The Effects of Immigration on Age Structure and Fertility in the United States

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I. Introduction

The United States has more immigrants than any other country in the world (United Nations 2009). Over 13% of the 2007 U.S. population was born outside the country. While this percentage is slightly smaller than the peaks reached in the late nineteenth and early twentieth centuries (Hirschman 2005: 597), it still represents a substantial proportion of the population. An understanding of how the demographic make-up of immigrants differs from that of the native-born population is thus a critical part of any complete picture of U.S. population characteristics. Immigrants are thought to be more likely to be young adults and to have higher fertility than the native population (Lee 2001). If this is the case the age structure of the population will be different than it would have been in the absence of immigration, and this can have far-reaching effects on such things as labor force participation, the viability of the Social Security system and other public finance issues. These effects, in turn, could have an impact on the formulation of immigration policies.

Although the National Research Council (2001: 44) claims that previous studies have shown that "international migration does not play a major role in the demography of aging" we shall see that the data do not support this conclusion, at least in a country with high immigration levels such as the U.S. The Council contends that "sustained immigration has little impact on overall age composition because immigrants themselves age. . .and initial labor migration often becomes family migration." Although individual immigrants certainly age, the stock of immigrants is also affected by the flow of new arrivals. If these new flows were spread among age groups in a way similar to that of current residents the effect might be negligible, but, as we shall see, the data indicate that this is not the case.

This study examines the impact of immigration on the demographic composition of the U.S. population by comparing the age structure and fertility rates of the native-born population with those of both the stock of foreign-born residents and the flow of recent immigrants.

II. Data and Methods

The data came from the American Community Survey (ACS) of 2007, accessed through the Minnesota Population Center's IPUMS-USA website. Micro data were aggregated to provide totals, applying person weights to the sample observations. The total sample size of the 2007 ACS was 2,969,741, thus the ACS has the advantages of a large sample size and recent data. ACS micro data also provides the advantage of allowing analysis of individuals, combining the attributes of age, sex, birthplace, recency of migration and fertility.

The IPUMS variables *sex* and *age* were used to identify the sex and age of each individual. The online tool was used to consolidate the observations into age groups 5 years wide, ranging from ages 0 to 4 to the open-ended age interval for ages 95 and up. Immigrants were identified by the birthplace variable *bpl*, with values between 15000 and 99999 showing a birthplace outside of the U.S. and its territories.[1] The variable *migplac1* shows the place of residence one year before the survey.[2] Foreign-born residents who were living outside of the U.S. at that time were identified as current-year migrants. A value of 1 in the variable *yrsusa2* was used to identify immigrants who had been living in the U.S. for 0 to 5 years at the time of the survey. The final variable used in the analysis was *fertyr*, with a value of 2 indicating that the woman had given birth to a child within the year prior to the survey. This was combined with other variables to calculate the Age-Specific Fertility Rates and the Total Fertility Rates for various groups.

III. Results

Figures 1 and 2 show population pyramids for the native-born and foreign-born U.S. populations in 2007. The native-born pyramid shows a pattern which is fairly close to stable overall—although fluctuations are apparent, such as the baby boom evident in ages 45-49, followed by the baby bust in ages 30-34 and the echo boom in ages 15-19. Another mini-boom, evident in the age 0-4 group, is partially the result of babies born to immigrants, as we shall see later.

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The pyramid for the foreign-born population looks dramatically different. There is a single mode in the age group 35-39, with the age group 30-34 only slightly smaller. Shares of the foreign-born population in each age group fall off rapidly as the groups get further from the modal values. Very few infants were born outside of the U.S. and then migrated prior to their 5th birthday. The smaller numbers in the older cohorts could be due to deaths of earlier immigrants, smaller volumes of immigrants in earlier years, emigration, and smaller flows of new immigrants in older age groups.

The result of these different age distributions for natives and the foreign born is that the percentage of foreign born in the population varied considerably by age group (see Figure 3).[3] This is especially evident in the group aged 30-34, where the baby bust among the native born combined with near-peak numbers of foreign born such that immigrants made up nearly one quarter of the male population and 22% of the female population. Thus the overall statistic showing that immigrants were 13% of the U.S. population in 2007 is somewhat misleading in that it hides the significantly higher proportions in age groups that tend to have high labor force participation. Immigrants formed approximately one-fifth of the total U.S. population between the ages of 25 and 49. This disproportionate share of immigrants among the core working-age population could explain why a majority of Americans in 2006 held the perception that immigrants made up 25% or more of the total population[4] (Massey 2007: 309). On the other hand, the foreign born made up less than 2% of the U.S. population of the very young (ages 0-4) and the very old (ages 95 and up).

Figure 3 also shows that immigrants made up a much larger percentage of the population over age 50 than of the population under age 20. As a result, the mean[5] age of immigrants is higher than the mean age of natives (41 compared to 36). The standard deviation is smaller (18 compared to 23), indicating that the ages of immigrants are more closely clustered around the mean. So, on average, immigrants are older than the general population. One reason for this is

that the children born to immigrants after their arrival are considered part of the native-born population and not as part of the foreign-born group.

The analysis so far has focused on the *stock* of immigrants. Figure 4 shows the age structure of the *flow* of immigrants during the year prior to the 2007 ACS as a percentage of the stock of foreign born, indicating the extent to which the stock is refreshed by new flows. Aside from the very young age groups, where the stock of foreign born was small and thus the net flow is a significant proportion of the stock[6], the foreign-born age groups most heavily supplemented by new flows were those covering ages 15 to 29. Figure 5 demonstrates that current-year migrants were most likely to be between the ages of 20 and 34, with a mean age of 30.5, far lower than the average for either natives or the foreign born. So although it is obvious that individual immigrants age after their arrival, the new flow of immigrants serves to lower the age structure of the overall stock of foreign born, and that of the population as a whole. The age structure of the new flow of migrants in 2007 did not mirror the age structure of the resident population, or even that of the foreign-born population.

Another way that immigration contributes to the lowering of the overall age structure of the U.S. population comes from differential fertility between immigrants and natives. Over 21% of the babies born in the year prior to the 2007 ACS were born to immigrant mothers, even though immigrant women made up only 13% of the total U.S. female population. This was due both to higher Age-Specific Fertility Rates (and thus a higher Total Fertility Rate—TFR) among immigrant women (Table 1) and a higher proportion of immigrant women among the prime childbearing age groups (Figure 3). Without births to immigrant mothers the U.S. birthrate would be below the replacement level, but the higher birthrate among immigrants brings the overall rate up to the replacement level. Fertility among current-year migrants was considerably lower, perhaps due to prospective mothers not wanting to make two major changes to their lives in the same year. But the TFR among prospective mothers who had been in the U.S. for less than 5

years was considerably higher than that for native women, while still slightly lower than that for immigrant women as a whole.

IV. Conclusion

This study has confirmed Lee's (2001) supposition that immigrants are more likely to be young adults and to have higher fertility than the native born population. The data do not, however, support the National Research Council's (2001) conclusion that immigration has only a minor impact on the age structure of the receiving country's population, at least for the case of the U.S. in 2007. While immigrants were, on average, older than the native population, their age distribution was heavily skewed towards the prime ages for labor force participation. The flow of younger immigrants into the country kept the age structure of both the foreign born and the overall population younger than it otherwise would have been. Higher fertility among immigrant women brought the U.S. Total Fertility Rate up to the replacement level, as births to immigrant mothers accounted for over one-fifth of total births.

Future research could expand upon this analysis by looking at further details related to the impact that immigration has on the demographic composition of the U.S. It would be valuable to incorporate the dimensions of time and space into the analysis by looking at how the impact of immigration on age and fertility has changed over time and how the impact is distributed spatially in different parts of the U.S. In addition, the fertility and age structures of the foreign born and recent migrants vary considerably depending on country of origin,[7] and it would be instructive to consider how this diversity influences the results. For example, do the fertility rates of immigrant women in the U.S. differ from those of women in their home countries who did not migrate?

This study was limited by considering only certain variables, for one year, on a national basis for one country. Analysis of further details, including variables such as education, income, labor force participation and race or ethnicity could provide additional insights that would be

useful for evaluating the impact of immigration on the economy and society of the U.S., while

comparisons with other immigrant-receiving countries would also be instructive.

V. Bibliography

Data Source:

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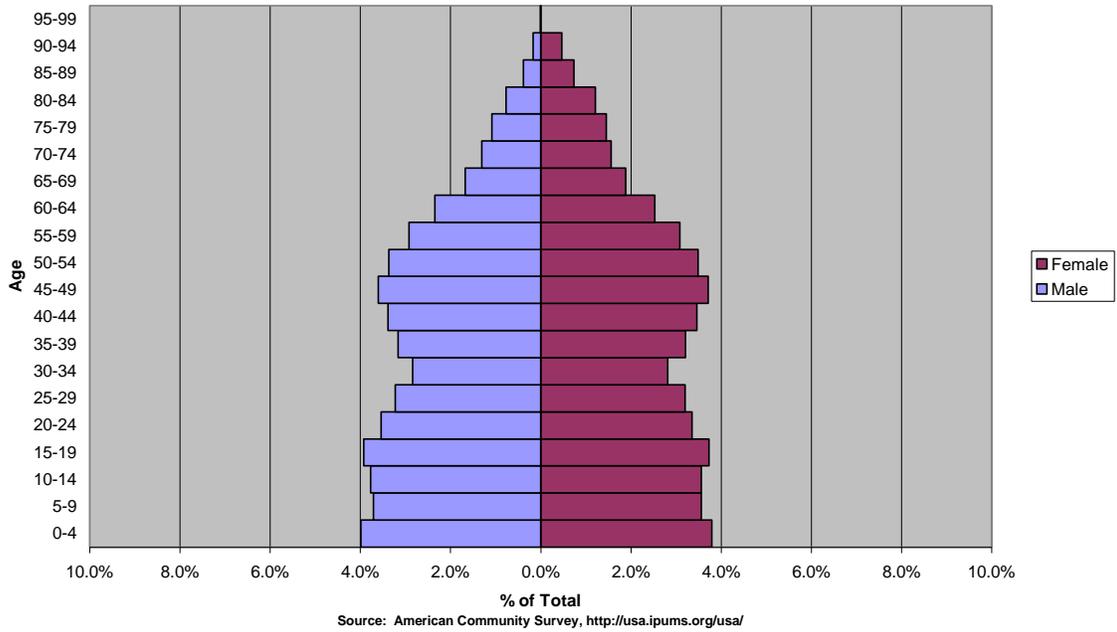
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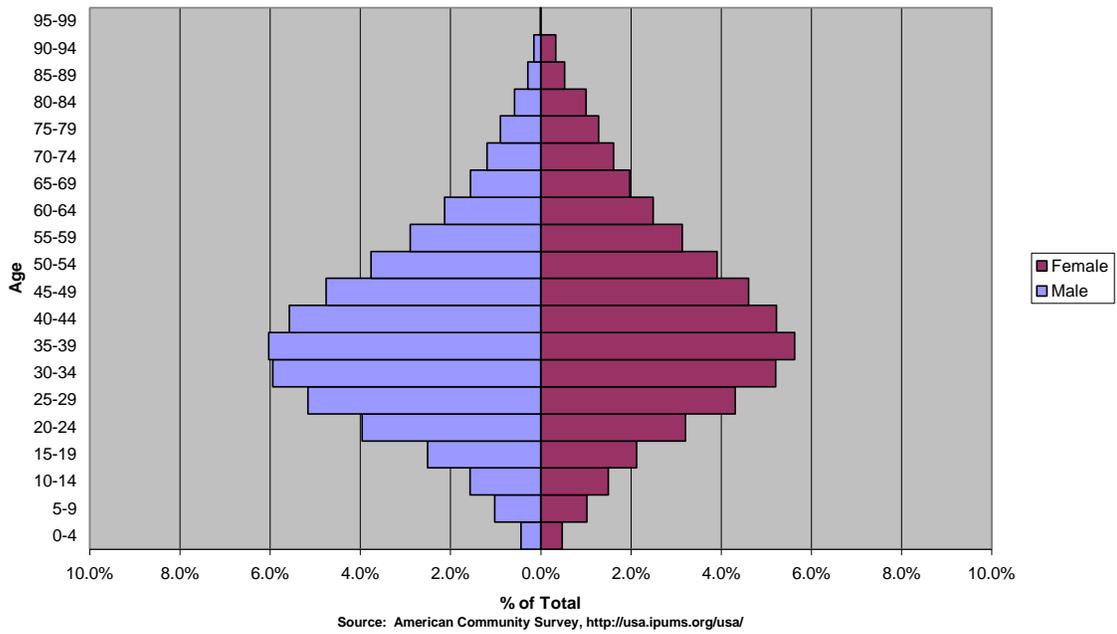
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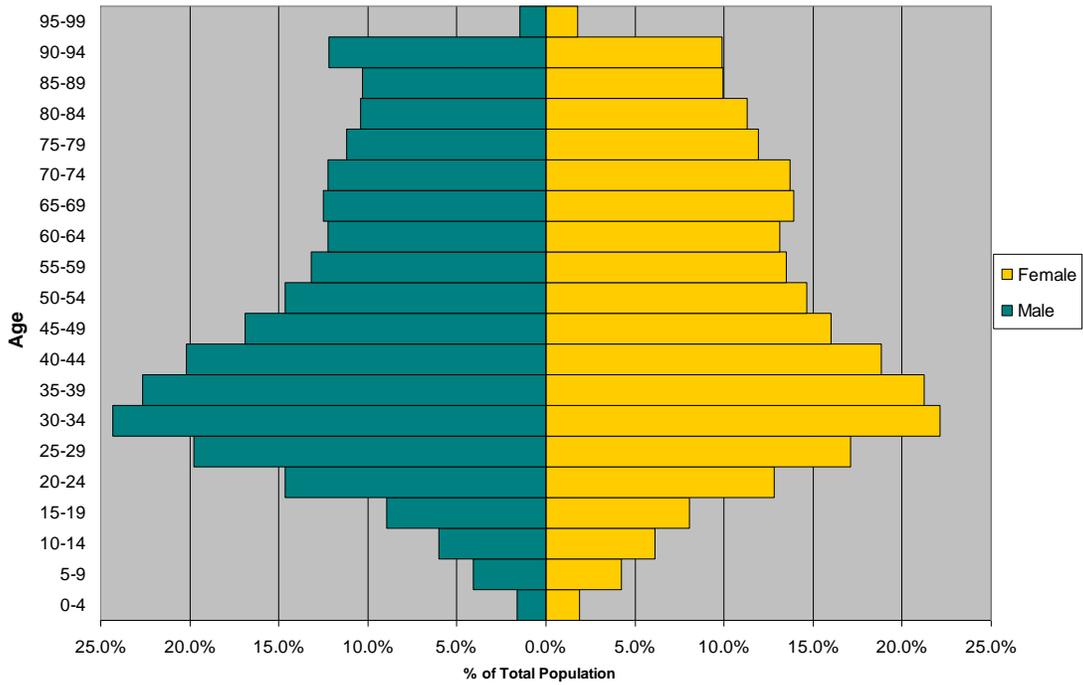
VI. Appendix: Charts and Tables

Figure 1
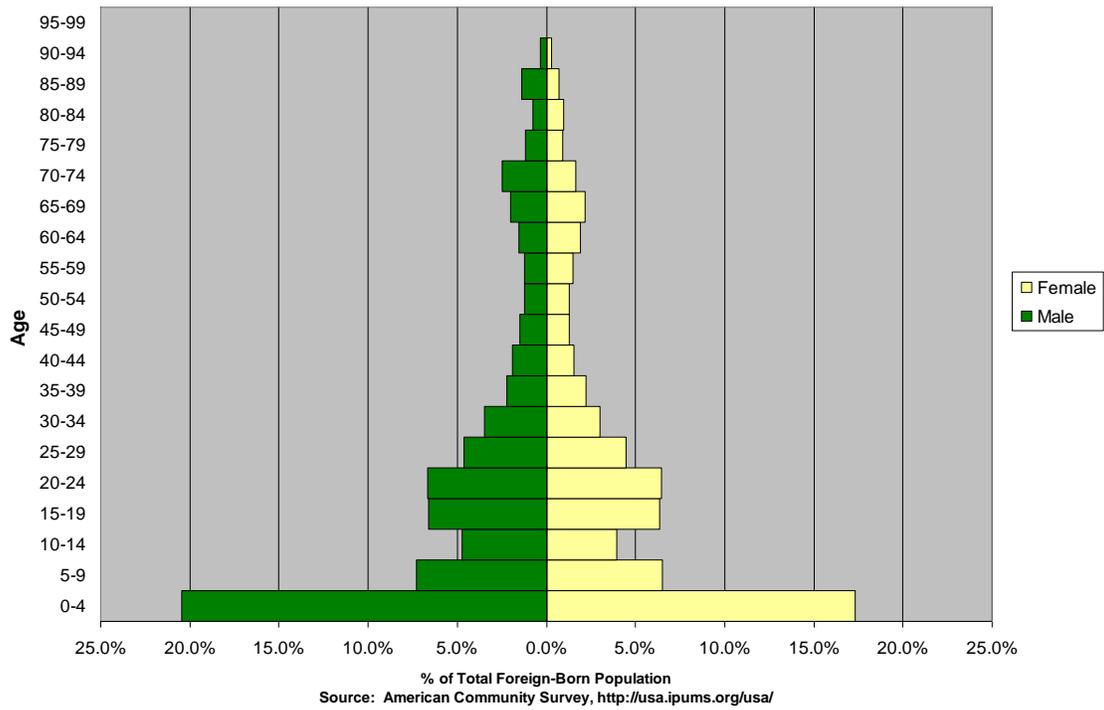**Native-Born US Popluation 2007**

% of Total
Source: American Community Survey, http://usa.ipums.org/usa/

Figure 2
Foreign-Born US Population 2007

% of Total
Source: American Community Survey, http://usa.ipums.org/usa/

Figure 3
Foreign Born as Percentage of Total U.S. Popluation 2007

Source: American Community Survey, http://usa.ipums.org/usa/

Figure 4
Current Year Migrants as Percentage of Total Foreign Born U.S. Population 2007

Source: American Community Survey, http://usa.ipums.org/usa/

Figure 5
Current Year Foreign-Born Migrants to the U.S. 2007

Number of Current Year Foreign-Born Migrants 2007
Source: American Community Survey, http://usa.ipums.org/usa/
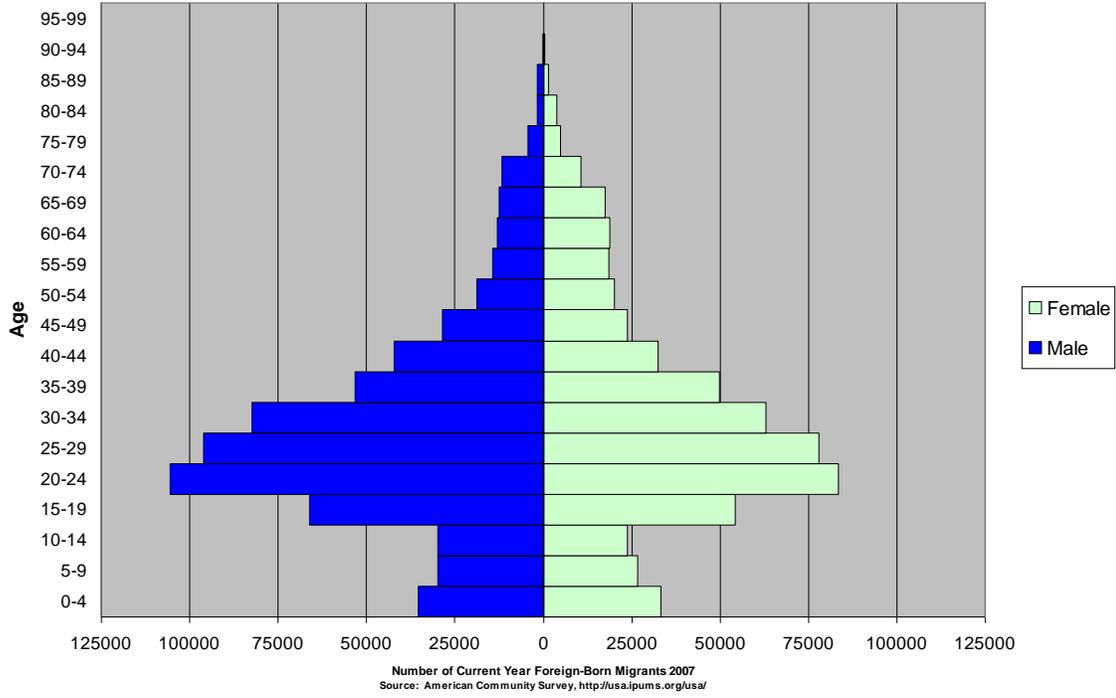
Table 1
Fertility Rates, U.S. 2007

Age	Total U.S.	Native Born	Foreign Born	Current Year Migrants	0 to 5 Years in U.S.
15-19	0.028	0.027	0.039	0.022	0.037
20-24	0.092	0.089	0.109	0.047	0.091
25-29	0.118	0.114	0.134	0.062	0.125
30-34	0.102	0.096	0.121	0.057	0.112
35-39	0.055	0.050	0.075	0.047	0.081
40-44	0.016	0.014	0.024	0.021	0.029
45-49	0.004	0.004	0.005	0.015	0.008
50-54	0.001	0.001	0.001	0.000	0.007
Total Fertility Rate	2.07	1.97	2.54	1.35	2.45

Source: Author's computations using data from American Community Survey, http://usa.ipums.org/usa/

VII. Endnotes

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[1] Note that this definition of immigrant includes U.S. citizens who were born outside of the U.S. and later moved to the U.S.

[2] For *migplac1* the values 150 to 999 refer to places outside of the U.S. and its territories.

[3] Note that figures 3 and 4 are *not* traditional population pyramids, although they may appear to be at first glance; they have different variables along the horizontal axis.

[4] The choices offered to respondents in the survey cited by Massey were 1%, 10%, 25% or over 25%, and 53% chose either 25% or over 25% (see http://pewhispanic.org/files/reports/63.pdf).

[5] Although the median age is often used in the literature instead of the mean, I have chosen to use the mean here since the median obscures the impact of extreme values and I wanted these values to be reflected in the statistic. In any case, the extreme values of ages are not very extreme, as the minimum is obviously 0 and there are very few observations greater than 95.

[6] The 0-4 age group requires some explanation. This chart includes only the foreign born, and the foreign born aged 0-4 must all have arrived in the past five years. Therefore, it is to be expected that the percentage arriving in the previous year would be approximately 20%.

[7] Some preliminary analysis for major countries of origin was completed as part of this research, but was omitted from the report due to space constraints.