D R A F T

A Typology of Workforce Incorporation Among Immigrant Women in the United States

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Abstract

While research on immigrant women's U.S. labor market incorporation has increased in recent years, systematic comparisons of employment trajectories across national origin groups remain rare. Using census data from 1990 to 2016, we propose a typology of employment trajectories based on synthetic cohorts of foreign-born women by national origin. Results indicate that most women eventually join the workforce, though with significant variation in starting levels and growth rates. Although gradual incorporation was the most common pattern, cohorts from Mexico, Central America, and South America exhibited a delayed pattern of incorporation, while women from India, Korea and other Asian countries followed an accelerated incorporation trajectory, though from very low starting rates. Filipinas and Caribbeans showed a constant intensive employment. We found that cohorts' gender-specific characteristics upon arrival explained a substantial share of the variation in incorporation patterns, more so than the human capital and family characteristics emphasized in prior research.

Key words: Immigrant women incorporation, labor force participation, group-based trajectories, patterns of incorporation.

Introduction

Early research on immigration labor in the U.S. has overwhelmingly focused on men; nonetheless, recent decades have seen a surge in attention to female migration, in terms of both the social forces that initiate and sustain migrant flows and those that shape the process of incorporation into host societies. Although recent scholarship has made great strides in illuminating the intersection between gender and migration in the labor market, our understanding of female incorporation to the workforce still lags behind that of men. Immigrant flows are increasingly driven by female labor (Sassen 2000; Kofman 2004), yet, women's migration to the United States has been long framed as determined by family considerations, rather than economic ones. Thus, there is a relative paucity of work on immigrant women's economic assimilation. Investigating patterns of immigrant women's workforce incorporation is crucial to better understand the overall trend in female labor force participation, gender and ethno-racial inequality in the labor market, and the economic well-being of immigrant families.

Extant research has shown that immigrant women constitute a vulnerable segment of the workforce, being disadvantaged by their gender and migration status (Boyd 1991; Parrado and Flippen 2005; Donato, Piya, and Jacobs 2014). A recent study provides evidence indicating that immigrant women have lower employment rates than immigrant men and native-born women (Donato et al. 2014). However, immigrant women's labor force participation varies tremendously by national origin. For instance, women from the Caribbean and Filipinas exhibit labor force participation rates above 80%, considerably higher than native-born American women, whose rates hoover around 72%. In contrast, immigrant women from Mexico, India, and Korea exhibit significantly low labor force rates, below 60% (Read and Cohen, 2007; Ruggles et al., 2017). This variation is partly due to differences across groups in length of U.S. residence,

levels of human capital, and family characteristics. However, differences across groups remain large even after accounting for these factors (Schoeni 1998; Read and Cohen 2007; Donato, Piya, and Jacobs 2014). We argue that this variation is also the result of the different patterns of labor market incorporation determined by particular combinations of workforce participation rates upon arrival and growth rates with time in the U.S. We show that gender-specific cohort characteristics at arrival, such as the sex ratio, the percent of single women, and the percent of married women with a college educated husband have significant explanatory power explaining the variation in labor force participation trajectories by national origin.

While previous work has begun to describe immigrant women's labor force participation by national origin, most studies rely on cross-sectional data and static models that fail to adequately capture differences in *trajectories* of incorporation. The average differences in participation levels obscure important variation across immigrant cohort rates at arrival and change in employment patterns over time. Both the difference in starting levels and slopes of labor force participation are potentially shaped by human capital and demographic forces, pointing to the need for more research that views economic incorporation as a *process*.

In this paper, we expand the literature on immigrant assimilation by investigating the labor force participation trajectories of immigrant women in the U.S. from different national origins. Drawing on Census and American Community Survey data for the period between 1990 and 2016, we create synthetic immigrant cohorts to illuminate patterns of labor force participation over time. Within this larger objective, this study aims to: 1) investigate national origin variation in labor force participation shortly after arrival; 2) examine the variation in growth rates in labor force participation with length of residence in the U.S.; 3) understand how intercepts and slopes are shaped by age at migration, identifying patterns of immigrant female incorporation to the

workforce; 4) examine the extent to which national origin differences in trajectories are attributable to group differences in human capital, family characteristics, and gender-specific cohort characteristics upon arrival. We provide a typology characterizing five distinctive patterns of workforce incorporation. This study contributes to a more holistic understanding of immigrant women's labor market assimilation.

Background

Previous research has tended to portray immigrant women as secondary workers, entering the labor force to supplement family incomes in times of need, but withdrawing from employment as their husbands achieve economic stability (Baker and Benjamin 1997). This framework was based on earlier flows of female migration, when most women migrated to rejoin their husbands and families. However, this pattern began to change as new immigrant flows have been increasingly composed of female migrant workers (Sassen 2002; Kofman 2004). These main drivers of female migration, family reunification and immigrant labor, are not mutually exclusive. Although for some immigrant groups, family based migration may still be important, the framing of immigrant women as secondary workers no longer fit contemporary immigrant stocks. As immigrant women are increasingly entering the workforce despite family responsibilities, understanding their patterns of incorporation becomes an important research imperative (Adserà and Ferrer 2014; Kofman 2004).

Immigrant women significantly differ in their labor force participation (LFP) rates by national origin. Part of this variation can be traced to differences in the socioeconomic determinants of employment, as well as their familial and demographic characteristics (Borjas 2015; Read and Cohen 2007; Schoeni 1998; Donato, Piya, and Jacobs 2014). Among

socioeconomic determinants, human capital, such as education and English proficiency, is of crucial importance (Borjas 2015). Schoeni found that the variation in labor supply among immigrant women was mostly explained by group differences in educational and language skills (1998, 62; see also Reimers 1985). In general, higher levels of human capital are associated with higher rates of labor force participation. This is the case for immigrant women from Europe, Canada, the Philippines, China, and the Caribbean, who are highly educated and exhibit concomitant high employment rates. By contrast, immigrant women from Mexico, who have lower levels of education and English language proficiency, have corresponding low rates of workforce participation. Mexican women are particularly disadvantaged given their relatively low skill levels, lack of work documentation, and the precarious labor market conditions they face (Flippen 2016; Hondagneu-Sotelo 2011). Nonetheless, the picture is less clear for certain groups, such as women from India and Korea who are highly educated, but exhibit relatively low levels of labor force participation (Read and Cohen 2007; Shin 2005), contradicting the central tenets of human capital theory.

Family factors, such as marriage and children, increase women's responsibilities at home, reducing their investments in paid labor (England, Garcia-Beaulieu, and Ross 2004; Roos 2010; Donato, Piya, and Jacobs 2014). Some studies have found evidence suggesting that work and family conflict is even stronger among immigrant, who tend to follow a more traditional gender division of labor (Donato et al., 2014; Flippen, 2016). Family responsibilities may have a stronger deterrent effect in women's labor supply among groups with more patriarchal cultures, such as Asian, Indian, Middle Eastern, and Latin American groups.

Demographic characteristics also shape patterns of immigrant women's labor market outcomes. Age is an important determinant of employment, which tends to rise steeply

throughout the 20s, stabilize during the 30s and 40s, and fall off at older ages. Age at arrival, which is often neglected in the literature, is an important factor shaping patterns of labor market incorporation. Assimilation theory predicts that immigrants would gradually adopt the behavioral norms in the host society as they become longer settled (Alba and Nee 1997). Immigrants who arrive at younger ages are more likely to have attended a U.S. school. They also spent more time being socialized in the host society's gender norms and practices in paid employment by the time they reach mature working ages. Conversely, immigrants arriving at older ages would be less able to adapt to the new labor market conditions. In fact, immigrants arriving at older ages are more likely to have been brought by their adult children than to have migrated in search of job opportunities (cite). Thus, we have theoretical and empirical reasons to expect that the younger individuals arrive, the more closely they would mimic the work behaviors observed among the native born. Earlier studies have provided evidence indicating that younger age at arrival is associated with higher levels of assimilation in most dimensions, such as education, English proficiency, social capital, and employment (Schoeni 1998; Borjas 2015; Portes 1998). Yet, most studies in immigrant labor market assimilation do not take into account age at arrival. This is particularly crucial when examining immigrant women's employment given that female employment is curtailed by childbearing, and prior studies have shown a propensity among immigrant women to experience a birth shortly after arrival (Parrado 2011). We argue that to better understand the patterns of immigrant women's workforce incorporation over the life course, we need to consider the variation in immigrant cohort trajectories by age at migration.

While prior studies have taken great strides towards illuminating the forces shaping immigrant women's incorporation into U.S. labor markets, little is known about the variation in different patterns of incorporation. This is in part due to the lack of longitudinal nationally-

representative data to track immigrant assimilation. Some studies have analyzed overall differences in women's employment using census data from a single point in time (England, Garcia-Beaulieu, and Ross 2004; Read and Cohen 2007). Most other studies have pooled data from different periods, often focusing on the effect of years since migration (Lu, Wang, and Han 2017; Borjas 2015; Schoeni 1998; Blau, Kahn, and Papps 2011; Donato, Piya, and Jacobs 2014). Yet, cross-sectional data have not been fully exploited in prior research. Moreover, traditional methods of studying immigrant assimilation face problems of identification, not being able to control for all the important temporal demographic variables, such as age, period, and birth cohort for all persons, and years since migration, period of arrival, and age of arrival for immigrants. Thus, most studies focus on the effect of years since migration and/or period of arrival, ignoring patterns by age at arrival (Borjas 2015; Donato, Piya, and Jacobs 2014; Read and Cohen 2007).

To our knowledge, this is the first study to provide a comprehensive analysis of female immigrant cohorts' workforce incorporation in the U.S. over the life course. Prior studies have noted that not all immigrant groups assimilate at the same rate, noting that Asian groups assimilate faster whereas Hispanic groups assimilate at a slower pace (Read and Cohen 2007; Schoeni 1998). However, none of the prior studies have provided a complete typology immigrant women's patterns of labor force incorporation in the U.S. Although some scholars have made a significant contribution identifying some distinctive pathways of immigrant labor market incorporation in Canada (Fuller 2015; Fuller and Martin 2012), their typology is limited to the first four years upon arrival and, as this study shows, it does not adequately capture the experiences of certain Hispanic immigrant groups in the U.S. whose integration is not noticeable until a decade after arrival. This study uses nationally representative data from the U.S. Census

Bureau following a synthetic cohort approach that allows us to track labor force participation trajectories over most of the cohorts' working life.

In contrast to prior studies, we construct synthetic cohorts by age at migration and period of arrival, following women's employment trajectories as they age in the U.S. To better understand patterns of immigrant women's workforce incorporation, we first examine the trajectories in five-year intervals. Our multivariate analyses models trajectories using a three-segment spline function that separates the rates of labor force participation shortly after arrival from early and late growth rates with time in the United States. The levels of LFP at arrival are an indicator of the extent of economic motivation behind female migration and the barriers for entry into the labor market set by the context of reception. We suspect that initial cohort differences in LFP by national origin reflect women's propensity to seek employment opportunities through migration. We then turn our focus to early and late trajectories over time. The results reveal some remarkably different patterns in immigrant women's workforce incorporation in the U.S. Given the assumption that upon arrival women are likely to find limited employment opportunities, a main question guiding the analysis is the extent to which disparities in labor force participation are reduced with time in the U.S. We also investigate the extent to which these trajectories are connected with demographic, human capital, family characteristics at the individual levels, and gender-specific cohort composition characteristics upon arrival. Taken together the analyses of starting differences in LFP and trajectories over time will complete the construction of our typology of female migrant incorporation to the workforce in the U.S.

Data and Methods

Data come from the 5% samples of the 1990 and 2000 decennial U.S. Census, and the 5-year American Community Survey files from 2010 and 2016, corresponding to the periods between 2006-2010 and 2012-2016 (Ruggles et al., 2017). We restrict the sample to immigrant women of working age, 16 to 64, who were not living in group quarters, were not enrolled in school, and who migrated to the United States after age 15 during the 1980s, 1990s, and 2000s.

Consistent with the theoretical discussion, the analytic strategy focuses on understanding the variation in LFP rates at the time of arrival, growth rates with time in the U.S., and convergence by the end of the observation period. We follow an immigrant cohort approach to approximate LFP trajectories as cohorts become longer settled in the U.S. Rather than following immigrants cohorts according to their year of birth or biological age, our proposed approach follows cohorts as a function of their age at arrival, period of migration, and country of origin. These cohorts are then tracked over census years, depicting the age pattern of labor force participation as they age in the U.S. The approach can be regarded as a variation of the "double cohort" approach proposed by Myers and Lee (1998, 1996). Because the data are not longitudinal, the trajectories are not necessarily described by the same women, instead they represent the experiences of each migration cohort.

First, we use descriptive statistics and group-based trajectory modeling (GBTM) to identify patterns of incorporation to the workforce by country of origin. The analysis of group-specific trajectories, rather than within-individual trajectories, is better suited for the aims of the current study. By contrast to sequence analysis, group-based trajectory modeling (GBTM), also called latent group trajectory analysis (LCTA), estimates the shape of latent group trajectories. Instead of assuming a single average growth trajectory, GBTM allows for heterogeneity in growth trajectories, identifying multiple growth patterns, and the clusters of cohorts (or latent

classes) that follow a common trajectory over time (Jones and Nagin 2013). Following best accepted practices in GBTM, we determined the number groups using a combination of criteria, including our research questions, the smallest Bayesian information criteria (BIC), parsimony, theoretical and empirical justification, and interpretability of the clusters (Jung and Wickrama 2008). We also use GBTM to investigate the probability of group membership by national origin. We describe our typology of female workforce incorporation in terms of the variation in entry levels of LFP upon arrival and growth rates over time.

After identifying trajectory patterns, we use multilevel random-effects linear[1] models predicting LFP trajectories using a spline function of years in the U.S. Random-effects models were chosen because they are appropriate to handle clustered data. Ordinary regression models assume that individuals' outcomes are independent from each other; however, immigrants' responses tend to be clustered within migration cohorts. Multilevel random-effects models take into account the dependence of individuals' observed outcomes within cohorts, including cohort-specific intercepts to control for unobserved heterogeneity at the cohort level, or omitted cohort characteristics (Rabe-Hesketh and Skrondal 2012). By contrast to fixed-effects, random-effects models can model subgroup variation in intercepts and slopes, allowing for generalizations of inferences at the population level. The models test for significant differences in intercepts and growth rates by country of origin, investigating the extent to which demographic, socioeconomic, and family characteristics account for these differences. The following simplified random-effects equation denotes the two-level linear model, where Level 1 is composed of *i* individuals clustered into *j* cohorts at Level 2:

[1] We also modeled the trajectories using random-effects logistic models, obtaining similar results. We report the coefficients of linear models because they have a more direct interpretation, and avoid the issues with standard errors and tests of significant tests in logistic models.

$$L_{ij} = \beta_0 + T_j + C_j + C_j \times T_j + H_{ij} + F_{ij} + S_j + S_j \times T_j + A_j + P_j + \zeta_j + \varepsilon_{ij}$$

Where L_{ij} is an indicator of FLFP that equals 1 if woman *i* in cohort *j* participated in the labor force at the time of the survey, 0 otherwise. β_0 represents the intercept. T_j measures time in the U.S. T_j is central to our analysis because we are interested in capturing rates at arrival, growth over time, and convergence with time in the U.S. Accordingly, we introduce T_j as a spline function of years in the U.S. with three segments. The first spline (ref.) models the LFP upon arrival, comprising years 0 to 2 in the U.S. The second spline includes the next 3 to 10 years and assess the early growth rate. The third spline includes year 11 and over, and captures the late grow rate. C_j is the vector of dummy variables representing country of origin, where Europe is the referent. $C_j \times T_j$ represents the interactions between the splines and country of origin. H_{ij} is a vector of variables that controls for variation in human capital, measured by women's education and English language proficiency. F_{ij} represents a vector of family characteristics at the individual level, including women's marital status and the presence of own children younger than age 5 in the household. S_j is a vector of gender-specific variables at the cohort level upon arrival, including the sex ratio, proportion of single women, and proportion of married women to a college educated spouse. For more reliable estimates these characteristics are averaged for each cohort during the first four years after arrival. The sex ratio is the ratio of man to women in the cohort, where a sex ratio > 1 indicates a male dominated immigrant flow, a sex ratio = 1 implies roughly equal numbers of men and women, and a sex ratio < 1 signifies a female dominated immigrant flow. The proportion of single indicates the proportion of never married, single women in the cohort. The proportion of married women with a college educated spouse is calculated only among married women. $S_j \times T_j$ indicates the interaction of the gender-specific cohort characteristics with the splines of time in the U.S. to assess how the

characteristics at arrival affect the starting levels and trajectories of LFP over time. A_j and P_j are control variables at the cohort level. A_j is a vector of mutually exclusive dummy variables indicating the age at arrival to the U.S. in five-year intervals; P_j is a vector of dummy variables indexing the period of arrival: 1980s (ref.) 1990s, 2000s. ζ_j is the cohort-specific random intercept, which represent the combined effect of omitted cohort (Level 2) characteristics. These random intercepts allow the rates of LFP to randomly vary among immigrant cohorts. ε_{ij} is the level-1 residual or individual-specific error component, which is assumed to have an expected mean of zero given the covariates and the random intercepts.

The sample in the multivariate analyses is restricted to women who migrated between the ages of 15 and 44[2], who were between ages 16 to 54[3] at the time of the survey. We use LFP as the dependent variable because it is a broad measure of immigrant women's labor supply. Following the U.S. Census definition of labor force participation, employed and unemployed women are considered as participating in the labor force.

Our main explanatory variable is country of origin. We use immigrants' birth place to classify groups by national origin creating dummy variables for Europe (reference), Canada, Africa, Caribbean, Mexico, Cuba, Central America, South America, Philippines, Vietnam, China, Korea, India, and other Asian countries.

Model 1 models the trajectories by years in the U.S. using a 3-spline function, as previously explained, including the dummy variables for country of origin, their interactions with the splines, and controls for demographic migratory characteristics, such as age at migration

[2]Less than 7% of women migrate after age 45 and they tend to follow a distinctive LFP trajectory as shown in Figure A1 in the Appendix.

[3]The data indicated that female employment rates start declining after age 55. Because the models aim to analyze the growth in labor force participation during prime working ages, we exclude the trajectories after age 55.

measured in 5-year intervals including 15-19, 20-24, 25-29 (ref.), 30-34, 35-39, and 40-44, and period of migration measured with 3 dummy variables for the 1980s (ref.), 1990s, and 2000s.

Model 2 adds controls for individual characteristics, including human capital and family characteristics identified as predictors of LFP in the previous literature. Human capital is measured by education and English proficiency. Educational attainment is measured in dummy variables for those with less than high school, high school (reference), some college, and college degree or higher. English proficiency is measured with a dummy indicator taking the value of 1 for women who do not speak English well or do not speak English at all, and 0 otherwise. Family structure is measured with two dummy variables, one measures marital status, and equals 1 for women who are married with a spouse present, and 0 otherwise. The second indicates the presence of pre-school age children, taking the value of 1 when there is one or more own children less than five years old living in the household.

Models 3 to 6 include a series of variables that capture gender power dynamics of cohorts upon arrival, including the cohort's sex ratio, proportion of single women, proportion of married women with a college educated spouse, and their interactions with the splines.

Results

Sample Characteristics

Table 1 presents the unweighted sample sizes and weighted means of LFP, as well as their demographic, human capital, and family characteristics, by country of origin. Table 1 shows very high rates of LFP among Caribbean women (81%), and Filipinas (82%), who work at higher rates than native-born women on average (72%). Women from Mexico (52%), Korea (59%),

India (60%), and other Asian countries (56%), in contrast, report LFP rates far below the average. Cohorts from Europe, Africa, China, Vietnam, Canada, as well as cohorts from Central America, South America, and Cuba, fall in between these two extremes.

Women's average age ranged from 35.9 for Mexicans to 40.1 for Koreans. The average age at migration ranged from 23.7 for Mexican women to 27.8 for Koreans. Women from India are more recent arrivals with an average of 10.7 years in the U.S., whereas women from the Caribbean and Vietnam are longer settled, having been in the U.S. for 13.7 and 13.5 years on average, respectively.

[Insert Table 1 here]

Table 1 reflects the well-known differences in human capital across national origin groups. For reference, native-born women had on average 13.3 years of education. While some immigrant groups were highly educated, having on average over 14 years of education, including women from the Philippines, Europe, Canada, and India, cohorts from Mexico and Central America exhibited the lowest education, with an average of 9.1 and 9.9 years of schooling, respectively. As expected, only 12% or fewer immigrants from Anglophone countries could not speak English well, including migrants from Canada, Philippines, Caribbean, Africa, India, and Europe. By contrast, the majority of migrants from linguistically distant countries could not speak English well or could not speak English at all, including 68% of Mexican, and between 50% and 56% of Central American, Cuban, and Vietnamese women.

With respect to family characteristics, the vast majority of immigrant women were married with a spouse present, whereas only 48% of native-born women were married. European, Canadian, and Asian groups had the highest proportion of married women, bordering 70%. By contrast, only between 44% and 59% of women from the Caribbean, Africa, Central

America, and Cuba were married. Asian groups averaged fewer pre-school age children, except for Indian women, who had the largest proportion of married women, 88%, and more young children, with an average of 0.37. Only Mexican and African women had more young children than Indians, with an average of 0.43 and 0.41 respectively. In general, women with high levels of labor force participation exhibited the most advantageous characteristics for employment, being more mature, longer settled, and having higher levels of human capital and fewer pre-school age children; whereas groups with lower rates of LFP tended to be disadvantaged in these characteristics.

[Insert Table 2 here]

Table 2 shows the gender-specific cohort composition characteristics at arrival, averaged for the first four years in the U.S. for more consistent estimates. The sex ratio is the number of men to women in the cohort. A ratio of 1 indicates equal numbers of men and women, that is, a balanced sex ratio. A ratio greater than 1 indicates a male-dominated immigrant flow, whereas a ratio of less than 1 indicates a female dominated immigrant flow. In general, groups with a male-dominated flow tend to exhibit lower rates of FLFP, such as cohorts from Mexico, Central America, India, whereas cohorts with more women exhibit higher rates of FLFP, such as cohorts from the Philippines, Caribbean countries, Vietnam, and South America. The cohorts also vary by the percent of women arriving as single. The largest percent of singe are seen for cohorts from Caribbean countries, 56%, and Central America, 49%, which may indicate a greater need to join the labor force; whereas a small percent of women from Asian countries, particularly India (18%), Cuba, Philippines, and Europe arrive as single. The vast majority of married women from India arrive married to a college educated husband, 75%, followed by women from China, Europe, Africa, and other Asian countries, averaging nearly 50%. This finding contrasts greatly

with cohorts from Mexico and Central America, among whom, only 6%, and 10% of married women have a college educated partner. In the multivariate analyses, we explore the impact that these gender dynamics play in explaining immigrant women's workforce incorporation trajectories.

Typology of immigrant women labor force incorporation

We examined cohorts' trajectories in labor force participation using descriptive statistics and group-based trajectory models (GBTM) to identify patterns of incorporation, and the probability of membership by national origin. As described in the methods section, we use a synthetic immigrant cohort approach, where cohorts are defined by their age at arrival, period of migration, and country of origin. These cohorts are followed as they age in the U.S. at roughly 5-years intervals. GBTM are used to identify patterns of incorporation. After considering several alternative solutions, we selected the five-group solution as the most parsimonious, compressive, and interpretable for the purpose of this study. Although the six and seven-group solutions had a lower BIC, these solutions resulted in groups with very small sizes (< 5%), and the additional groups did not substantively add to our understanding of the patterns of workforce incorporation. Fig. 1 presents the five-group solution.

[Insert Fig. 1 here]

The first group, the *gradual* incorporation group, exhibits average rates of LFP upon arrival with average entry levels, followed by progressive gains in LFP with time in the U.S., a pattern observed among cohorts from Europe, Africa, China, and Vietnam. Cohorts from these countries had a 67% or higher probability of following this type of trajectory. Cohorts from Canada exhibited a 30% probability of membership in this group, and 43% probability of

following the *intensive employment* trajectory. We decided to classify cohorts from Canada in the gradual incorporation group given the similarity in average FLFP and other characteristics shared with other cohorts in this group. The second group, the *delayed, lower intercept* incorporation, exhibits relatively low rates of LFP upon arrival, followed by stagnant early growth rates. Most of the gains in LFP are achieved after ten years of residing in the U.S. This pattern is observed among cohorts from Mexico, who exhibit over 99% probability of following this type of trajectory. The third is the *delayed, higher intercept* incorporation group, which exhibits a similar initial sluggish growth rate as the former group, however, these cohorts start with a higher level of LFP upon arrival. This pattern is observed among cohorts from Central America (99%), and most cohorts from South America (70%), and some from Cuba (44%). The fourth group exhibits a pattern of *accelerated* incorporation, with fast gains in labor force participation during the first ten years, albeit from very low starting levels, a trajectory depicted by most cohorts from India (78%), Korea (67%), and other Asian countries (99%). The fifth cluster follows a trajectory of *intensive* employment, with very high starting levels of LFP, followed by gradual increases, achieving rates that surpass the participation rate of native-born women, a pattern observed among women from the Philippines (99%) and Caribbean (99%) countries, and some cohorts from Canada (43%).

It is worth noting that the two largest groups, the gradual incorporation group which comprises 31.4% of the cohorts, and the delayed incorporation with high intercept, with 24.3% of the cohorts, exhibit substantial heterogeneity, with several countries partially falling into these two categories. In the results that follow, we group countries based on their group membership probability and their sociodemographic characteristics. For simplicity, we refer cohorts from the

same country as following one of the group trajectories, however, we acknowledge the heterogeneity that exists within countries.

Multivariate Analyses

We assess the extent to which the variation in LFP trajectories by national origin are explained by individuals' characteristics, including human capital and family characteristics, and gender-specific cohort characteristics at arrival. Table 3 presents the coefficients from the two-level linear random-effects models investigating the effect of individual characteristics on the LFP trajectories, and Table 4 explores the effect of gender-specific cohort characteristics at arrival. In the random-effect models, Level 1 is composed of individuals, who are clustered within immigrant cohorts at Level 2. As detailed in the methods section, the trajectories are modeled using a spline function of time with three segments, the first spline includes the first two years in the U.S. and models the intercepts (referent), the second spline captures the early growth rate from years 3 through 10, and the third spline captures the late growth rate, including years 11 and more in the U.S. The models test for significant differences in intercepts and growth rates by interacting the splines with the dummy variables for country of origin. Model 1 on Table 3 models the trajectories, including demographic controls, such as country of origin, age at migration, period of migration, and the interaction between the splines and country of origin. Model 2 adds controls for human capital, measured by educational attainment and English proficiency, and family characteristics, measured by marital status and the presence of own children younger than 5 in the household at the time of the survey.

[Inset Table 3 here]

Model 1 on Table 3 confirms that the *gradual incorporation* group, represented by immigrant cohorts from Europe, Africa, China, Vietnam, and Canada, exhibit roughly similar average starting levels of LFP. The small differences in starting levels are explained by human capital and family characteristic, as shown in Model 2. The results indicate significant heterogeneity in the early growth rates among this group, some of which are partly explained by individual characteristics, but significant differences remain. This finding suggests that a small part of the relatively high levels of early LFP among this group is due to positively selected educational and family characteristics, although their explanatory power is modest. It is worth noting that the early growth rates among cohorts from China and Africa are significantly higher than those of European cohorts ($p < .01$), paralleling the early growth rates of cohorts in the accelerated incorporation class.

Delayed incorporation groups, with lower and higher intercept, have on average low levels of human capital, measured by education and English proficiency. Human capital explains the low entry levels for the delayed-low intercept group represented by Mexican cohorts. Preliminary analysis showed that controlling for education and English proficiency, the difference in starting LFP rates between Mexican and European cohorts would no longer be statistically significant. Moreover, if cohorts in the delayed- high intercept group had average education, they would start with even higher levels of LFP upon arrival. Family characteristics had a smaller effect. Model 3 in Table 4 shows that Mexican cohorts would have higher rates of LFP upon arrival than European cohorts if they had a more balanced sex ratio. Mexican groups are male dominated immigrant flow. However, Model 5 shows that if more Mexican immigrant women were married to a college educated husband upon arrival, their starting levels would be instead lower, presumably because more of them could rely on their college educated husbands

for economic support. Model 6 indicates that the three gender-specific cohort characteristics explain the higher rates of LFP upon arrival among the delayed, high intercept group. Setting these characteristics to the mean, cohorts from South America and Cuba would start instead with lower levels of LFP than cohorts from Europe.

Results indicate that human capital characteristics cannot explain the low entry levels in the *accelerated incorporation* group. Instead, if these cohorts had average stocks of human capital, their levels of LFP upon arrival would be even lower. Again family characteristics, such as marriage and number of children had a modest effect, reducing the remaining differences in starting levels by about 15%, but the differences remain large and significant. Gender-specific characteristics at arrival, Table 4, particularly the high % of married women with a college educated husband, explain the low starting levels of LFP among women from India, and about 47% of the remaining difference between cohorts from Europe and Korea, and 24% of the difference with cohorts from other Asian countries.

The effects among the *intensive employment* group vary. If cohorts from Caribbean countries had average human capital, their starting levels would be about 25% higher than those of European countries, but the starting levels for women from the Philippines would be about 20% lower. Both of these cohorts, Caribbean and Filipinas have favorable family characteristics for employment, (lower % married and fewer children than average), which explain 8% and 30% of their higher LFP rates upon arrival, respectively. Yet, significant differences remain, which are explained by gender-specific cohort characteristics upon arrival as shown in Table 4, which account for over 82% of the difference in starting levels among cohorts from Caribbean countries, and nearly 40% of the higher starting levels among women from the Philippines.

Explaining variation in early growth rates (3-10 years)

Table 3 confirmed that the two delayed incorporation groups have similar significantly slower growth rates during the first 10 years after arrival than European cohorts ($p < .01$), but significantly higher growth rates after 10 years in the U.S. ($p < .01$). However, the results indicate that individual characteristics, human capital cannot not explain the slow early growth rates among the delayed group, nor the fast growth rates for cohorts that follow an accelerated incorporation trajectory; whereas family characteristics have a modest effect in accounting for the differences in early growth rates. Model 6 reveals that gender-specific cohort characteristics at arrival greatly explain the variation in early growth rates: women from Mexico and Cuba would have instead higher early growth rates if they had more gender-balanced characteristics upon arrival; whereas cohorts from India and Korea in the accelerated group would instead had a lower early growth rate. The relatively slower growth rate among women from the Caribbean and the Philippines are also explained by gender-specific cohort characteristics at arrival.

Conclusions and Discussion [coming soon]

Table 1. Sample Characteristics: Weighted means. US: Immigrant women ages 16-54*

			Demographic			Human Capital		Family	
	N	In the labor force	Age	Age at migration	Years in the U.S.	Years education	% English not well	Married	Preschool children
U.S. born		72%	39.8			13.3		48%	0.17
Gradual									
Europe	111,152	71%	38.8	27.5	11.4	14.2	12%	72%	0.26
Africa	33,419	75%	37.8	26.7	11.1	13.2	11%	59%	0.41
China	62,434	74%	40.0	27.6	12.4	14.0	32%	76%	0.24
Vietnam	34,307	73%	39.7	26.2	13.5	10.8	50%	69%	0.28
Canada	18,818	71%	38.8	27.7	11.1	14.5	3%	71%	0.32
Delayed, lower intercept									
Mexico	312,464	52%	35.9	23.7	12.3	9.1	68%	65%	0.43
Delayed, higher intercept									
Central Americ	106,616	68%	37.3	24.6	12.8	9.9	56%	50%	0.32
South America	74,558	71%	38.7	27.0	11.7	12.9	29%	62%	0.26
Cuba	15,779	71%	39.8	28.5	11.3	12.4	54%	57%	0.19
Accelerated									
India	67,687	60%	36.8	26.2	10.7	15.1	12%	88%	0.37
Korea	28,416	59%	40.1	27.8	12.3	14.0	38%	78%	0.24
Other Asia	63,604	56%	38.5	26.6	11.9	12.6	25%	75%	0.35
Intensive									
Caribbean	40,210	81%	39.8	26.1	13.7	12.4	10%	44%	0.24
Philippines	59,978	82%	39.8	27.3	12.6	14.5	3%	69%	0.25

Source: U.S. Census 1990, 2000; American Community Survey 2010, 2016.

*Immigrant women ages 16-54, who migrated from ages 15-44, not living in group quarters, not attending school.

Table 2. Gender-specific cohort characteristics upon arrival[a]

	Sex ratio[b]	% Single	% College Spouse[c]
Gradual			
Europe	0.96	33%	46%
Africa	1.17	38%	46%
China	0.84	37%	53%
Vietnam	0.75	40%	14%
Canada	0.96	37%	40%
Delayed, lower intercept			
Mexico	1.58	37%	6%
Delayed, higher intercept			
Central America	1.34	49%	10%
South America	0.93	38%	30%
Cuba	1.09	30%	16%
Accelerated			
India	1.15	18%	75%
Korea	0.77	33%	51%
Other Asia	0.99	36%	47%
Intensive			
Caribbean	0.91	56%	16%
Philippines	0.61	34%	36%

Source: U.S. Census 1990, 2000; American Community Survey 2010, 2016.

[a]Cohort mean during the first four years in the U.S. for women who migrated from ages 15-44.

[b]Sex ratio: ratio of men to women, > 1: male

[c]Percent of married women with a college educated spouse, estimated among married women only.

Table 3. Two-Level Linear Random-Effects Models: Effects of Individual Characteristics on Labor Force Participation Cohort Trajectories

	M1			M2		
Splines	**0-2 years**	**3-10 years**	**11+ years**	**0-2 years**	**3-10 years**	**11+ years**
	(ref.)	0.021 **	0.003 **	(ref.)	0.020 **	-0.001 *
Gradual						
Europe (ref.)						
Africa	0.005	0.005 **	0.000	0.017	0.003 **	0.000
China	-0.005	0.006 **	-0.003 **	0.014	0.006 **	-0.002 **
Vietnam	-0.030 *	0.001	0.004 **	0.053 **	0.001	0.004 **
Canada	0.036 *	-0.008 **	0.000	0.016	-0.005 **	0.000
Delayed, lower intercept						
Mexico	-0.118 **	-0.015 **	0.007 **	-0.016	-0.012 **	0.005 **
Delayed, higher intercept						
Central America	0.042 **	-0.016 **	0.006 **	0.096 **	-0.014 **	0.004 **
South America	0.018	-0.005 **	0.003 **	0.039 **	-0.005 **	0.002 **
Cuba	0.035 *	-0.006 **	-0.003 **	0.087 **	-0.007 **	-0.003 **
Accelerated						
India	-0.153 **	0.011 **	0.003 **	-0.138 **	0.012 **	0.002 **
Korea	-0.140 **	0.006 **	-0.001	-0.103 **	0.003 *	0.000
Other Asia	-0.215 **	0.011 **	0.001 *	-0.166 **	0.009 **	0.001 *
Intensive						
Caribbean	0.135 **	-0.007 **	0.001	0.124 **	-0.006 **	0.001
Philippines	0.141 **	-0.006 **	-0.001	0.099 **	-0.004 **	0.000
Individual controls						
Human capital						
Less than HS				-0.054 **		
High school (ref.)						
Some college				0.036 **		
College				0.089 **		
Does not speak English well				-0.076 **		
Family characteristics						
Married				-0.140 **		
Children < 5 in HH				-0.150 **		
Constant	0.538 **			0.680 **		
N	1029442			1029442		

* $p < .05$, ** $p < .01$

Note: M1 controls for age at migration and period of migration. M2 adds controls for human capital (education and English proficiency) and family characteristics (marital status and presence of preschool age children in the household) at the individual level.

Table 4. Two-Level Linear Random-Effects Models: Effects of Gender-Specific Cohort Characteristics upon arrival on Labor Force Participation Cohort Trajectories

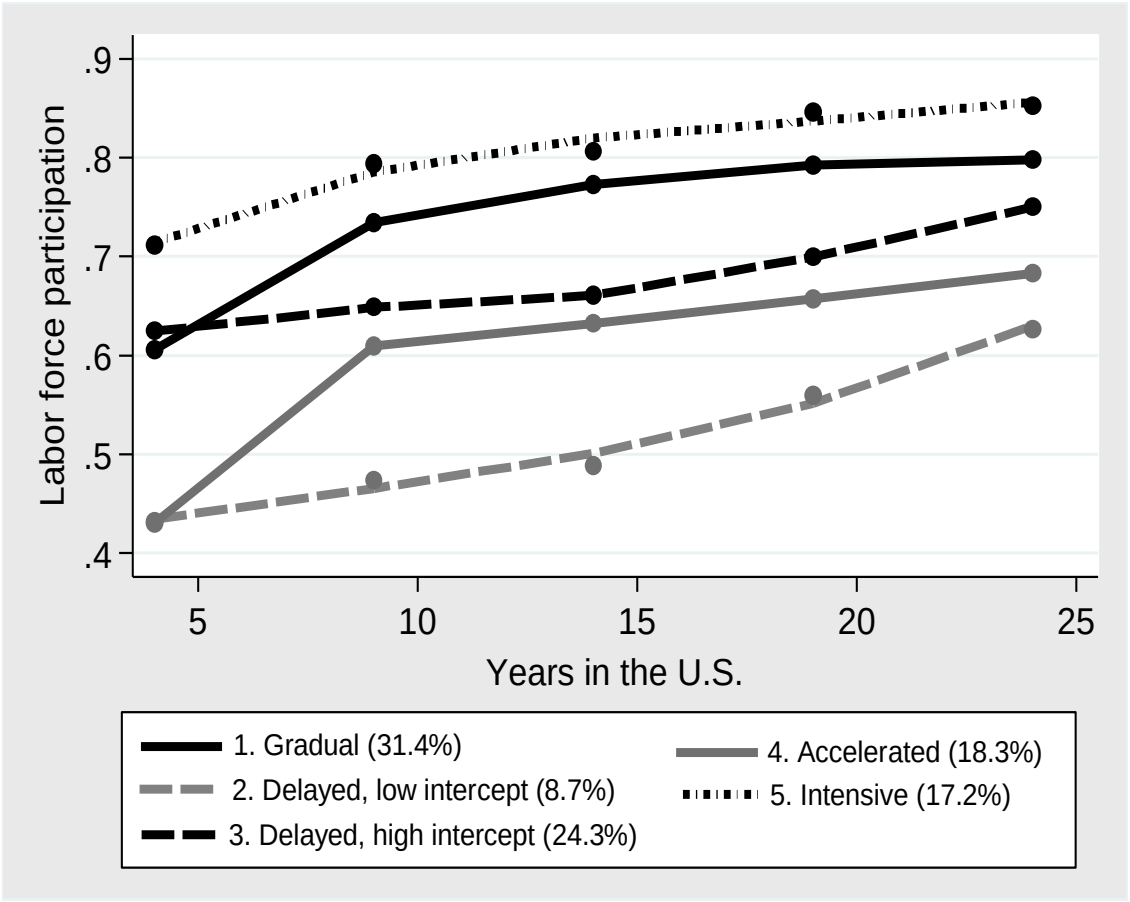
	M3	M4	M5	M6
	Sex ratio[a]	% Single	% College spouse[b]	Full
Spline years 0-2 (ref.)				
Gradual				
Europe (ref.)				
Africa	0.038 **	0.017	0.030 *	0.046 **
China	-0.003	0.009	0.042 **	0.052 **
Vietnam	0.025 †	0.051 **	-0.030 *	-0.100 **
Canada	0.013	0.014	0.032 *	0.051 **
Delayed, lower intercept				
Mexico	0.033 *	-0.009	-0.126 **	-0.172 **
Delayed, higher intercept				
Central America	0.123 **	0.098 **	0.000	-0.033 *
South America	0.029 *	0.038 **	0.006	-0.012
Cuba	0.096 **	0.086 **	0.011	-0.041 **
Accelerated				
India	-0.120 **	-0.135 **	-0.053 **	0.000
Korea	-0.123 **	-0.108 **	-0.066 **	-0.055 **
Other Asia	-0.167 **	-0.166 **	-0.141 **	-0.126 **
Intensive				
Caribbean	0.113 **	0.119 **	0.051 **	0.022
Philippines	0.060 **	0.098 **	0.087 **	0.061 **
Early growth, 3-10 years	0.011 **	0.018 **	0.007 **	-0.017 **
Gradual				
Europe (ref.)				
Africa	0.001	0.003 **	0.002 *	0.000
China	0.008 **	0.007 **	0.003 **	0.001
Vietnam	0.003 *	0.001	0.009 **	0.019 **
Canada	-0.005 **	-0.006 **	-0.007 **	-0.011 **
Delayed, lower intercept				
Mexico	-0.016 **	-0.013 **	-0.001	0.007 **
Delayed, higher intercept				
Central America	-0.016 **	-0.015 **	-0.004 **	0.001
South America	-0.004 **	-0.005 **	-0.002 *	0.001
Cuba	-0.008 **	-0.007 **	0.000	0.008 **
Accelerated				
India	0.011 **	0.013 **	0.002 *	-0.005 **
Korea	0.005 **	0.003 **	-0.001	-0.004 **
Other Asia	0.009 **	0.009 **	0.007 **	0.004 **
Intensive				
Caribbean	-0.005 **	-0.007 **	0.001	0.005 **
Philippines	0.000	-0.004 **	-0.002 *	0.001
Late growth (11+ years)	-0.005 **	-0.003 **	0.002 **	-0.004 **
Gradual				
Europe (ref.)				
Africa	-0.001	0.000	0.001	-0.002 **
China	-0.002 **	-0.003 **	-0.001 *	-0.004 **
Vietnam	0.004 **	0.003 **	0.002 **	0.003 **
Canada	0.000	0.000	0.000	0.000
Delayed, lower intercept				
Mexico	0.002 **	0.005 **	0.003 **	0.005 **
Delayed, higher intercept				
Central America	0.002 **	0.004 **	0.002 **	0.004 **
South America	0.001 **	0.002 **	0.001 †	0.002 **
Cuba	-0.003 **	-0.003 **	-0.005 **	-0.003 **
Accelerated				
India	0.001	0.003 **	0.005 **	0.001
Korea	0.000	-0.001	0.000	-0.001
Other Asia	0.001	0.001 *	0.002 **	0.001
Intensive				
Caribbean	0.000	0.000	-0.001 *	-0.001
Philippines	0.001 *	0.000	0.000	0.000
Sex-speific cohort characteristics at arrival				
Sex ratio[a]	-0.099 **			-0.042 *
Sex ratio x 3-10 years in U.S.	0.009 **			0.004 **
Sex ratio x 11+ years in U.S.	0.005 **			0.001
% Single		0.031		-0.142 **
% Single x 3-10 years in U.S.		0.007 **		0.024 **
% Single x 11+ years in U.S.		0.005 **		0.005 **
% College educated spouse			-0.305 **	-0.505 **
% College spouse x 3-10 years in U.S.			0.029 **	0.060 **
% College spouse x 11+ years in U.S.			-0.008 **	0.003
Constant	0.777 **	0.678 **	0.813 **	0.991 **
N	1029442	1029442	1029442	1029442

†$p < .10$, *$p < .05$, **$p < .01$

[a]Sex ratio: ratio of men to women, > 1: male dominated, = 1: equal numbers of men and women, <1: female dominated immigrant flow.

[b]Percent of married women with a college educated spouse, married women only.

Fig. 1. Group-Based Trajectory Model: 5-Group Solution



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