A New Look at the Recent Fertility of American Immigrants, Results for 21st Century*

C. Gray Swicegood, Michael Sobczak, and Hiromi Ishizawa

Department of Sociology
University of Illinois, Urban-Champaign
326 Lincoln Hall, MC454
702 S. Wright Street
Urbana, IL 61801

Abstract

The fertility dynamics of foreign-born women impact overall population growth and the racial, ethnic, linguistic, and generational composition of the country. Here we consider the patterns of recent fertility among immigrant women along the dimensions of national origin, education, geographic settlement, and linguistic behavior using data from the 2000-2004 American Community Survey. We estimate a total fertility rate among foreign-born women that is nearly 30% higher than that of native-born women, but also observe a wide array of period fertility rates across national origins subgroups. The processes associated with the marital and non-marital fertility of immigrant women are distinct. Our results point to the value of adopting a more life-course oriented approach with greater attention to the context of pathways to marriage and motherhood alike.

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Introduction and Rationale

The direct effects of decades of sustained high levels of immigration on the population dynamics of the United States are well appreciated. More recently the secondary impact of immigration via differential fertility has received increased attention (e.g., Swicegood and Morgan 2002; Frank and Heuveline 2005; Saenz 2006). This focus is well justified. Vital statistics for 2003 indicate that of all births for that year nearly one quarter occurred to women born outside the United States (Martin et al. 2005). For at least three decades, the levels of childbearing among immigrants have exceeded those of native-born women. This differential accentuates the societal consequences of immigration through its impacts on the overall population growth and shifts in the racial, ethnic, linguistic, and generational composition of the population. The population growth and the compositional shifts associated with it hold substantial implications for virtually every American institution.

How large are the differences in the reproductive schedules of foreign- and native-born women? What national-origin groups are most distinctive? Are recent cohorts of immigrants more or less likely to exhibit distinctive patterns of childbearing? How are individual factors such as education and language proficiency implicated in the fertility behavior of immigrants? Is the pattern of nativity differentials associated by the destination context? Our research group has been pursuing these and related questions

for several years now using data from various nationally representative samples. Two years ago, we presented a study at the PAA meetings entitled "Is the United States a Pro-natalist Destination? A New Look at the Recent Fertility of American Immigrants." Our results provided a strong, but qualified yes as the answer. Based on data from the Census 2000 Supplemental Survey (C2SS) we estimated a Total Fertility Rate (TFR) for the foreign-born women of 2.706, over 32.1 percent higher than our estimate for native-born women of 2.048. The General Fertility Rate (GFR) of the foreign-born sample was forty-five percent higher than their native-born counterparts, because the younger age structure of the immigrant population is more favorable to births. The nativity gap was even greater when comparing only those women born in Mexico with native-born women. In that presentation, we reported that the fertility levels of Mexican-origin women was higher than that of women still residing in Mexico, a curious demographic fact that forms the tagline of a recent article by Reanne Frank and Patrick Heuveline (2005) published in the on-line journal, *Demographic Research*.

Our 2004 study findings, also pointed to a great deal of diversity in the recent childbearing of immigrant women. While comparatively low rates were observed for many national origin groups, these tended to involve countries with relatively small contributions to the immigration stream of recent decades. Historical shifts in the proportion of immigrants from Mexico and Latin America clearly mean that increasing proportions of immigrants are from comparatively high fertility sending countries. Moreover, women from India and the Philippines, two relatively important source countries also tended to have fertility levels above that of native-born women. The

United States does appear to provide a supportive environment for immigrant family formation.

In this paper we update and expand the analyses presented in the 2004 study. That prior research was based on the Census 2000 Supplemental Survey. The results that we present here are based on merged samples of the 2000 though 2004 American Community Surveys Public Use Microdata Samples. We have nearly 125,000 foreign-born women in this database. The abundance of cases and accuracy of the reports allows us to more effectively pursue our research questions. We can provide estimates of the fertility of foreign-born women that should be more accurate, and we can expand the coverage to a wider range of national origin groups. These estimates are complimented with a series of multivariate analyses of childbearing that examine how the fertility of foreign-born women is associated with factors such as age, education, time of immigration, language use, regional location and family structure. The organization of the paper is slightly unconventional. Our initial results consist of estimates of period fertility rates for foreign-born and native-born women and numerous specific national origin subgroups. These results are purely descriptive and we present them before turning to the theory and research literature that shape the specification of our multivariate models.

Data and Methods

The American Community Survey

Our study utilizes data from the American Community Survey Public Use Microdata Sample (ACS PUMS) (U.S. Bureau of Census various years). Data included

in our investigation comprise five years of data from 2000 to 2004. We choose to aggregate data for these five years for several reasons including the ability to compile measures of fertility for smaller groups and stronger statistical modeling applications (enabled by the larger sample sizes resulting from data aggregation). ACS PUMS data for the years 2000 and 2001 are subsets of the Census Supplementary Surveys (conducted by the ACS) for each respective year. Data for the years 2002 thru 2004 are subsets of the American Community Survey and consist of a 0.7% sample of the U.S. in which a third of all counties in the United States are sampled (roughly 1,235 counties). Each survey from 2000 to 2004 is a nationally representative sample and the state level is the smallest geographic unit under which data are released.

The primary objective of the American Community Survey (ACS) is to collect timely Census long-form type data on an annual basis. When fully implemented, the ACS is projected to replace the Census 2010 long-form, which consists of a 1/5 of all households in the U.S. (U.S. Bureau of Census 2002a). Despite its comparability to the Census long-form, there are important differences between the ACS and the Census long-form. By examining such differences we are able to better comment on the reliability, quality, and overall coverage of ACS data. First, the design and implementation of the two surveys were different. The ACS is an ongoing survey with a staff that consists of permanent professional interviewers who are typically experienced and have undergone extensive training. In contrast, the Census was conducted at one point in time by hundreds of thousands of temporary employees with limited training. Furthermore, in the 2000 Census, non-response on question items was not followed-up, while non-response

follow-up is an integral design of the ACS.[1] In sum, the design and implementation of the ACS is superior to that of the 2000 Census long-form. Second, although consisting of a very large sample of households, the ACS is still significantly smaller than the Census long-form sample (which consists of 19 million households) and therefore is subject to inherently larger sampling error. Third, the ACS did not sample group quarters, while the Census did.[2] Fourth, the reference period for the ACS is the year before the survey, while the reference period for the Census is the calendar year before the survey.[3] Lastly, the Census is a snapshot in time (April 1, 2000) while the ACS is an ongoing survey over each respective year it is administered.[4]

Despite its much smaller sample size, overall, accuracy measures indicate that the Census 2000 Supplementary Survey (C2SS: administered by the ACS) are of high quality (U.S Bureau of Census 2002b), suggesting ensuing survey years in which the ACS was administered are of high quality as well. High sample completeness ratios[5] reflect this assessment (85%-90%). Some estimates of sample completeness for the C2SS even showed a significant improvement over equivalent estimates from the 1990 Census long-form[6,7] (Starsinic and Albright 2002). Yet, overall sample completeness

[1] Follow-up for the 2000 Census was only conducted if the short form was not filled out. On the other hand, the ACS followed up by mailing out questionnaires to non-responding households. If responses were still not received, follow up was attempted by telephone. Lastly, if a response was still not obtained, 1/3 of the remaining households received visits by ACS interviewers. As a result, when comparing imputation rates to the Census 2000, ACS rates were significantly lower for every basic population item (U.S. Bureau of Census 2002b; U.S. Bureau of Census 2005).
[2] Such a discrepancy may have large effects for certain areas (e.g., the median age in the locality of a large military base would be significantly different between ACS and Census results).
[3] Results for items such as income are likely to be different due to such methodological differences.
[4] Therefore results in highly seasonal areas are likely to be different between both surveys.
[5] Which measured the extent to which the C2SS represents the Census 2000 population count. A ratio of 100% would mean the sample completely parallels the Census 2000.
[6] Which measures the extent to which the 1990 long-form survey represents the 1990 Census population.
[7] Completeness ratios for the total population, Hispanics, Whites, and Blacks were actually significantly higher for the C2SS.

ratios for the C2SS were comparable to 1990 estimates.[8,9] The data quality of the ACS is further supported by the high coverage rates[10] and survey response rates.[11] Moreover, the ACS may be superior to Census 2000 for investigating disaggregated Latino groups. Analyses by Logan (2001) and Suro (2002) show that the Census 2000 data may be problematic in this regard.

Reliability of the ACS estimates

Before presenting our substantive results we provide an assessment of the reliability of the ACS data. How accurately can we estimate recent fertility based on the responses to the birth in the last year question that is asked in the ACS survey. We address this question by estimating period fertility rates for all women and for each major racial/ethnic category with the ACS samples and comparing these results with Vital Statistics rates published by National Center for Health Statistics (NCHS) for the adjacent

[8] Completeness ratios for American Indians/Alaska Natives, Asians, and Native Hawaiians/Other Pacific Islanders were comparable to those for the 1990 long-form. The only racial/ethnic group with a significantly lower completeness ratio were those in the "some other race" category, which was likely the result of differences in data collection. Also, there was a discrepancy in the response format for the Hispanic question. While the response format for the Census 2000 was simply "yes" or "no" the response format for the C2SS consisted of several categories (not Hispanic, Mexican, Puerto Rican, Cuban, Dominican, etc.). The end result stemmed from Hispanics having different patterns of response to the race question as fewer Hispanics in the C2SS reported "some other race" and many more reported "white" in the Census 2000.

[9] Completeness ratios by age and gender were comparable to and better in some cases to the 1990 Census long-form. Furthermore, completeness ratios for persons in Metropolitan areas were either significantly higher for the C2SS or comparable to the 1990 Census long-form. On the other hand, completeness ratios for persons not in Metropolitan areas were generally lower for the C2SS, but usually not significant when compared to equivalent measures for the 1990 Census long-form. So estimates for respondents from rural areas will still be accurate.

[10] Coverage rates were: 96.8 for 2000; 94.1 for 2001; 93.5 for 2002; 94.1 for 2003; and 94.4 for 2004 (U.S. Bureau of Census 2005).

[11] Response rates were: 95.1 for 2000; 96.7 for 2001; 97.7 for 2002; 96.7 for 2003; and 93.1 for 2004. Response rates for 2004 were primarily lower due to budget cuts that led the ACS to drop telephone and personal visit follow-up operations for the January 2004 panel, thus only allowing mail respondents to contribute to the overall response for that panel. Dropping the non-response follow-up operations for that single panel month reduced the annual response rate by about four percentage points. If we exclude the January panel from the calculation, the annual response rate rises to 97.3% for 2004 ACS PUMS data (U.S. Bureau of Census 2005).

year. We have undertaken this comparison for each annual ACS sample that is incorporated in to the merged sample, but for illustrative purpose we include as Table 1 only the comparison of the 2003 ACS estimates with the 2002 Vital Statistics reports (Martin et al. 2003). For all women the ACS 2003 data produces a Total Fertility Rate (TFR) that is less than one percent higher than the vital statistics reports for the year 2002. The comparability of the General Fertility Rate (GFR) estimates from the two sources is nearly as close with the ACS estimate falling short of the vital statistics figure by about one and a half percent. When we consider the race-specific estimates of recent fertility, we observe some fluctuation in the reliability of the ACS data across the various categories. Estimates for the white women (including those identifying as Hispanic) are lower than the vital statistics figures by as much as five percent. On the other hand, when considering non-Hispanic white women, the ACS data produces over estimates of a similar magnitude. We can see how this shift occurs when we view the comparisons for the Hispanic women. Both the TFR and the GFR estimates are lower for this category than the vital statistics rates (by 5.3 and 8.4 percent respectively). For other racial/ethnic categories the ACS data results in estimates that compare quite well with vital statistics reports. The major exception to this general assessment is found for the Native American category where limits of survey coverage for a relatively small group and vagaries associated with the reporting of racial identity for this group may account for the large divergence in the rates under comparison. For most purposes the estimates for this category will not have a substantive impact on our finding. Overall these results (and other annual comparisons not shown) suggest that fertility behavior during the previous year is reasonably well assessed with the ACS data. Of course we need to keep the

observed discrepancies in mind especially those for Hispanic women, many of who are immigrants. Unfortunately we cannot make separate comparisons for just foreign-born women because NCHS does not publish vital rates for the foreign-born population. Thus we must assume that our estimates and models of recent fertility for these women are of similar quality to the racial comparisons presented in Table 1.

(Table 1 about here)

Findings

Age-specific and overall recent fertility of immigrant women

In Table 2, we present the five age-specific fertility rates for the foreign-born women, native-born women and the ratio of the two as well as the summary measures, TFR and GFR. These rates all apply to our pooled sample of 2000-2004 ACS PUMS. The TFR for the foreign-born women is about 27% higher than that of native-born women (2.58 vs. 2.03). Because of their younger age structure, the GFR of the foreign-born women is about 40% higher than that of native-born women (87.9 vs. 63.1). Of course it is the GFR that is the most relevant to the differential growth rates of these two sub-populations. Immigrants have substantially higher rates of childbearing in all of the age groups shown in Table 2. The highest ratios however, are observed for the teen-age years of 15-19 and for age intervals 35 to 39 and 40-44 (ratios of 1.43, 1.50 and 1.88 respectively). Thus foreign-born women appear to be starting families earlier and stopping their childbearing later in life as compared with native-born women. These differentials pertain to the population of all immigrants and thus do not consider the substantial variation that may occur across different national origin groups.

(Table 2 about here)

Recent fertility of foreign-born women by national origin

In Table 3, we present a contemporary and comprehensive depiction of the recent fertility of immigrant women in the United States. We provide estimates of the TFR and GFR by marital status for all foreign-born women and for forty national origin groups that include every major sending country. The overall foreign-born sample consists of more than 124,000 individual women, and the estimates for the national origin groups are based on a minimum of 382 women. The majority of the national origin groups include more than a thousand women.

(Table 3 about here)

From the first two rows in Table 3, we can see that recent fertility of both married and unmarried foreign-born women is higher that of their native-born counterparts. For both nativity statuses, marital fertility rates are much higher that the non-marital rates. Marital status contributes to overall nativity differential because foreign-born women are a good deal more likely to be married (58.2% vs. 46.1%). The next two rows of Table 3 show a comparison between Mexican-born women and foreign-born women from all other origins. These comparisons highlight the distinctively high levels of childbearing that characterize the Mexican-born population. The overall TFR for the women born in Mexico is about fifty percent higher than that of non-Mexican-born immigrants. (3.364 vs. 2.243). The marital fertility rates for the Mexican-born women exceed those of other immigrant women by almost one child. The marital rates for the non-Mexican immigrants are nearly the same as that of native-born women. However we see a more

striking difference between the Mexican-born and other immigrants in the estimates of non-marital childbearing. Both the TFR and the GFR are more than twice as high for the former as compared with the later. In the case of the Mexican-born women, childbearing is clearly less conditioned by marriage as compared with other immigrants overall or for native-born women.

Of course, non-Mexican immigrants encompass many different national-origin groups with a very substantial range of patterns of recent fertility. In the remaining rows of Table 3 we present estimates of the various fertility measures for thirty-nine additional countries of origin. We do not attempt discuss each group here, and instead highlight some of the more distinctive and less intuitive results. The countries are roughly grouped by region of the world but even within region there is much variation. Several of the Central and South American countries have rates much higher than native-born women but some such as Brazil and Columbia do have lower rates. The case of Brazil is interesting in so far as the level of non-marital fertility is substantially lower than that of native-born women.

The next grouping countries are island nations in the Caribbean. The overall fertility rates for women who have immigrated from these countries are typically higher than those of native-born women and this pattern is observed for both married and unmarried women. Cuban origin women provide the most interesting case in this cluster. The relatively low TFR (1.99) results from marital fertility rates substantially below that of the native-born women and non-marital rates that are substantially above that of native-born women. This pattern seems to suggest that there are two groups of immigrant women from Cuba with quite different childbearing strategies.

For the Asian countries of origin, we again see a wide variation in the estimates. The levels of overall fertility in this category roughly correspond to the level of development in the countries. A number of the Asian origin populations have levels of childbearing that are below that of the native-born population but higher than rates that are currently in force in their countries of birth. Women born in China have TFR of 1.88 while the current TFR in China is about 1.6. The GFR for immigrants from China is actually higher than that of native-born Americans. Much of this childbearing occurs within marriage where the rates are comparatively high. As is the case for several Asian-origin groups, fertility levels for unmarried women are quite low. Those Asian-origin groups with comparatively higher overall fertility rates tend to have considerably higher levels of non-marital fertility. In the case of Cambodia, the non-marital rates are very pronounced.

Women from countries in the Middle East tend to have much higher levels of childbearing than native-born women. That differential rests primarily on differences in childbearing within marriage. Our estimates for women born in Israel approach those observed for women born in Mexico, while women born in Iran provide a strong exception to the general pattern with very low marital and non-marital fertility rates. The two immigrant groups from African countries shown in Table 3 have a smaller case basis. Results show a relatively high fertility level for women from Nigeria, which is not surprising. On the other hand the rates for women born in Ethiopia are rather similar to those observed for the native-born women.

The remaining sets of estimates pertain to countries of origins from the European continent and Canada. The range of period fertility rates for this set of foreign-born

women moves from a low TFR of about 1.6 for Polish immigrant women to a high of 2.3 for women born in England. Although the non-marital fertility rates for all women from Europe and Canada are below that of native-born American women, this category exhibits a good deal of variation from a low non-marital TFR of 0.14 for the Romanian-born women to a high of 0.80 for their Russian-born counterparts. What is most interesting about this set of rates is the extent to which levels of childbearing for these immigrants surpasses the current fertility rates prevailing in their home countries. The TFR's around two that we observe for women of Italian and Portuguese origin may seem unremarkable in the American context but they are sixty percent higher than the rates or their origin countries.

Theoretical Perspectives and Prior Research

Cultural and economic perspectives

Research on immigrant fertility is often grounded in a concern with the extent to which the childbearing patterns of the immigrant population varies from that of the native-born and the pace at which convergence or demographic incorporation occurs. Not surprising the default hypothesis in much empirical work is that with passage of time (either individual or generational), immigrant groups and their descendants will become increasingly assimilated on a variety of dimensions and as a consequence their fertility patterns will come to resemble those of their new country. The assimilation framework posits acculturation as the initial component of the process, thereby suggesting the importance of normative structures (particularly those relevant to childbearing) in the destination society, but the significance of this factor necessarily depends upon the extent

to which such norms differ from those at origin and the strength with which they continue to influence immigrants in their new home. Cultural influences associated with the origin contexts of immigrant women are intuitively appealing, but on the fertility seems likely, the empirical assessment of these influences on fertility remains underdeveloped, while residual differences between native-born and foreign-born women are still often attributed to unmeasured normative factors.

Factors such as female education and labor market positions, key elements of structural assimilation, occupy a more prominent role both theoretically and empirically in the fertility literature. We term this emphasis an "opportunity structure" approach. This framework has close affinities with an economic perspective that emphasizes the opportunity costs of childbearing as indicated by labor force behavior and experience and human capital indicators, especially female education. Economic theories of fertility (Becker 1960; Schultz 1981) use the concept of "opportunity costs" to explain the relationship between female employment and fertility. All else being equal, the more resources a couple has, the more children they will have. At the same time, the greater the "price" of children, the fewer children a couple will have. In part, the price of children is specified as a function of the mother's foregone earnings (opportunity costs). Opportunity costs may vary for several reasons, depending on the accessibility of the female labor market, a woman's human capital (e.g., educational attainment, specific job skills and experience), and her potential wage. Also, opportunity costs may increase when a woman's earnings make up a substantial share of total household income (see Butz and Ward 1979). It is important to note that opportunity costs are likely to be moderated by the prevailing cultural and economic contexts, insofar as these contexts

shape the substance of human capital and generate incompatibilities between childbearing and work. For example, immigrant flows to destinations outside the traditional metropolitan southwest receiving areas with less seasonal economies could reduce the opportunity costs of childbearing through mechanisms such as reduced commuting, housing, or childcare costs.

Language Use and English Proficiency

As immigration to the United States has increased and diversified, the country has become home to multiple language groups. A generation ago, in 1980, only about 23 million Americans, about 10% of the population, reported speaking a non-English language. But by 2000, that total had approximately doubled to forty-seven million Americans, about 18% of the U.S. population. Language background or use of a non-English language at home has been used as a measure of ancestry or degree of assimilation in prior research of demographic phenomena such as fertility (e.g., Morgan, Watkins, and Ewbank 1994), and mortality (e.g., Preston and Haines 1991). Levels of proficiency in English have been used as measures of human capital in analyses of demographic phenomena such as fertility (e.g., Swicegood et al. 1988), and are a staple measure of human capital in economic analyses of earnings. Research by Swicegood and colleagues (based on data from the 1980's) showed that English proficiency was negatively associated with fertility and that this factor accentuated the negative effect of education on fertility. Since that time, increasing numbers of non-English speakers have arrived and changed the context of language use in many parts of the country. In California, for example, the percentage of residents speaking a non-English language has

risen from 28% in 1980 to almost 40% in 2000. Moreover, Spanish language is increasingly dominant. In 2000 Spanish speakers accounted for 60% of the non-English language population.

Grandparents, Living Arrangements and Fertility

Extended family living arrangements have been posited as pro-natalist influence, but primarily within the context of developing societies (e.g., Caldwell and Caldwell 1987). Empirical analyses using Taiwanese data, suggests that living with grandparents increases marital fertility (Chi and Hsin 1996). More general studies on the role of child care in fertility decisions has shown that the availability of child care by relatives increases the parents' desire to have another child (Lehrer and Kawasaki 1985). Therefore, living with grandparents may decrease the opportunity costs of child bearing. It is more common for co-resident grandparents to provide childcare (Baydar and Brooks-Gunn 1998), especially extended full-time care (Vandell et al. 2003). Hank and Kreyenfeld (2003) found that among native-born Germans and immigrants living in Germany, access to informal childcare by respondent's parents significantly increased the risk of a first birth.

While the presence of grandparents may lead to higher fertility, under certain circumstances they might be expected to have a negative impact. Grandparents may compete for household resources with their (potential) grandchildren. The prolongation of life expectancy has meant that more people may experience being a grandparent, and that duration of grandparenthood is increased (Uhlenberg and Kirby 1998). This shift does not mean however that the presence of grandparents will enhance household

resources in terms of childcare provision or other contributions. Baydar and Brooks-Gunn (1998) for example, found that frail grandparents are less likely to provide childcare compared to healthier grandparents. The presence of frail grandparents may even require sufficient care from the adult children's generation as to exert a downward pressure on fertility. There is little empirical evidence to adjudicate between these positions in the case of immigrants to the United States.

Geographic Dispersion of the Immigrant Population

While continuing to favor the traditional receiving areas, immigrants are increasingly spatially dispersed, with both recently arrived migrants settling in non-traditional destinations and more experienced migrants engaging in "secondary migration" and moving to states that traditionally have appealed to the native-born migrants, such as Georgia, Nevada, and North Carolina (Frey 2002). Indeed, states such as California, New York, and Illinois were the three largest foreign-born "exporters" to other states (Perry and Schachter 2003). California lost many foreign-born residents to nearby states such as Nevada, Texas, and Arizona, as well as to more distant states such as Georgia (Perry and Schachter 2003). Since housing and other factors in the cost of living are expensive in California and other primary destination sites, we are interested in examining variation in recent fertility across these contexts. We are interested in seeing whether fertility of the foreign-born differs across contexts that we suspect have rather different opportunity costs of childbearing. Although we do not incorporate direct measure of the possible mechanisms suggested above such as housing costs, fertility

differentials across areas may provide evidence consistent with the operation of opportunity costs effects.

In the multivariate analyses that we present below, we view the opportunity costs of childbearing as associated with education, linguistic usage, household structure (co-resident grandparents), and geographic region. These factors may all overlap to some extent with cultural preferences, and we make no attempt to untangle the knot in which cultural and economic influences are intertwined. Changing patterns of immigration have made all of these factors potentially more important to childbearing behavior in the United States. We make no claim that causal inferences can be drawn from the multivariate results. For example we are not certain if the grandparents present in the household at the time of the survey were there at the time of the birth. In some case they may have been called in to provide help to the daughter/daughter in law. Nevertheless our models do provide some insight into the contexts in which the comparatively high fertility of first generation Americans can be observed.

Logistic Regression Models of Recent Fertility

The subsequent results are presented in the form of logistic regression models that consider a birth in the previous year as a function of a sequential set of social and demographic characteristics. All foreign-born women are included in the analyses, but we have estimated separate models for women who were married at the time of the survey and those who were not. Because we wanted to address the possible impact of grandparents in the household, we focused initially on married women for whom it would be possible to have either maternal or paternal grandparents as co-residents. When we

began to explore comparable models for unmarried women we observed very different patterns of effects across marital status categories. We can see from the results in Table 3 that for some groups of immigrant women a considerable portion of childbearing occurs outside of marriage. We know that the relationships between marriage and childbearing are complex and conditional (Rindfuss and Parnell 1989; Wu and Wolf 2001), especially given the enormous range of cultural and social background represented in the immigrant population. However for these analyses we have only the limited information collected by the ACS on the marital status and births in the last year to work with. We are also presenting separate analyses for the Mexican-born women and women from all other origin countries. As the largest component of the immigrant population the Mexican-born warrant a separate analyses. We would expect given their numerical presence and proximity to their home country that their fertility dynamics would be somewhat unique. Of course a parallel argument might be made for any other country of origin. But the presentation of forty sets of logistic regression models would be totally unwieldy. Thus, we examine all the non-Mexican-born women in one group while acknowledging that there is likely to be considerable variation in the impact of particular independent variables for specific national origin categories.

The results of these analyses are shown in Table 4, where all coefficients are reported in terms of estimated logits. The pattern of age effects is consistent with expectations for all four categories of women. Marital status obviously makes difference. Unmarried teenage women are much less like to have a birth than the reference category of 20-24 year old women, while for married women there is no statistically significant difference between the two age categories. The lower likelihood of a birth for unmarried

teens is much less pronounced for the Mexican-born as compared with all other immigrant women. Educational differences in the recent fertility of Mexican-born women are relatively weak. Married women with a college degree are more likely to have had a birth in the prior year than their less educated counterparts, while in the unmarried sub-sample only those women with some secondary education have somewhat higher birth probabilities. In the case of the other foreign-born women the effects of education show the expected strong negative impact on fertility for the unmarried sub sample while for married women the women with some college have slightly higher birth probabilities than the less educated. These patterns are more consistent with education difference for the population as a whole. The next predictor variables in the model are measures of English language proficiency. There is no significant difference across categories of this variable for married Mexican women. The picture for unmarried Mexican-born women is quite different. For these women having little facility in English is strongly associated with a higher likelihood of a birth in the last year. For the unmarried other foreign-born women the pattern is very similar to that of the unmarried Mexican-born women.

Length of residence in the United States is a commonly used predictor in research on many social and behavioral outcomes for the immigrant population. With respect to childbearing, the hypothesized influence of time in the destination society varies according to the temporal parameters bounding the behavior and the period in which fertility is observed. A number of studies have looked for evidence of reduced fertility that may occur as a result of the immigration process, a so called disruption effect, that may or may not be compensated for by increased fertility after settlement is complete.

On the other hand, research on immigration from less developed countries with larger average family sizes has tended to look for evidence of assimilation in the form of reduced rates of childbearing with increasing length of residence. Our results in Table 4 offer only modest support for either point of view. Married Mexican-born women who have been in the country six years or less have moderately higher birth probabilities as compared to those with twelve or more years of residence. For unmarried Mexican-born women length of residence has no significant effect. The results are quite different for other foreign-born women. For the married women in this category, we observe a weak curvilinear pattern with slightly elevated levels between 4 and 11 years of residence. Only for unmarried other foreign-born women who are recent arrivals do we see results consistent with the disruption hypothesis. Those women who have been in the United States three years or less are less likely to have had a birth in the prior year than women whose duration of residence was longer. For the latter group, duration of residence has no further effect. Although the reference categories in these models are *not* native-born women, the pattern of results we observe do not imply that assimilation is occurring with respect to recent fertility.

Aspects of family/household structure have not appeared very frequently in the empirical literature on immigrant childbearing. The importance of cohabitation may have been underplayed in the past under the assumption that most children were born in wedlock. In Table 4, cohabitation is strongly associated with elevated birth probabilities for unmarried women be they Mexican or other foreign-born. The presence of grandparents is also associated with the recent fertility of immigrant women albeit in diametrically opposing ways for married versus non-married women. The presence of

maternal grandparents is associated with higher fertility for the married women of both national origin categories. Conversely the presence of grandparents has a very strong damping effect on the birth probabilities of unmarried women.

The last predictor variable in our model indicates the U.S. region of residence for women in our sample. California is taken as the reference category with other states and groupings of states coded to identify traditional immigrant receiving areas. The regional variation that we observe in these models is neither pronounced nor particularly systematic. There are no significant effects of region for the married Mexican-born women. This is the group that we would most expect to show evidence of higher fertility in non-traditional receiving areas particularly if the economic opportunities and low costs of living were sustaining the higher levels of childbearing characteristic of immigrants from Mexico. Unmarried Mexican origin women do have somewhat higher birth probabilities in the Southwestern states of Texas, Arizona and New Mexico where living costs trail those of California, but this differential is not a large one. In the case of other foreign-born women those who are married and living in Florida have slightly lower birth probabilities. For unmarried women all other geographic categories have higher birth probabilities than other foreign-born women residing in California, Texas, Arizona and New Mexico and that differential is about the same for all the non-southwest area be they traditional receivers of immigrants or not.

(Table 4 about here)

We also considered one additional factor in our models, that of time. We addressed the question of whether or not there was any trend in the fertility levels over the five-year period covered by the available ACS surveys by including dummy variables for each year of the survey into separate models for each of our four subgroups of women. The results showed no evidence of a linear trend in the likelihood of a birth and indeed they indicated only a couple of instances of even small differences from one year to the next.

Summary and Discussion

The two major goals of our study have been: (1) to provide an accurate and comprehensive profile of immigrant fertility in the United States in the 21 century and; (2) to identify the factors associated with differential fertility within the immigrant population. Using a merged sample of woman of childbearing age from the 2000-2004 American Community Survey(s), we have shown that the period fertility rates of foreign-born women in the United States remain substantially higher than those of native-born women. The age-specific fertility rates of the foreign-born are higher than those of the native-born women at every age, particularly during earlier and later portions of the childbearing years. If the volume and character of immigration remains in force, these dynamics will exert an even greater contribution to the population momentum than is already evident. However, within foreign-born population we find a wide range of period fertility rates across different national origin groups.[12] This variance roughly corresponds to fertility levels that currently prevail in the sending nations, but in many instances we have estimated fertility levels for national origin groups that exceed those that are

[12] The differences we observed across national origin groups are scarcely attenuated by standard social and demographic control variables (results not shown here).

observed in their county of birth. Examples of this pattern are as disparate as results among immigrants women from Mexico and England. In so far as Mexico remains a major sending area, the comparatively high fertility of this group of immigrant will be especially consequential.

In our multivariate analyses, we examined a number of standard socio-economic correlates of fertility, such as age, education, and region of residence. Our models also included English proficiency, the presence of grandparents, and the presence of a cohabitating partner in the case of unmarried women. Disaggregation by marital status is an important feature of our results. For many national origin groups, a substantial amount of recent childbearing has occurred outside of marriage, and the factors that differentiate recent fertility for unmarried women do not always operate the same way as in the case of marital fertility. Educational differences are much sharper for unmarried women than married women and in the opposite direction. These associations are similar to those observed in the native-born population. More relevant to the immigrant experience is English language proficiency. This factor like education is more important for unmarried women than married women and indeed has a stronger association with fertility than education. When we look at length of residence in the United States we do not find very strong support for assimilation effects. Only for the married Mexican-born women do we find a pattern consistent with that expectation and the evidence in this case is rather weak. The presence of a woman's parents in the household has significant associations with her fertility outcomes that have not been widely assessed in the literature. For unmarried women there is a strong negative effect as we might expect. What is more interesting is that this effect is much stronger in the case of Mexican-born

women than it is for other immigrant women. It is difficult to draw strong generations in regards to the effect of respondent's region of residence. We had expected that the recent dispersion of immigrants might manifest itself in higher fertility rates in these non-traditional settlement locales. This hypothesis was not confirmed at least with respect to the broad groupings of states that were utilized.

Our analytical strategy involved the estimation of separate models for Mexican-born women. We observed substantial differences in regards to the impact some predictors had in explaining Mexican-born fertility as compared with models for all other foreign born women. We are open to some criticism of our decision to lump all non-Mexican origin women into a single group. If we were to estimate models separately for each national origin group we would no doubt discover more unique pattern of effects. This variation could arise from cultural differences amongst the sending countries. But, it is also important to recognize that selective immigration may play an important role in structuring those differences. Immigrants from Great Britain are surely not a representative sample of all women in that country, nor is this likely to be the case for any of the other national origin groups.

Our investigation still leaves open the most interesting questions regarding the mechanisms that sustain relatively high fertility levels amongst some sectors of the foreign-born population and quite low levels amongst others. Our results point to the value of adopting a more life-course oriented approach than is typical of differential fertility research. As we have seen, the processes associated with marital and non-marital fertility are quite distinct and ultimately understanding differential family formation will require attention to the pathways that lead into and out of marriage. In order to model

these processes in such a way as to allow for stronger causal inference, researchers will have to rely on richer data than Census based surveys are likely to provide. While the ACS data used for this analysis is valuable, it lacks information on fertility beyond the occurrence of a birth in the last year. For this reason, we are not able to control for prior parity. As we continue this investigation we will be estimating parity through application of own child measures (Cho, Retherford, and Choe 1986). This will in turn allow us to model parity transitions with the large case base available in our merged ACS files. Unfortunately there is no way to approximate marital history with the information available, but it is still the case that no other data source can allow for the investigation of so many different national origin categories with a direct measure of fertility.

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Table 1: Comparison of Total Fertility Rate (TFR) and General Fertility Rate (GFR): Estimates from ACS 2003 PUMS and Vital Statistics, Women Ages 15-44

Race by Hispanic origin	ACS 2003 PUMS		2002 Vital Statistics		Ratio (ACS/Vital)	
	TFR_{15-44}	GFR_{15-44}	TFR_{15-44}	GFR_{15-44}	TFR_{15-44}	GFR_{15-44}
All women (238,198)	2.031	63.8	2.013	64.8	1.009	0.985
White alone (184,084)	1.981	61.7	2.028	64.8	0.977	0.952
Non-Hispanic White (169,264)	1.935	60.0	1.829	57.4	1.058	1.045
Black (24,542)	2.051	64.2	1.991	65.8	1.030	0.976
Non-Hispanic Black (24,106)	2.044	64.0	2.047	67.4	0.999	0.950
Asian alone or Pacific Islander (11,737)	1.814	64.1	1.820	64.1	0.997	1.000
Hispanic (27,491)	2.574	86.5	2.718	94.4	0.947	0.916
Native American and/or Alaskan Native alone (2,397)	2.269	68.4	1.735	58.0	1.308	1.179

Sources: American Community Survey 2003 Public Use Microdata Sample; National Vital Statistics Reports (Martin et al. 2003)
Note: Numbers in parentheses are sample size for 2003 ACS PUMS data.

Table 2: Age Specific Fertility Rates (ASFR), Total Fertility Rates (TFR), and General Fertility Rates (GFR) for Native-born and Foreign-born Women Ages 15-44: Estimates from the 2000-2004 American Community Survey Public Use Microdata Sample

	Native-born	Foreign-born	Ratio (Foreign-born/Native-born)
$ASFR_{15-19}$	0.0275	0.0393	1.4255
$ASFR_{20-24}$	0.0972	0.1155	1.1882
$ASFR_{25-29}$	0.1157	0.1384	1.1963
$ASFR_{30-34}$	0.1031	0.1246	1.2088
$ASFR_{35-39}$	0.0497	0.0744	1.4968
$ASFR_{40-44}$	0.0130	0.0245	1.8811
TFR_{15-44}	2.031	2.583	1.272
GFR_{15-44}	63.1	87.9	1.393
Sample size	889,986	124,056	

Table 3: Total Fertility Rate (TFR) and General Fertility Rate (GFR) for Foreign-born Women Ages 15-44 by Country of Origin and Marital Status: Estimates from 2000-2004 American Community Survey Public Use Microdata Sample

	All	Married	Unmarried	All	Married	Unmarried		All
Country of origin	**TFR_{15-44}**	**TFR_{15-44}**	**TFR_{15-44}**	**GFR_{15-44}**	**GFR_{15-44}**	**GFR_{15-44}**	**Percent Married**	**Sample Size**
Native-Born	2.031	4.380	1.035	63.1	95.5	35.4	46.1	889,986
Foreign-Born	2.583	4.823	1.457	87.9	115.2	49.8	58.2	124,056
Mexico	3.364	5.205	2.479	114.8	133.1	87.9	59.6	32,483
Non-Mexican Foreign-Born	2.243	4.375	1.100	78.4	108.7	36.9	57.7	91,573
Guatemala	2.973	4.290	2.489	99.1	111.4	85.0	53.5	1,695
El Salvador	2.544	4.753	1.936	88.0	105.8	68.6	52.2	3,080
Honduras	3.236	3.590	2.792	107.0	121.6	93.0	49.2	1,037
Nicaragua	2.315	3.368	1.458	77.0	105.3	50.1	48.8	818
Colombia	1.956	2.588	1.103	67.1	92.9	34.0	56.1	2,147
Ecuador	2.136	4.695	1.343	71.7	95.9	43.7	53.7	990
Peru	3.057	6.985	1.577	105.8	153.2	52.9	52.8	1,200
Venezuela	1.869	2.635	0.666	72.8	111.1	24.1	56.0	659
Argentina	2.257	3.067	1.083	82.8	106.5	41.1	63.7	604
Brazil	1.886	2.568	0.814	66.0	91.4	27.4	60.3	1,288
Guyana	1.860	2.843	1.270	63.8	83.1	45.8	48.3	846
Puerto Rico	2.583	4.627	1.959	79.4	102.8	62.3	42.3	3,839
Cuba	1.993	2.380	1.547	56.4	63.8	45.2	60.0	1,880
Trinidad and Tobago	2.658	4.268	1.559	78.9	129.7	45.6	39.6	798
Dominican Republic	2.518	6.030	2.184	79.9	96.2	69.4	39.0	2,291
Haiti	3.123	8.382	1.730	99.8	161.5	56.0	41.5	1,403
Jamaica	2.316	4.446	1.741	72.5	107.9	56.3	31.3	2,015

Table 3:
(Continued)

Country of origin	All TFR_{15-44}	Married TFR_{15-44}	Unmarried TFR_{15-44}	All GFR_{15-44}	Married GFR_{15-44}	Unmarried GFR_{15-44}	Percent Married	All Sample Size
China	1.882	4.937	0.650	73.5	101.2	21.5	65.3	5,360
Japan	1.557	2.519	0.069	71.6	112.4	2.8	62.8	1,955
Korea	1.578	2.824	0.452	57.2	89.2	13.2	57.9	4,321
Taiwan	1.471	3.204	0.400	57.5	97.1	8.7	55.2	1,792
Philippines	2.098	4.976	0.954	71.7	97.5	31.9	60.7	6,862
Indonesia	2.020	6.024	0.364	73.3	119.8	12.1	56.8	382
Vietnam	2.264	5.696	0.923	87.5	132.5	32.1	55.2	4,445
Cambodia	2.807	3.031	2.510	91.8	93.8	89.1	56.9	599
Laos	3.302	9.407	1.430	112.5	147.7	54.1	62.4	1,031
Thailand	2.122	5.204	1.106	69.9	97.3	48.5	43.8	844
India	2.227	3.462	0.583	96.5	117.6	18.4	78.7	5,627
Pakistan	2.955	6.714	0.434	104.4	143.9	10.7	70.4	948
Iran	1.451	2.578	0.085	54.6	87.9	2.5	61.0	1,007
Lebanon	2.938	4.120	0.576	112.1	143.7	17.5	74.9	455
Israel	3.340	5.026	0.871	131.8	184.7	32.7	65.2	440
Ethiopia	1.895	3.594	0.951	75.4	124.3	35.4	45.0	411
Nigeria	3.137	9.584	1.002	111.3	191.2	30.0	50.5	539
Germany	1.645	2.447	0.491	57.5	84.3	16.8	60.2	1,792
Poland	1.574	2.548	0.408	55.5	80.5	16.5	60.9	1,549
England	2.319	4.092	0.722	81.1	115.3	23.3	62.8	1,961
France	1.769	2.707	0.147	75.4	127.4	4.3	57.7	544
Italy	1.955	3.442	0.404	62.7	81.8	20.2	69.0	638
Portugal	2.046	3.866	0.737	58.5	74.7	24.0	68.0	650

Table 3:
(Continued)

Country of origin	All TFR_{15-44}	Married TFR_{15-44}	Unmarried TFR_{15-44}	All GFR_{15-44}	Married GFR_{15-44}	Unmarried GFR_{15-44}	Percent Married	All Sample Size
Romania	1.817	2.746	0.139	68.5	101.6	5.1	65.7	569
Bosnia and Herzegovina	1.939	3.147	0.620	63.2	86.7	25.9	61.4	601
Ukraine	2.036	2.873	0.491	68.0	101.9	12.9	61.9	1,015
Russia	1.726	2.599	0.793	57.2	84.9	18.3	58.5	1,450
Canada	2.162	4.308	0.474	74.6	110.6	15.0	62.4	2,842

Table 4: Logistic Regression Results Predicting Birth in Last Year by Marital Status and Place of Birth for Foreign-Born Women Ages 15-44: 2000-2004 ACS PUMS

	Mexican-Born		Other Foreign-Born	
	Married	Unmarried	Married	Unmarried
Age				
15-19	0.195	-0.568**	0.308	-1.210**
20-24[a]	—	—	—	—
25-29	-0.343**	-0.236**	-0.092	0.124
30-34	-0.755**	-0.609**	-0.280**	-0.003
35-39	-1.356**	-1.081**	-0.882**	-0.566**
40-44	-2.457**	-2.188**	-2.077**	-1.580**
Education				
0 – 8th grade	0.022	0.056	-0.049	0.087
Less than high school	0.009	0.178*	0.112	0.151
High school[a]	—	—	—	—
Some college	0.073	-0.142	0.093*	-0.441**
College graduates	0.250*	-0.186	0.184**	-1.186**
English ability				
Very well	0.156	0.216	0.093*	0.031
Well	0.018	0.206	0.072	0.207*
Not well	0.110	0.513*	0.142*	0.514**
Not at all	0.167	0.652**	0.116	0.728**
English only[a]	—	—	—	—
Years In U.S.				
0-3 years	0.224**	-0.010	-0.063	-0.347**
4-6 years	0.254**	-0.012	0.161**	-0.074
7-11 years	0.014	0.120	0.101**	-0.010
12 or more years[a]	—	—	—	—
Grandparents				
Maternal	0.215*		0.223**	
Paternal	0.105		0.068	
No grandparents[a]	—		—	
Grandparents		-0.772**		-0.324**
No grandparents[a]		—		—
Cohabitation		0.680**		0.766**
No Cohabitation[a]		—		—

Table 4: (Continued)

	Mexican-Born		Other Foreign-Born	
	Married	Unmarried	Married	Unmarried
Geography				
California [a]	—	—	—	—
Florida	-0.133	0.141	-0.139*	0.372**
Texas, New Mexico, Arizona	-0.025	0.218**	-0.025	0.047
New York, New Jersey, Massachusetts, Pennsylvania	-0.093	-0.061	0.020	0.457**
Other States	0.013	0.055	0.044	0.363**
Sample size	19,365	13,118	52,864	38,709
Model chi-square	1083**	597.9**	2002**	1065**

Source: 2000-2004 ACS PUMS (U.S. Bureau of Census various years)
Note: [a] Reference category. * p< .05, ** p< .01