**How high is Hispanic/Mexican fertility in the U.S.? Immigration and tempo considerations**

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Fertility levels in a population are a major determinant of its overall growth and age composition which in below replacement contexts directly connects with concerns about aging and the system of public pensions (Preston and Hartnett, 2008). In the case of racial/ethnic differentials, though, variation in fertility levels across groups also affects projections about their relative sizes and discussions about minority incorporation and convergence in behavior with the majority group. These issues are particularly prominent among Hispanics/Mexicans in the U.S. The percentage of births attributable to Hispanic women increased from 15 to 25 percent between 1990 and 2006. The increase was even more pronounced for the Mexican population, whose share of births nearly doubled from 9 to 17 percent during the same period. At the same time, Hispanic and Mexican women represented only 16 and 11 percent of women in childbearing ages in 2006 (Martin et al., 2006). The apparently much higher fertility of Hispanic/Mexican women has sometimes been signaled as a sign of failure of assimilation and a reaction to their minority group status.

This paper re-examines the issue of Hispanic/Mexican fertility levels. The overarching hypothesis is that the apparently much higher fertility of Hispanic/Mexican women is in large part the product of the fertility behavior of the immigrant population and that period estimates of fertility for immigrant women suffer from serious limitations that need to be taken into account when discussing the contribution of Hispanic/Mexican fertility to population growth and issues of minority incorporation. Specifically, we argue that two main processes distort estimates of immigrant Hispanic/Mexican fertility. The first is the unknown size of the undercount in population projections and estimates. The second, and potentially more important issue, is that migration affects the timing of fertility behavior. In particular, we show that the tendency of women to have a birth soon after migration dramatically distorts period estimates (Toulemon, 2004). Contrary to the processes observed in European fertility where delays in childbearing drive period fertility estimates down (Bongaarts and Feeney, 1998), the acceleration of childbearing after migration among the immigrant population drives the estimates

upward. We conclude the analysis highlighting the need to rely on cohort fertility measures to approximate the fertility of immigrant groups and provide estimates for Hispanics/Mexicans.

The analysis elaborates on these issues relying on the two types of data sources that are the main basis for fertility estimates: vital registration and fertility surveys. The first part of the analysis documents the anomalies in fertility estimates for Hispanic/Mexican women obtained from the vital registration system. We document several anomalous findings (see preliminary analysis below): 1) the evolution of Hispanic/Mexican fertility in the U.S. reported in the vital registration system is dramatically at odds with the evolution of fertility behavior in Latin America/Mexico; 2) there is dramatic variation and anomalies in estimates of total fertility and first birth rates for Hispanic/Mexican women across states that are closely associated with the size and recency of arrival of the immigrant population. We argue that variation in the accuracy of the estimated number of women at risk of childbearing, the denominator for the computation of rates, accounts in part for these anomalies.

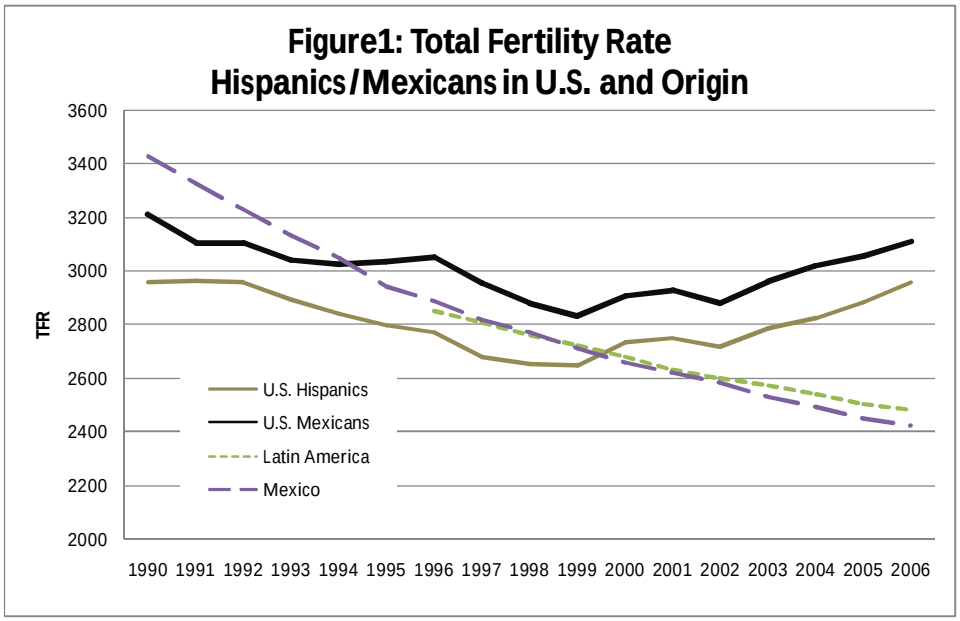
The second part of the analysis uses data from the 2002 National Survey of Family Growth to show that these anomalies are also present in survey estimates even though the undercount is not an issue. In particular, we show that the anomalies again arise from the fertility behavior of immigrant Hispanic/Mexican women and not their native counterparts. Connecting information on the timing of migration and fertility behavior we document the acceleration in childbearing in the years immediately to arrival to the U.S. The final part of the analysis uses cohort fertility measures to provide alternative estimates of the fertility behavior of immigrant origin Hispanic/Mexican women. Overall we show that standard period fertility measures significantly overstate the level of Hispanic/Mexican fertility.

**Preliminary analyses**

*Anomalies in fertility behavior among the Hispanic/Mexican population*

Figure 1 documents the dramatic disparity in reported trends in fertility levels between Hispanics/Mexicans in the U.S. and in their countries of origin. For Hispanics/Mexicans vital registration estimates show their fertility declining from 2.9/3.2 to 2.6/2.8 children per woman between 1990 and 1999 but rising to 1990 levels by 2006. There is no apparent reason for this *reversal* in fertility decline. Moreover, vital registration estimates show Mexican fertility in the U.S. as being higher than in Mexico starting in 1996, and since 2000 the same is applicable for all Hispanics relative to Latin American fertility levels.

A usual tentative explanation suggested for these differences has been the changing composition of the Hispanic/Mexican population in the U.S. due to immigration. If immigrants are socioeconomically disadvantaged relative to those left behind, then fertility in the U.S. could be higher than at origin. This is highly unlikely. The 1990s were characterized both by high levels of immigration and declining Hispanic/Mexican fertility. Moreover, fertility has been declining dramatically in Mexico and Latin America for all groups in conjunction with educational expansion and increased in female labor force participation. There is not dramatic deterioration in the economic origins of immigrants in recent years that could explain the reversal in fertility trends in the U.S. Another explanation that has been offered is that Hispanics/Mexicans in the U.S. are developing an oppositional culture in response to their minority status. This encourages a pattern of fertility behavior that is at odds with the dominant group. This explanation also fails to account for the reversal in fertility decline evidenced in vital statistics.



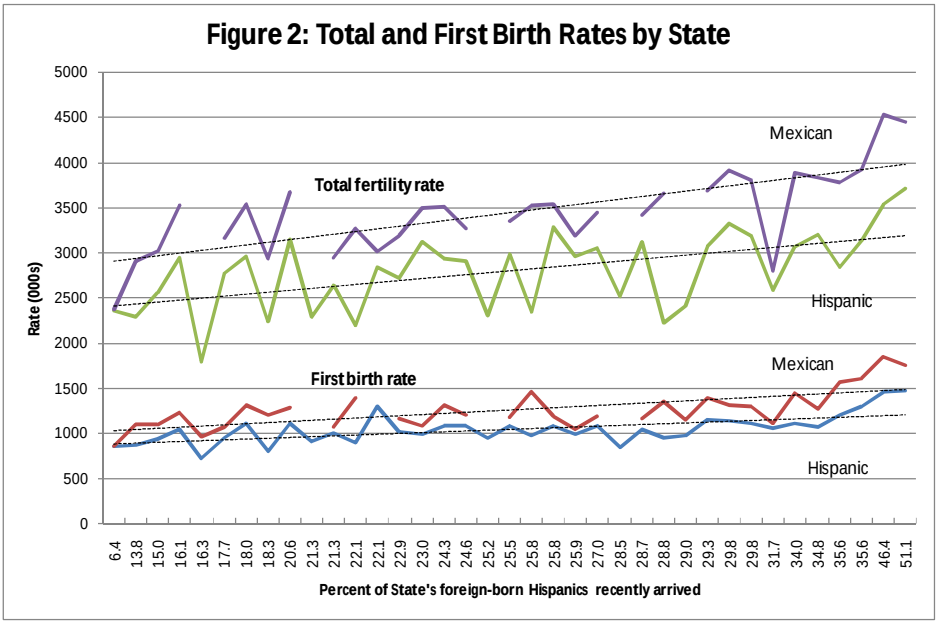
A more likely source of the volatility in vital statistics based TFR estimates for U.S. Hispanics/Mexicans is the estimated size of the denominator used in the computation of rates. Errors in projecting the size of the Hispanic/Mexican population are regularly recognized and corrections are usually promptly made. For instance, prior to the release of population estimates from the 2000 Census, vital statistics reports also showed Hispanic/Mexican fertility as increasing in a fashion similar to the one evidenced after 2000. Once the 2000 population estimates became available prior fertility estimates were corrected. Table 1 documents these differences; there is a 12 and 11 percent discrepancy in fertility levels for Hispanics and Mexicans, respectively, between the estimates relying on projections from the 1990 Census as compared to those based on 2000 estimates. Moreover, contrary to initial estimates fertility decreased during the period for both groups.

**Table 1: Changes in reported total fertility rate among Hispanic and Mexican women**

*National Vital Statistics Report*

| | Hispanics | | | Mexicans | | |
|---|---|---|---|---|---|---|
| | Vol. 50-5 2002 | Vol. 54-2 2004 | Difference | Vol. 50-5 2002 | Vol. 54-2 2004 | Difference |
| 2000 | 3.1 | 2.7 | 12.2% | 3.3 | 2.9 | 11.0% |
| 1990 | 3.0 | 3.0 | | 3.2 | 3.2 | |

The considerable volatility in Hispanic/ Mexican fertility estimates and the influence of the immigrant population in affecting these results is highlighted in Figure 2. The figure reports vital registration estimates of total fertility and first birth rate by state ranked according to the percent of



Hispanic immigrants who are recently arrived (i.e. less than 5 years in the U.S.). Results show that fertility rates increased consistently according to the size of the recently arrived immigrant population.[1] To illustrate, New Mexico has the smallest percentage of recently arrived immigrants, 6.4%, and the total fertility rate for the Hispanic/Mexican population is around 2.3 children per woman for both groups. At the other extreme, in North Carolina, 51.1% of Hispanic immigrants are recently arrived and the Hispanic/Mexican fertility rates are estimated at 3.7 and 4.4 children per woman, respectively.

Moreover, first birth estimates defy standard demographic interpretations. The first birth rate typically captures the proportion of women that will have at least one birth, so by definition it cannot exceed one because it is not possible for more than 100% of women to have one child. However, in its period formulation it is a measure sensitive to temporal fluctuations in childbearing. First birth rate estimates above one were observed during the baby boom years in the U.S. as women accelerated their fertility. Such anomaly provided part of the rationale for favoring cohort over period fertility measures, especially when the timing of fertility is changing. Figure 2 shows that first birth rates above one are registered across almost all states for the Mexican population and in a larger portion of states for the Hispanic population. Moreover, the first birth rate also rises in conjunction with share of the immigrant population that is recently arrived. To illustrate again, in New Mexico the first birth rate for the Hispanic/Mexican population is 84.7%; in North Carolina the rate is 146 and 174% for Hispanics and Mexicans, respectively. In addition to difficulties in estimating the size of the denominator, we argue that this anomaly in first birth rate estimates from vital statistics results from changes in the timing of fertility associated with migration.

Comparable anomalies are registered in estimates emanating from fertility surveys even though they do not suffer, at least for sample based calculations, the problems of estimating the size of the at risk population. Fertility surveys, however, have the advantage of allowing us to compute both period and cohort measures.

[1] The shape of the association cannot be inferred from the graph due to differences in scales. Individual scatter plots of the relationship though shows the association to be practically linear.

Table 2 reports period and cohort estimates obtained from the 2002 National Survey of Family growth. The TFR from births occurring in the period 1999-2001 for Hispanics/Mexicans is 2203 and 2502 per 1000 women, respectively. The average vital statistics estimates for the period are 2709 and 2889 for Hispanics and Mexicans, respectively. To the extent that fertility rates from NSFG are complete and less prone to errors, the discrepancy could be used to correct population estimates for the computation of rates (the under-enumeration seems to be around 20% we will report results from this exercise in the paper). Table 2 also documents that the main source of high fertility is the foreign born population. Native Hispanics/Mexicans have a TFR of 2082 and 2278 per 1000 women, respectively, which is lower than the average estimates for the period for Latin America and Mexico; 2677 and 2663, respectively.

**Table 2: Period and cohort survey estimates: NSFG 2002**

| | Period measures (births between 1999-2001) | | Cohort measures (women 40+) | |
|---|---|---|---|---|
| | TFR | FBR | CEB | FB |
| Hispanics | 2202.9 | 894.3 | 2240.6 | 882.3 |
| Native | 2081.8 | 776.1 | 2053.8 | 838.7 |
| Foreign Born | 2827.3 | 1298.5 | 2425.5 | 925.5 |
| Latin America | 2741.7 | | | |
| Mexicans | 2502.4 | 988.0 | 2431.6 | 905.3 |
| Native | 2277.5 | 821.5 | 2136.4 | 863.6 |
| Foreign Born | 3647.7 | 1338.8 | 2686.3 | 941.2 |
| Mexico | 2745.0 | | 3210.0 [a] | |

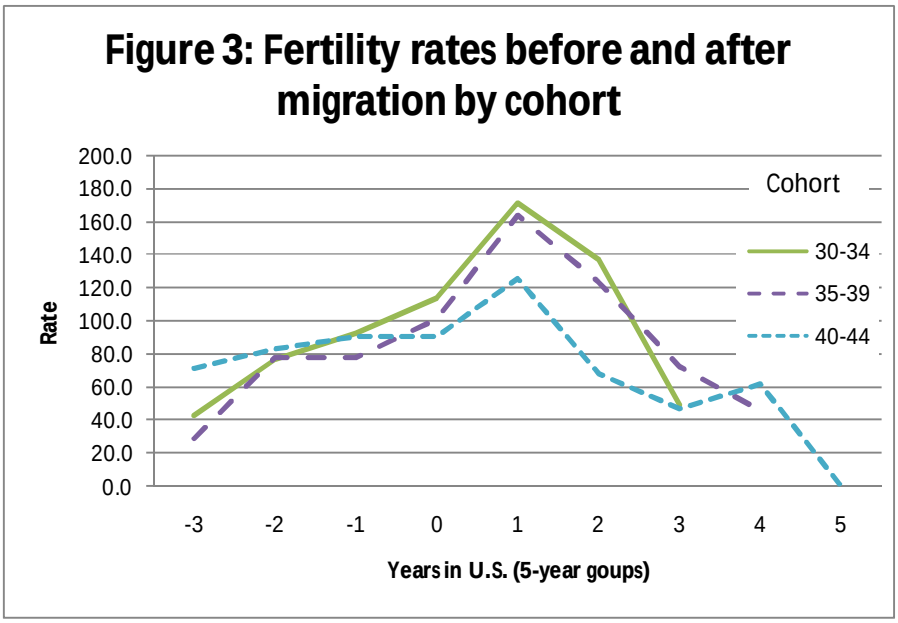
[a] Estimate for 2006. Source "Encuesta Nacional de la Dinámica Demográfica."

The anomalous estimates for the foreign born population become more evident when we consider the first birth rate results obtained from the NSFG. Estimates show that 89 and 99 percent of Native Hispanic/Mexican women had one child in the period 1999-2001. The estimates for the foreign born again are well beyond 100 percent. Computations indicate that 130 and 134 percent of Hispanic/Mexican women had a first child in the period 1999-2001.

Cohort fertility estimates, are markedly different from period calculations only for the foreign born. Results show that immigrant Hispanic women aged 40 and above had on average 2426 children per 1000 women, which is 14% lower than the period TFR estimate. The difference is even more pronounced for immigrant Mexican women. Results show that CEB for foreign-born Mexican above age 40 was 2686 per 1000 women, which is 26 percent lower than the estimated period fertility rate.

*Immigration and timing considerations*

We argue that these disparities are mainly the result of changes in the timing of fertility associated with migration. Figure 3 documents the dynamics. The figure reports fertility rates by age cohort according to time in the U.S. The X-axis represents time since arrival with 0 indexing rates before and after migration. Results show that fertility rates are low before migration but peak considerably in the early years after arrival to decline again with time in the U.S. The pattern is evidenced for all cohorts, *independent of age*. This timing effect inflates period fertility measures especially in areas where the immigrant population is recently arrived. Studies in Europe have documented the same pattern, which suggests that the change is very much part of the migration experience.




We will further explore the analysis comparing immigrant fertility rates with the fertility rates of native Hispanics/Mexicans in the U.S. and also Mexicans in Mexico.

The final part of the analysis will elaborate on the measures proposed by Schoen (2004) that rely on completed family size to provide alternative estimates of the fertility level of Hispanic/Mexican immigrants in the U.S.

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