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U.S. Migration and Reproductive Health among Mexican Women: Assessing the Evidence for Health Selectivity

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Abstract. Health selectivity posits that individuals who practice preventive health behaviors are more likely to migrate to the United States, and this has been proposed as one explanation of the Latino Paradox. This paper examines evidence for health selection in the context of reproductive health using national survey data from Mexico (the longitudinal Mexico Family Life Survey [MxFLS], 2002 and 2005 waves) and the United States (the National Survey of Family Growth [NSFG], 2002). We compared sexual behaviors and contraceptive practices of Mexican women residing in Mexico who subsequently migrated to the United States with those who remained in Mexico and with Mexican immigrants in the United States. MxFLS respondents who migrated to the United States had a younger mean age, and a larger proportion had no children compared to MxFLS nonmigrants. Within the MxFLS sample, a smaller proportion of women who migrated had ever had vaginal sex, though this difference was nonsignificant with adjustment for sociodemographic factors. No sexual behavior or contraceptive use measures varied between Mexican migrants and nonmigrants within the MxFLS. The mean lifetime number of sexual partners was lower for MxFLS respondents than for Mexican immigrants in the NSFG. Smaller proportions of MxFLS respondents reported using hormonal methods or condoms relative to NSFG respondents. We found no evidence for health selectivity with regard to sexual behaviors or contraceptive practices, underscoring the importance of continued attention to the factors that influence the adaptation trajectories following U.S. migration.

Keywords. Health selection, Latino Paradox, immigrant health, Mexican women, contraception, sexual risk behavior.

1 Background

The Mexican immigrant population in the United States constitutes 30.1% of all U.S. immigrants, reaching 11.4 million Mexicans in 2008 among the U.S. foreign-born (Terrazas 2010). Approximately half of Mexican immigrants in the United States are undocumented. Women accounted for 44.2% of the Mexican immigrant population in the United States in 2008 (Terrazas 2010). Research suggests that immigration from Mexico to the United States is associated with changes in reproductive health behaviors (Parrado *et al.* 2005; Maternowska *et al.* 2010) that may affect fertility patterns (Bean *et al.* 2000; Parrado and Morgan 2008; Carter 2000) and vulnerability to sexually transmitted infections (Hernandez *et al.* 2009; Magis-Rodriguez *et al.* 2009; Salgado de Snyder *et al.* 1996; Sanchez *et al.* 2004), with implications for provision of reproductive health care to the large and growing immigrant population (Parrado *et al.* 2004; Munoz-Laboy *et al.* 2009; Hirsch *et al.* 2009). For many health outcomes and practices — reproductive and otherwise — foreign-born

Latinos living in the United States fare better than their U.S.-born counterparts, and increased length of time in the United States corresponds with declines in health and adoption of riskier health practices (Acevedo-Garcia *et al.* 2007). This pattern is described as the Latino Paradox because, despite low socioeconomic status, for many health outcomes Latino immigrants appear healthier than their U.S.-born counterparts, an epidemiologic finding likewise noted for other immigrant groups (Marmot and Syme 1976).

Two competing theories have been proposed to explain this apparent health advantage of immigrants relative to native-born populations. The first addresses immigrant adaptation in the United States and a health trajectory shaped by a negative acculturation process involving adoption of riskier health behaviors, experience of mental health stressors, and erosion of protective cultural norms and support structures. Segmented assimilation, as presented by Portes and Zhou (1993), describes more variability in the adaptation process, whereby socioeconomic status (SES) also influences the assimilation trajectory, with lower SES and socioeconomic inequalities contributing to negative acculturation. An alternative explanation argues that the apparent health of first-generation immigrants relative to U.S.-born populations reflects, first and foremost, a health

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selectivity whereby healthier individuals or individuals who practice preventive health behaviors choose to migrate to the United States (Jasso *et al.* 2004). These individuals may be more likely to have the motivation, resources, health, and other advantages to migrate and adapt successfully to the destination communities. Jasso and colleagues (2004) argue that a U.S. native-born population may not be an appropriate comparison group for assessing an immigrant population's health. Rather, they suggest comparing the health of migrants and nonmigrants in countries of origin at the time of immigration. Few studies to date, however, have adopted this methodological approach.

A number of studies have documented a similar trajectory of worsening reproductive health outcomes and higher levels of sexual risk behaviors both comparing Latino and non-Latino white populations and across Latino immigrant generations. Nonetheless, inconsistencies in this pattern across outcomes and studies exist (Afable-Munsuz and Brindis 2006), and it has become increasingly clear that timing of immigration within the life course, number of years lived in the United States, and experiences of reception there influence patterns of structural and cultural assimilation (Weiss and Tillman 2009). Research on fertility patterns across generations of Mexico-origin women in the United States found a curvilinear pattern, with reduced fertility among generation 1.5 (women who immigrated after age 15) and generation 2, compared to generation 1 (women who immigrated as children), but increased fertility again for generation 3 (Bean *et al.* 2000). However, results of a recent study suggest generational convergence in fertility levels toward that of white women (Parrado and Morgan 2008). A study of Latino adolescents we conducted in San Francisco similarly highlighted the complexity of investigating immigration's effects on reproductive health. We found that though pregnancy intentions and pregnancy incidence did not vary by U.S. generation (Rocca *et al.* n.d.), the proportion of youth with sexual partners engaged in high-risk activities (e.g., gang affiliated, incarcerated) increased with increasing U.S. generation. This was true even comparing recent immigrants and youths who immigrated to the United States prior to adolescence (Minnis *et al.* 2010).

Though much work has posited that health selectivity may be a plausible alternative explanation of the Latino Paradox, few studies have examined this hypothesis directly with health measures assessed prior to migration. One recent paper used longitudinal Mexico Family Life Survey data to examine evidence for health selectivity among young Mexican migrants to the United States (Rubalcava *et al.* 2008). The authors compared self-reported overall health status and four physical health indicators (such as body mass index and blood pressure) and found limited support for the health selectivity hypothesis. A second analysis testing the health selectivity hypothesis with internal migration within Mexico using the same health measures found some evidence for health selection that was modified by age and rural-versus-urban place of origin (Arenas 2008). Whether health selectivity plays a role in shaping reproductive health patterns of Mexican immigrant women in the United States has been explored insufficiently to date.

This paper was designed to evaluate evidence for health selectivity as contributing to reproductive health

patterns observed in the United States among immigrant Latino populations, comprised in large part of Mexican women and women of Mexican descent. Using national survey data from Mexico, we compared the reproductive health behaviors of Mexican women who subsequently migrated to the United States with those who remained in Mexico. We also used U.S. national survey data to compare the women in Mexico to foreign-born Mexican women residing in the United States and U.S.-born women of Mexican descent.

2 Methods

2.1 Data

Study data are derived from two nationally representative surveys: the Mexico Family Life Survey (MxFLS), a longitudinal study of individuals in Mexico with data collection waves in 2002 and 2005; and the 2002 wave of the U.S.-based National Survey of Family Growth (NSFG) (Cycle 6). The MxFLS included over 8,400 households in 150 Mexican communities; all household members aged 15 and above completed questionnaires administered face-to-face with an interviewer; the questionnaires were designed to assess social, economic, demographic, and health behaviors of individuals and their families. All female respondents aged 15-49 completed a reproductive health questionnaire that assessed pregnancy history, contraceptive practices, and sexual behaviors. In the 2005 survey wave, contact with all wave 1 participants was attempted, including with those who migrated to the United States. For those who could not be contacted, location information was obtained from other household members so that migration status was documented. The NSFG Cycle 6 was a multistage probability survey derived from an area probability sample of males and females aged 15-44 residing in U.S. households in 120 areas across the country. In-person interviews were conducted by female interviewers using computer-assisted personal interview, with sensitive data collected through audio computer-assisted self-interviewing (ACASI). Latino respondents were over-sampled to permit subgroup analyses.

2.2 Analytic Sample

This analysis includes female respondents in the MxFLS 2002 baseline survey wave who completed the reproductive health questionnaire module in 2002 and for whom U.S. migration status in 2005 was known ($N = 8,731$). Women with a history of U.S. migration for a period of 12 months or more at baseline were excluded from analyses ($N = 90$). The second part of the analytic sample is derived from the 7,643 female NSFG 2002 wave respondents, of whom 921 identified as Hispanic and of Mexican origin and provided a known country of birth. In all analyses that included NSFG data, we defined two subpopulations: Mexican immigrant women ($N = 432$) and U.S.-born women of Mexican descent ($N = 489$).

2.3 Measures

Measures in common between MxFLS and NSFG have been selected for analysis. When identical measures were not

available, we created measures sufficiently similar to permit direct comparison between the two datasets.

We evaluated two categories of reproductive health behaviors with implications both for fertility and for STI risk: sexual behaviors and contraceptive practices. Note that for MxFLS participants, all reproductive health behaviors were assessed in 2002 prior to U.S. migration.

Sexual behaviors included lifetime number of sexual partners (continuous measure) and age of sexual debut. We evaluated a dichotomous measure of onset of sexual activity by age 15 (yes vs. no), a measure of risk used commonly in the literature. Given both studies' lower age limit of 15 years, all participants would have experienced the outcome of early sex (or not) by study enrollment.

We compared ever use of hormonal methods (oral contraceptive pills, injection, implant), condoms, IUD, and emergency contraception. We categorized current contraceptive method use as permanent or semi-permanent (sterilization, IUD), hormonal, condom, natural (withdrawal, herbs, fertility awareness), or no method used. In the NSFG, women were permitted to report multiple methods used currently, though dual method use was low. In the MxFLS, current method use was ascertained without a specified definition of "current." In the NSFG, method use was measured for each month during the four years prior to the interview. Thus, for comparison, we chose method use reported in the month of the interview.

The primary exposure of interest is U.S. migration. In this paper we examined two groups of Mexico-origin women who migrated to the United States. First, within the MxFLS survey we defined our exposure as U.S. migration between 2002 and 2005. This group could include women who remained in the United States in 2005 as well as those who returned to Mexico by 2005 but had resided in the United States for at least one year during this period. As a direct examination of the health selectivity hypothesis for reproductive health behaviors, we compared this group of women to Mexican respondents who did not migrate to the United States. Second, we compared Mexican nonmigrants from the MxFLS sample to Mexican immigrant respondents in the NSFG who, by design, resided in the United States. Third, as a control comparison to replicate expected findings suggestive of the Latino Paradox, we compared the NSFG Mexican immigrant sample to NSFG U.S.-born women of Mexican origin.

Sociodemographic factors were examined for descriptive purposes and for their potential confounding effects as hypothesized based on the literature. Specifically, we examined age, marital status and age at first marriage, parity, rural-versus-urban community of residence at age 12, educational attainment, and current employment. In the MxFLS sample, we also included a community-level marginalization index comprised of nine nonmonetary measures of poverty (e.g., percentage of illiterate individuals over 15 years of age, percentage of individuals with no drainage service) (CONAPO). Higher marginalization levels indicate greater poverty.

2.4 Analysis

To examine whether the theory of health selectivity applies to reproductive health risks among Mexican women, we compared

sexual behaviors and contraceptive practices between four groups of women: Mexican women with no history of U.S. migration in 2002 who did not migrate to the United States in the subsequent three years; Mexican women with no history of U.S. migration in 2002 who did migrate to the United States for a minimum duration of 12 months between 2002 and 2005 (or who resided there in 2005 and were expected to reside in the United States for at least 12 months); Mexican immigrant women residing in the United States in 2002; and U.S.-born women of Mexican descent residing in the United States in 2002. An evaluation of reproductive health selectivity could be undertaken using only the first two groups (MxFLS data only); however, in comparing the reproductive health profile prior to migration with that among Mexican immigrants residing in the United States (NSFG sample), we are able to investigate how similar this U.S.-based foreign-born population is to those women sampled in Mexico who migrate subsequently. Though an in-depth examination is beyond the focus of this analysis, such a comparison could offer evidence for the degree to which the Latino Paradox may be due to health selection (i.e., lower-risk women migrate) versus structural and cultural assimilation processes.

First we examined descriptive statistics that characterized the sociodemographic background of survey respondents. We tested for differences in sociodemographic background within the two Mexico and U.S. samples using contingency table analysis and, for continuous measures, tested the null hypothesis that the two means were equal using the adjusted Wald test. We assessed differences in contraceptive use and sexual behaviors by calculating the proportions of participants reporting each behavior among women in each of the four groups as well as 95% confidence intervals. For continuous or count measures, we calculated means with 95% confidence intervals. Estimates can be compared directly across the four groups of women, with non-overlapping confidence intervals indicating statistically different estimates.

We used multivariable logistic and Poisson regression to adjust for underlying population differences in age structure and socioeconomic status. Separate models were constructed for each reproductive health behavior, with direct comparisons within the Mexico and U.S. datasets.

For all analyses we used appropriate sampling weights and specified the survey structure (primary sampling units and strata) so that estimates and standard errors are consistent with the survey design. We conducted analyses using Stata statistical software version 10.

3 Results

3.1 Sociodemographic Background

Among female MxFLS respondents aged 15-49 years with no prior U.S. migration experience in 2002, 2.5% ($N = 214$) migrated to the United States during the subsequent three years (between survey waves 1 and 2). Women who migrated to the United States were more likely to have expressed intentions to migrate at wave 1 (3.2% who reported intending to migrate versus 1.9% who reported no migration intentions actually migrated, $p = 0.02$) and to report having relatives in the

United States (79.0% vs. 21.0%, $p < 0.0001$). Women who migrated to the United States had a younger mean age, fewer were married, and a larger proportion had no children. A higher proportion of women who migrated intended to have additional children (table 1A). Women who migrated were relatively evenly distributed across quintiles of a community-level marginalization index, compared to nonmigrants who were concentrated in the least marginalized quintile.

Table 1a. Sociodemographic Characteristics of Mexican Women with No U.S. Migration Experience Stratified by Subsequent U.S. Migration: Mexico Family Life Survey, 2002

| Characteristic | No U.S. Migration (N = 8443) | Migrated to U.S. 3 Years ^a (N = 214) |
|-----------------------------------------------------|---------------------------------|-------------------------------------------------------|
| Factors | % | % |
| Mean age in years (SE†): range 15-49*** | 29.3 (0.18) | 24.3 (0.58) |
| Married (ever)*** | 57.5 | 34.8 |
| Mean age in years at marriage (SE†) ^b | 19.7 (0.14) | 19.4 (0.49) |
| Educational attainment | | |
| No formal education | 4.6 | 2.6 |
| Primary | 34.5 | 35.5 |
| Middle school equivalent | 33.2 | 35.9 |
| High school equivalent | 16.0 | 18.5 |
| College/professional training | 11.8 | 7.5 |
| Employed currently | 36.9 | 34.1 |
| Urban residence at age 12 (vs. rural) | 46.5 | 33.5 |
| Marginalization Index** | | |
| Very high | 2.9 | 2.1 |
| High | 9.3 | 23.0 |
| Medium | 13.9 | 23.5 |
| Low | 16.3 | 23.4 |
| Very low | 57.7 | 27.9 |
| Parity*** | | |
| No children | 37.1 | 58.4 |
| 1 child | 11.8 | 12.6 |
| 2 children | 17.7 | 11.2 |
| 3 or more children | 33.4 | 17.8 |
| Mean parity (SE†)*** | 1.9 (0.04) | 1.1 (0.17) |
| Intends to have additional children*** | 54.1 | 72.3 |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

† Standard error

^a U.S. migration occurred between survey waves 1 and 2 (2002 and 2005).

Includes "permanent migration" only, defined as migration for at least 12 months

^b Estimate includes only married or formerly married women

Mexican immigrant NSFG respondents had resided in the United States for a mean of 11.2 years, with 20.5% residing there for three or fewer years. A higher proportion of immigrant Mexican women residing in the United States than U.S.-born women of Mexican descent had been married. Immigrant women had lower educational attainment and higher parity compared to U.S.-born women of Mexican descent. The level of educational attainment reported by

immigrant women was similar to that reported by MxFLS respondents (table 1B).

Table 1b. Distribution of Sociodemographic Characteristics among Mexican Immigrant and U.S.-born Women of Mexican Descent in the U.S.: National Survey of Family Growth, 2002

| Characteristic | Mexican Immigrant | U.S.-born Women |
|-----------------------------------------------------|-------------------|-----------------------------------|
| | (N = 432) | 3 Years ^a (N = 489) |
| Factors | % | % |
| Mean age in years (SE†): range 15-44** | 30.4 (0.38) | 26.7 (0.59) |
| Married (ever)** | 68.1 | 48.0 |
| Mean age in years at marriage (SE†) ^a | 21.4 (0.37) | 21.9 (0.31) |
| Educational attainment** | | |
| < high school | 55.0 | 9.9 |
| some high school | 12.3 | 22.6 |
| high school | 14.2 | 25.2 |
| some college | 13.5 | 31.8 |
| college graduate | 5.1 | 10.6 |
| Employed currently* | 52.1 | 61.8 |
| Parity** | | |
| No children | 20.1 | 42.1 |
| 1 child | 17.7 | 18.0 |
| 2 children | 29.1 | 20.3 |
| 3 or more children | 33.0 | 19.6 |
| Mean parity (SE†)** | 2.0 (0.08) | 1.3 (0.07) |
| Intends to have additional children | 51.5 | 52.9 |

* $p < 0.05$, ** $p < 0.0001$

† Standard error

^a Estimate includes only married or formerly married women

3.2 Reproductive Health Behaviors

Overall proportions of women reporting ever having had vaginal sex were lower for Mexican women residing in Mexico compared with Mexican women in the United States; however, the proportion reporting sexual onset (by age 15) was similar for the MxFLS sample and the Mexican immigrants among NSFG respondents (approximately 15% across all three groups) (table 2). The mean lifetime number of sexual partners was lower for MxFLS respondents than for those in the NSFG. Smaller proportions of women in Mexico reported ever and currently using hormonal methods and/or condoms relative to Mexican women residing in the United States. They reported higher levels of permanent method use currently, as well as of no method use during sex currently.

Within the MxFLS sample, a smaller proportion of women who migrated had ever had vaginal sex, though this difference was attenuated with adjustment for age and socioeconomic indicators (table 3). We found no evidence for health selectivity with regard to contraceptive practices or sexual behaviors. Though parity was significantly lower and pregnancy intentions higher for Mexican women who migrated to the United States between 2002 and 2005 compared to Mexican nonmigrants, these differences were nonsignificant with adjustment for age.

Table 2. Sexual Behaviors and Contraceptive Use among Mexican Women in Mexico and Women of Mexican Descent in the United States

| | Mexico Family Life Survey, 2002 | | | | National Survey of Family Growth, 2002 | | | | | |
|--------------------------------------|---------------------------------|------------|----------------------------------------------|------------|----------------------------------------|--------|------------------------------|--------|------------|----|
| | No U.S. Migration | | Migrated to U.S. within 3 Years ^a | | Mexican Immigrants | | U.S.-born of Mexican Descent | | | |
| | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI | | |
| Sexual behaviors | | | | | | | | | | |
| Ever had vaginal sex | 69.4 | 67.8, 70.9 | 46.9 | 37.5, 56.3 | ** | 91.9 | 89.1, 94.7 | 80.1 | 75.2, 84.9 | ** |
| Sexual onset at age 15 or younger | 14.6 | 13.2, 15.9 | 15.8 | 5.7, 25.9 | | 15.1 | 9.0, 21.2 | 32.7 | 27.1, 38.3 | ** |
| Multiple sexual partners in lifetime | 18.6 | 16.4, 20.6 | 19.0 | 6.9, 31.1 | | 41.5 | 34.3, 48.7 | 69.7 | 64.5, 74.9 | ** |
| Mean age at first vaginal sex | 19.1 | 18.9, 19.4 | 19.4 | 18.0, 20.8 | | 19.3 | 18.8, 19.9 | 17.0 | 16.8, 17.2 | |
| Mean lifetime no. sexual partners | 1.3 | 1.3, 1.4 | 1.4 | 1.1, 1.8 | | 2.2 | 1.9, 2.6 | 5.3 | 4.5, 6.1 | |
| Contraceptive use | | | | | | | | | | |
| Ever use | | | | | | | | | | |
| Hormonal | 41.6 | 37.8, 45.3 | 40.2 | 27.5, 52.9 | | 68.8 | 61.4, 76.3 | 81.7 | 77.0, 86.5 | ** |
| Condoms | 24.5 | 22.1, 26.9 | 22.2 | 11.0, 33.3 | | 67.4 | 61.3, 73.6 | 85.4 | 81.7, 89.1 | ** |
| IUD | 38.3 | 35.5, 41.1 | 36.4 | 24.3, 48.5 | | 14.0 | 9.8, 18.2 | 4.6 | 2.1, 7.1 | ** |
| Current use ^b | | | | | | | | | | |
| Hormonal | 7.2 | 6.0, 8.4 | 6.5 | 0.4, 12.6 | | 26.0 | 17.9, 34.0 | 21.6 | 16.7, 26.5 | |
| Condoms | 5.0 | 4.1, 5.8 | 2.1 | -0.6, 4.7 | | 19.6 | 13.6, 25.6 | 14.2 | 10.3, 18.1 | |
| Permanent | 43.5 | 41.2, 45.7 | 39.6 | 29.3, 49.8 | | 30.1 | 24.1, 36.2 | 24.6 | 20.7, 28.4 | |
| Natural | 4.2 | 3.3, 5.0 | 0.8 | -0.8, 2.3 | | 6.5 | 3.6, 9.3 | 6.1 | 3.9, 8.3 | |
| Nothing used | 40.2 | 37.5, 42.9 | 51.1 | 38.6, 63.5 | | 24.4 | 18.3, 30.5 | 33.5 | 28.1, 39.0 | * |

p* < 0.05, *p* < 0.001

^a U.S. migration occurred between survey waves 1 and 2 (2002 and 2005). Includes “permanent migration” only, defined as migration for at least 12 months

^b Respondents could choose more than one contraceptive method, so total exceeds 100% in some groups

Table 3. Multivariable Analysis of Differences in Contraceptive Use and Sexual Behaviors between Mexican Women who Immigrated to the U.S. and Native Populations in Mexico and the United States

| | Mexico Family Life Survey, 2002 | | National Survey of Family Growth, 2002 | | |
|----------------------------------------|--------------------------------------------|------------|-----------------------------------------------------|------------|----|
| | U.S. Migrants ^a vs. Nonmigrants | | Mexican Immigrants vs. U.S.-born of Mexican Descent | | |
| | Odds Ratio [‡] | 95% CI | Odds Ratio ^b | 95% CI | |
| Sexual behaviors | | | | | |
| Ever had vaginal sex | 0.68 | 0.42, 1.09 | 1.18 | 0.74, 1.87 | |
| Sexual onset at age 15 or younger | 0.96 | 0.47, 1.96 | 0.16 | 0.09, 0.28 | ** |
| Multiple sexual partners in lifetime | 1.13 | 0.59, 2.19 | 0.18 | 0.14, 0.25 | ** |
| Number of sexual partners (rate ratio) | 1.08 | 0.83, 1.39 | 0.31 | 0.26, 0.38 | ** |
| Contraceptive choice | | | | | |
| Ever use | | | | | |
| Hormonal | 0.87 | 0.55, 1.39 | 0.59 | 0.35, 0.97 | * |
| Condoms | 0.74 | 0.40, 1.36 | 0.50 | 0.33, 0.75 | ** |
| IUD | 0.89 | 0.48, 1.62 | 3.19 | 1.34, 7.56 | ** |
| Current use | | | | | |
| Hormonal | 0.79 | 0.25, 2.52 | 1.53 | 0.95, 2.47 | |
| Condoms | 0.38 | 0.10, 1.44 | 2.06 | 1.34, 3.17 | ** |
| Permanent | 1.22 | 0.77, 1.92 | 0.76 | 0.49, 1.19 | |
| Natural | 0.20 | 0.03, 1.50 | 1.47 | 0.70, 3.11 | |
| Nothing used | 0.76 | 0.42, 1.40 | 0.74 | 0.48, 1.15 | |

p* < 0.05, *p* < 0.01

^a U.S. migration occurred between survey waves 1 and 2 (2002 and 2005). Only “permanent migration” considered, which was defined as migration for at least 12 months

^b Odds ratios are derived from logistic regression and the rate ratio from Poisson regression. Estimates are adjusted for age, educational attainment, rural-versus-urban community of residence (MxFLS sample only), and community marginalization (MxFLS sample only)

Among NSFG respondents, though ever use of all four contraceptive method types varied between Mexican immigrant and U.S.-born women of Mexican descent, with generally lower levels of hormonal contraceptives and condoms and higher use of IUDs, when examining current method use choices, only differences in condom use were found. Mexican immigrant women reported a higher odds of condom use compared to U.S.-born women of Mexican descent. As expected based on previous research, sexual behaviors did vary between Mexican immigrant women and U.S.-born women of Mexican descent, with a pattern of decreased risk among immigrant women. For example, Mexican immigrants had more than an 80% decreased odds of reporting an early age of first vaginal sex compared to U.S.-born women of Mexican descent.

4 Discussion and Public Health Implications

This paper evaluated evidence for health selection related to reproductive health behaviors in the context of Mexico-U.S. immigration. Examining contraceptive practices and sexual behaviors reported by women in two nationally representative population surveys, one from Mexico and one from the United States, we found no evidence for health selectivity. Using longitudinal data, we compared reproductive health behaviors of women in Mexico who subsequently migrated to the United States to those who remained in Mexico. Second, we compared the reproductive health behaviors of Mexican women to those reported by Mexican immigrants residing in the United States and U.S.-born women of Mexican descent. Use of these two nationally representative population surveys constitutes a strength of this paper and contributes to a literature based largely on smaller convenience samples with results that may not be generalizable. Further, the prospective assessment of migration *after* the reproductive health assessments addresses biases in previous research. The lack of evidence for health selectivity underscores the importance of continued attention to the reproductive health needs of recent immigrants and to the factors that influence the adaptation trajectories, like those examined by Bostean in this issue, that lead to increased risk following migration to the United States.

Our findings from the MxFLS survey indicating that women who migrated to the United States tended to be younger, unmarried, and have no children but report a desire for children in the future highlight the connection between migration and fertility decisions. Past research has suggested how fertility preferences can determine migration decisions, with decisions to have fewer children or to improve children's educational opportunities prompting migration to lower-fertility destinations (Lindstrom and Saucedo 2007). A couples-level analysis of Mexico Migration Project data found that U.S. migration by married women became less likely after the first birth, both for women migrating with their husbands and for those migrating alone to join a husband in the United States (Lindstrom and Saucedo 2007). Thus family formation, childbearing decisions, and migration may interact to shape fertility trajectories, patterns with implications for the provision of reproductive health care for recent immigrants in

the United States. As evidenced by reports of current contraceptive use, nearly half of the Mexican women who subsequently migrated to the United States reported using no contraceptive method—a finding that underscores the importance of ensuring the availability of comprehensive contraceptive services, particularly for recent immigrants.

Despite the strengths of this study, there are several limitations that should be noted. First, the reproductive health behavioral measures available in common between the two surveys were limited, particularly with regard to sexual risk measures. Thus we had no biological markers (e.g., sexually transmitted infections) nor strong measures of partner risk such as partnership patterns (e.g., concurrency) or partner behavioral characteristics known to be associated with STIs. Given that reproductive health outcomes occur within partnerships, additional understanding of sexual networks could offer a richer set of comparative measures. Second, developing a cohesive framework for analysis of health selectivity in the context of reproductive health is challenging in that some behaviors improve in the United States and others appear to worsen. Additional research could address this conceptually and connect a conceptual framework to an understanding of behavioral and health trajectories in the context of migration, with implications for prevention activities and provision of care. Finally, the comparison between the NSFG Mexican immigrants and the MxFLS samples likely is weakened by biases in under-sampling of undocumented immigrants in the United States.

4.1 Conclusions

Given the expected growth in the Latino population in California and the disproportionate burden of sexually transmitted infections and pregnancy found among this group, understanding more about the reproductive health behaviors of migrants, both among youth who have immigrated to the United States and remain and among those who return to Mexico, remains critically important. Indeed, the health of the Latino immigrant population in California is likely to assume an increasingly important role in the health of the U.S. communities to which immigrants move. Likewise, the health of Mexican communities that experience migration is closely tied to the health of their populations that migrate. Our ability to prevent adverse reproductive health outcomes through well-targeted policies and programs will depend on a keen understanding of the characteristics of migration and the migrants themselves that shape underlying determinants of reproductive health risks.

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