Gendered spatial patterns in recent U.S. immigration

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Extended abstract/draft paper

Introduction

The 20th century witnessed two important trends in U.S. immigration: the gradual increase in the proportion of women among the foreign-born population in the U.S. (Donato et al. 2011), and—at the end of the century—the start of a substantial shift of immigration away from traditional gateway states such as New York, California, and Texas, and toward new destinations in the West, Midwest, and Southeast (Massey 2008; Singer, Hardwick, and Brettell 2008). While both of these phenomena have generated substantial interest among researchers, few studies have examined immigration to new U.S. destinations as a gendered process. Although there is evidence of substantial variation in the sex ratios of foreign-born populations at the state level, there has been no systematic attempt to explain this variation.

In this paper, we describe geographic variations in the sex ratios of recent immigrant populations across the U.S. in 2000 and between 2007-2011. Because there is substantial variation both within and across states, we use county level data to describe gendered geographic patterns. We find that, in 2000, women comprised an unusually high proportion of recent immigrants in many northern and western areas of the U.S., while men comprised an unusually high proportion of recent immigrants in the Southeast. These geographic patterns have become even more pronounced in recent years. In the final version of the paper, we will explore whether this pattern remains the same for immigrants from different regions of the world, and we will analyze whether there are associations between gendered migration patterns and other types of geographic clustering, such as immigrants with high levels of education, and immigrants living in non-family households. Identifying gendered geographic patterns of immigration is a necessary first step to introducing a gendered perspective to theories on new immigration patterns in the U.S.

Background

The dramatic increase in immigration to the U.S. since the 1980s, particularly to southern and Midwestern states with little recent history of immigration, has generated substantial interest among both social scientists and the policy community. Researchers have described new settlement patterns (Bump, Lowell, and Pettersen 2005; Donato et al. 2007; Durand, Massey, and Capoferro 2005; Lichter and Johnson 2006; Light and Johnston 2009; Massey and Capoferro 2008; McConnell 2008) and identified a variety of factors that deter immigration from established destinations and pull immigrants to new destinations. First, the increased militarization of the U.S.-Mexico border following the Immigration Reform and Control Act of 1986 has decreased border-crossings around El Paso and Tijuana, and increased crossings along more remote parts of the border, including into Arizona and New Mexico (Massey, Durand, and Malone 2002; Massey and Capoferro 2008).

Second, in the early 1990s, an economic recession in southern California both increased rates of unemployment among immigrants and natives, and prompted anti-immigrant measures such as Proposition 187, decreasing the attractiveness of California as a destination state (Durand, Massey, and Capoferro 2005). Third, high crime rates and other problems in the urban areas of southern California, as well as other large cities, further served to decrease their desirability of destinations (Hernandez-Leon and Zuniga 2000; Leach and Bean 2008),

particularly as the number of migrants interested in permanent residence rather than temporary employment increased (Massey, Durand, and Malone 2002).

Finally, many areas of the U.S. enjoyed a sustained economic boom in the mid-1990s, leading to increased real wages and a demand for unskilled and semi-skilled workers in areas of the country which had not been serious destinations for immigrants (Durand, Massey, and Capoferro 2005). This demand for unskilled workers was particularly concentrated in the industries of animal slaughtering and processing, carpet and rug manufacturing, construction, restaurants and other food services, crop production, landscaping, and fruit and vegetable preserving (Donato and Bankston 2008). Corporate labor recruitment plays an important role in drawing immigrants, particularly those from Latin America, to new destinations (Donato and Bankston 2008). In particular, agricultural and manufacturing industries, which have exceptionally high turn-over rates, require companies to repeatedly hire new workers, and do so by active recruitment in traditional urban immigrant destinations, such as Houston, Miami, and Los Angeles (Johnson-Webb 2002). Carpet manufacturing and petroleum refining industries have also participated in active recruitment of Hispanics to nontraditional cites (Parrado and Kandel 2008).

Because of the specific pull factors that are drawing immigrants to new destinations, the characteristics of immigrant populations in new destinations are different than those of immigrant populations in established destinations. More recent immigrants are more likely than those arriving in 1990 to report having fewer years of education and are less likely to have a high school diploma And more foreign-born people in 2000 lived in poverty, as compared to ten years earlier (Bump, Lowell, and Pettersen 2005). The sex ratios of immigrant populations differ between new and established destinations as well. In a 2005 article, Bump and colleagues (Bump, Lowell, and Pettersen 2005) classify U.S. states into three categories based on the size and growth of their foreign-born populations. Traditional states of immigration (California, Florida, Illinois, New Jersey and New York) were home to some 70 percent of all immigrants to the U.S. in 2005. New settlement states saw their foreign-born populations grow by more than 100 percent from 1990 to 2000, and moderate-growth states experienced growth rates of less than 100%. New settlement states showed a sex ratio of 112 men per 100 women in 2000, compared to 98 men per 100 women in traditional states and 94 men per 100 women in moderate growth states, although there was notable variation in sex ratios within categories as well.

The high proportion of men among immigrants in new settlement states implies that immigration to these states is dominated by unaccompanied, male "target-earners" (Sana and Massey 2005). This is not surprising, given the industries that play the greatest role in attracting immigrants to new destinations, with meatpacking, construction, and carpet-making all male-dominated industries. In a study of contexts of reception of Mexican immigrants in southwestern Montana, Schmalzbauer found that men are drawn by plentiful jobs in the construction industry, while the service jobs that Mexican women are qualified for are few and far between (Schmalzbauer 2009).

This straightforward explanation, however, is not sufficient to account for the substantial geographic diversity of gender patterns that exist. Bump and colleagues' study demonstrates substantial variation in the sex ratios of immigrant populations within both the new settlement and moderate growth categories. Sex ratios in the new settlement states range from 128 men per 100 women in North Carolina to 98 men per 100 women in Minnesota and Nevada. In moderate growth states, sex ratios range from 122 men per 100 women in Wyoming to 61 men per 100 women in North Dakota (Bump et al 2005: 36-37). There is also evidence of gendered pockets of

settlement within states, such as Mexican women working in the crab processing industry in costal North Carolina (Griffith 2005). In addition, these studies have all be conducted with 2000 Census data as the most recent data point. While more recent research indicates that the geographic dispersion of the foreign-born population is continuing (Sanderson and Painter II 2011), there a lack of evidence as to whether the gender patterns observed by Bump and colleagues have remained constant.

Understanding the gendered geographic patterns of migration is important because women immigrants require different levels of service and support than their male counterparts. Despite the increasing number of immigrant women in the US, their concerns and interests are often overlooked in public policy debates. Such concerns unique to women immigrants include reproductive health issues, domestic violence, difficulty gaining legal status, and poor job quality within traditionally female positions (Hess et al. 2011). In addition, immigrant women are more likely to live with their children. Demographic changes produced by immigration entail far-reaching implications for schools, particularly in the need to provide services to limited English proficient children and their parents (NCLB 2003). Understanding the causes of gendered geographic patterns will help in predicting future population change, and allow for states and communities to plan accordingly.

Research questions

As a first step to better understanding the factors that attract men and women to specific destinations, this paper presents a county-level analysis of the geographic patterns of settlement of male and female immigrants arriving in the U.S. since 1990. We address the following questions:

1. Which areas of the country are attracting the highest proportion of female immigrants, and which of male?
2. Have these gender patterns been stable across time?
3. Are there differences by among immigrants from different countries of origin?
4. Are gendered spatial patterns associated with other characteristics, such as the prevalence of non-family households?

Data

Data used in this paper comes from the 2000 Census 5% public-use micro-data sample and the American Community Survey 2007-2011 5-year public use microdata sample (Ruggles et al. 2010). While the use of the 5-year combined sample for my most recent data limits my ability to fully understand change over time, the larger sample size is essential for generating large-enough samples of foreign-born men and women at the county level. The Census and ACS IPUMS data allow us to identify foreign-born individuals, their country of birth, their year of entry into the United States, as well as basic demographic characteristics such as sex and age. In order to focus on recent immigration trends, we limit our analysis to foreign-born individuals arriving in the U.S. since 1990 in the 2000 sample, and since 2000 in the 2007-2011 sample. We aggregate this individual-level data to create county-level estimates.

County-level data is not directly available in public-use microdata, in which the smallest available geographic unit is the Public-Use Microdata Area (PUMA). PUMAs are non-overlapping geographic areas that divide states into geographic areas having a population of approximately 100,000 people each (Ruggles et al. 2010). Although spatial analysis at the PUMA-level is possible, PUMAs are difficult to present visually because they vary substantially

in size. To facilitate the presentation of geographic patterns, we use the PUMA to county crosswalk developed by the Population Studies Center at the University of Michigan. The crosswalk software converts a table of PUMA-level counts or rates to an equivalent table at the county level by using a weighted average of PUMA values for counties that contain multiple PUMAs, and by attaching the PUMA value to all counties in a PUMA that contains multiple counties.

Results

Spatial analyses of the 2000 Census sample and the 2007-2011 combined ACS sample demonstrate that there are significant concentrations of male immigrants in the Southeast and Midwest, including the high-growth new settlement states of Alabama, Georgia, Iowa, Kentucky, North Carolina, South Carolina, and Tennessee. Significant concentrations of female immigrants occur primarily in moderate-growth states, including North Dakota, Maine, Missouri, Montana, Pennsylvania, and Wyoming. These patterns have remained largely consistent over time.

Sex composition of recent immigrant populations in 2000 and 2007-11

Analysis of the 2000 Census data shows that counties in the Mid-Atlantic, Southeast, and Midwest regions tend to have the lowest proportion of women among recent immigrant populations, while most of the Western U.S. is characterized by a higher proportion of women (see Figure 1). North Dakota, Maine, New Hampshire and Vermont in particular have high concentrations of women among recent immigrants, although the overall size of recent immigrant populations in all four of these states is quite small. This pattern of male dominance in the Southeast and Midwest remains true in the analysis of the 2007-2011 combined ACS sample, although there are interesting female-heavy pockets around the cities of Des Moines, Iowa and Mobile, Alabama (see Figure 2).

Figure 1. Percent women among immigrants since 1990, by county, 2000 Census

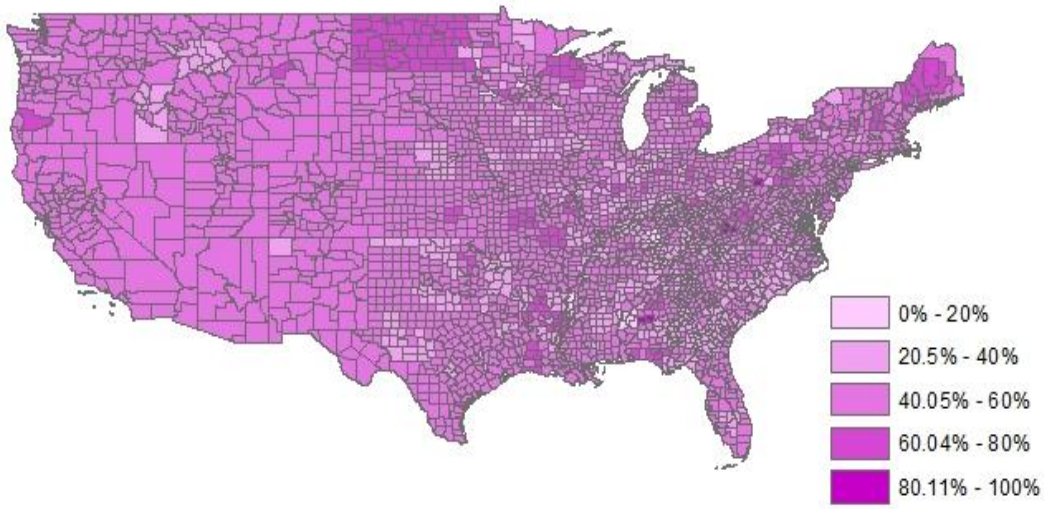
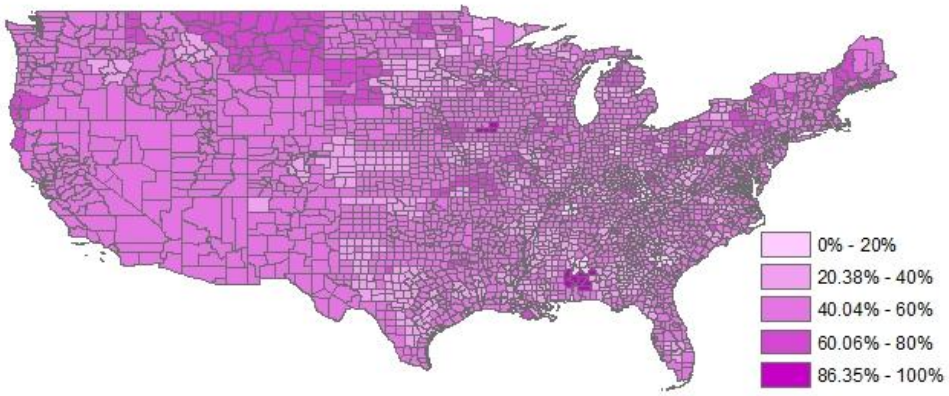
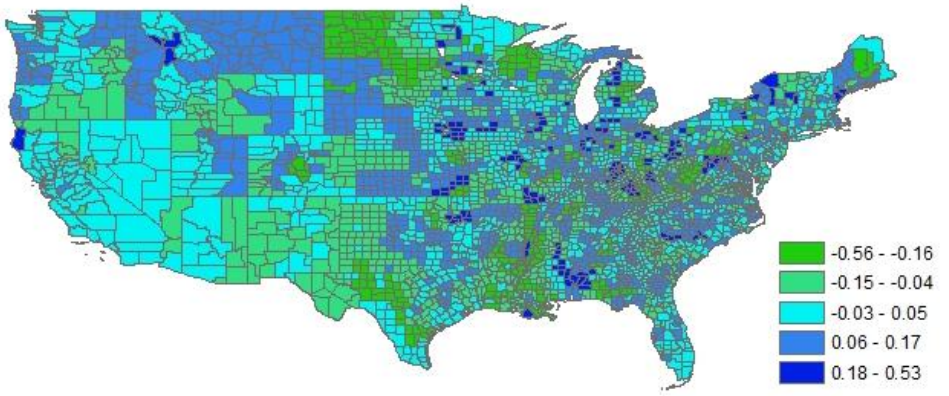


Figure 2. Percent women among immigrants since 2000, by county, 2007-2011 ACS estimates



Comparing the proportion of women among immigrants arriving between 1990 and 2000 with the proportion of women among immigrants arriving between 2000 and 2011, we see that while the high-growth regions of Southeast and Midwest had the most male-dominated immigrant populations in the country, many counties in these regions actually experienced a relative increase in women's migration between 2000 and 2011, while many counties in the southwest experienced a relative loss of female immigrants (see Figure 3). Also notable is the substantial relative loss of female immigration in North Dakota, with equally dramatic relative gains in neighboring Montana, although the total foreign-born population in both these states remains quite small.

Figure 3. Change in percent women among recent immigrants, by county, 2000-2007/2011



Areas with significant concentrations of male and female immigrants

In Figures 4 and 5, I use the Anselin Local Moran's I tool in ArcMap to measure spatial autocorrelation and identify whether the gendered patterns identified above represent statistically significant ($p<.05$) spatial clusters (Mitchell 2005). The Anselin Local Moran's I tool identifies statistically significant clusters of high values (in this case, a high proportion of women among recent immigrants), statistically significant clusters of low values (a low proportion of women among recent immigrants), as well as significant outliers (counties with low proportions of

women located near a high cluster, or counties with high proportions of women located near a low cluster).Because the actual number of recent immigrants in some counties, especially rural counties, is small, a substantial proportion of variation between counties is due to sampling error. In addition, the PUMA to county crosswalk forces many counties to take on the same values as adjoining counties. The Moran's I values for specific counties should therefore be interpreted with caution.

Nevertheless, the cluster analyses do show distinct geographic patterns. Using the 2000 Census data, there are significant low-female clusters throughout the high immigrant growth states of the Southeast (Alabama, Georgia, Kentucky, Tennessee, and North and South Carolina). There are also low-female clusters in several high-growth states of the Midwest, particularly Indiana, Iowa, and Oklahoma, and in the moderate growth states of Ohio and Illinois. There are a number of outlier (high-female) clusters scattered throughout this region, but overall, the Southeast and Midwest are best categorized as low-female areas.

All of the high-female clusters are located in moderate growth states: New England, Pennsylvania, northern Wisconsin, North and South Dakota, Louisiana, and Missouri. The sex ratio of recent immigrant populations does not significantly differ from the national average in much of the West.

Analysis of the 2007-2011 ACS data produces somewhat similar results (see Figure 5). As shown in figure 3, the areas with the lowest proportions of recent female immigrants in 2000 were also the areas that experienced the greatest relative gains in the proportion of female immigrants in 2007-2011. Therefore, the number of statistically significant low-female clusters in the Southeast decreases in the 2007-11 data, with the exception of Louisiana, which switches from being dominated by low-female clusters to being dominated by high-female clusters. However, there are new low-female clusters in Texas and South Dakota. There are also new high-female clusters in Montana, in Illinois and Iowa, and around the city of Mobile, Alabama. These last clusters are particularly notable, given that they are the only statistically significant high-female clusters located in high immigrant growth states.

Figure 4. County cluster analysis (Moran's I) of female immigrants since 1990, 2000 Census

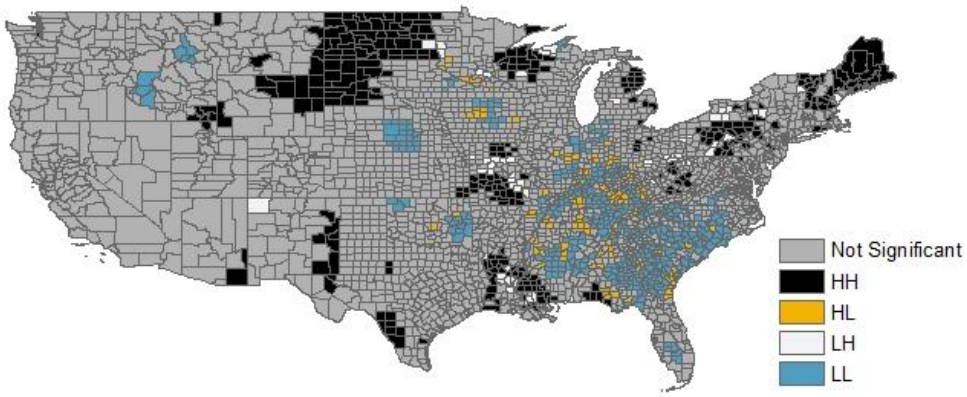
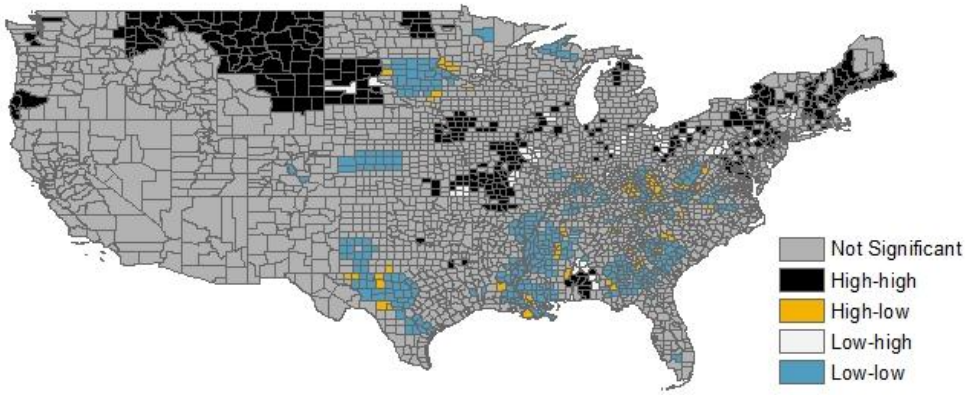


Figure 5. County cluster analysis (Moran's I) of female immigrants since 2000, 2007-2011 ACS estimates



Analysis of the gendered geographic patterns of immigration to the U.S. reveals four notable patterns that deserve further attention:

1. The high proportion of male immigrants in the Southeast and Midwest, which seems to be decreasing over time.
2. The balanced sex ratios that characterize the high growth states of the West (Arizona, Colorado, Idaho, Nevada, and Utah), which stand in stark contrast to the male-heavy immigration to the Southeast.
3. The shift from high-female clustering in Louisiana in 2000 to high-male clustering by 2011.
4. The concentrations of female immigrants around specific cities in high growth states, such as Mobile, Alabama, and Des Moines, Iowa.

Explaining patterns

In the final version of this paper, we will conduct two additional analyses. First, we will repeat the above analyses of gendered geographic patterns of migration using a sample of Latin American immigrants only. Mexicans, who represent by far the largest segment of the foreign-born population in the U.S., also have a higher ratio of men to women than other immigrant groups (Donato et al. 2011). Gendered geographic patterns may therefore be closely related to ethnic geographic patterns. Second, we will identify geographic patterns in the presence of highly educated immigrants, and immigrants living in family versus non-family households, and analyze whether these patterns correspond to the gendered geographic patterns. These two analyses will serve as first steps in explaining why gendered geographic patterns exist.

Discussion

These preliminary analyses indicate that there are distinct gender patterns in the geographic distribution of immigrants at the county, state, and regional levels. These patterns are worthy of further exploration and explanation. By identifying why some destinations are relatively more attractive to women, and others to men, we will gain a greater understanding of the geographic diversification of immigration to the United States.

This research will provide a valuable starting point for future research testing hypotheses about gendered pull factors. Some potential explanations for gendered geographic patterns include:

- *Gendered labor market demands and recruitment*. Specific male-heavy or female-heavy pockets may be explained by the presence of a specific firm or industry that is deliberately recruiting either male or female workers.
- *Tied migration*. If early migration to new destinations is dominated by unaccompanied male target-earners, later migration may be more female-heavy as men are joined by their wives and children. These patterns will be especially clear in regions of the U.S. that are most attractive to immigrants for permanent settlement.
- *Gendered migrant networks*. Substantial research has shown that different types of migrant networks benefit men and women differently (Curran et al. 2005; Curran and Rivero-Fuentes 2003; Davis and Winters 2001). Initial male migration streams may therefore encourage future male migration, with female migration streams encouraging future female migration.
- *Variation in types of migration*. Preliminary analyses revealed that female-heavy clusters were primarily located in low-immigration areas. This may be explained by a relatively large number of female refugees or student migrants in an areas that receives little labor migration.

References

Bump, Micah N., B. Lindsay Lowell, and Silje Pettersen. 2005. "The Growth and Population Characteristics of Immigrants and Minorities in America's New Settlement States." In *Beyond the Gateway: Immigrants in a Changing America*, edited by Elzbieta M. Gozdziak and Susan F. Martin, 19-56. Lanham: Lexington Books.

Curran, Sara R., Filiz Garip, Chang Y. Chung, and Kanchana Tangchonlatip. 2005. "Gendered Migrant Social Capital: Evidence from Thailand." *Social Forces* no. 84 (1):225-255.

Curran, Sara R., and Estela Rivero-Fuentes. 2003. "ENGENDERING MIGRANT NETWORKS: THE CASE OF MEXICAN MIGRATION." *Demography* no. 40 (2):289-307.

Davis, Benjamin, and Paul Winters. 2001. "Gender, Networks and Mexico-US Migration." *Journal of Development Studies* no. 38 (2):1.

Donato, Katharine M., Joseph T. Alexander, Donnar R. Gabaccia, and Johanna Leinonen. 2011. "Variations in the Gender Composition of Immigrant Populations: How They Matter." *International Migration Review* no. 45 (3):495-526.

Donato, Katharine M., and Carl L. Bankston. 2008. "The Origins of Employer Demand for Immigrants in a New Destination: The Salience of Soft Skills in a Volatile Economy." In *New Faces in New Places: The Changing Geography of American Immigration*, edited by Douglas S. Massey, 124-148. New York: Russell Sage Foundation.

Donato, Katharine M., Charles M. Tolbert II, Alfred Nucci, and Yukio Kawano. 2007. "Recent Immigrant Settlement in the Nonmetropolitan United States: Evidence from Internal Census Data." *Rural Sociology* no. 72 (4):537-559.

Durand, Jorge, Douglas S. Massey, and Chiara Capoferro. 2005. "The New Geography of Mexican Immigration." In *New Destinations: Mexican Immigration in the United States*, edited by Victor Zuniga and Ruben Hernandez-Leon, 1-22. New York: Russell Sage Foundation.

Griffith, David C. 2005. "Rural Industry and Mexican Immigration and Settlement in North Carolina." In *New Destinations: Mexican Immigration in the United States*, edited by Victor Zuniga and Ruben Hernandez-Leon, 50-75. New York: Russell Sage Foundation.

Hernandez-Leon, Ruben, and Victor Zuniga. 2000. "Making Carpet by the Mile: The Emergence of a Mexican Immigrant Community in an Industrial Region of the U.S. Historic South." *Social Science Quarterly* no. 81 (1):49-68.

Johnson-Webb, Karen D. 2002. "Employer Recruitment and Hispanic Labor Migration: North Carolina Urban Areas at the End of the Millennium." *Professional Geographer* no. 54 (3):406-421.

Leach, Mark A., and Frank D. Bean. 2008. "The Structure and Dynamics of Mexican Migration to New Destinations in the United States." In *New Faces in New Places: The Changing Geography of American Immigration*, edited by Douglas S. Massey, 51-74. New York: Russell Sage Foundation.

Lichter, Daniel T., and Kenneth M. Johnson. 2006. "Emerging Rural Settlement Patterns and the Geographic Redistribution of America's New Immigrants." *Rural Sociology* no. 71 (1):109-131.

Light, I., and M. F. Johnston. 2009. "The Metropolitan Dispersion of Mexican Immigrants in the United States, 1980 to 2000." *Journal of Ethnic and Migration Studies* no. 35 (1):3-18. doi: 10.1080/13691830802488954.

Massey, Douglas, Jorge Durand, and Nolan J. Malone. 2002. *Beyond Smoke & Mirrors: Mexican Immigration in an Era of Economic Integration*. New York: Russell Sage Foundation.

Massey, Douglas S. 2008. *New Faces in New Places: The Changing Geography of American Immigration*. New York: Russel Sage Foundation.

Massey, Douglas S., and Chiara Capoferro. 2008. "The Geographic Diversification of American Immigration." In *New Faces in New Places: The Changing Geography of American Immigration*, edited by Douglas S. Massey, 25-50. New York: Russell Sage Foundation.

McConnell, Eileen Diaz. 2008. "The U.S. Destinations of Contemporary Mexican Immigrants." *International Migration Review* no. 42 (4):767-802.

Mitchell, Andy. 2005. *The ESRI Guide to GIS Analysis, Volume 2*: ESRI Press.

Parrado, Emilio A., and William Kandel. 2008. "New Hispanic Migrant Destinations: A Tale of Two Industries." In *New Faces in New Places: The Changing Geography of American Immigration*, edited by Douglas S. Massey, 99-123. New York: Russell Sage Foundation.

Ruggles, Steven J., Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. 2010. Integrated Public Use Microdata: Series: Version 5.0 [Machine-readable database]. edited by University of Minnesota. Minneapolis.

Sana, Mariano, and Douglas S. Massey. 2005. "Household Composition, Family Migration, and Community Context: Migrant Remittances in Four Countries." *Social Science Quarterly (Blackwell Publishing Limited)* no. 86 (2):509-528.

Sanderson, Matthew, and Matthew Painter II. 2011. "Occupational Channels for Mexican Migration: New Destination Formation in a Binational Context." *Rural Sociology* no. 76 (4):461-480.

Schmalzbauer, Leah. 2009. "Gender on a New Fronteir: Mexican Migration to the Rural Mountain West." *Gender & Society* no. 23 (6):747-767.

Singer, Audrey, Susan Wiley Hardwick, and Caroline B. Brettell. 2008. *Twenty-First Century Gateways: Immigrant Incorporation in Suburban America*. Washington, DC: Brookings Institution Press.