The Spatial Assimilation and Changing Earnings Inequalities of Mexican Farmworkers in the United States, 1980 to 2007*

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Abstract

The demand for low-wage agricultural workers has been vital to the history of Mexican migration to the United States and continues to be an important factor in the contemporary assimilation processes of a large subset of Mexican immigrants. Mexican farmworkers, similar to immigrants in other industries, are increasingly bypassing traditional gateway cities and states and settling in new destinations. This paper focuses on earnings inequalities among Mexican farmworkers living in traditional agricultural settlement states (California and Texas) and those living in new agricultural destination states. Using data from 1980, 1990, 2000, 2005-07 IPUMS, I use OLS regression to model the relationship between income and destination while controlling for immigration-related and demographic characteristics. Findings suggest that Mexican-origin farmworkers living in traditional settlement areas earned higher incomes during the 1980s, but since 1990 incomes have been greater for farmworkers living in new destination states.

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Farm labor migration has been critical to the history of Mexican immigration to the United States and continues to be an important factor in the contemporary assimilation processes of a large subset of Mexican immigrants. Beginning in the early 1900s, Mexican nationals were actively recruited by employers, labor contractors, and the U.S. government to fill labor shortages in agriculture (Reisler 1976). From 1942-1964, nearly 4.5 million Mexican laborers migrated to the U.S. as part of the Bracero Program which was initially created to prevent farm labor shortages during World War II (Massey and Liang 1989). Even the restrictive Immigration Control and Reform Act (IRCA) of 1986 made special provisions for agricultural workers which resulted in an additional 1.2 million undocumented immigrants receiving amnesty because of their status as farm laborers (Boucher, Smith, Taylor, and Yunez-Naude 2007). There has clearly been a strong connection between agricultural labor and Mexican migration; however, research situating farmworkers within contemporary patterns of immigration from Mexico is lacking.

Considerable research attention is currently being given to the increasing number of Mexican immigrants living in new destinations outside of traditional gateway settlement areas (Durand, Kandel, Parrado, and Massey 1996; Jensen 2006; Kandel and Cromartie 2004; Waters and Jimenez 2005). Historically, Mexican immigrants have been concentrated in a select number of metropolitan areas located mainly in California and the Southwest. New settlement patterns, however, are helping to redistribute this population as many immigrants are either leaving traditional gateway cities or bypassing

them altogether, and settling in new destinations. Research has also shown that this geographic mobility has affected the earnings of Mexican immigrants. In fact, poverty rates are lower for Mexican immigrants living outside of traditional settlement areas than for Mexican immigrants living in the Southwest (Crowley, Lichter, and Qian 2006). Using decomposition methods, Leach (2008) calculates that the higher relative earnings of Mexican immigrants living in new destination states helped lessen the national-level decline in Mexican earnings from 1990-2000 by nearly 22 percent.

This research begins to situate Mexican-origin farmworkers within broader patterns of contemporary Mexican migration. Using data from the Integrated Public Use Microdata Samples (IPUMS) for the period 1980-2007, this paper focuses on changes in the spatial distribution of Mexican-origin farmworkers and the impact of these changes on their economic well-being.

New Destinations and Farm Labor

Immigration to the United States has changed in recent decades (Massey and Hirschman 2008). Not only has the size of the foreign-born population increased but there has also been dramatic growth in the number of immigrants living in new destination cities and states (Durand, Massey, and Charvet 2000; Singer, Hardwick, and Brettell 2008). Historically, Mexican immigrants have been geographically concentrated in a few select cities and states along the Eastern Seaboard, California, and the Southwest (Durand, Massey, and Charvet 2000; Hernandez-Leon and Zuniga 2000; Waters and Jimenez 2005). However, new settlement patterns are redistributing the Mexican population as many immigrants are settling in new destinations. To be sure, traditional

settlement areas continue to attract the majority of Mexican immigrants, but the number of migrants seeking out new destinations is increasing.

The demand for agricultural labor helped to establish the traditional Mexican immigrant gateway states. Throughout the 20th Century, Mexican immigrants settled primarily in five states—Arizona, California, Illinois, New Mexico, and Texas—some parts of which were formerly Mexico. In the early 1900s, Texas was the largest receiving state for Mexican migrants. While Mexican immigration to California steadily increased after 1920, it was not until after the creation of the Bracero Program in 1942 that it became the largest receiving state (Durand, Massey, and Charvet 2000). California continues to be the destination state for the largest number of Mexican immigrants, however, the proportion of immigrants settling in California, and other traditional gateway states, began declining in the 1990s (Durand, Massey, and Charvet 2000; Hernandez-Leon and Zuniga 2000).

The growth of the Hispanic population in new destinations has been well documented. Durand et al. (2000), using census data from 1910-1996, show how the geography of Mexican migration has shifted from being a regional to a national phenomenon. Their analysis indicates that the percentage of all Mexican immigrants living in non-gateway states increased sharply from 12.8 percent in 1990 to 30.9 percent in 1996. Hernández-León and Zúñiga (2000) find similar evidence of Mexican immigrant communities being established in the textile producing regions of the South during this same time period. Some research has focused on the establishment of new gateway cities such as Atlanta, Charlotte, Dallas, Portland, Sacramento, Washington D.C. and their

suburbs which have become major destinations for new immigrants to the United States (Singer, Hardwick, and Brettell 2008).

While most immigrants live in metropolitian areas, there has been substantial growth in the Hispanic population living in nonmetropolitan (nonmetro) areas (Jensen 2006; Kandel and Cromartie 2004). In their study of new settlement patterns of Hispanics in nometro counties, Kandel and Cromartie (2004) found that for more than 20 states, mostly in the South and Midwest, the Hispanic population more than doubled from 1990-2000 and that by 2000, over half of nonmetro Hispanics were living in communities outside of the Southwest. Using data from Current Population Survey, Jensen (2006) noted that new immigrants to rural areas are more likely to be of working age, married, from Mexico, have lower educational attainment, and to be underemployed than new immigrants in urban areas. He also found that nearly 14 percent of recent immigrants in rural areas work in agriculture and that they are twice as likely as the native born to work in agriculture.

There are several explanations for the dispersion of Mexican immigrants to new immigrant destinations including immigration policy, labor market saturation, and economic restructuring (Kandel and Parrado 2005; Light 2006; Massey, Durand, and Malone 2002). Immigration reforms adopted in the late 1980s altered the geographic distribution of Mexican migrants. Prior to the passage of IRCA, movement back and forth between Mexico and the United States was relatively common, as Mexican migrants would work in the U.S. for fairly short periods of time before returning home. The most common destination states were almost always within close geographic proximity to Mexico, which facilitated their eventual return. After the passage of IRCA,

however, this pattern changed. Amnesty provisions under IRCA created opportunities for mobility to more distant regions of the United States, while at the same time, increased border enforcement shifted the entry points for undocumented migrants to other places along the Mexico-United States border and created disincentives for migrants to return to their origin country by increasing the costs of migration (Massey, Durand, and Malone 2002). Within IRCA was a provision for farmworkers, the Special Agricultural Workers (SAW) program which granted amnesty to an additional 1.2 million immigrants based on their employment in agriculture.

Economic restructuring, especially in rural areas, has been another explanation for the spatial deconcentration of nonmetro Hispanics (Crowley, Lichter, and Qian 2006; Fairchild and Simpson 2004; Gozdziak and Bump 2004; Kandel and Parrado 2005). Crowley et al. (2006) argue that economic restructuring in rural areas outside of traditional Hispanic settlement cities has increased the demand for low-wage workers and that that demand is being filled by Mexican immigrants. Their research also found that these immigrants experience lower rates of poverty than those in gateway cities suggesting that geographic mobility leads to greater economic opportunity. Restructuring of the meat processing industry in the Midwest has also attracted Hispanic immigrants to that region (Kandel and Parrado 2005). Industrial restructuring in both the poultry and textile industry have attracted Mexican immigrants to the South (Gozdziak and Bump 2004; Hernandez-Leon and Zuniga 2000).

Migrant farm labor has been a common feature in many of the so-called new destination states for decades (Friedland and Nelkin 1971); however, not until recently have farmworkers began to settle in these new destinations. Fairchild and Simpson

(2004) document the recent increase in the number of Mexican immigrants moving to the Pacific Northwest, many of whom are agricultural workers. Other research has described how migrant farmworkers, originally attracted to the rural communities of the Shenandoah Valley to work in the apple harvest, have settled because of opportunities to work in poultry processing plants (Gozdziak and Bump 2004). The extent to which agricultural restructuring—declining number of farms, increase in the size of farms, vertical integration of production and processing, expansion of contract production, decline in family labor, and the overall industrialization of the farm sector (Buttel 2001; Lobao and Meyer 2001)—is creating demand for farm labor in regions that have not traditionally employed large amounts of immigrant workers has not been systematically researched.

This research extends the literature on Mexicans in new destinations by focusing on a specific occupational group—farmworkers. The first research questions asks what changes have there been to the geographic distribution of Mexican-origin farmworkers in the United States? The second question addresses the economic well-being of farmworkers in new destinations by asking are there income and earnings differences for Mexican-origin farmworkers by destination type and have these changed over time? The final research questions addresses the extent to which earnings differences are the result of compositional changes in the population living in new and traditional destinations by asking are changes in earnings inequalities by destination type due to changes in the population composition in the destination?

Data and Methods

National-level analyses of hired farmworkers in the United States are challenged by a lack of a single data source can provide a comprehensive profile of this population (Kandel 2004; Kandel 2008). Several data sources that have been used to make estimates of the characteristics of hired farmworkers include the National Agricultural Workers Survey (NAWS), Census of Agriculture, Farm Labor Survey, the Mexican Migration Project (MMP), and the Current Population Survey (Carroll, Samardick, Bernard, Gabbard, and Hernandez 2005; Kandel 2004; Kandel 2008). The NAWS is a nationally representative, individual level survey of crop workers throughout the United States that is conducted annually by the U.S. Department of Labor. This survey includes questions on the demographic, economic, and immigration-related characteristics of crop workers. Because this data set is limited to crop workers, it excludes the growing number of Mexican-origin farmworkers in the livestock industry. The Census of Agriculture is an aggregate level data set that includes information on the number of hired farmworkers, number of farms with hired labor, and labor expenses. The Census of Agriculture does not include indicators of national origin or individual level characteristics of hired farmworkers. The Farm Labor Survey is conducted by the U.S. Department of Agriculture and is a quarterly survey of approximated 14,500 farms (Kandel 2008). These data do not include indicators of the immigration status of farmworkers. The MMP is a longitudinal study of migration that samples respondents in both Mexico and the United States. Kandel (2004) used the MMP to develop a profile of demographic and socioeconomic characteristics of Mexican immigrants working in U.S. agriculture. However, this data does not provide accurate estimates of the total number of Mexican-

origin farmworkers in the United States. Finally, researchers have used the Current Population Survey to study the earnings of hired farmworkers (Kandel 2008), but these data have limited coverage of immigrant groups (Farley and Alba 2002).

The data for this research come from the Integrated Public Use Microdata Series (IPUMS) database distributed by the Minnesota Population Center (Ruggles, Sobek, Alexander, Fitch, Goeken, Hall, King, and Ronnander 2004). The IPUMS are individual-level data that include the Public Use Microdata Samples (PUMS) from the U.S. Decennial Censuses and the American Community Survey (ACS) that have been synthesized across different census years. Specifically, I am combining the 1% and 5% PUMS samples for 1980, 1990, and 2000 Censuses and then pooling the 2005-07 years of the ACS. The concatenation of Census samples and the pooling of ACS data ensures a large enough sample of Mexican-origin farmworkers. While neither the Population Census nor the American Community Survey are specifically designed for studying the specifics of agricultural labor, these data include extensive demographic, socioeconomic, industry, occupational, and geographic characteristics for the entire U.S. population that allow for the selection of Mexican-origin farmworkers. The sample of Mexican-origin farmworkers used in this analysis was selected from the PUMS and ACS data using occupation and birthplace codes. By selecting Mexican-born[1] individuals from the IPUMS whose occupation[2] is coded as "farm laborers, wage workers" I was able to identify Mexican-origin farmworkers.

[1] Mexican-born individuals who were born abroad of American parents were excluded from the analysis.
[2] Specifically, I used "occupation 1950" which is a variable synthesized across the IPUMS samples that identifies wage farm workers.

The main variables of interest in this analysis are the destination type and hourly earnings of Mexican-origin farmworkers. Destination type was determined using the individual's state of residence. Although a more refined geography would have made the classification of destination type more precise, the individual level samples from the PUMS and ACS restrict identifiers for smaller geographies[3]. An individual's hourly earnings was calculated by dividing the total annual income from wages and salaries earned in the previous year by the product of weeks worked and usual hours worked per week in that year. In order to eliminate cases with unrealistic values on hourly earnings, I restricted the sample to people who usually worked 35 hours or more per week had worked more than 12[4] weeks the previous year.

There are three basic analytical strategies to this paper. First I provide a descriptive analysis of the changing spatial distribution of Mexican-origin farmworkers, as well as their demographic, immigration-related, and work characteristics by destination type. The degree to which Mexican-origin farmworkers are spatially clustered is measured using Theil's (1972) entropy index Eq.(1):

$$E = \frac{-\sum_{i=1}^{n} p_i * \log(p_i)}{\log(n)} \times 100 \qquad (1)$$

[3] While the IPUMS data do include a smaller geography (Public Use Microdata Areas or PUMAs), the boundaries for these geographies change over time and so could not be used in this analysis.

[4] This cut-off was used because a sizable proportion of individuals in the sample reported working as few as 12 weeks out of the year, not surprising given the seasonal nature of farm work.

where n is the number of geographic units (states), and p_i is the proportion of farmworkers in that unit. The index ranges from 0-100 with low scores indicating that all observations are concentrated within a few geographic units and a high scores indicating that observations are equally dispersed across units. Demographic composition will be measured using age, sex, education, and marital status of the individual. Immigration-related characteristics include citizenship status, ability to speak English, and length of residence in the United States. Work and economic outcome variables include crop or livestock work, the number of weeks worked, usual hours worked, total annual income, total income from wages, hourly earnings, and the logged hourly earnings. Second, I use OLS regression models to estimate the relationship between the log hourly earnings and destination type while controlling for demographic, immigration-related and work characteristics.

The final part of the analysis uses regression decomposition to quantify the compositional and structural components of the change of log hourly earnings by destination type using the Blinder-Oaxaca decomposition method (Blinder 1973; Oaxaca 1973). Decomposition is a method of disaggregating total change in the dependent variable into the parts resulting from changes in the structure of the outcome variable (in this case log hourly earnings) and the composition of the population (Firebaugh 1997). The Blinder-Oaxaca decomposition method is shown in Eq. (2)

$$\overline{Y}_{(t+1)} - \overline{Y}_t = \sum_{k=1}^{k=K} b_{k,t}\left(\overline{x}_{k,(t+1)} - \overline{x}_{k,t}\right) + \sum_{k=1}^{k=K}\left(b_{k,(t+1)} - b_{k,t}\right)\overline{x}_{k,(t+1)} \qquad (2)$$

where the change in value of Y from time t to t + 1 is decomposed into two parts, the first term which represents change in population composition and the second term which represents change in the structure of the dependent variable.

Results

Changing spatial distribution

Table 1 reports the geographic distribution of Mexican-origin farmworkers from 1980-2007. In 1980, the two states with the greatest proportions of Mexican-origin farmworkers were California and Texas with 80.3 percent of the total population. Just five states—California, Texas, Washington, Arizona, and Florida—accounted for 92 percent and ten states accounted for 97 percent. With the exception of Illinois and Idaho, all of these states were located in the Southwest and along the West Coast. In that year, the diversity index was 34.2, indicating spatial clustering.

From 1980-1990 the total number of Mexican-origin farmworkers in the United States more than doubled, in part, because of amnesty provisions for seasonal farmworkers in IRCA that spurred the migration of over one million immigrants from Mexico (Martin, Fix, and Taylor 2006). However, there were only slight changes in the spatial distribution of Mexican-origin farmworkers. California and Texas were still the destination states for 73.6 percent of all farmworkers and the five states with the highest proportions remained the same, but now accounted for 88.1 percent. By 1990, Georgia had become a destination for Mexican-origin farmworkers. The diversity index increased to 40.5 suggesting that the overall population is became more geographically dispersed.

The greatest changes in the spatial distribution of Mexican-origin farmworkers happened during the 1990s. From 1990-2000, the proportion living in California and Texas declined to 62.8 percent. Again there was a drop in the proportion of Mexican-origin farmworkers living along the West Coast and in Southwest. Georgia was again a destination state and North Carolina emerged as a destination state. The diversity index increased to 50.6 signaling greater spatial dispersion than in 1980 or 1990. From 2000-2007, the Mexican-origin farmworker population continued to diffuse throughout the United States.

By 2007, the proportion living in California and Texas had decline to 55.4 percent. In fact, Washington became the state with the second highest proportion of Mexican-origin farmworkers during this time period. The five states with the largest proportions were now California, Washington, Texas, Florida, and Oregon and accounted for 75.1 percent. Georgia and North Carolina continued to be destination states as well as Michigan. In addition, there were also dramatic increases in the proportion of Mexican-origin farmworkers living in Pennsylvania and Wisconsin (results not shown). The diversity index increased to 56.4. To be sure, Mexican-origin farmworkers in the United States continue to be a very spatially clustered population; however, there has been considerable growth in the number of Mexican-origin farmworkers living in new destinations.

Compositional Differences

The most consistent trend in the spatial distribution of Mexican-origin farmworkers from 1980-2007 was the declining proportion living in California and Texas. For the remainder of this analysis, destination types are operationalized as

traditional destination for farmworkers living in California and Texas (CA/TX) and *new destination* for those in Other States. Throughout the study period, there are consistent compositional differences between Mexican-origin farmworkers by destination type. Table 2 shows the means and percentages for selected demographic, immigration-related, and economic characteristics by destination type.

Mexican-origin farmworkers living in new destinations are younger, more often male, and less likely to be married than those living in traditional destination states (Table 2). These patterns are consistent over the study period; however, the differences by destination become less pronounced as the proportion of Mexican-origin farmworkers living in new destinations increases. In 1980, the average age in CA/TX was 34.0 years compared to 32.6 in Other States. Changes in the average age from 1980-1990 were nominal but from 1990-2000 farmworkers in CA/TX became older (35.5) while the average age remained the same in Other States. From 2000-2007, the average age increased in both destinations. Overall, the percent of males remained relatively high but declined from 1980-2007. Farmworkers in Other States were consistently more likely to be male with the greatest differences being in 1980 and 2000. The percent married also declined overall but was greater in CA/TX than in Other States.

In all, there was a considerable increase in the educational attainment of Mexican-origin farmworkers in the United States from 1980-2007. In 1980, nearly half of the total sample reported their level of education as elementary school or less, and while this was higher in traditional destinations, there were also slightly more farmworkers in traditional destinations reporting their level of education as post-secondary. Between 1980 and 1990, the total percent of Mexican-origin farmworkers with elementary schooling or less

declined while the percent with a ninth grade through high school education increased with the greatest increases being in Other States. A few farmworkers even reported having some college or a bachelor's degree. This percentage is quite small, ranging from a low of 2.0 percent in Other States in 1980 to a high of 3.8 percent in Other States in 2007.

In terms of immigration-related characteristics, Mexican-farmworkers in Other States appear to be more selective than those in CA/TX. In 1980, roughly 23 percent of farmworkers in Other States were U.S. citizens compared to only 15 percent in CA/TX. From 1980-2007, there was a dramatic decline in the overall percentage who are citizens. Also, the gap in citizenship status by destination status declined during the study period, but was always highest in Other States. The ability to speak English was also more common among farmworkers in Other States and the differences by destination type increased throughout the study period. Mexican-origin farmworkers in Other States tended to be more recent immigrants than those in CA/TX. Overall, there was a decline in the percent of farmworkers who were recent immigrants. That these farmworkers were more likely to be U.S. citizens and speak English but yet were more recent immigrants indicates that this group is more positively selective than the farmworkers in CA/TX.

Table 2 reports the mean work and economic characteristics by year and destination type. While the proportion of Mexican-origin farmworkers employed in crop production (as opposed to livestock production) is high, it is consistently in CA/TX. Because crop production is more seasonal than livestock production, the average number of weeks worked per year is also consistently lower in CA/TX. The usual number of hours worked per week is roughly the same across destinations. Average hourly earnings

are greater for Mexican-origin farmworkers in CA/TX, but this wage gap declines significantly over time. The log hourly earnings follow a similar pattern. Total annual income, which reports personal yearly income from all sources, is higher in CA/TX in 1990 and 2000 but is higher in Other States in 2000 and 2007. There is a similar change in inequalities by destination type for total annual income from wages.

From the preceding analyses, it is clear that there has been an overall shift in the geographic distribution of Mexican-origin farmworkers in the United Sates since 1980 and that there has also been a corresponding change in composition of farmworkers living in both destination types. One of the goals of this paper is to estimate the effect of living in a new destination on the economic well-being of Mexican-origin farmworkers. Although the bivariate analysis shows that the inequalities in income and earnings by destination type of changed over time, these findings do not account for compositional changes in the population over time. This is accomplished with multivariate regression and decomposition analysis.

Multivariate Models

To explain the changing earnings inequalities between Mexican-origin farmworkers, I use multivariate OLS regression analysis to model the relationship between log hourly earnings and destination type over time while controlling for demographic, immigration-related, and work characteristics (Table 3). The overall strategy of the multiple regression analysis is to first model the reversal in earnings inequalities over time (Model 1) and then to account for these changes by controlling for demographic (Model 2), educational attainment (Model 3), immigration-related (Model 4), work and economic (Model 5) characteristics as well as a full model (Model 6).

Model 1 includes a dummy variable for destination type (CA/TX) that is coded 1 if the farmworker lives in California or Texas and 0 if they live in the Other States, dummy variables for years (1980 is the omitted category), and interaction terms between destination type and year. Interaction terms are used in multiple regression models when the relationship between the independent and dependent variables is moderated by another variable (Jaccard and Turrisi 2003). Figure 1 illustrates the interaction effects between destination type and year while controlling for demographic, immigration-related, and work characteristics.

The interaction effects in these models capture the reversal in earnings inequalities by destination type between 1990 and 2000. In 1980, the hourly earnings in CA/TX were nearly 10 percent higher than they were in Other States. From 1980-1990, log hourly earnings declined for all Mexican-origin farmworkers, but earnings were still greater in CA/TX. While earnings continued to decline in CA/TX between 1990 and 2000, they increased in Other States. From 2000-2007 there was an overall increase in earnings of roughly 1.5 percent but this relationship was not statistically significant. However, the interaction term for destination type in 2007 is negative and statistically significant indicating that earnings increased less in CA/TX than they did in Other States during this period.

Model 2 introduces several demographic variables to help control for compositional difference across destination types. Age has a large impact on their wages (2.3% increase for each year) of Mexican-origin farmworkers. However, this relationship is curvilinear —as indicated by the negative coefficient for age^2—meaning that hourly earnings eventually decrease with age. Male farmworkers have 10 percent higher hourly

earnings than female farmworkers and farmworkers that are married have 6.5 percent higher hourly earnings than those that are not married. These demographic control variables are all statistically significant. After controlling for demographic composition, inequalities in hourly earnings by destination type still reversed from 1990-2000. In fact, the demographic controls increased the percent that earnings declined in CA/TX relative to Other States in 2000 from 8.1 percent in Model 1 to 8.8 percent in Model 2.

Model 3 controls for educational attainment which has been coded into three dummy variables—middle school, ninth through high school, and some college through bachelor's degree—with elementary school or less as the reference category. As expected, farmworkers with higher educational attainment earn higher hourly earnings, but only middle school and some college through bachelor's degree were statistically significant. The increase in hourly earnings for farmworkers in CA/TX in 1980 and the lower decline for CA/TX in 2000 in Model 3 shows that educational attainment has a greater influence on hourly earnings in CA/TX.

Model 4 controls for immigration-related characteristics including citizenship status, English language ability, and length of residence in the United States. Citizenship status increases hourly earnings, but this relationship is not statistically significant. The hourly earnings of Mexican-origin farmworkers are 5 percent higher for those that speak English than those that do not speak English. Hourly earnings also increase with the length of residence in the United States. Farmworkers who have been in the U.S. less than 10 years have hourly earnings that are 13 percent lower than those that have been in the U.S. 21 years or more. The earnings gap between recent and longer term arrivals is less pronounced for farmworkers that have lived in the United States for 11-20 years who

earn only 2.4 percent less than long-term immigrants. Controlling for immigration-related characteristics had no effect on the earnings inequalities by destination in 1980 but increased the inequalities between traditional and new settlement states in 2000 and 2007.

Model 5 introduces control variables for the type of agricultural industry and the number of weeks worked each year. Farmworkers in crop production have 5 percent lower hourly earnings than those that are employed in livestock production. This relationship is statistically significant. While this relationship is statistically significant, it accounts for only a 0.1 percent decrease in hourly earnings per additional week of work. In this model, earnings inequalities in 1980 increased while there was no change in the earnings inequalities in 2000 found in Model 1.

The final model (Model 6) combines all of the control variables from the previous regressions into one model. In the full model, being male has a significantly larger effect on hourly earnings than it did in the previous model. Also, the effect of educational attainment increased with the greatest change being for farmworkers with a ninth through high school level of education. While controlling for other factors, the effects of length of residence in the U.S. on hourly earnings declined. Additional analyses (not shown) found that this decline in the effect of length of residence in the U.S. is due to controlling for age and age^2. In the full model, type of industry became less of a predictor while the coefficient for number of hours worked increased from -.001 to -.003. Despite controlling for demographic, immigration-related, and work characteristics, hourly earnings were still higher in CA/TX in 1980 and then decreased in 2000 relative to hourly earnings in Other States. Introducing the control variables had no effect on earnings in CA/TX in 1980 over the base model but increased the earnings differentials in 2000.

Decomposition Analysis

Overall, the hourly earnings of Mexican-origin farmworkers in CA/TX from 1980-2007 declined while the hourly earnings of those living in Other States increased slightly. The greatest difference in hourly earnings was during the 1990s when earnings decreased in CA/TX and increased in Other States (Figure 2). While the multivariate regression models begin to explain the changing earnings inequalities of Mexican-origin farmworkers by destination, it is unclear how much of this change is due to the earnings structure or to changes in population composition because of shift in the proportion living in Other States. Decomposition analysis is an appropriate method for partitioning the total change in hourly earnings into its different component parts (Blinder 1973; Firebaugh 1997; Oaxaca 1973). Below, I report the findings of three separate decomposition analyses. The first analysis decomposes the change in hourly earnings from 1990-2000 for all Mexican-origin farmworkers, the second focuses specifically on the change in hourly earnings from 1990-2000 for those living in CA/TX, and the final analysis decomposes the change in hourly earnings for farmworkers in Other States for this same time period.

Table 4 shows the decomposition of the change in log hourly earnings from 1990 to 2000. During this period, hourly earnings for all Mexican-origin farmworkers declined by 1.6 percent. Change in the composition of the population actually had a positive effect on earnings but was offset by a larger negative change in the structure of earnings. Focusing first on the structure component of change, the overall earnings would have been 16.3 percent higher had earnings not declined in CA/TX. Hourly earnings of all Mexican-origin farmworkers were 51 percent higher because wages were higher for older

farmworkers. The type of production also had a large effect on the change in earnings since overall earnings would have been nearly 30 percent higher had earnings not declined for crop workers. As mentioned above, change in the composition of the population had less of an impact on the change in earnings than structure. Earnings were 7 percent higher because of changes in the age distribution. Also the proportion of farmworkers with ninth through high school and recent immigrants prevented earnings from declining even more. It is important to point out that changes in the overall earnings are masked by variation in the change of earnings across destinations.

Table 4 also reports the findings from two additional decomposition analyses, the first focusing on the change in log hourly earnings from 1990-2000 in just CA/TX and the second on just the Other States. Hourly earnings declined in CA/TX by 2.8 percent from 1990-2000 while they increased by 2.1 percent in Other States. Similar to the overall model, the structure component of change had a greater effect on hourly wages in both destinations. However, a greater proportion of the overall change in earnings in CA/TX was due to the structure of earnings than in Other States. Figure 2 compares the percent of change from selected demographic, immigration-related, and work characteristics by destination type. Age hade a greater effect on the increase in the structure of earnings in Other States than in CA/TX while being male had a greater increase on the structure of earnings in CA/TX. Educational attainment increased the structure in earnings in Other States while it lead to a decline in the structure of earnings in CA/TX. The ability to speak English had a positive impact on the change in earnings structure in CA/TX and a negative impact in Other States. While working in crop production had a negative impact on the change in the earnings structure in both

destinations, the percent of decline was greater in CA/TX. Figure 3 reports the proportion of change in composition by destination type. Findings here indicate that changes in the age composition in CA/TX had a large positive impact in the change in earnings.

Conclusion

Since 1980, there has been a dramatic change in the spatial distribution of Mexican-origin farmworkers in the United States. As farmworkers sought out new destinations, differences in the demographic, immigration-related, and work characteristics declined. One of the more substantial differences between Mexican-origin farmworkers by destination type was in total annual income and earnings. In 1980, Mexican-origin farmworkers in CA/TX had higher incomes and earnings than those living in Other States. By 2000, however, these income inequalities had reversed as the earnings structure in new destinations increased while it decreased in traditional settlement areas.

One explanation for the declining structure of wages for all farmworkers, especially for workers in traditional settlement areas, since 1980 could be the dramatic increase in the supply of Mexican-origin migrants working in agriculture as a result of the Seasonal Agricultural Workers Program (SAW). This provision under IRCA granted amnesty for over 1 million Mexican immigrants who claimed to have previously worked in U.S. agriculture. However, he relatively low percentage numbers of Mexican-origin farmworkers who claim to be U.S. citizens (even in 1990), shows that few of those granted amnesty remained in agriculture.

Increases in the earnings of Mexican-origin farmworkers in new destinations might also be indicative of changes in structure of agriculture in those states. Differences in the type of production and weeks worked per year by destination type have been increasing over time, which will continue to impact the earnings of Mexican-origin farmworkers in new destinations. Unfortunately, these data do not allow for a detailed analysis of the specific commodity sectors in which Mexican-origin farmworkers are employed.

That Mexican immigrants were transitioning out of agriculture, or bypassing it altogether, is also apparent by changes in the age structure of farmworkers. The age structure of this population had a substantial impact on changes in the earnings structure in both traditional and new agricultural settlement areas. Overall, the population of Mexican-origin farmworkers was getting older at the same time that the earnings of older farmworkers increased. Immigration from Mexico increased during the 1990s and the findings above indicate that younger men were bypassing agriculture and working in other industries. This was especially apparent in California and Texas. It seems that not only are younger and more recent Mexican immigrants choosing to settle in new destinations but they are also choosing to work in new occupations, a trend that has increased the wages for the older workers who remain in agriculture.

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Table 1. Ten States with the Highest Proportion of Mexican Origin Farmworkers 1980-2007.

1980[1]		1990		2000		2005-2007[2]	
California	65.5	California	60.7	California	54.1	California	48.1
Texas	14.8	Texas	12.9	Texas	8.7	Washington	8.6
Washington	4.9	Washington	5.6	Washington	6.7	Texas	7.3
Arizona	4.3	Florida	5.2	Florida	6.5	Florida	6.6
Florida	2.4	Arizona	3.7	Arizona	3.1	Oregon	4.5
Oregon	1.5	Oregon	2.5	Oregon	3.0	Arizona	3.2
Idaho	1.4	Idaho	1.6	Idaho	2.3	North Carolina	2.5
New Mexico	1.2	New Mexico	1.4	North Carolina	2.2	Idaho	2.3
Colorado	0.9	Colorado	0.9	Georgia	1.7	Georgia	1.6
Illinois	0.6	Georgia	0.7	New Mexico	1.3	Michigan	1.4
CA/TX	80.3		73.6		62.8		55.4
Top Five States	92.0		88.1		79.1		75.1
Top Ten States	97.6		95.1		89.5		86.1
Diversity Index	34.2		40.5		50.6		56.4
Population Estimate	107,875		238,558		333,236		451,476
(N)	7,580		15,518		23,403		11,451

[1]Source: 1% and 5% Public Use Census Microdata
[2]Source: Pooled 2005, 2006, and 2007 American Community Survey (ACS)

Table 2. Means of Demographic and Socioeconomic Variables for Mexican-Origin Farmworkers 1980-2007

	1980		1990		2000		2005-07	
	CA/TX	Other States	CA/TX	Other States	CA/TX	Other States	CA/TX	Other States
Age	34.0	32.6	34.1	32.6	35.5	32.6	36.7	34.7
Sex	79.2	85.1	79.0	84.5	76.1	82.7	77.1	81.1
Married	73.4	69.4	67.6	63.9	67.4	61.1	63.9	59.0
Education (percent)								
Elementary school or less	47.3	45.3	40.4	37.2	31.8	24.7	27.1	20.5
Middle school	34.6	38.1	35.0	37.6	39.3	39.2	41.4	36.9
Ninth through high school	15.5	14.7	21.0	22.2	25.9	32.7	28.6	38.9
Some college through bachelor's	2.7	2.0	3.6	3.0	3.0	3.3	3.0	3.8
Citizenship status	15.7	23.1	17.8	20.8	14.5	14.1	9.3	10.0
Speaks English	55.6	64.9	62.6	73.3	54.5	67.7	45.6	63.9
Length of Residence in United States (percent)								
Recent (less than 10 years)	60.1	65.7	50.8	61.0	41.6	57.9	42.7	55.8
Intermediate (11-20 year)	26.2	21.6	33.8	28.7	34.2	29.3	28.9	28.9
Long-term (21 or more years)	13.7	12.7	15.4	10.3	24.3	12.9	28.4	15.2
Work								
Crop worker	91.1	85.3	90.2	87.6	87.5	80.3	83.0	75.7
Weeks worked	38.1	40.2	37.2	38.6	38.3	41.5	42.0	44.0
Usual hours	46.8	46.6	47.4	46.4	47.2	46.8	45.9	45.9
Hourly earnings[1]	8.9	8.2	8.4	7.9	8.2	8.1	8.4	8.2
Logged hourly earnings[1]	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0
Total annual income	16,180	15,413	15,013	14,026	15,319	15,867	16,598	16,589
Total annul income from wages	15,604	15,158	14,415	13,736	14,586	15,462	16,075	16,368
Poverty status	29.9	38.3	29.5	40.3	27.7	28.0	26.9	29.5
(N)	3,743	936	7,474	3,043	10,050	6,176	3,959	3,036

[1]Sample restricted to wage workers who usually work 35 hrs per week and worked 12 or more weeks in the previous year.

Table 3. OLS Regression of Log Hourly Earnings[1] for Mexican-Origin Farmworkers in the United States 1980-2007 (Std. Error)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	2.008	1.442	2.000	2.063	2.101	1.671
	(.014) ***	(.025) ***	(.014) ***	(.015) ***	(.017) ***	(.029) ***
CA/TX	0.095	0.095	0.096	0.095	0.097	0.095
	(.015) ***	(.015) ***	(.015) ***	(.015) ***	(.015) ***	(.015) ***
Year						
1980 (ref.)						
1990	-0.024	-0.026	-0.025	-0.032	-0.025	-0.038
	(.016)	(.015)	(.016)	(.016) *	(.016)	(.015) *
2000	-0.002	-0.001	-0.005	-0.011	-0.004	-0.013
	(.015)	(.014)	(.015)	(.015)	(.015)	(.014)
2007	0.016	0.010	0.013	0.007	0.014	0.004
	(.016)	(.015)	(.016)	(.015)	(.016)	(.015)
Interaction Effects						
CA/TX*1980 (ref.)						
CA/TX*1990	-0.031	-0.032	-0.031	-0.037	-0.032	-0.035
	(.018)	(.018)	(.018)	(.018) *	(.018)	(.017) *
CA/TX*2000	-0.081	-0.088	-0.080	-0.094	-0.081	-0.095
	(.017) ***	(.016) ***	(.017) ***	(.017) ***	(.017) ***	(.016) ***
CA/TX*2007	-0.063	-0.066	-0.063	-0.071	-0.062	-0.067
	(.018) **	(.018) **	(.018) **	(.018) **	(.018) **	(.018) **
Demographic characteristics						
Age		0.023				0.019
		(.001) ***				(.001) ***
Age2		-0.000				-0.000
		(.000) ***				(.000) ***
Male		0.099				0.114
		(.005) ***				(.005) ***
Married		0.065				0.062
		(.005) ***				(.005) ***

Educational attainment						
Elementary school or less (ref.)						
Middle school			0.015			0.034
			(.005)	**		(.005) ***
Ninth through high school			0.008			0.042
			(.006)			(.006) ***
Some college through bachelor's			0.058			0.068
			(.013)	*		(.012) ***
Immigration-related characteristics						
Citizenship status				0.014		0.014
				(.006) *		(.006) *
Speaks English				0.049		0.041
				(.004) ***		(.005) ***
Length of Residence in U.S.						
Recent—less than 10 years				-0.130		-0.093
				(.006) ***		(.007) ***
Intermediate—11-20 years				-0.024		-0.019
				(.006) **		(.007) *
Long-term—21 or more years (ref.)						
Work characteristics						
Crop worker					-0.058	-0.040
					(.006) ***	(.006) ***
Weeks worked					-0.001	-0.003
					(.000) ***	(.000) ***
Adjusted R^2	(.005)	(.040)	(.006)	(.031)	(.008)	(.059)

*p< .05; **p< .01; ***p< .001.

[1]Sample restricted to wage workers who usually work 35 hrs per week and worked 12 or more weeks in the previous year.

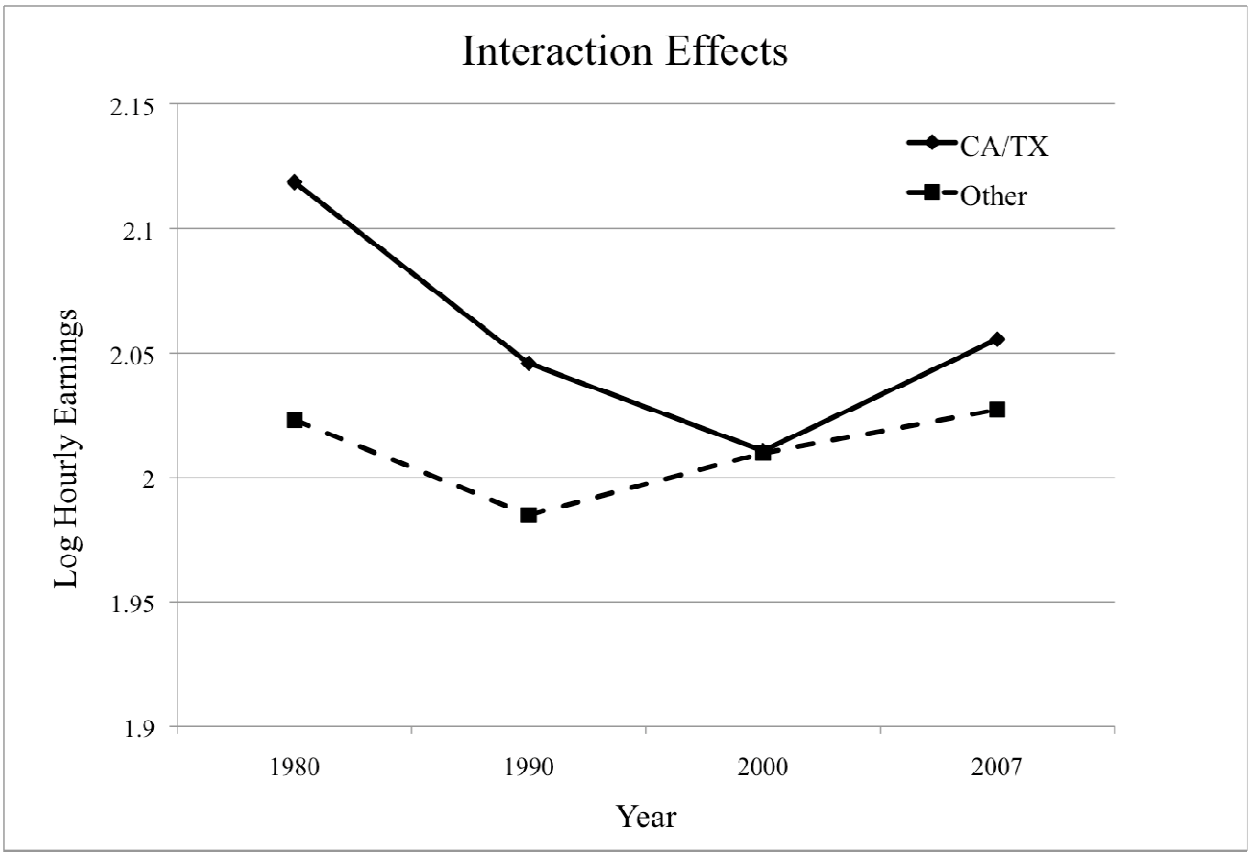

Figure 1. Interactions Effects between Destination Type and Year

Table 4. Decomposition of the Change in Log Hourly Earnings of Mexican-origin Farmworkers 1990-2000

	Overall			CA/TX			Other States		
	Comp.	Structure	Total	Comp.	Structure	Total	Comp.	Structure	Total
Intercept	0.0000	-0.073	-0.073	0.0000	-0.1215	-0.1215	0.0000	-0.2073	-0.2073
CA/TX	-0.0002	-0.039	-0.039	-	-	-	-	-	-
Age	0.0156	0.113	0.129	0.0352	0.0840	0.1192	0.0006	0.3661	0.3668
Age2	-0.0122	-0.027	-0.039	-0.0285	-0.0098	-0.0383	0.0001	-0.1392	-0.1390
Male	-0.0023	0.015	0.013	-0.0042	0.0292	0.0250	-0.0015	-0.0126	-0.0141
Married	-0.0010	-0.001	-0.002	-0.0001	0.0072	0.0070	-0.0017	-0.0260	-0.0277
Middle school	0.0013	0.005	0.006	0.0015	-0.0038	-0.0023	0.0006	0.0313	0.0319
High school	0.0029	-0.001	0.002	0.0020	-0.0058	-0.0038	0.0040	0.0140	0.0180
Some college	-0.0002	0.001	0.001	-0.0007	0.0025	0.0018	0.0002	-0.0015	-0.0013
Citizenship	-0.0025	0.017	0.015	-0.0016	0.0194	0.0178	-0.0051	0.0095	0.0044
Speaks English	-0.0024	0.012	0.009	-0.0039	0.0190	0.0151	-0.0014	-0.0104	-0.0118
Less than 10 yrs	0.0049	0.018	0.023	0.0066	0.0239	0.0305	0.0031	0.0109	0.0141
11-20 yrs	0.0000	0.008	0.008	-0.0001	0.0087	0.0086	0.0000	0.0068	0.0067
Crop	0.0029	-0.071	-0.068	0.0011	-0.0649	-0.0637	0.0058	-0.0566	-0.0507
Weeks worked	-0.0054	0.006	0.000	-0.0042	-0.0194	-0.0236	-0.0031	0.0351	0.0321
Total Change	0.004	-0.017	-0.016	0.0033	-0.0313	-0.0281	0.0016	0.0203	0.0219

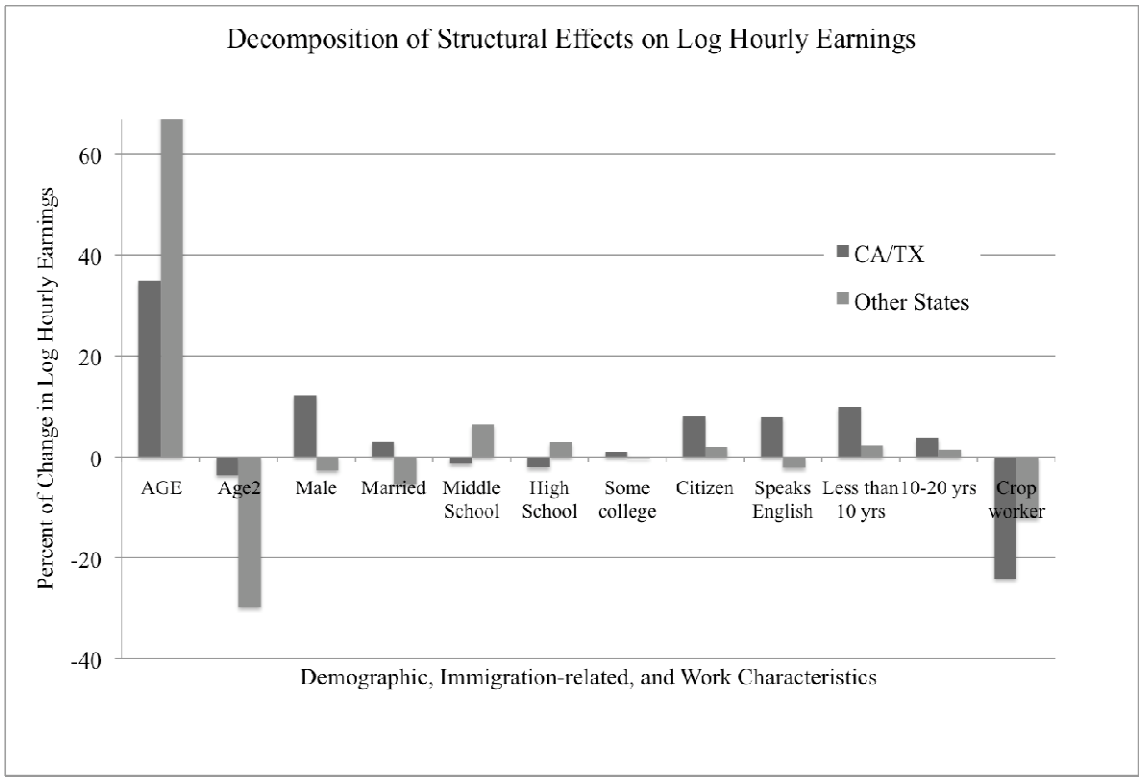

Figure 2.

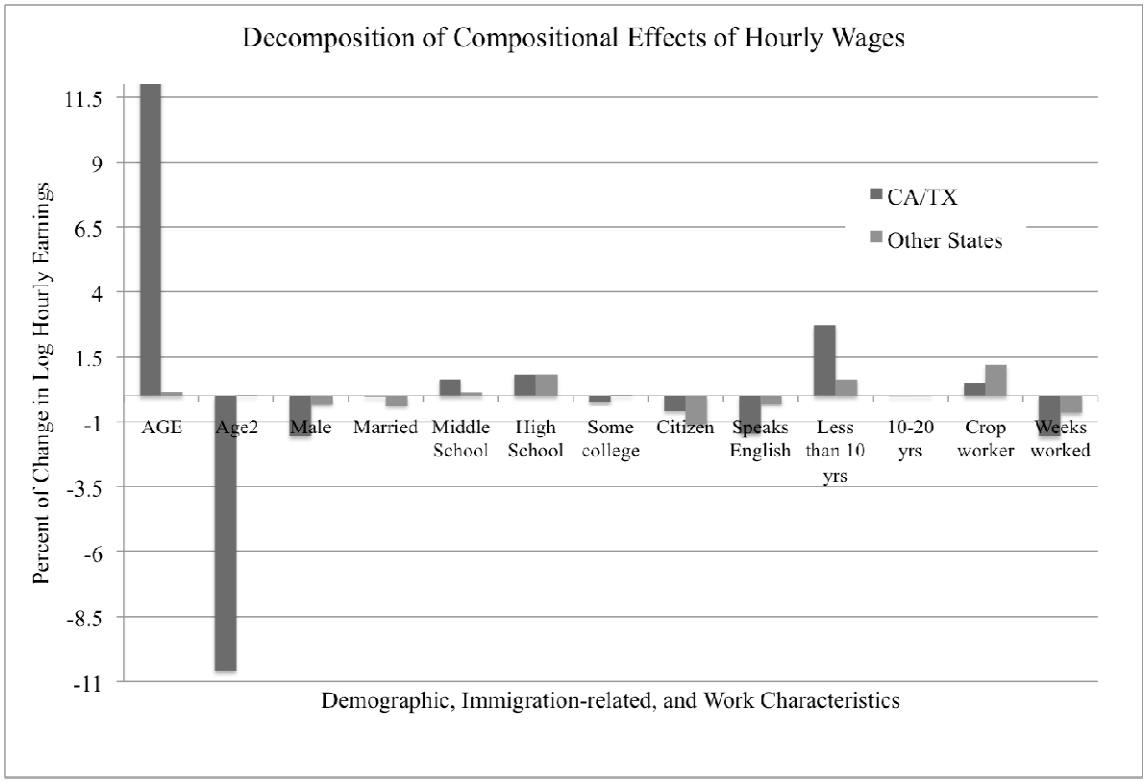

Figure 3.