Sources: National Center for Health Statistics; Census Bureau 2000-2010 State Characteristics Intercensal Population Estimates File (2009 and Earlier); Vintage 2016 Postcensal Population Estimates Single Year of Age and Sex (2010-2015); Analysis by Kem C. Gardner Policy Institute

The TFR has declined over time and the main decreases have occurred at ages younger than 30.

Utah ASFRs for selected age groups from 2003 through 2015 are shown in Figure 6. Rates have declined for all of the age groups younger than 30, and especially for the 20 through 24 year old age group. Fertility rates for 30 through 34 year olds are mostly unchanged. But rates for those 35 through 39 and 40 through 44 have risen slightly (though the rates are comparatively low). Biologically, after age 35 it becomes increasingly difficult to give birth, and this is especially true after age 40. Improvements in fertility technologies, such as in-vitro fertilization, have increased the possibility of childbirth after age 40.

Agnes 25 through 29 remain the peak ages of childbearing, though the rate has been steadily decreasing. Of particular interest, rates for women ages 20 through 24, which were once higher than the rates for ages 30-34, are now substantially lower (by almost five per 100). This suggests that women are postponing the age of first birth. Similar patterns have been observed throughout the U.S. and the developed world.

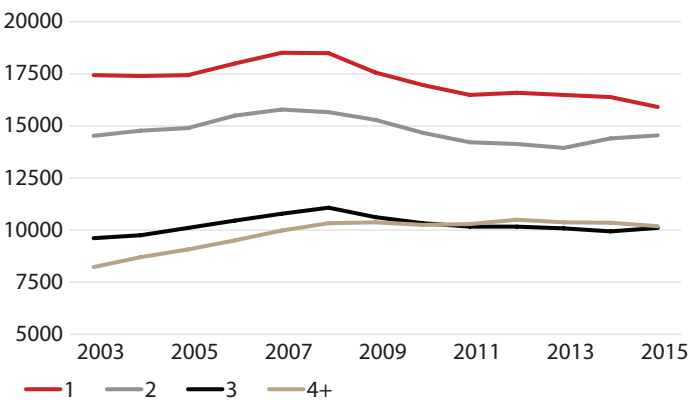
Decreasing rates are usually driven by women postponing motherhood and having smaller families, rather than foregoing childbearing altogether.⁹

Birth Order

Total births to Utah women by birth order over time are shown in Figure 7. Birth order indicates where a particular birth occurs in the sequence of children a woman has had. Birth order is indicated as follows: first child (birth order 1), second (birth order 2), third (birth order 3), and so forth. Changing female age patterns by birth order provide further insights into Utah's declining fertility rate. Total births for birth orders 1, 2, and 3 all declined from 2007 to 2015. Births of order 4 or greater have remained mostly constant over the same period.

The ASFR by birth order for Utah in 2007 is shown in Figure 8. This measure still uses the full population of women of the given age, but only considers births of the given order.¹⁰ Each curve represents the probability a woman of a given age has a child of the given birth order. The curves for the lower birth-order are higher, and also start and end at younger ages. This is a rearrangement and disaggregation of the ASFRs for 2007 which were shown in Figure 2.

Figure 7
Utah Births by Birth Order

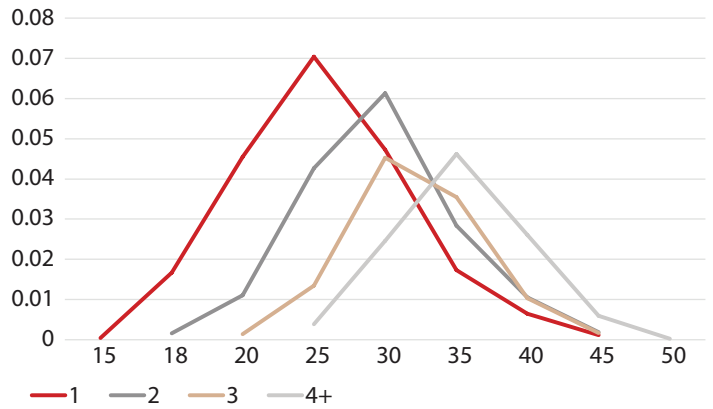


Source: National Center for Health Statistics

ASFRs for 2007, 2010, and 2015 for each birth order are shown in Figure 9. The ASFRs for each birth order decline over time, suggesting that, on average, women are having fewer children throughout their lives. These differing levels are most pronounced for the first child (birth order 1). In 2015 the curve is not peaked, but flat. Indeed, it appears that the peak age for a woman having her first child has shifted into the late 20s, instead of the early 20s. This is consistent with delayed first birth, a common pattern seen throughout the developed world.¹¹

Postponement decreases the timespan a woman has to bear children. It is possible for women who begin having children at

Figure 8
Utah Age Specific Fertility Rates by Birth Order, 2007



Sources: National Center for Health Statistics; Census Bureau 2000-2010 State Characteristics Intercensal Population Estimates File (2009 and Earlier); Vintage 2016 Postcensal Population Estimates Single Year of Age and Sex (2010-2015); Analysis by Kem C. Gardner Policy Institute

older ages to have as many as if they had started sooner, but this is unlikely.¹² Some evidence suggests childlessness increased since the Great Recession, as some women postponed to the point where they forewent childbearing altogether.¹³

Historical Context

The fertility changes surrounding the Great Recession suggest that fertility behavior can be tied to short-term economic cycles. Describing and contextualizing longer term historical fertility trends provides more clarity about fertility patterns in Utah. Fertility rates have been steadily decreasing for a century in developed regions of the world. Figure 10 highlights TFRs for Utah and the United States since 1900. Although not shown, rates were much higher prior to 1900. Theories identifying and specifying the First and Second Demographic Transitions provide explanations for the patterns seen in these data.

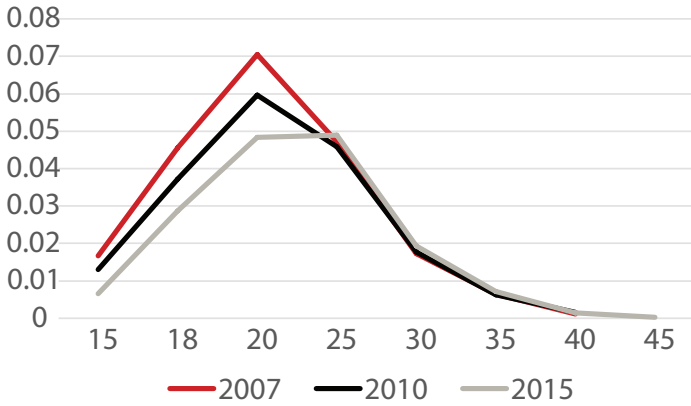
First Demographic Transition

The “Demographic Transition” is a well-documented social phenomenon. Prior to the Industrial Revolution in the 18th and 19th centuries, death rates were much higher for infants and children, and so a higher TFR was necessary to replace the population. The high number of births countered the high number of deaths, resulting in a maintained level of population. As countries industrialized, those high fertility and mortality rates dropped to lower levels.

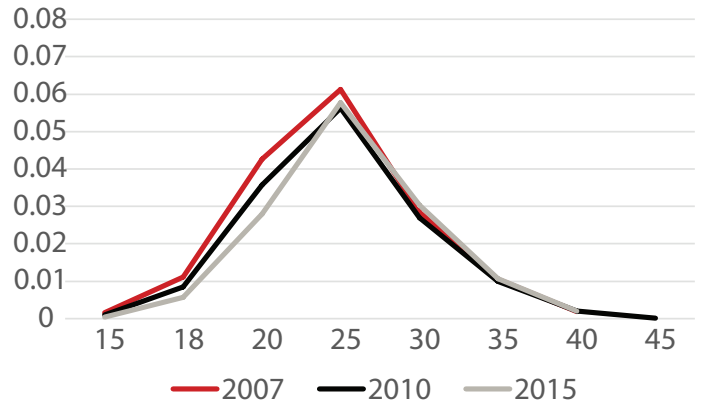
Infant, child, and maternal mortality declined due to technological and public health improvements during the transition period and this lowered the fertility threshold for population replacement. Additionally, advancements in contraceptive technologies provided women with the

Figure 9
Utah Age Specific Fertility Rates by Birth Order

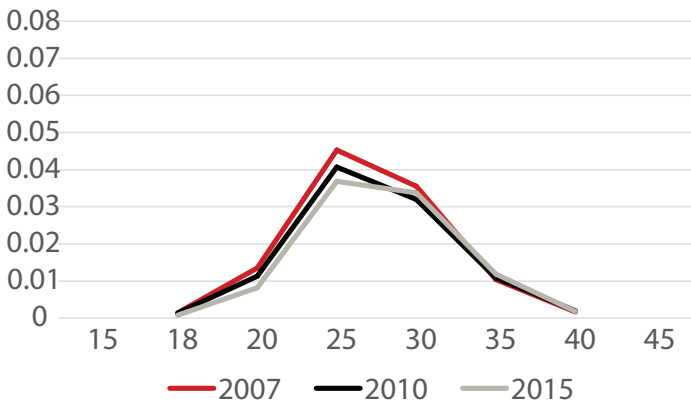
Birth Order = 1



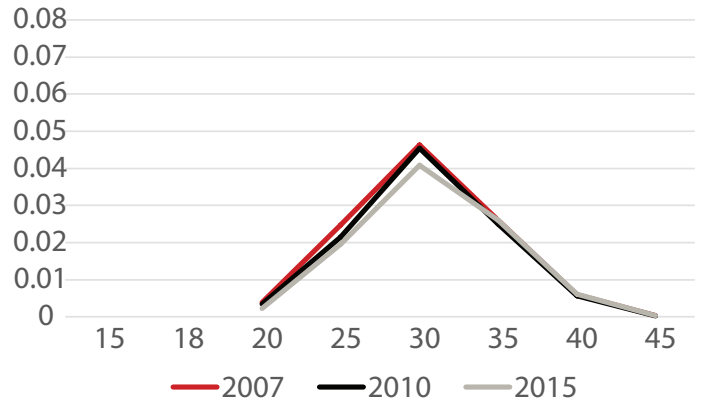
Birth Order = 2



Birth Order = 3



Birth Order = 4+



Sources: National Center for Health Statistics; Census Bureau 2000-2010 State Characteristics Intercensal Population Estimates File (2009 and Earlier); Vintage 2016 Postcensal Population Estimates Single Year of Age and Sex (2010-2015); Analysis by Kem C. Gardner Policy Institute

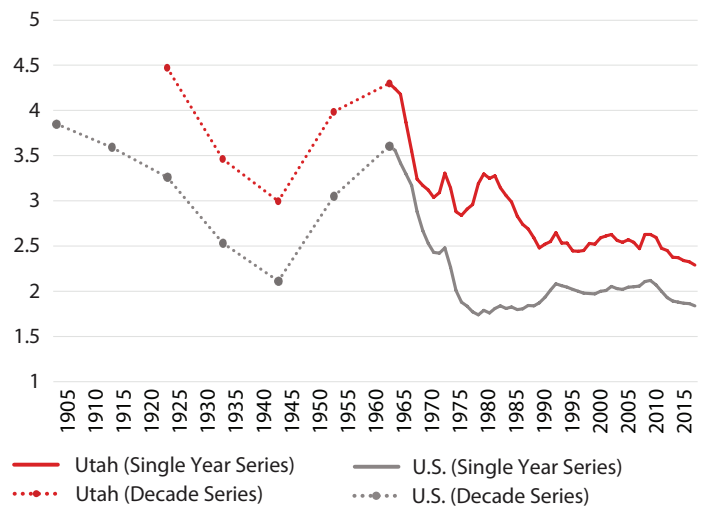
opportunity to plan their fertility. These advances have all taken place in developed countries, with corresponding declines in fertility rates. Utah's demographic transition has been documented in a demographic history, demonstrating these patterns since the pioneer settling of Utah in the mid-1800s.¹⁴

While declining fertility is a notable part of the Demographic Transition, there have been instances of *increasing* fertility due to unusual circumstances. The Baby Boom, the period after World War II (approximately 1945-1965), saw a globally increasing TFR in much of the developed world. It was an unexpected deviation from historical trends, but after this temporary deviation, the downward fertility trend was reestablished in Utah and the nation. This is shown in Figure 10.

Second Demographic Transition

In the mid-1980s, the theory of a Second Demographic Transition was developed in Europe. This transition is expressed in shifting family structures which includes increasing prevalence

Figure 10
Total Fertility Rates: Utah and the United States



Sources: National Center for Health Statistics; Gapminder; Utah Department of Health; U.S. Census Bureau Decennial Counts; Utah Population Database, University of Utah

of divorce, non-marital childbearing, and postponement of marriage. The Second Demographic Transition results in lower fertility rates, and has progressed so far in some countries that fertility rates have declined to below replacement levels.¹⁵ In these countries, migration has become a more prominent driver of population growth. As seen in the first Demographic Transition, external factors helped create these impacts to fertility. External factors contributing to this new transition include shifts from religious to secular life, more workforce participation by women, other life goals (work, education) taking priority over parenthood, and a desire for an open future.¹⁶

The Second Demographic Transition is also occurring in the U.S., although due to the diversity of the population, impacts vary by geographic region. States having populations with less religious participation, higher concentration in metropolitan areas, and higher educational attainment and incomes all align more closely with the transition seen in Europe. These attributes encompass a broad swath of the U.S., including the northeast, the Pacific coast, the Great Lakes region and Arizona, New Mexico, and Colorado. Utah falls into a smaller group of states which are experiencing the transition in a different way. This group of states typically has higher levels of religious adherence, less education, and more rural populations. Within this grouping, Utah is distinctive.¹⁷

Utah in Transition and Recession

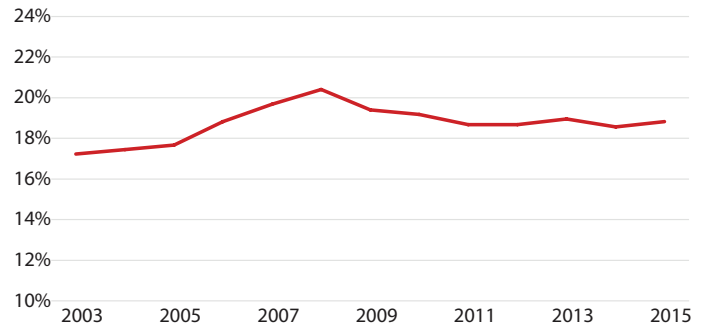
Utah's population differs from its group of peer states in the Second Demographic Transition in significant ways. Utah has a highly educated population, low teen birth rates, and low non-marital fertility. However, the high religious adherence in Utah has enough influence to align fertility patterns with states in the Northwest and Southeastern regions of the country. The Great Recession likely affected Utah's response to the Second Demographic Transition, and potentially intensified the impacts that otherwise would have taken years to develop more fully.

The following sections focus on some of the drivers of these changes, including marriage, education, economic factors, and religion. These discussions highlight how the Second Demographic Transition is being expressed in Utah, and how the recession accentuated factors that accelerated the trend.

Marriage

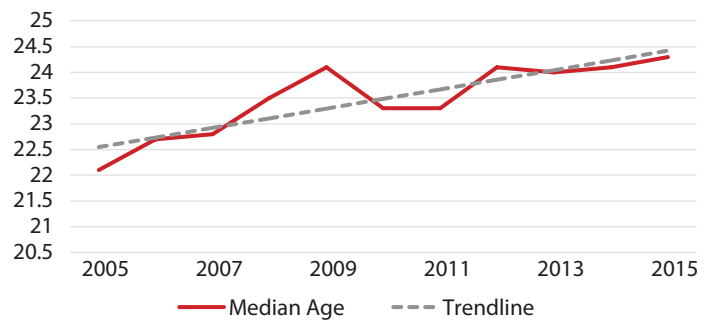
Nationally, and in Utah, the share of births to unmarried mothers increased from 2003 to 2015. In both situations, the most significant increase was seen in the years leading up to the recession, with Utah peaking in 2008 (20.4 percent) and the U.S. in 2009 (41.0 percent). Figure 11 highlights this change in Utah from 2003 to 2015.

Figure 11
Percent of Births to Unmarried Utah Mothers



Source: National Center for Health Statistics

Figure 12
Median Age at First Marriage for Utah Women



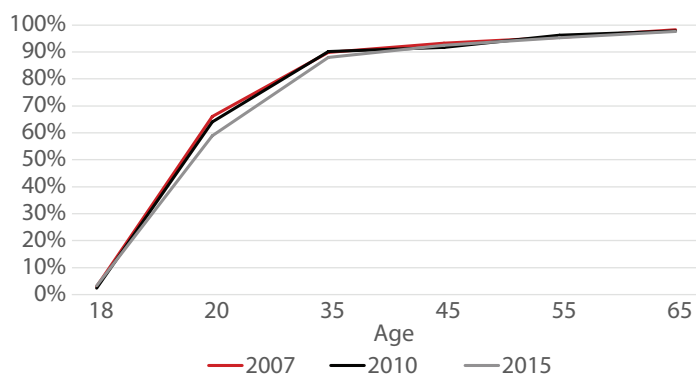
Source: Census Bureau American Community Survey single-year from American Fact Finder

This change also seems to reflect the influence of different types of families included in the second demographic transition. While the shares of younger unmarried mothers (teens and 20 to 24 year olds) comprise over 50 percent of births to unmarried women, they have decreased in both Utah and the U.S. since the recession. Conversely, the shares of older unmarried mothers (30-44 years old) have increased significantly. These changes to certain age groups combined with the overall increase in births to unmarried mothers reflect findings from national research, which concluded that teens and unmarried women delayed fertility during the recession through increased contraceptive use.¹⁸

Despite these increases, about 80 percent of Utah births are still to married mothers. There is a strong association between marriage and fertility rates. Median age at first marriage, reported by the Census Bureau, highlights the age of first marriage for Utah women increasing over the past decade, from 22.1 in 2005 to 24.3 in 2015 (Figure 12).

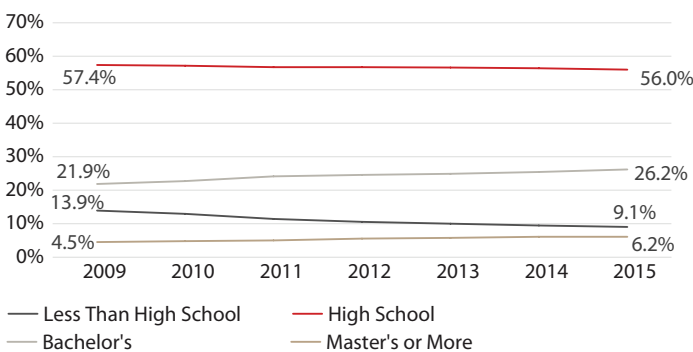
Figure 13 illustrates this concept in a different way, through the proportion of Utah women in certain age groups ever married in 2007, 2010, and 2015. With the consideration of confidence intervals for this sample-based data, the data highlights a statistically significant change over time. In particular, the percentage of women ever married by their late 20s has decreased, especially between 2010 and 2015.

Figure 13
Percent of Utah Women Ever Married



Source: Census Bureau American Community Survey Single-Year Data (Table S1201 - Marital Status)

Figure 14
Percentage of Utah Births by Mother's Education Level

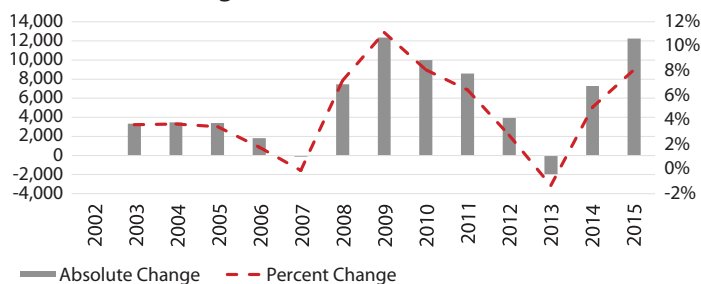


Source: National Center for Health Statistics

It is likely that some of this effect is due to local cultural factors, rather than the recession. A large proportion of Utah's residents are members of the Church of Jesus Christ of Latter-day Saints (LDS). LDS women generally marry earlier than other populations, and also have higher fertility rates.¹⁹ In 2013, the LDS church lowered its missionary ages for men and women. This change resulted in an increase in the share of LDS women serving missions, which was reflected in a reduced share of the statewide population of young adult women.²⁰ Mission service time is generally 18 months for women, resulting in the first cohort of younger women returning around 2015. This age change could account for some of the delayed first marriages and births between 2010 and 2015, though this is only a hypothesis.²¹

Regardless, there is a clear pattern of the age of first marriage increasing in Utah, as was evident even prior to the missionary age change. This is consistent with the birth data already presented, other empirical research, and known attitudes towards childbearing and marriage discussed above.

Figure 15
Female Annual Higher Education Fall Enrollment in Utah,



Sources: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall Enrollment component (provisional data).

Education

Mothers with higher levels of educational attainment tend to have healthier children due to better health behaviors, research-informed parenting strategies, and also increased earning potential.²² While the benefits of education are myriad, education takes time. This can result in delayed marriage and childbearing as education levels rise.

Figure 14 shows the percentage of all births to Utah women by selected levels of educational attainment. These are shown since 2009, due to prior data appearing to have poor reliability.

The proportion of births to Utah women with higher education degrees is increasing over time, while the proportion to women with less than a high school education is decreasing. There also appears to be a slight decrease in the proportion of births to mothers with a high school diploma but less than a Bachelor's degree, though they still encompass the vast majority of births. This is likely related to the postponing age of first marriage and first child discussed above. These trends may be related to individual adjustments to a postrecession economy.²³ Educational attainment of women has been increasing, which reinforces these trends.

It is uncertain whether these trends will continue because it could be an after-effect of increased higher-education enrollments during the recession. Enrollments tend to increase during recessions as employment is increasingly difficult to obtain. The lack of jobs decreases the opportunity cost (in the form of temporary foregone wages) of additional education to increase one's earning potential. Figure 15 illustrates the annual change in Utah women's enrollment peaking in fall of 2009, coinciding with the trough of the recession when household incomes were hit the hardest.

There was a gradual decrease of enrollment as economic recovery began and the job market improved. As previously explained, the missionary age change resulted in an increased number of women leaving Utah in 2013, and this resulted in declines in higher education enrollments. Subsequently, there

has been an increase in enrollment as those women return from missions and enroll at institutions of higher education.

Recent research suggests that although higher proportions of Utah women have earned a Bachelor's degree or higher in the past decade – 24.5 percent in 2005 to 30.7 percent in 2016 – serious gender gaps remain.²⁴ If trends of increased educational attainment continue for women, it could improve the health and opportunities of families, and most relevant to this paper, decrease the likelihood of a return to prerecession fertility levels.

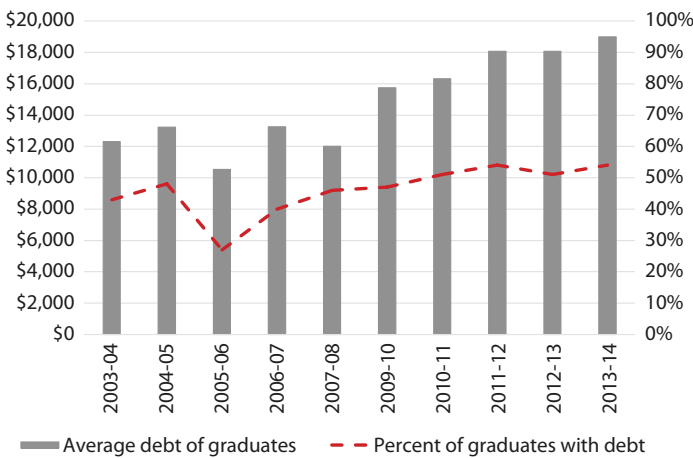
Student Debt

The expense of education often requires increasing student debt. All other things being equal, higher student debt burdens can discourage household formation and childbearing because of budget constraints. Between 2003 and 2015, Utah's per capita student debt burden has increased by 285 percent, far outpacing the growth in other types of debt.²⁵

Figure 16 represents the changes in student debt burdens and the proportion of students graduating with debt from Bachelor's programs in Utah between 2003 and 2014. Not only can student debt decrease discretionary spending, it can also adversely impact the ability to obtain loans for homeownership.²⁶

Housing

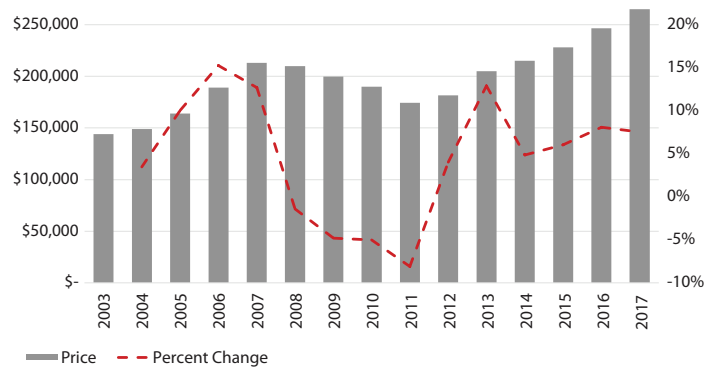
Figure 16
Undergraduate Student Debt in Utah



Source: The Institute for College Access & Success, College InSight

Inflating home prices are also related to childbearing. Research suggests that the age of parents at first birth might be postponed by three to four years in expensive housing markets.²⁷ Previous work by the Kem C. Gardner Policy Institute indicates Utah has a relatively high rate of debt compared to other states, with end-of-2015 estimates ranking Utah 13th with \$52,150 per capita (over age 18).²⁸ In particular, Utahns carry more housing debt than their peers nationally. This is likely due to Utah's increasing housing prices and younger homeowners with less equity.

Figure 17
Utah Median Household Selling Price and Annual Percentage Rate



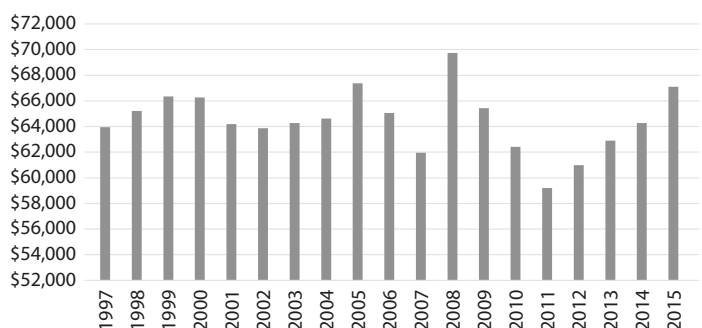
Source: UtahRealEstate.com

Housing debt surged prior to, and was a major cause of, the recession but has since declined. One reason for the decline was due to foreclosures, which cleared the mortgages but also has likely adversely impacted credit ratings of potential homeowners. Other reasons include tightened credit markets and risk-averse borrowers following the recession.²⁹ Figure 17 shows median Utah housing prices from 2003 through 2016. Prices are again surging, and Utah's housing market is known to be tight.

Income

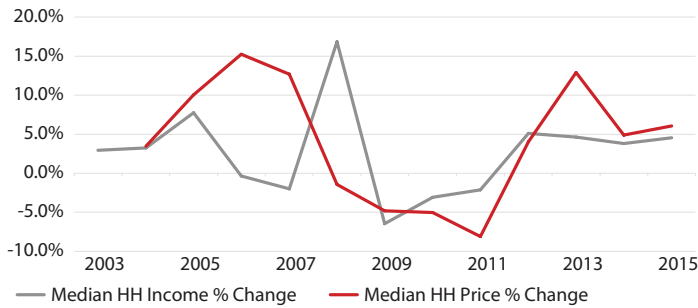
Debt and housing are not the only aspects of household finance relevant to parenthood. Figure 18 explores Utah inflation-adjusted median household income since 1997. In these data, the significant declines related to the recession begin in 2009 and continued to a low point in 2011. Household income has gradually increased since 2011, but by 2015 had not yet attained its previous peak level from 2008. Decreased income can discourage couples from having a child. If household incomes continue to increase, there could potentially be some rebound of the TFR.³⁰

Figure 18
Inflation Adjusted Median Income in Utah



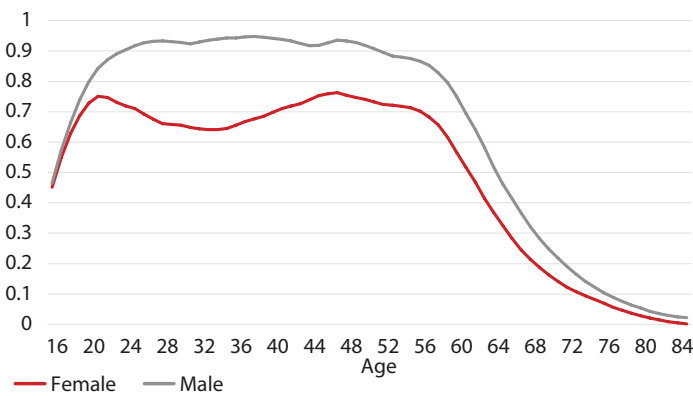
Sources: U.S. Census Bureau: Current Population Survey (CPS) Money income of households; U.S. Bureau of Labor Statistics (BLS)

Figure 19
Utah Median Household Income and Median Household Price Percent Change



Sources: U.S. Census Bureau: Current Population Survey Money income of households; UtahRealEstate.com

Figure 20
Utah Labor Force Participation Rate in 2007 by Age and Sex



Source: American Community Survey, Public-Use MicroData Sample (PUMS) 2007

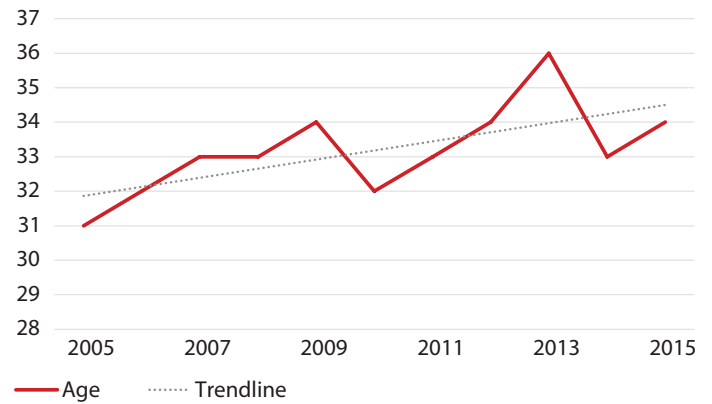
Figure 19 compares changes in income and housing prices. In the past few years, housing prices have increased faster than household income.

Women’s Labor Force Participation

Increased female labor force participation has often been used as an explanation for delayed fertility. However, research also suggests that in recent decades, increased female labor force participation is actually related to higher fertility rates.³¹ Utah’s female workforce experiences a larger gender wage gap than their peers nationally.³² These economic factors could impact fertility timing.

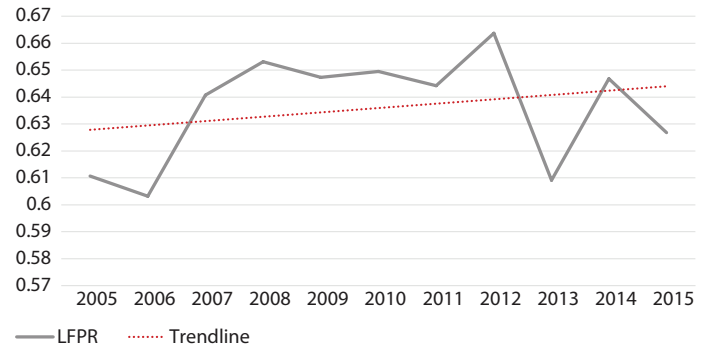
Figure 20 compares labor force participation rates for Utah women and men in 2007, revealing some meaningful patterns. First, the labor force participation rate is generally higher for men. Second, when examining the rates by age, women’s rates noticeably decline between the early 20s and late 40s. This pattern is a well-documented occurrence, as women take time away from the labor force to raise and care for their families. It is

Figure 21
Age of Lowest Female Utah Labor Force Participation Rate (ages 25-45)



Source: American Community Survey, Public-Use MicroData Sample (PUMS) 2005-2015

Figure 22
Lowest Female Utah Labor Force Participation Rate (ages 25-45)



Source: American Community Survey, Public-Use MicroData Sample (PUMS) 2005-2015

particularly pronounced in Utah, where data suggest the gap in participation between mothers and fathers may be especially large.³³ When returning to the labor force, this “motherhood penalty” tends to suppress women’s wages.³⁴

The lowest point in female labor force participation can be used as a metric to approximate women’s “family gap” – differences in pay for women with children compared to those without – over time. Figure 21 examines the ages at which these low points occurred, and there appears to be a trend of increasing age over time. The actual labor force participation rates at which these low points occurred, shown in Figure 22, are generally slightly increasing, but the pattern is not consistent.

This delay of the labor force participation rate low point suggests women might be waiting longer to exit the labor force to raise children. This has meaning for fertility rates, but also likely reflects women’s financial experiences and labor market adjustments women are making in response to these wage dynamics.

LDS Religious Affiliation

The strong cultural influence of the LDS Church is the most commonly presented reason for Utah's higher-than-average fertility rates. The church teaches many values which are generally regarded as traditional and conservative, including the encouragement of marriage and childbearing—and of not delaying these steps. Though still present in cultural influence, there are two major reasons to suspect these attitudes are having less of an impact on Utah fertility patterns over time.

First, LDS teachings about normative family gender roles have changed in the past few decades.³⁵ Shifts in attitudes toward women's roles in the home and in the workplace, as well as how fathers care for their children and their households, could have impacts on timing of marriage and fertility.

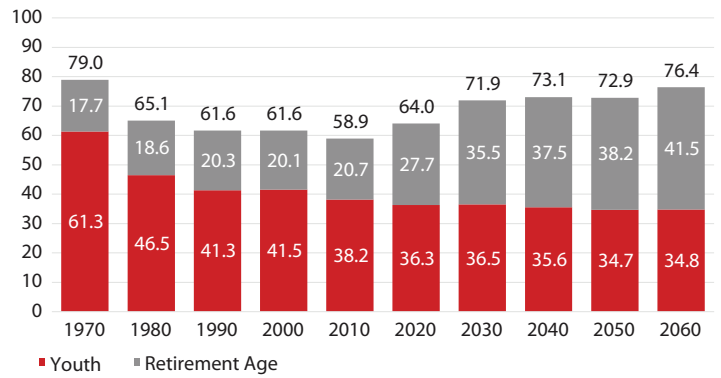
Second, each Utah Mormon may interpret and apply LDS teachings differently. Personal interpretations will likely be influenced by Utah's increasing integration with the global economy and culture. With increasing diversity in religious preferences and practices, ideas are transmitted, and people often incorporate other ideas into their personal belief systems.³⁶ Shifting personal attitudes towards childbearing would probably tend to lower fertility rates over time even amongst strong adherents of the LDS faith.

It is difficult to find sufficient data examining these trends for religious groups within individual states. Some evidence suggests Mormons are following the patterns of delayed marriage and childbearing, though replicated studies over a longer time period would be necessary for a more definitive conclusion to be reached, particularly within Utah.³⁷ Delayed age at first marriage, age at the birth of first child, and lower fertility in Utah suggest these historical trends will likely continue, regardless of short-term economic cycles. However, given the power of cultural forces to influence demographic forces, it seems premature to assume that Utah's fertility rate would continue to decline to reach below-replacement levels.

Policy Implications

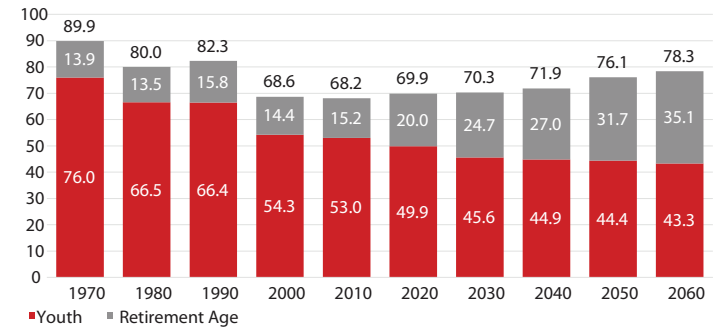
The most direct result of a declining fertility rate is fewer births per capita, which results in lower rates of natural increase (births minus deaths) over time. A declining fertility rate alters the demographic makeup of a population. The median age of the population will increase and the age structure will shift from young to old. Over the next 50 years, all age groups are projected to increase, but the population 65 years and older increases significantly as a share of the total population. These changes impact planning for the future of Utah.

Figure 23
United States Dependency Ratio



Sources: U.S. Census Bureau Decennial Counts; U.S. Census Bureau National Projections 2014-2060

Figure 24
Utah Dependency Ratios



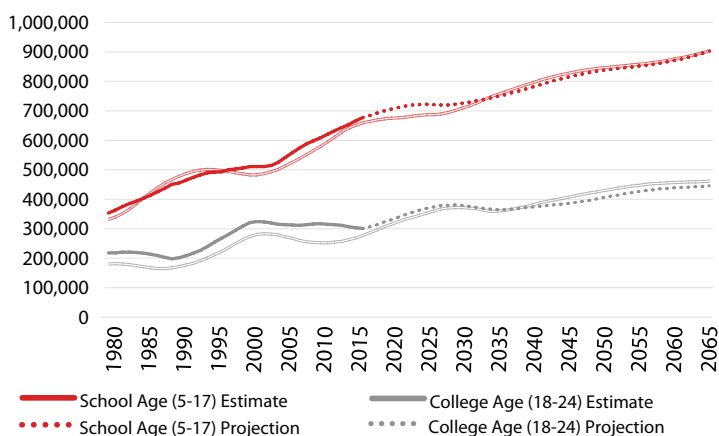
Sources: U.S. Census Bureau Decennial Counts; Kem C. Gardner Policy Institute 2015-2065 State and County Projections

Dependency Ratios

The aging population is a global phenomenon and has a wide range of significant economic, social, and political implications. Populations are growing older because of the combined effects of declining fertility and increasing life expectancy. A summary measure of the age structure is the dependency ratio. It is the ratio of the non-working age population (ages zero through 17, and 65 years and older) per 100 persons in the working age population (ages 18 through 64). The ratio can be disaggregated into young dependents and older dependents, or be presented as a combined total of both traditionally non-working age groups. It is often used as a measure for economic planning—how much economic “pressure” will be put on the working age population to finance services such as education or Social Security? Though many Utahns work well beyond age 65, and children and aged adults also contribute to the economy in other ways, age-related programs still require funding and planning.

Utah has historically had a higher dependency ratio than the United States, but also a different age distribution within the total dependency ratio. Figures 23 and 24 show recent past and

Figure 25
Utah Births Analysis
School Age and College Age Population Estimates, Projections, and Corresponding Births



Sources: 1980-1989: Governor’s Office of Planning and Budget, Population estimates by sex and single year of age; 1980-1989; 1990 to 2009: Governor’s Office of Management and Budget, 2012 Baseline Projections; 2010 to 2065: Kem C. Gardner Policy Institute 2015-2065 State and County Projections

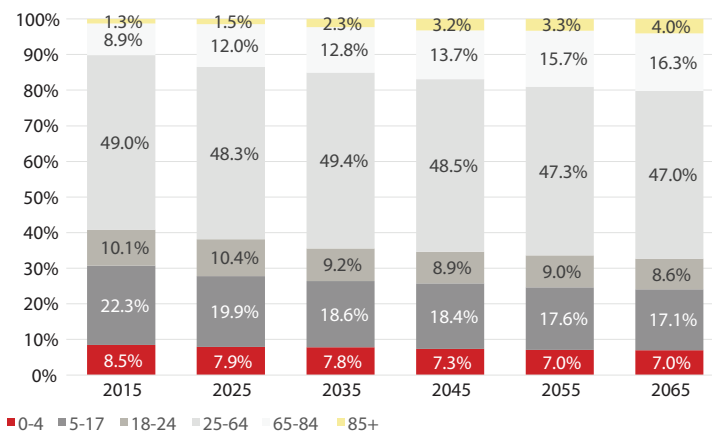
projected dependency ratios for Utah and the U.S. In 2010, Utah’s total dependency ratio was 68.2 non-working age dependents to every 100 working age persons, with a retirement ratio of 15.2, and a youth ratio of 53.0. When compared with the U.S., Utah has more youth dependents, and fewer retirement-aged dependents. This is strongly related to Utah’s higher TFR and young adult net in-migration, which keeps the population “younger.”³⁸

As the TFR and life expectancy change, these ratios will also shift. In 2060, Utah is projected to have 78.3 dependents per 100 working age persons, with a retirement ratio of 35.1, and a youth ratio of 43.3. The age structure of Utah is becoming more similar to that of the nation, but still maintains its youthful signature. Utah’s youth dependency ratio is expected to get lower, and the old-age dependency ratio to get higher over time.

This dynamic has implications for program and infrastructure funding. For example, Figure 25 shows just how closely the school-age population follows the past level of births over time.³⁹ While Utah’s school-age population is expected to continually grow, those growth rates are projected to decelerate over time, impacting school enrollments.

For the foreseeable future, the Utah population will grow in total and across all age groups. Children’s health services, public schools, and pre-K programs will most likely feel less growth burden in the future while services that the senior community utilize will feel increasing growth pressure as the Baby Boomers continue to age. In addition to the perennial increases in student headcounts, new funding considerations will emerge

Figure 26
Selected Age Groups as a Percent of Total Utah Population



Source: Kem C. Gardner Policy Institute 2015-2065 State and County Projections

with the growth in populations of older adults (e.g., such as Social Security, senior housing assistance, and health care).

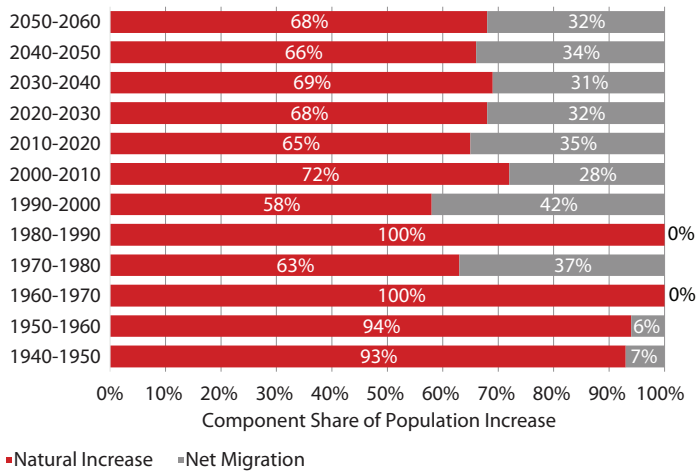
Figure 26 shows the projected shift in age-distribution over time. There is a particularly strong increase in the number of the “oldest old”—those over age 85—and “centenarians”—those over age 100. Programs related directly to old age, such as Alzheimer’s assistance, will face increasing demands and funding pressures.

These shifts also indicate a change in the demand for services. More health care services specialized in geriatric care and skilled nursing facilities will be essential to support the aging population. Educational requirements for these shifting occupational opportunities will need to be addressed. Certain types of jobs will be more likely to generate high pay and spur development in aging communities.⁴⁰

Shifting Sources of Population Growth

Figure 27 shows the historical and projected relative contributions to population growth from natural increase (births minus deaths) and net migration over time. The projections suggest that sustained net in-migration will consistently contribute to Utah’s population and economic growth. Historically, when Utah was a relatively small, isolated, and economically specialized state, it relied heavily upon births for its population growth, with the effects of migration varying by economic conditions. As the state has become much larger, with a more diversified and globally connected economy, natural increase has slowed. These economic and demographic transformations have combined to result in a more consistent contribution of net migration over time to maintain sufficient growth in the labor force. This is necessary for continued economic growth and to keep pace with the aging dependency ratio. Fewer children per family will result in a smaller “home-grown” labor force, requiring continued recruitment from elsewhere.

Figure 27
Utah Population Components of Change



Sources: Utah Population Estimates Committee (1940-2010); Kem C. Gardner Policy Institute 2015-2065 State and County Projections (2010-2060)

The world’s population is currently over 7.4 billion, with more people being added every second and no end to this growth in sight.⁴¹ There is no absolute shortage of workers at the global scale. As suggested by the second demographic transition, migration will become a key component to maintain population levels in areas with lowered fertility rates. In some European and Asian countries, pronatalist policies designed to encourage growth have been implemented in response to fertility rates below replacement levels. These policies include programs such as paid family leave or state-sponsored childcare, with some success in their respective populations.⁴² Many of these policies are already being considered by Utah policy-makers to varying degrees and for varying reasons, some unrelated to fertility. The fact that Utah’s fertility rate has been declining, and will probably continue to do so, should inform these policy discussions.

Households and Community

Another future planning issue is sufficient, appropriate, and affordable housing. The number of Utah households is projected to steadily increase over time; but the average household size will decrease because older Americans generally live with fewer people and families are having fewer children. The housing mix demanded will change accordingly.

The current population of aging adults is experiencing life in a different way than their parents, which will likely create lasting impacts into the future. Concepts such as aging in place – which focuses on keeping seniors in their communities rather than moving into retirement communities – affordable housing, and multi-modal transportation are being implemented to accommodate today’s seniors and provide opportunities for more diverse planning for the future.⁴³

These assumptions are also based on the idea that there will not only continue to be enough housing, but that it will also be affordable. These two caveats can heavily impact population growth (both natural increase and migration) within a particular geography as explained above. Planners will want to take into consideration the changing size and makeup of households, and the availability and placement of affordable housing and transportation when determining the amount of funding and the types of services needed.

Future Fertility Trends

Future gazing is fraught with uncertainties. An example is the completely unforeseen Post WWII Baby Boom, which baffled population forecasters, because it was such a deviation from the prevailing trend.⁴⁴ Certainly we rely on historical data. But “even perfect use of exact facts regarding a homogenous past may be frustrated by the future being genuinely different.”⁴⁵ In other words, the past is not a great predictor of the future; but, it is still the best predictor we have. Simple data extrapolations alone are not sufficient for future forecasts. Demographic projections should also incorporate other patterns we derive from history, including distinctive socio-economic realities, and the changing cultural attitudes of successive generations.

No one report can provide a completely thorough examination of all Utah’s fertility dynamics. This report focused on Utah’s fertility transitions, and a few key economic and cultural indicators. Changes in migration levels and patterns, population composition (e.g. ethnicity, nativity, etc.), same-sex unions, and other important social dynamics will all affect Utah’s fertility rate to some degree. Each is worthy of its own special examination, and could affect the likelihood of a fertility rebound.

Because of its impacts on fertility, this research focused special attention on the state’s cultural demographics. Utah has a unique and dominant cultural tradition rooted in the LDS faith, which tends to elevate fertility rates above those of the nation. However, the economic and cultural trends point to lower fertility levels. These historical trends carry momentum that is very difficult to slow or change, which affects people’s childbearing decisions. “Historical transformations carry meanings not only for individual ways of life, but for the very character—the limits and possibilities of the human being.”⁴⁶

It is likely that, consistent with history, Utah’s fertility rate will not return to previous levels and will most likely trend lower over time. For the foreseeable future, Utah will remain the heart of the Mormon Culture Region. Consequently, its signature demographics, including a fertility rate above the national average, should continue. It seems premature to argue that the rates will lower to a replacement TFR of 2.1.

Conclusion

Utah still has the highest fertility rate in the nation, but those rates have declined since the onset of the Great Recession with no sign of rebounding. While recovery from the recession suggests possible short-term increases in the near future, the longer-term historical trend of lowering fertility rates is well established, and unlikely to reverse. With the consideration of external factors, this shift which might just be seen as a pregnant pause appears to be the new normal. Socio-economic conditions impact demographic forces, and Utah residents are affected along with the rest of the nation despite its unique cultural heritage. Utah will likely continue to attract migrants even as the population ages. Planning for this continued growth, an aging population, and shifting labor-force composition will be crucial for Utah to maintain its quality of life into the future.

Endnotes

- 1.. Meinig, D.W., *The Shaping of America: A Geographical Perspective on 500 Year of History, Volume 4: Global America, 1915-2000*. (Yale University Press, 2004).
- 2.. "Childbearing age" differs by report. For the reports here, we usually use ages 15-49.
3. Martin J. A, Hamilton B. E., Osterman M. J. K., et al. Births: Final data for 2015. *National Vital Statistics Reports* 66:1, 1-69 (2017).
4. This discussion of total fertility rates includes text from Catherine Jeppsen's unpublished manuscript on Utah fertility that was an early draft of this paper while she worked at the Kem C. Gardner Policy Institute. It is included here with her permission.
5. Preston, S. H., Heuveline, P., & Guilot, M. *Demography: Measuring and Modeling Population Processes*. (Blackwell Publishers, 2001).
6. Rowland, D.T. *Demographic Methods and Concepts*. (Oxford University Press, 2003).
7. Jeppsen, Catherine. (2016). Utah Fertility. Unpublished manuscript at the Kem C. Gardner Policy Institute.
8. Goldstein, J., Kreyenfeld, M., Jasilioniene, A. et al. Fertility Reactions to the 'Great Recession' in Europe: Recent Evidence from Order-Specific Data. *Demographic Research* 29:4, 85-104 (2013).
9. Morgan, S. P. Is Low Fertility a Twenty-First-Century Demographic Crisis? *Demography* 40:4, 589-603 (2003).
10. For example, the ASFR for birth order 2 is the number of second births to women of a given age, divided by the total population of women that age. Another measure would be the number of second births to women of a given age, divided by the number of women who have already given birth once. This measure would have a different meaning, but is much more difficult to construct and interpret.
11. Goldstein, J., Kreyenfeld, M., Jasilioniene, A. et al. Fertility Reactions to the 'Great Recession' in Europe: Recent Evidence from Order-Specific Data. *Demographic Research* 29:4, 85-104 (2013) and Matthews, T. J. & Hamilton, B. E. Mean Age of Mothers is on the Rise: United States, 2000-2014. *NCHS Data Brief* 232, 1-7 (2016).
12. Goldstein, J. R., Sobotka, T. & Jasilioniene, A. The End of "Lowest-Low" Fertility? *Population and Development Review* 35:4, 663-699 (2009).
13. Comolli, C. L. & Bernardi, F. The Causal Effect of the Great Recession on Childlessness of White American Women. *IZA Journal of Labor Economics* 4:21, 1-24 (2015).
14. Bean, L. L., Anderton, D. L. & Mineau, G. P. *Fertility Change on the American Frontier: Adaptation and Innovation*. (University of California Press, 1990).
15. Replacement-level fertility is the TFR necessary for a population to replace itself. It is generally assumed to be 2.1 in the modern developed world, which accounts for the fact that each woman on average would need at least one son, one daughter, and an addition tenth of a child to account for other factors such as early death. Some recent research suggests that fertility rates in these countries might return to replacement levels, such as Goldstein, J. R., Sobotka, T. & Jasilioniene, A. The End of "Lowest-Low" Fertility? *Population and Development Review* 35:4, 663-699 (2009).
16. Lesthaeghe, R. The Second Demographic Transition: A Concise Overview of its Development. *Proceedings of the National Academy of Sciences* 111:51, 18112-18115 (2014).
17. Lesthaeghe, R., & Neidert, L. The Second Demographic Transition in the United States: Exception or Textbook Example? *Population and Development Review*, 32:4, 669-698 (2006).
18. Schneider, D. Non-marital and Teen Fertility and Contraception During the Great Recession. *RSF: The Russell Sage Foundation Journal of Social Sciences* 3:3, 126-144 (2017).
19. Lipka, M. Mormons More Likely to Marry, Have More Children than Other U.S. Religious Groups. *Pew Research Center* (2015) and Sturgill, K. & Heaton, T. B. High Utah Fertility: Implications for Quality of Life in Utah at the Beginning of the New Millennium: *A Demographic Perspective* (eds. Zick, C. D. & Smith, K. R.) 19-26 (The University of Utah Press, 2006).
20. *Utah Population Committee Methodology*. (Kem C. Gardner Policy Institute, University of Utah, 2016).
21. To truly assess the impact of the missionary age change on age of marriage and fertility, better data, such as a survey, would need to follow the first cohorts of female LDS missionaries over time until they were beyond reproductive years. Even then, it is uncertain what the effects will be of successive cohorts. In the absence of such data, we can only make indirect inferences using models and assumptions.
22. Carneiro, P., Meghir, C. & Parey, M. Maternal Education, Home Environments, and the Development of Children and Adolescents. *Journal of the European Economic Association*. 11:supplement 1, 123-160 (2013).
23. Carnevale, A. P., Smith, N. & Strohl, J. Recovery: Job Growth And Education Requirements Through 2020. (Georgetown Public Policy Institute, Georgetown University, 2013).
24. *Educational Attainment, American Community Survey 1-Year estimates*. (U.S. Census Bureau 2005-2016). Retrieved from https://factfinder.census.gov/bkmk/table/1.0/en/ACS/16_1YR/S1501/0400000US49 and Hess, C. & Williams, C. *The Well-Being of Women in Utah: An Overview*. (Institute for Women's Policy Research, The George Washington University, 2014).
25. *Utah Households Carry More Debt*. (Kem C. Gardner Policy Institute, University of Utah, 2016).
26. Mezza, A. A., Ringo, D. R., Sherlund, S. M, et al. On the Effect of Student Loans on Access to Homeownership. (Board of Governors of the Federal Reserve System, 2016) and Lew, I. Student Loan Debt and the Housing Decisions of Young Households. (Joint Center for Housing Studies of Harvard University, 2015).

27. Clark, W. A. V. Do women delay family formation in expensive housing markets? *Demographic Research* 27:1, 1–24 (2012).
28. *Utah Households Carry More Debt*. (Kem C. Gardner Policy Institute, University of Utah, 2016).
29. *Utah Households Carry More Debt*. (Kem C. Gardner Policy Institute, University of Utah, 2016).
30. One problem with a basic time series of household income is that it does not account for how many workers are in each household, nor for the income patterns by age. While household mean incomes appear to be returning to previous levels, the dispersion of the income is also increasing (in other words, inequality is increasing). There is a well-established life-cycle pattern for income; income tends to increase with age. Examining income amongst those in the younger childbearing ages, adjusted for dual-income household rates and education levels, with special attention paid to the small sample sizes often used for measuring income, would be a more informative measure. Such detailed work would merit its own study to better understand the effect of income upon Utah birth patterns.
31. Morgan, S. P. Is Low Fertility a Twenty-First-Century Demographic Crisis? *Demography* 40:4, 589–603 (2003).
32. Madsen, S. R., Dillon, J. & Scribner, R. T. The Gender Wage Gap in Utah. (Utah Women and Leadership Project, 2017) and Hess, C. & Williams, C. The Well-Being of Women in Utah: An Overview. (Institute for Women's Policy Research, The George Washington University, 2014).
33. Hess, C., Milli, J., Hayes, J., Hegewisch, A., et al. The Status of Women in the States: 2015. (Institute for Women's Policy Research, The George Washington University, 2015).
34. Madsen, S. R., Dillon, J. & Scribner, R. T. *The Gender Wage Gap in Utah*. (Utah Women and Leadership Project, 2017).
35. Miles, Carrie. LDS Family Ideals Versus the Equality of Women: Navigating the Changes Since 1957 in *Revisiting Thomas F. O'Dea's The Mormons: Contemporary Perspectives*. (eds. Jacobson, C., Hoffmann, J., & Heaton, T.) 101-134. (University of Utah Press, 2008) and Iannaccone, L. and Miles, C. Dealing with Social Change: The Mormon Church's Response to Changes in Women's Roles. *Social Forces* 68:4, 1231-1250 (1990).
36. Stark, R. Religion as Context: Hellfire and Delinquency One More Time. *Sociology of Religion* 57:2, 91-112 (1996) and Heaton, T. How Does Religion Influence Fertility?: The Case of The Mormons. *Journal for the Scientific Study of Religion* 25:2, 248-258 (1986).
37. Lipka, M. *Mormons More Likely to Marry, Have More Children than Other U.S. Religious Groups*. (Pew Research Center, 2015) and Jones, R. P. & Cox, D. *America's Changing Religious Identity: Findings from the 2016 American Values Atlas* (Public Religion Institute, 2017).
38. Hollingshaus, M. & Perlich, P. S. *Migrant Today, Parent Tomorrow: A Zero Migration Simulation*. (Kem C. Gardner Policy Institute, University of Utah, 2016).
39. *School and College Age Populations: 1980-2065*. (Kem C. Gardner Policy Institute, University of Utah, 2017).
40. Lambert, D. M., Clark, C. D., Wilcox, M. D., et al. Do Migrating Seniors Affect Business Establishment and Job Growth? An Empirical Look at Southeastern Nonmetropolitan Counties, 2000-2004. *The Review of Regional Studies* 37:2, 251–278 (2007).
41. *U.S. and World Population Clock* (United States Census Bureau, 2017). Retrieved from <https://www.census.gov/popclock/>.
42. D'Addio A.C. & d'Ercole, M.M., Policies, Institutions and Fertility Rates: A Panel Data Analysis for OECD Countries. *OECD Economic Studies* 41:2, 7-43 (2005) and Bick, A. The Quantitative Role of Child Care for Female Labor Force Participation and Fertility. *Journal of the European Economic Association* 14:3, 639–668 (2016).
43. Farber, N., Shinkle, D., Lynott, J., et al. *Aging in Place: A State Survey of Livability Policies and Practices*. (National Conference of State Legislatures and the AARP Public Policy Institute, 2011).
44. Berke, R. L. Census Bureau Demographer's Unqualified Prediction: 'We Will Be Wrong'. (The New York Times, 1989).
45. Keyfitz, N. & Caswell, H. *Applied Mathematical Demography*. (Springer, 2005).
46. Mills, C. W. *The Sociological Imagination*. (Oxford University Press, 1959).



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