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*Commentary*

## **Birth Rate Statistics**

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Much is in the media about the demographic hole that Western nations are digging themselves into. The prolific columnist Mark Steyn has created much of this buzz. While few things are for certain, the future does appear to include declining populations.

The nature of our lives is that there is a lot of inertia in our population. Women take 20 years to get to their prime birthing years and our life spans are very long (80 years or so); it takes a long time to get reproduction rolling and a long time for us to die off. However, there is also dynamism in our population. Women have a very long reproductive phase of 20 years or more; a single generation can have a dramatic effect on population dynamics, impacting preceding and succeeding generations.

Reviewing historical generations reveals just how unusual the current predominance of the two-baby woman is, that when combined with other factors, leads to the current dearth of babies.

### **Fallacy 1 One Baby At End of Reproductive Phase**

Do Western women really have this profile?

Looking at the country of Mr. Steyn's birth, Canada, in 2004, 17% of the babies birthed had mothers aged 35 or older. Further, of these babies, 28% of those babies were their mother's first. This makes just 5% of babies born, being first babies of women aged 35 or older. And of course, some of the 5% will later be joined by a sibling or two or more. In fact, babies who were born to mothers aged 35 or older started life with an average of 1.3 siblings.

In the Great Republic to the south, just 10% of women have a first child at age 35 or older. This 10% of women don't all stop at just one.

The "one designer baby at the age of 39" is extremely atypical in both Canada and the United States. While the frequency of this profile has increased in recent years, it still remains far from typical.

*"True, birth rates are falling all over the world, and it may be that eventually every couple on the planet decides to opt for the western yuppie model of one designer baby at the age of 39."*

Mark Steyn, America Alone

## **Fallacy 2 Most Women Aren't At Replacement Level**

This is false for the United States. In the United States, 65% of women are reproducing at or above the replacement rate. Only 16-17% of American women remain barren while the remaining 18-19% have just one child.

This fallacy highlights the difference between mean and mode. The 35% of "non-replacing" women do drag down the mean but they are in the minority. Mr. Potter in fact has it backwards. A large majority of American women are reproducing at or above the replacement rate. The breakdown is roughly: one-third have none or one; one-third have two; one-third have three or more.

*"Most American women are reproducing at well below replacement rate."*

Andrew Potter, MacLean's  
October 30, 2006

## **Fallacy 3 Extended Families No More**

I haven't examined the Italian demographics so I cannot comment directly on Mr. Steyn's statement. However, be wary of extrapolating conclusions from the mean. In the United States, women born in the 1950's delivered an average of 2.0 babies, but the number of babies per woman varied significantly:

None	16.5%
One	18.4%
Two	34.9%
Three	19.1%
Four	7.1%
Five	2.4%
Six	1.0%
Seven +	0.7%

Only 9.4% of these children had no siblings. On average these children had 1.4 siblings, that is, 2.4 children per mother.

A personal example, my paternal grandmother was one of four children. She had six children herself but her three siblings never married and had no children. Her own children all married and had children (3 had two, 1 had three, 2 had four). Mashing up the concept of fertility rate somewhat: generation one, 2 begat 4; generation two, 5 begat 6; generation three, 12 begat 17. The fertility rate was not that high (4.0, 2.4, 2.8) but there were lots of cousins, aunts and uncles.

Maybe the Italian pattern is significantly different or maybe it has similarities to North America; those that do, do while those that don't, don't. In reality it's not each mother having 1.3 children, there are zeros and ones for sure but also threes and fours.

*"There's no need to extrapolate, and if you do it gets a little freaky, but, just for fun, here goes: by 2050, 60 per cent of Italians will have no brothers, no sisters, no cousins, no aunts, no uncles. The big Italian family, with papa pouring the vino and mama spooning out the pasta down an endless table of grandparents and nieces and nephews, will be gone, no more, dead as the dinosaurs."*

Mark Steyn, America Alone

## **Fallacy 5 Populations Are Crashing**

Mr. Steyn is not inaccurate in his statement of populations halving, but the halving doesn't begin in a generational time period. Due to our longevity, it takes a while for the non-reproducing generation to die off. For example, Statistics Canada projected in a 2005 report that Canada's annual number of deaths will first exceed number of births somewhere between 2020 and 2046 (with assumed fertility rate varying from 1.3 to 1.7). This may seem to be a long time off, but it has also been a long time coming. As Statistics Canada noted in that report, "In Canada, as in many European countries, fertility has been below the replacement level for more than three decades." The Canadian fertility rate was 2.3 in 1970, 1.8 in 1975 and had declined to 1.5 by 2000. Thus it is projected to take Canada somewhere from 50 to 75 years for its non-replacement fertility to cause natural increase to cease (births greater than deaths) and then reverse (deaths greater than births). There is a lot of inertia in human demographics.

Of course there is a difference between a fertility rate of 1.8 and 1.3 or 1.1. The lower the fertility rate the more rapid and dramatic the change. However, the point remains, there is an aging effect of the current population before death can take the momentum and populations begin halving.

Once death takes the momentum, it become a matter of whether that momentum can and will be reversed. With a woman's reproductive phase being 20 years or more, there is no doubt that the momentum can be reversed but it would take marked changes in behaviour. Where a society has experienced very low fertility rates for an extended period of time, it will take a very long period of time before births again exceed deaths. Inertia goes both ways. The odds of pulling out of a decline become longer the lower the fertility for a longer period. The "can" exists but the "will" is a different matter entirely.

## **Fallacy 5 Birth Rates are At Historical Lows**

I don't have a nice quote to critique for this fallacy, but consider historical norms. Examining birth records for the United States, much of the current birthing rates of women is not unusual. I have thought of Mr. Steyn as repeating some of the warnings of President Theodore Roosevelt 100 years earlier, railing against women choosing to be childless or bearing merely one or two. President Roosevelt made a noted speech to the National Congress of Mothers in 1905. This speech is quite a lively read (it makes even Mr. Steyn appear politically correct by comparison). An extract from President Roosevelt's speech that is in line with some of Mr. Steyn's societal warnings is shown to the right,

*"In 17 European countries, it's 1.3 or below -- that's what demographers call "lowest-low" fertility, a rate from which no society has ever recovered. Spain's population is halving with every generation."*

Mark Steyn, Chicago Sun-Times  
October 22, 2006

*"In Canada, as in many European countries, fertility has been below replacement level for more than three decades."*

Statistics Canada  
2005

*"The intelligence of the remark is on a par with its morality; for the most rudimentary mental process would have shown the speaker that if the average family in which there are children contained but two children the nation as a whole would decrease in population so rapidly that in two or three generations it would very deservedly be on the point of extinction, so that the people who had acted on this base and selfish doctrine would be giving place to others with braver and more robust ideals. Nor would such a result be in any way regrettable; for a race that practised such doctrine—that is, a race that practised race suicide—would thereby conclusively show that it was unfit to exist, and that it had better give place to people who had not forgotten the primary laws of their being."*

President Theodore Roosevelt  
March 13, 1905

followed by a longer section, condensed, of President Roosevelt's speech that is more to the subject of a lack of children.

It appears that dearth of children is not unique to our time. One particular table of United States statistics is very revealing. This table shows the birthing patterns of women by generation. Table 1 is an extract from that table which shows the number of children of generations of women who completed their reproductive phase. The most ancient of these generations, women born in 1886-1890, would have been just entering its reproductive phase at the time of President Roosevelt's speech. Unfortunately I have not acquired the statistics for the generations even more ancient in order to give context for President Roosevelt's speech. Though I did find a statement suggesting that fertility did crash during the 19<sup>th</sup> century (see quote to right).

In Table 1, the more recent "baby boom" can be seen to be the work of women born in the 1920's and 1930's. Fertility rate is typically measured for a period of time rather than by generation as I've examined in this commentary.

The point in time definition of fertility rate is:

- the number of children born to the average female if she follows the birthing pattern being experienced today by the overall population (Robert Brown, Introduction to the Mathematics of Demography).

The generation definition of fertility rate is:

- the number of children born to the average female of a particular generation over her life.

The United States point in time fertility rate peaked around 3.7 in the late 1950's but, as can be observed from Table 1, no relevant generation of women had fertility near this high. You can observe later in Table 3 that the "baby boom" mothers started motherhood earlier than preceding generations of women and hence the "boom" is exaggerated due to women of different generations entering their peak childbearing years at the same time.

I find the generational fertility rates to be more informative, without the same risk of distortion, than point in time fertility rates, however, they do not develop as quickly and do not reduce to a single number, and hence the convenience that point in time fertility rates offer.

*"There are many good people who are denied the supreme blessing of children, ... But the man or woman who deliberately foregoes these blessings, whether from viciousness, coldness, shallow-heartedness, self-indulgence, or mere failure to appreciate aright the difference between the all-important and the unimportant,—why, such a creature merits contempt as hearty as any visited upon the soldier who runs away in battle ... The existence of women of this type forms one of the most unpleasant and unwholesome features of modern life. ... That it also exists in American life is made unpleasantly evident by the statistics as to the dwindling families in some localities."*

President Theodore Roosevelt  
March 13, 1905

*"Family size declined from 7.0 children to 3.5 between 1800-1900. During the Great Depression, it declined further to 2.3, until the baby boom of the 1940s and 1950s when family size peaked at 3.7."*

Center for Disease Control  
December 3, 1999

Note: it appears that "family size" is point in time fertility rates.

Birth Years of Women	Distribution of Women by Number of Children Birthed (%)								Fertility Rate
	0	1	2	3	4	5	6	7+	
1954-1958	16.5	18.5	34.7	19.2	7.1	2.4	0.9	0.7	2.0
1951-1955	16.5	18.3	35.1	19.0	7.1	2.4	1.0	0.8	2.0
1946-1950	13.9	17.3	35.5	19.9	8.1	3.0	1.2	1.0	2.1
1941-1945	11.7	13.6	31.1	22.6	11.5	5.1	2.4	2.1	2.5
1936-1940	9.0	10.7	24.6	23.6	15.3	8.0	4.2	4.6	2.9
1931-1935	8.8	9.7	21.9	22.4	16.0	9.1	5.2	6.9	3.2
1926-1930	10.6	11.4	22.7	21.0	14.3	8.2	4.7	7.0	3.1
1921-1925	11.0	15.3	25.0	19.8	12.3	6.7	3.9	6.0	2.8
1916-1920	15.1	18.0	25.4	17.5	10.2	5.5	3.1	5.2	2.5
1911-1915	19.3	21.0	24.0	15.0	8.4	4.5	2.8	5.0	2.3
1906-1910	21.9	22.6	21.9	13.1	7.7	4.4	2.9	5.5	2.2
1901-1905	20.5	22.9	20.7	12.9	8.0	4.8	3.4	6.8	2.4
1896-1900	19.7	20.1	19.6	13.7	8.8	5.4	4.2	8.6	2.6
1891-1895	19.3	17.2	17.7	13.9	9.8	6.2	4.8	11.1	2.9
1886-1890	21.0	14.9	15.3	13.0	10.0	6.8	5.5	13.5	3.1

Source: National Center for Health Statistics

Note: terminal age of 50-54 years was available for women with birth years 1886-1945; terminal age of 40-44 was available for women with birth years 1896-1958; this table uses terminal ages of 40-44 for women with birth years 1896-1958 and 50-54 for women with birth years 1886-1895; termination age of 50-54 would have caused the fertility rate for generations of women born 1896-1945 in some cases to have rounded 0.1 higher with other cases unchanged.

The lower fertility rate of the more recent generations is not caused by more of these women having none or one baby. 35% of women being in the category of none or one is not unusual by historical comparison. Mr. Potter would have been closest to his statement on non-replacing women with respect to American women born around 1900 as the portion of those women having none or one baby exceeded 40%.

What is unusual with the more recent generations is the current predominance of the two-baby woman (see Table 2 for convenient compilation of Table 1 data); about 35% have two babies. 19-26% of “baby boom” mothers had two babies while the more ancient generations had even fewer two-baby mothers.

With the more recent generations women, only 30% have 3 or more children whereas the “baby boom” mothers had a very high portion with 3, 4 or 5 children (almost half, 39-48%) and a very low portion with none or one (19-26%). The more recent generations haven’t slipped that much relative to more ancient generations (born prior to 1921) with respect to women having 3, 4 or 5 children but there are far fewer women birthing larger numbers of children (six or more).

With the more recent generations of women, those who do bear children, bear fewer than the mothers of the “baby boom” generation and the women preceding them. It appears that the coupling of this lower baby count per childbearing woman with a return to previous rates of none or one gives the current dearth of babies.

*“... the coupling of this lower baby count per childbearing woman with a return to previous rates of none or one gives the current dearth of babies.”*

**Table 2 - Historical Family Size for U.S.A. Women by Generation**

Birth Years of Women	Distribution of Women by Number of Children Birthed (%)				Children per Family	Distribution of Children by Children per Family (%)			
	0 or 1	2	3 - 5	6 +		1	2	3 - 5	6 +
1954-1958	35.0	34.7	28.7	1.6	2.4	9.4	35.2	49.7	5.7
1951-1955	34.8	35.1	28.5	1.8	2.4	9.3	35.5	49.3	5.9
1946-1950	31.2	35.5	31.0	2.2	2.5	8.2	33.6	50.7	7.5
1941-1945	25.3	31.1	39.2	4.5	2.8	5.5	25.3	56.6	12.6
1936-1940	19.7	24.6	46.9	8.8	3.2	3.6	16.7	58.5	21.1
1931-1935	18.5	21.9	47.5	12.1	3.5	3.0	13.7	55.4	27.8
1926-1930	22.0	22.7	43.5	11.7	3.4	3.7	14.8	52.7	28.8
1921-1925	26.3	25.0	38.8	9.9	3.2	5.4	17.7	50.3	26.6
1916-1920	33.1	25.4	33.2	8.3	3.0	7.1	20.0	47.7	25.2
1911-1915	40.3	24.0	27.9	7.8	2.9	9.1	20.8	43.7	26.4
1906-1910	44.5	21.9	25.2	8.4	2.9	10.1	19.5	41.0	29.4
1901-1905	43.4	20.7	25.7	10.2	3.0	9.5	17.3	39.5	33.7
1896-1900	39.8	19.6	27.9	12.8	3.3	7.6	14.9	39.2	38.2
1891-1895	36.5	17.7	29.9	16.0	3.6	5.9	12.1	38.1	44.0
1886-1890	35.9	15.3	29.7	19.1	4.0	4.7	9.8	36.0	49.4

Source: Compilation of data from Table 1, National Center for Health Statistics

Note 1: "Children per Family" is the average number of children birthed by a woman who bears children. These rates are always higher than the corresponding fertility rate since barren women are excluded. For example, of the generation of women born 1954-1958 who had children, they had 2.4 children on average, or the average child had 1.4 siblings, but their fertility rate was 2.0.

Note 2: "Distribution of Children by Children per Family" is the distribution of children by the fertility of women. For example, 35.2% of children born to the generation of women born 1954-1958 had 1 sibling (family of 2 children) while 49.7% had 2, 3 or 4 siblings (family of 3, 4 or 5 children).

Looking at the generations that have not yet completed their childbearing years can give a glimpse of how their story may unfold. From the developing data, to date (i.e., 1998) women born in the 1960's and 1970's have behaved remarkably similar to women born in the 1950's in terms of age and frequency of motherhood (see Table 3). Women born in the 1960's are nearing the end of their reproductive phase. Women born in the 1970's have more time left in their reproductive phase but the pattern is similar thus far. Women born in the 1980's are entering their reproductive phase; their story is just starting.

As alluded to earlier, it is also interesting to note from Table 3 that "baby boom" mothers entered motherhood at an earlier age than both prior and subsequent generations of women. The more recent generations of women (born in the 1950's, 1960's and 1970's) started motherhood similar to the more ancient generations of women (born before 1921) but do not appear to have kept growing their families after age 30 the way the more ancient generations of women did. The women born from 1951-1975 at attained age 25-29 have a very similar childbearing pattern to women born 1911-1920 at the same attained age, but this similarity does not continue to attained age 30-34.

*"... women born in the 1960's and 1970's have behaved remarkably similar to women born in the 1950's in terms of age and frequency of motherhood.."*

**Table 3 - Historical Pattern of Age of Childbearing for U.S.A. Women by Generation**

Birth Years of Women	Distribution of Women by Number of Children Birthed (%) at Selected Attained Ages											
	20-24			25-29				30-34				
	Number of Children			Number of Children				Number of Children				
	0	1	2 +	0	1	2	3 +	0	1	2	3	4 +
1974-1978	65.1	21.8	13.1									
1971-1975	65.5	21.2	13.3	43.0	24.8	19.4	12.8					
1966-1970	68.3	19.6	12.1	44.0	24.2	19.3	12.5	26.1	23.4	28.4	14.5	7.6
1961-1965	67.7	20.3	12.0	43.5	24.5	20.4	11.6	26.2	23.3	28.8	14.4	7.3
1956-1960	66.2	21.1	12.7	41.5	24.9	22.0	11.6	25.9	22.6	30.2	14.4	6.9
1951-1955	62.5	23.3	14.2	38.9	25.0	23.9	12.2	24.6	22.0	31.5	14.7	7.2
1946-1950	57.0	24.9	18.1	31.1	25.4	27.2	16.3	19.7	20.5	33.5	16.6	9.7
1941-1945	51.4	23.1	25.5	24.4	21.9	27.7	26.0	15.2	16.2	30.9	20.6	17.1
1936-1940	47.5	24.6	27.9	19.7	18.2	26.4	35.7	11.8	12.9	25.6	22.8	26.9
1931-1935	51.2	24.7	24.1	20.0	19.1	27.5	33.4	11.7	11.8	24.2	22.4	29.9
1926-1930	56.0	26.0	18.0	24.7	23.3	27.1	24.9	14.2	14.6	26.4	21.0	23.8
1921-1925	63.5	22.5	14.0	28.6	29.5	24.2	17.7	15.7	20.2	28.8	18.1	17.2
1916-1920	67.1	20.6	12.3	37.5	28.1	19.2	15.2	21.4	23.8	26.7	14.2	13.9
1911-1915				42.7	26.8	16.5	14.0	27.5	25.8	22.5	11.3	12.9
1906-1910								29.7	25.5	20.2	10.7	13.9

Source: National Center for Health Statistics

Notes: for generation 1971-1975 the data for attained age 25-29 is actually that of generation 1969-1973; for generation 1966-1970 the data for attained age 30-34 is actually that of generation 1964-1968.

Perhaps the birthing pattern of those women born in the 1950's, 1960's and 1970's will continue for another few generations of women. The pattern will change. In what way, we don't know. Maybe there are rational reasons for the changes that have occurred, maybe not. Maybe there is some sort of population cycle that will mysteriously push the fertility rate back over 3, after all, fashions tend to come back into style. The stable fertility rate of 2.0 for the United States is not without precedence and is not dire. Other countries, as Mr. Steyn correctly notes, having much lower fertility rates ("lowest-low"), will face dramatic societal consequences.

Cause is often a difficult thing to assign. It is not evident whether or not President Roosevelt's efforts had any effect, but it appears that the generations succeeding his Presidency did not have robust fertility. Perhaps Mr. Steyn will have better luck convincing the aging women born in the 1970's, the young ladies born in the 1980's and the girls born in the 1990's to remember, with their men, the "primary laws of their being"; maybe there will be mothers with second and third sons named Marc or Marco, or at least Mark. □