# Hispanic Economic Outlook

## Fall 2017

### The Report of the Hispanic Economic Outlook Committee

# Letter from the President-Elect
Susan Pozo[*]

Dear Readers of HEO:

I would like to thank the 2016-17 HEO committee, Luisa Blanco, Alberto Dávila, Mark Hugo López, Marie T. Mora and Isabel Ruiz for compiling this issue of the Hispanic Economic Outlook. The 2018-19 committee is composed by: Isabel Ruiz (Harris Manchester College, co-chair), Jose Fernandez (University of Louisville, co-chair), Alberto Dávila (University of Texas Rio Grande Valley), John Francois (West Texas A&M University), Alfredo Romero (North Carolina A&T State University) and Gerard M. Acosta, (United States Army). I am grateful for all the efforts of the committee in scouting for articles and contributions that enrich our membership with information and scholarly inquiry.

The contributions of this season's *Hispanic Economic Outlook* brings us both exciting and troubling news. As Marie Mora and Alberto Dávila note in their report, the labor market progress of different Hispanic origin groups, post-Great Recession, is uneven. It behooves us, as specialists, to encourage further inquiry into understanding the causes of those differing trajectories. Disparities in drowning rates across ethnic and racial groups in relation to the training and employment of lifeguards by ethnic group also causes us to pause, a topic explored by Meyers, Gorsuch, Lai, Steward, Vega and Motachwa. In earlier work, it was found that the increased employment of black lifeguards was associated with reduced black drowning rates. They ask: can similar patterns be found with respect to Hispanics?

Alves Pena discusses her work using the Department of Labor's National Agricultural Workers Survey. She attempts to relate occupational injuries to the productivity of farmworkers, disproportionately of Hispanic origin. In a fourth contribution, I recount my work with co-authors Abeba Mussa and Uwaoma G. Nwaogu concerning how immigration inflows affect housing markets. The price patterns observed, by geography, are consistent with native-flight due to immigration inflows. In short, all four HEO contributions attest to the need for further work and inquiry in understanding the intricacies of and disparities present in today's economy.

With this in mind, I will be assuming the position of President of ASHE during the January 2018 ASSA meetings. In my role, I intend to follow the efforts of each of the previous presidents -- to further strengthen and develop what ASHE offers our membership. I reproduce the goals of ASHE as;

- Promoting the vitality of Hispanics in the economics profession through education, service, and excellence;
- Promoting rigorous research on economic and policy issues affecting U.S. Hispanic communities and the nation as a whole;
- Engaging more Hispanic Americans to effectively participate in the economics profession.

While our organization has surely made progress with all three, please consider how ASHE might further our cause. I invite each and every one of you to continue to contribute your ideas and concerns to the ASHE board. I pledge to work with you throughout the year to make us stronger and more inclusive.

With kind regards,

Susan Pozo, President-Elect

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# Employment Outcomes of the Four Largest Hispanic Groups:
## 2013-2016

Marie T. Mora and Alberto Dávila*

At 5.8%, the 2016 Hispanic unemployment rate was at its lowest annual rate since the Great Recession first got underway.[1] It had also fallen within 0.9 percentage points of the national average (4.9%), indicating that Hispanic workers continued their labor market recovery since the Recession. At the same time, labor market and other socioeconomic and demographic characteristics reported for Hispanics as a group often mask considerable differences that exist within this heterogeneous population. Even without considering other demographic characteristics such as gender, birthplace, migration, and geographic location, Hispanics are comprised of a score of national origin/identity subgroups. Mexican Americans represent the vast majority (nearly two-thirds) of Hispanics in the 50 states plus Washington, DC, followed by Puerto Ricans (nearly one in ten), Salvadorans and Cubans (nearly four percent each), Dominicans (slightly over three percent), and others.[2] In certain regions and states, however, the relative size and rank order of these Hispanic populations vary.



Figure 1: Unemployment Rates by Hispanic Subgroup
2013 - 2016
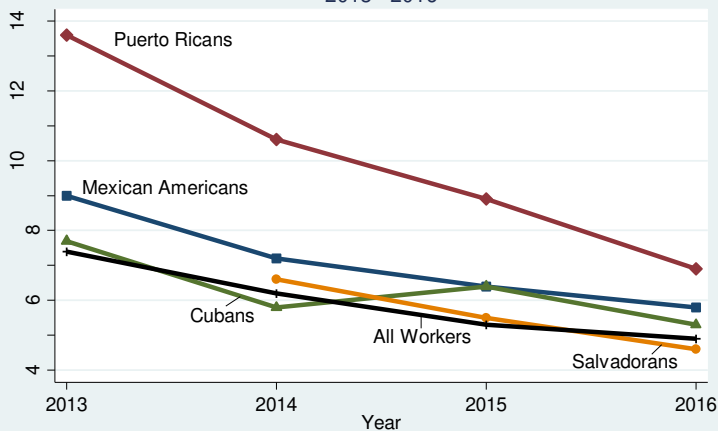
Source: Authors' use of BLS data. See Footnote 1 for details.

Figure 1 presents the unemployment rates for the four largest Hispanic subgroups as well as the national average between 2013 and 2016.[3] With the exception of Cubans, these rates fell consecutively for each of the Hispanic groups, as they did for workers in general. As expected, given they represent the majority of Hispanics, the change in unemployment among Mexican Americans closely followed the change among Hispanics in general. Among Cubans, unemployment rates increased between 2014 and 2015, but fell by 2016, resulting in their lowest rate (5.3%) over the timeframe shown. As such, the general improvement in the Hispanic unemployment rate in recent years was not unique to just one or two specific Hispanic populations.

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[1] The labor force statistics discussed here were downloaded from the Bureau of Labor Statistics (BLS) website (www.bls.gov) during August and September 2017, based on the Current Population Survey. Because the BLS treats ethnicity separately from race, Hispanics can be of any race.

[2] For an overview of these Hispanic subgroups, see the Pew's annual *Statistical Portraits of Hispanics in the United States* (e.g., Stepler and Brown 2016); for more in-depth analyses of the differences, see the various chapters in Rodríguez, Sáenz and Menjívar (2008).

[3] We do not include the employment statistics for Hispanics overall in this report's figures to reduce clutter; Mexican Americans closely mirror those of Hispanics. We also do not report these statistics for Salvadorans in 2013 because the BLS did not begin separately reporting them in their public-use data until 2014.

At the same time, Figure 1 indicates sharp differences across the subgroups, particularly for Puerto Ricans who had considerably higher unemployment rates than those among the other groups, especially earlier in this period. In 2013, the Puerto Rican unemployment rate was 13.6% - 1.5 times greater than the next highest among the Hispanic groups (9.0%, among Mexican Americans).[4] The differences across the subgroups narrowed over time partly due to the sharp drop in the Puerto Rican unemployment rate (which nearly fell in half, to 6.9%) by 2016. Still, even in 2016, the disparity in unemployment between Puerto Ricans and the Hispanic subgroup with the second highest unemployment rate (Mexican Americans, at 5.8%) was greater than the disparity between Mexican Americans and the national average. The unemployment rate among Cubans was half a percentage-point below Mexican Americans that year (5.3%), while the unemployment rate among Salvadorans (4.6%) had fallen below the national average (4.9%).

It follows that while Hispanics in general have benefitted from increased employment opportunities associated with the growing economy, their overall employment status masks differences (some of which are substantial) in the incidence of joblessness that exist within segments of the Hispanic population. The purpose of this report is not to explain why such differences exist, but demographic and socioeconomic characteristics, including gender, migration, geographic location, educational attainment, occupation, among others, presumably play a role.

It should be noted, however, that differences in labor force participation rates (LFPRs) across the Hispanic subgroups do not explain the differences in unemployment rates. Indeed, as seen in Figure 2, consistent with their relatively high unemployment rates, Mexican Americans had relatively high LFPRs (65.9% in 2016).[5] However, Puerto Ricans had the lowest LFPRs (60.1% in 2016) of the four largest subgroups yet the highest unemployment rates, while Salvadorans had the highest LFPRs (72.2% in 2016) but the lowest unemployment rates. This observation implies that if the Hispanic subgroups had similar LFPRs, differences in their unemployment rates would likely have been wider.



Figure 2: Labor Force Participation Rates by Hispanic Subgroup 2013 - 2016

Source: Authors' use of BLS data. See Footnote 1 for details.
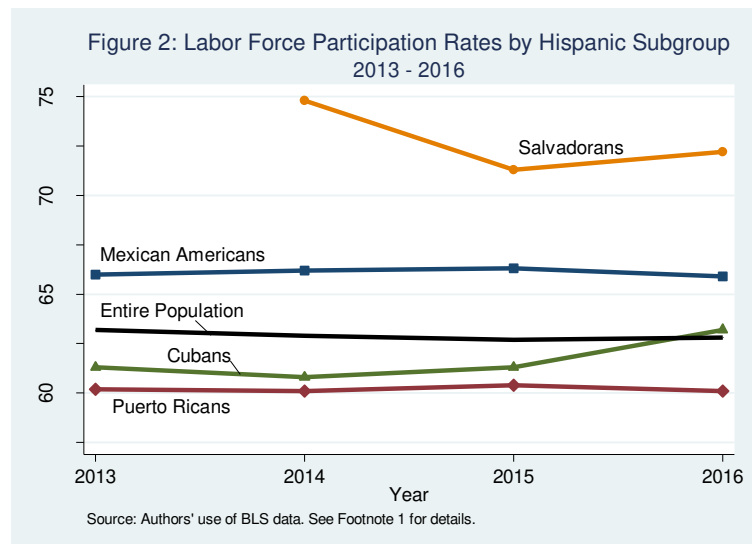
At the same time, the essentially flat LFPRs between 2013 and 2016 for Mexican Americans and Puerto Ricans suggest that the declines in their unemployment rates were primarily driven by true gains in employment rather than discouraged worker effects. Similarly, the rising LFP rates for Cubans (which reached 63.2% in

[4] Along with Havidán Rodríguez, we have also found that the unemployment rates among Puerto Ricans on the mainland were particularly high among those born in the states, but some of the difference relates to the relatively low labor force participation (LFP) rates of island-born Puerto Ricans (Mora, Dávila, and Rodríguez 2017).

[5] For readers unfamiliar with labor market dynamics, there are times when unemployment rates increase as LFPRs rise, as individuals who were previously outside of the labor force begin searching for work; this phenomenon is known as an "added worker effect". Similarly, unemployment rates can fall when individuals unable to find work quit looking (and the LFPR falls), which is known as a "discouraged worker effect". Therefore, it is common for populations with relatively high LFPRs to simultaneously have relatively high unemployment rates, as is the case with Mexican Americans and Hispanics in general.

2016, half a percentage point above the national 62.8% LFP rate) and Salvadorans after 2015 occurred while their unemployment rates fell, again indicating increases in employment among members of these groups.

The rising employment-population ratios (EPRs) for Mexican Americans and Puerto Ricans between 2013 and 2016, and for Cubans and Salvadorans between 2015 and 2016, provide further evidence of employment gains among workers from these four groups (see Figure 3) in the midst of the growing economy. The rank order of the EPRs of the four largest Hispanic groups was the same as for the LFPRs, with Puerto Ricans having the lowest EPR, followed by Cubans, then Mexican Americans, and finally Salvadorans, who had the highest EPRs. The latter group's EPRs considerably exceeded the national average (e.g., 68.9% versus 59.7%, or 9.2 percentage points in 2016). Moreover, despite having higher unemployment rates than workers in general, Mexican Americans also had higher EPRs over this time frame (62.1% in 2016) than the national average. Consistent with their declining unemployment rate and rising LFPR between 2015 and 2016, Figure 2 further shows that the EPR among Cubans (59.8%) had reached the overall EPR in 2016 after lagging behind.



Figure 3: Employment/Population Ratios by Hispanic Subgroup 2013 - 2016

Source: Authors' use of BLS data. See Footnote 1 for details.
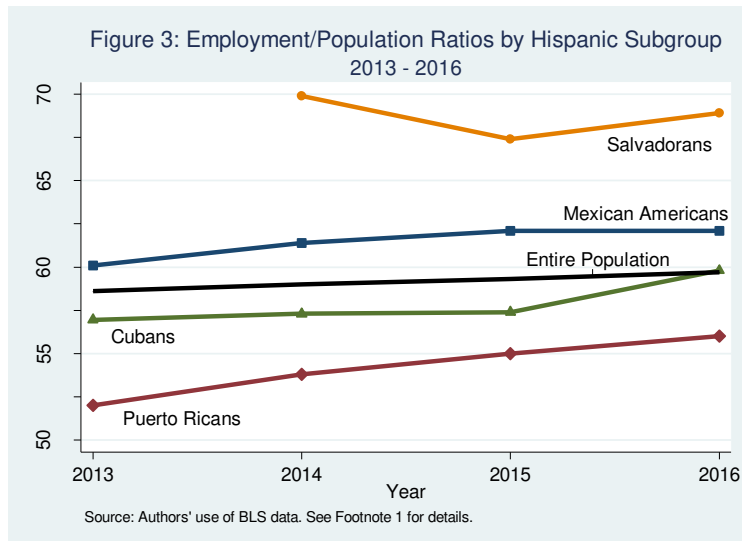
Between 2013 and 2016, Puerto Ricans experienced the greatest increase in their EPRs of the four Hispanic groups (and compared to the national average), both in absolute and in relative terms, as their EPR rose by four percentage points, from 52.0% to 56.0%. Taking together with their declining unemployment rates and rising LFPRs, their rising EPRs indicate that the labor market situation of Puerto Ricans on the mainland has improved considerably in recent years (at least by these measures). Still, this should not be interpreted as a reason to lack concern about their labor market status; despite employment gains, their unemployment rates remain relatively high, and their LFPRs and EPRs are relatively low. If mainland labor markets cannot continue to absorb additional workers migrating from Puerto Rico during the island's unrelenting economic crisis,[6] migration which has been expedited by the tragic and continually unfolding aftermath of Hurricane María, recent improvements in the labor market situation of Puerto Ricans living stateside may be reversed.

In all, this report highlights how labor market outcomes differed across the four largest Hispanic subgroups in recent years. Indeed, some of these differences are larger across these groups than those observed between the overall Hispanic population and the national average. While not addressed here, differences in demographic characteristics (including gender, birthplace, migration, and geographic location) and socioeconomic characteristics (such as educational attainment and occupations) provide additional layers that

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[6] Lasting for more than a decade, Puerto Rico's economic crisis – La Crisis Boricua, which started in 2006 and triggered a humanitarian crisis even before Hurricane María made landfall, has shown no signs to relenting. As a consequence, La Crisis Boricua led to massive net outmigration from the island on a scale not seen since the 1950s, the period of the "Great Migration" (Mora, Dávila, and Rodríguez 2017). In fact, we estimate that between 2006 and 2017, 647,000 migrants left Puerto Rico between 2006 and 2016 (equivalent to 16.5% of the island's 2006 population), approximately three quarters of whom moved to the U.S. mainland. Since Hurricane María, outmigration appears likely to be in the hundreds of thousands; for example, Edwin Meléndez and Jennifer Hinojosa (2017) project that Puerto Rico will lose an additional 470,000 migrants through 2019.

contribute to the heterogeneity of the Hispanic population in the U.S. It follows that national and regional data on Hispanics in the aggregate do not always accurately portray labor market and other socioeconomic outcomes among specific Hispanic groups, a fact that should be kept in mind when interpreting such data.

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# Immigration and Housing Prices
Susan Pozo[*]

While policymakers grapple with settling on an appropriate level of U.S. openness with respect global economic forces, the issue of the impact of immigration on major domestic variables continues to be of relevance. We could observe, in the coming years, a continuation of the rise in immigrant inflows into the US, but it is more likely that we observe that those flows and, perhaps, the stock of the foreign born diminish. In either case, a better understanding of how immigration impacts variables of concern to policymakers and the public at large, can help us adjust to the demographic changes that take place. In this contribution I discuss how housing costs and housing values are affected by variations in immigration flows.

Housing costs and housing values constitute a significant part of households' budgets and portfolio of assets. According to the Bureau of Labor Statistics, about one-third of total expenditures by married couples went toward housing in 2015,[7] while housing wealth accounts for about one-half of total U.S. household net worth.[8] Given the importance of housing costs and housing wealth in households' budgets and portfolios, understanding how immigration inflows influence housing remains an important concern regardless of whether immigration inflows continue to rise or they fall.

**Is there a relationship between immigration inflows and housing costs?**

Recent research by me with my colleagues Abeba Mussa and Uwaoma Nwaogu ("Immigration and Housing: A Spatial Econometric Analysis," *Journal of Housing Economics*, 35, 2017: 13-25), explores the relationship between immigration and housing using the house price index from the Federal Housing Finance Agency and rents from the Department of Housing and Urban Development. We find that immigration inflows into a metropolitan statistical area (MSA) result in a rise in house prices and rents in that MSA. This finding is not at odds with many other previous studies that also find a positive impact of immigrant population inflows on housing prices and rents as, for example, in Saiz (2007), Ottaviano and Peri (2007), Akbari and Aydede (2012) and Gonzalez and Ortega (2013). What is novel about our study is that we relate immigration inflows to prices and rents, not only in the MSA that immigrants move into, but also in surrounding MSAs. That is, we expand the question by asking, how do immigrants into say, the New York metropolitan area**,** affect house prices and rents not only in New York City, but also in surrounding or adjoining MSAs in Connecticut and New Jersey? We introduce a spatial context into our study and ultimately find more nuanced impacts of immigration on housing prices and rents.

It is fairly intuitive to expect housing values and rents to rise in immigrant receiving areas since pressures from greater demand for housing in the face of a fixed or only slowly adjusting upward-sloping supply curve is likely to be relieved with price/rent increases. However, there are a number of scenarios that might have us observe the converse. For example, should immigrant-labor inflows into an area depress wages, reductions in household incomes might ensue. Housing demand may then be tempered, possibly to the point of depressing house prices and rents. A second mechanism that could explain lower housing prices and rents in the face of increased immigration inflows considers the preferences and reactions of the long-term settled native population. Immigration might set off native-flight offsetting positive housing demand pressures from immigration inflows possibly to the point of depressing housing values in the immigrant-receiving areas.

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[7] www.bls.gov/news.release/cesan.nr0.htm
[8] https://www.federalreserve.gov/pubs/ifdp/2011/1027/ifdp1027.htm

Accenturro et al. (2014) and Sá (2015) find immigrant inflows to be associated with declining housing prices in Italy and the UK, respectively, attributing those findings to native-flight. A third scenario that could emerge is that immigrant inflows impact owner-occupied housing prices and housing rents in opposing directions. Using the Mariel boatlift natural experiment, Saiz (2003) found that rents rose in the refugee in-migration areas while house prices declined in those same refugee settlement areas, attributing the decline in house prices to the out-migration of native homeowners.

These findings point to the need to more carefully account for the impact of immigration inflows, not only in the in-migration area, but also in the surrounding areas. Spatial econometric methods are up to this task, estimating the total impact of immigration inflows on house prices (or rents) in a spatial context. The **total** impact of immigration inflows consists of and can be decomposed into two effects.

- The direct effect measures how immigration inflows into, say NYC, affects housing values in NYC.
- The indirect effect measures how immigration inflows into NYC affects housing values in NYC's surrounding MSAs in New Jersey and Connecticut.

The study by Mussa, Nwaogu and Pozo (2017) employs spatial econometric methods during a period of rapidly rising and then tapering of immigration inflows from 2002 through 2012 to explore how those flows affect rents and house prices. Annual rent data for 275 MSAs were obtained from the Department of Housing and Urban Development. The housing price index, compiled by the Federal Housing Finance Agency, consists of annual observations for 282 MSAs. There is nearly complete overlap in the two data sets with 273 MSAs reporting both house price and rent information.

**Descriptive Plots**

Descriptive data on the concepts covered in this article are displayed in the following plots. Annual immigration inflows -- limited to individuals who are granted legal permanent residency (LPR) status -- are displayed in Figure 1 from 2002 to 2012. These annual inflows, (obtained for this summary article from the Migration Policy Institute data hub; 2017) represent only a portion of individuals who might enter the U.S. They do not include individuals admitted on temporary work or student visas nor do they include individuals who enter without inspection. However, LPRs are in the best positon to impact the demand for houses since LPRs are likely to be in households with employed members and are more likely to be thinking of remaining in their current location in the longer-run. The plot reveals considerable variability in LPR inflows over the decade. In 2006 the annual inflow topped 1.25 million but was at close to half of that (around 700,000) in 2003. In the later years of the plot, annual LPR admissions settled at about one million per year. Figure 2 depicts the foreign-born share of the US population over the same time period. It is quite clear that, at least to 2012, the foreign-born share of the US population has continued to gradually rise.

The somewhat distinct patterns observed in Figures 1 and 2 are, of course, not inconsistent. First of all, the LPR plot represents a flow while the bar graph represents a stock with the flows contributing year after year to the stock[9]. The flows are expressed as absolute numbers of immigrant entrants, while the stock is displayed as a share of the total U.S. population. The two concepts differ in yet another respect. Figure 1 incorporates only a subset of the total immigrant inflow – LPRs. The foreign-born stock information displayed in Figure 2

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[9] Lack of systematic information on migrant outflows, makes it difficult to relate migrant inflows to the stock of immigrants.

includes not only LPRs but also immigrants who naturalized in the past, the undocumented, refugees and some temporary visa holders such as students.
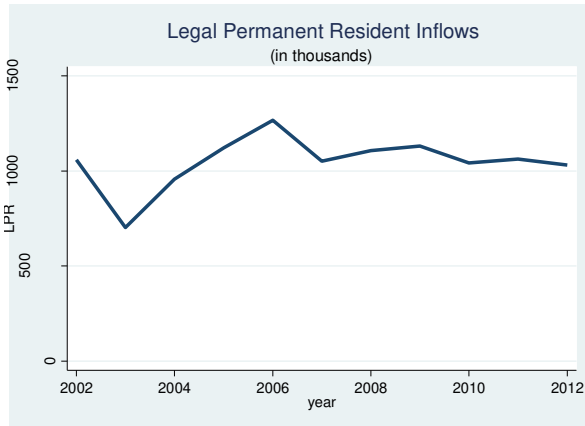
Figure 1



Figure 2
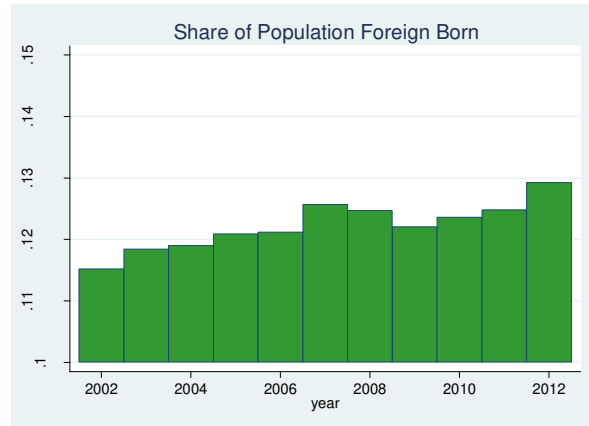


Other variables of interest in this inquiry are house prices and rents. Figure 3 depicts the House Price Index (HPI), which appears to have steadily risen until about 2006, marking the onset of the financial crisis and ensuring Great Recession. Thereafter, the HPI appears to fall year after year, at least until 2012 where we see it possibly edging up once again. This pattern is not shared by the rent series depicted in Figure 4. Rents seem to rise throughout the period, showing a very slight turn around in 2012. In short, the financial crisis did not seem to damper the appreciation of rents and it is only toward the end of the period of study that we observe some softening in the rent series.

Figure 3



Figure 4



In short, immigration inflows have tended to be relatively healthy, with some variation in absolute inflows, but apparently continually contributing to the stock of the foreign-born. Over the same time period, housing prices and housing rents seem to be acting in different ways, with rents overall rising and house prices experiencing depreciation in the aftermath of the financial crisis and Great Recession.

**Modeling house prices and rents**

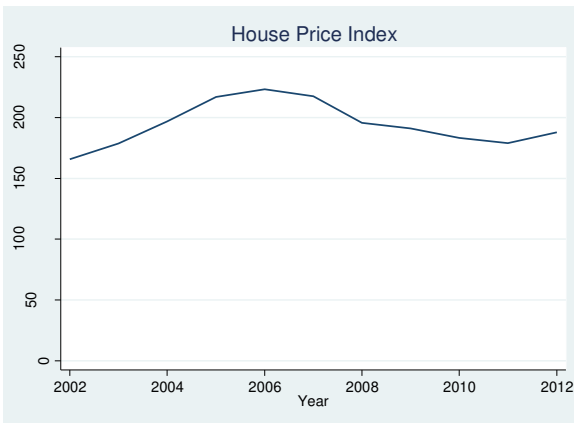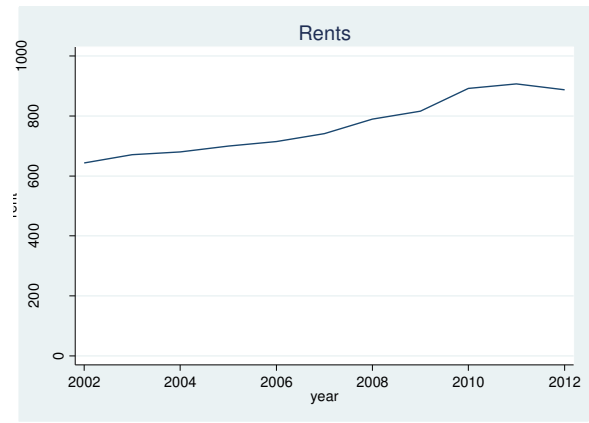That the two indicators of housing costs—house prices and rents -- behave differently should not be too surprising. The rental and single family home markets are distinct and should not be lumped together. However it is not necessarily obvious the role that immigration plays in the two markets. The study by my co-authors and me represents an attempt to tease out the relationship between immigration and the house and rental markets by accounting for many of the complications that are inherent in this environment. To account for these difficulties we

- use the Spatial Durbin model to control for two separate types of spatial dependence—with respect to both dependent and explanatory variables;
- take advantage of variation across time and geography while accounting for fixed effect with the employment of panel methods;
- attempt to achieve identification (to sort out a causal relationship from immigration inflows to housing costs) using appropriately transformed dependent variables;
- employ a two-staged instrumental variables technique with bootstrapped standard errors to better identify any causal relationships that may exist from immigration to house prices and rents.

In addition, my co-authors and I accounted for many other standard conditioning variables in the 282 MSAs used in the house price equation and the 275 MSAs used in the rent equation over each of the 11 years. These are variables that account for crime (murder and burglary rates), population density, economic conditions (measured with the unemployment rate and income per capita), and potential housing supply as measured by the number of housing permits issued by each of the MSAs in each year.

The reader is referred to the Mussa, Nwaogu and Pozo (2017) publication for details on how each of the complications were specifically accounted for in the estimation procedures and for more specifics on the other variables incorporated in the study.

**Results**

A summary of the main outcomes from the spatial Durbin estimations is presented in Table 1. The specification displayed is the one that is most complete, and is the specification that employs best techniques to better infer the existence of a causal link from immigration inflows to housing and rental prices. The positive and significant spatial coefficient, ρ, on both the rent and price equations provides some justification for pursuing a spatial estimation technique as this seems to confirm the existence of positive spatial dependence across MSAs. When home prices or rents rise (fall) in one MSA they tend to rise(fall) in surrounding ones as well.

Turning now to the central question, how does immigration impact house prices and rents? The next row address this with the coefficient values to our main explanatory variable, immigration inflows scaled to the MSA's population in the prior year. These coefficient values reveal the estimated percentage change in rents/house prices in MSA m due to a corresponding increase in immigrants in MSA m equal to 1 percent of its population (in the prior year). The estimates reveal that in both the rent and house markets, immigration (amounting to 1% of MSA m's population) raises rents by a little less than 1 percent (about eight-tenths of a percent) -- what we refer to as the **direct effect**. These are not far off from what others have found, with estimates suggesting that immigration amounting to 1 percent of an area's population raises prices of housing

by about 1 percent. More interesting are the indirect effects emerging from this estimation. An increase in immigrants equivalent to 1% of the MSAs population has an impact that spills over into adjoining MSAs -- raising rents and prices there too. Furthermore an examination of the magnitude of those effects reveal that the **indirect** or **spillover effects** are larger than are the direct effects. Furthermore, the spillover effects in the price equation are much larger than in the rent equation.

| Table 1 Housing and Immigration – spatial Durbin model | | | | | | |
|---|---|---|---|---|---|---|
| | Dependent Variable $\Delta\ln(Rent_{mt})$ | | | Dependent Variable $\Delta log(Price_{mt})$ | | |
| | Direct Effect | Indirect Effect | Total Effect | Direct Effect | Indirect Effect | Total Effect |
| P | | 0.467*** (0.003) | | | 0.877*** (0.003) | |
| Immigration $_t$/Pop $_{t-1}$ | 0.792*** (0.072) | 1.612** (0.777) | 2.404*** (0.728) | 0.810*** (0.047) | 9.594*** (0.520) | 10.404*** (0.539) |
| Conditioning variables | Yes | | | Yes | | |
| Time Fixed Effect | Yes | | | Yes | | |
| | | | | | | |
| Observations | 2750 | | | 2820 | | |

Notes: Standard errors are in parentheses: *significant at 10%; **significant at 5%; ***significant at 1%. Additional conditioning variables (not shown) include the MSA's murder rate, log burglary rate, land per capita, log income per capita, log permit and unemployment rate at the MSA level.

My co-authors and I next consider what might be the channel by which the rent and house price effects spill over into surrounding MSAs and why the indirect effects are so much larger in the house market when compared with the rental market. We explore the possibility that native flight explains these patterns. Immigration inflows could be inducing natives to move out of the immigrant receiving areas and into surrounding MSAs. Furthermore, it is conceivable that native renters in the immigrant receiving areas are the ones that are leaving and that they tend to subsequently purchase houses rather than rent in the adjoining MSAs. This larger shift in demand toward the housing market may explain the relatively large indirect effect estimated in the housing market when compared with the rental market.

| Table 2: Native and Immigrant flows estimation – spatial Durbin Model | | | | | | |
|---|---|---|---|---|---|---|
| | Dependent Variable $\Delta log(natives_{mt})$ | | | | | |
| | Time Fixed Effect | | | Spatial and Time Fixed Effect | | |
| | Direct Effect | Indirect Effect | Total Effect | Direct Effect | Indirect Effect | Total Effect |
| ρ | 0.127* (0.066) | | | 0.124* (0.066) | | |
| log Immigration $_{t-1}$ | -0.053*** (0.005) | 0.075*** (0.018) | 0.020* (0.018) | -0.053*** (0.005) | 0.081*** (0.017) | 0.028* (0.018) |
| Conditioning variables | Yes | | | Yes | | |
| | | | | | | |
| Observation | 2730 | | | 2730 | | |

Notes: Standard errors are in parentheses: *significant at 10%; **significant at 5%; ***significant at 1%. Additional conditioning variables (not shown) include the MSA's murder rate, log burglary rate, land per capita, log income per capita, and unemployment rate at the MSA level.

The results in Table 2 corroborates the idea that natives are moving out in response to immigration inflows. In Table 2 we reproduce the critical results from estimating the spatial Durbin model for sorting out the impact of immigration into an MSA on changes in the native population. An examination of the coefficient values under the columns labeled "direct effect" and "indirect effect" of immigration on natives show that, indeed, immigration inflows into MSA m lead to native outflows from MSA m (negative direct effect) and native inflows into the surrounding MSAs (positive indirect effect).

**Discussion**

The results of the study suggest that immigration does have important impacts on the house and rental markets. Immigration into an MSA appears to cause some modest increase in housing and rental prices in that MSA, but the bigger impact is on prices for housing and rents in adjoining and surrounding MSAs which enjoy increases by quite a bit more. Further analysis seems to show that these patterns are driven, in part, by native flight from immigrant receiving areas.

What do these results suggest concern the housing and rental markets in the years to come? If the current rhetoric concerning immigration continues and immigration is slowed considerably, it is conceivable that we will see softening of house prices and rents in current immigration receiving areas. MSAs that are traditional gateways for immigrants may see some reversals in housing values and in rents. But what about the indirect effects that we observed? Will the surrounding MSAs also see declines in housing values and rents? Since it appears that a major contributor to the healthy increase in prices in surrounding MSAs over the past decades are linked to native population flows away from immigrant gateways, future price patterns may very well depend on how natives respond to slower immigration in gateway MSAs. Will natives move back to the gateway areas? Or, will this generation of natives stay put in the surrounding MSAs? High transactions costs would suggest that the current population would stay put. But how their offspring behave will likely depend on the location of jobs and other amenities sought by current generations.

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# The Labor Market for Lifeguards and Hispanic Drowning Rates

Samuel L. Myers, Jr., Marina Gorsuch, Yufeng Lai, Devan Steward, Diana Vega Vega and Rachel Motachwa[*]

Accidental drowning is a leading cause of death among young persons. It is the third leading cause of accidental death world-wide, the second leading cause of accidental deaths among persons 1–14 years of age in the United States and the leading cause of accidental deaths among persons 1–14 years of age in China (WHO, 2017). In the United States, there are wide racial and ethnic disparities in drowning rates among persons under 29 years of age (Gilchrist and Parker, 2014). American Indians and African Americans under 29 years old are 1.95 and 1.44 times more likely to be victims of fatal drownings than are whites. In the 10- to 14-year age group, African Americans are an astonishingly 3.7 times more likely to drown than whites. Overall, Hispanics are only slightly more likely to drown than whites (1.04 times). But, in the 20–24 year age group, Hispanics are 1.39 times more likely to drown than are whites.

In a recent paper, Myers, Cuesta, and Lai (2017) reported that increases in the number of lifeguards reduced the drowning rates for blacks but not for whites. Myers, et al. also reported that there was a strong inverse relationship between competitive swimming rates among African Americans and black drowning rates. That paper provided a heuristic labor market model that linked black drowning rates to black participation in competitive swimming through a narrative that argues that competitive swimming is associated with the training and employment of lifeguards and that the supply of minority lifeguards increases when there are more minorities participating in competitive swimming programs. The argument goes further to posit that minority drowning rates are lower when there are more *minority* lifeguards (Myers and Lai, 2017). The argument is that minority lifeguards serve as role models for young minority swimmers; encourage them to play safely; have better crowd management skills; and are unlikely to discriminate against minority swimmers. Using a variety of model specifications and estimation techniques, the authors find a strong and robust inverse relationship between black drowning rates and black lifeguard supply and black competitive swimming rates.

What, then, is the connection between *Hispanic* lifeguard rates and their drowning rates? Might there be an explanation for the disproportionate drowning rates among Hispanic young adults in their relative supply of lifeguards? To test this hypothesis, the authors have replicated the model of lifeguard supply and drowning rates among blacks using data on Hispanics.

Data on fatal unintentional drowning[10] are compiled from Centers for Disease Control public use files on Fatal Injury Reports 2003–2016. Given that Hispanic drowning disparities are greater for such age groups as 20–25 year olds, the data set compiled includes non-Hispanic whites and Hispanics ages 1–29 and also those who

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[10] Fatal unintentional drowning means accidental deaths due to drowning or submersion. Excluded are homicides, suicides, or drowning deaths arising from legal intervention or war.

are 20 to 29 years of age. The analysis here focuses exclusively on the impacts of lifeguard supply on drowning rates.

The supply of lifeguards is determined by computing from the annual Current Population Survey March Supplement files for the years 2003–2016 the share of persons employed in the occupational category of lifeguards and other security officials.[11] This category excludes police officers, firefighters, private security guards, and other law enforcement personnel. *Table 1* reports the ratio of probabilities of being a lifeguard for ages 15–24, 24 and over, all ages and for the years 2003–2008, 2009–2016, and 2003–2016.

**Table 1**

| Ratio of White-Non Hispanic to Hispanic and Black Lifeguard Rates | | | |
|---|---|---|---|
| | 15-24 | 25 and over | All Ages |
| | | | |
| 2003-2008 | | | |
| White/Hispanic | 5.24 | 1.06 | 2.47 |
| White/Black | 5.45 | 0.43 | 1.26 |
| 2009-2016 | | | |
| White/Hispanic | 2.76 | 1.18 | 1.84 |
| White/Black | 3.53 | 0.58 | 1.26 |
| 2003-2016 | | | |
| White/Hispanic | 3.26 | 1.14 | 2.03 |
| White/Black | 3.53 | 0.58 | 1.44 |

Source: Author's calculations from IPUMS-CPS, March Supplement

Across all age groups and years, white non-Hispanics are more than twice as likely to be lifeguards as are Hispanics. In the 2003–2008 period, white non-Hispanics were more than five times as likely as Hispanics to be lifeguards among those 15 to 24 years of age. This disparity drops to 2.8 to 1 in the period of 2009–2016 for younger lifeguards. Still, the overall disparity is 3.26 to 1 in the period of 2003–2016 among persons 15 to 24 years of age. The central implication of these findings is that there are wide disparities in the employment of white vs Hispanic lifeguards and these disparities are most prominent among younger workers.

Similarly, the black-white disparity in lifeguard employment is concentrated among the youngest age group of 15- to 24-year-olds.  In 2003–2008, whites were more than five times as likely as blacks to be employed as lifeguards in the 15- to 24-year age group. In the period from 2009 to 2016, whites were 3.5 times as likely as blacks to be employed as lifeguards.

Clearly, there are wider disparities in lifeguard employment rates between Hispanics and white non-Hispanics than between blacks and whites. White non-Hispanics are twice as likely to be lifeguards as are Hispanics, for the years 2003–2016 and for all age groups. The corresponding disparity for whites versus blacks is 1.44 to one.

To examine whether there are advantages of higher rates of employment of Hispanics as lifeguards in preventing unintentional drowning fatalities, we graph the relationship between drowning rates for Hispanics ages 1–29 years of age against overall Hispanic lifeguard rates. *Figure 1* reveals that there is a weak inverse

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[11] There were several changes in the codes for lifeguards in the years prior to 2003. For the purposes of this essay, we use the common CPS definition of lifeguards found beginning in 2003.

relationship between Hispanic drowning rates and the supply of Hispanic lifeguards, in contrast to the strong inverse relationship found previously between black drowning rates and black lifeguard supply. Due to data availability, the comparison between Hispanic lifeguard supply and Hispanic drowning rates is restricted to the years 2003–2015 at the national level.

**Figure 1**

**Hispanic Drowning Rate vs. Lifeguard Rate**



$y = -0.196\ln(x) - 0.5629$
$R^2 = 0.1475$
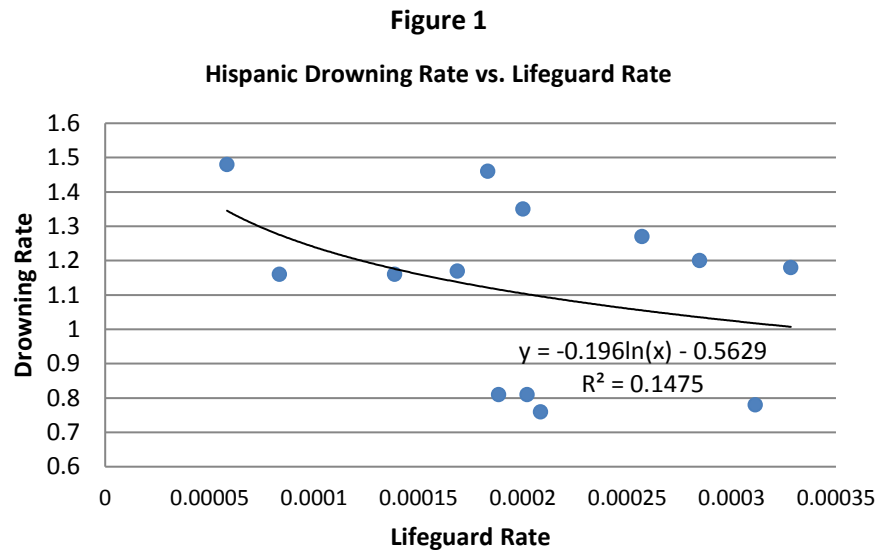
Despite the weak inverse relationship between Hispanic lifeguard supply and Hispanic drowning rates, the sizeable ethnic differences between the probability of lifeguard employment might translate into non-trivial numbers of unnecessary Hispanic deaths due to drowning. Controlling for age, education, marital status, number of children, attending high school while working fulltime or part-time, attending college while working fulltime or part-time, veteran status, and health status, we find that between 46 percent and 77.5 percent of the gap between the Hispanic lifeguard rates and the white non-Hispanic lifeguard rates cannot be explained.[12] Economists often refer to this unexplained disparity as *discrimination*.

While there may be other reasons for the unexplained gap—e.g., factors that are unobserved or omitted from the model—it is instructive to estimate the drowning rates under the scenario wherein this unexplained gap is eliminated. *Figure 2* converts drowning rates into numbers of drowning deaths. It reports the actual annual drowning deaths (blue line) and the estimated deaths (red line). The grey line in the figure shows the difference between the actual number of drowning deaths and the estimated number when the "unexplained" portion of the gap in drowning rates is eliminated. The gold area in the graph shows the cumulative difference between the actual drownings and the "discrimination-free" drownings, or those where the "unexplained" portion of the disparity is eliminated. Each year there is a potential for saving of from four to 30 Hispanic lives through the elimination of measured discrimination against Hispanics in lifeguard employment. The cumulative total adds up to 188 lives saved. The year-by-year totals are displayed in *Table 2*.

**Figure 2**

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[12] In the model specification reported herein, we also control for post-2011, a period when there was a sharp drop in Hispanic drowning rates. The unexplained gaps are computed using the Oaxaca two-fold decomposition method.

## Hispanic Lives Saved Through Reduction in Discrimination in Lifeguard Labor Market
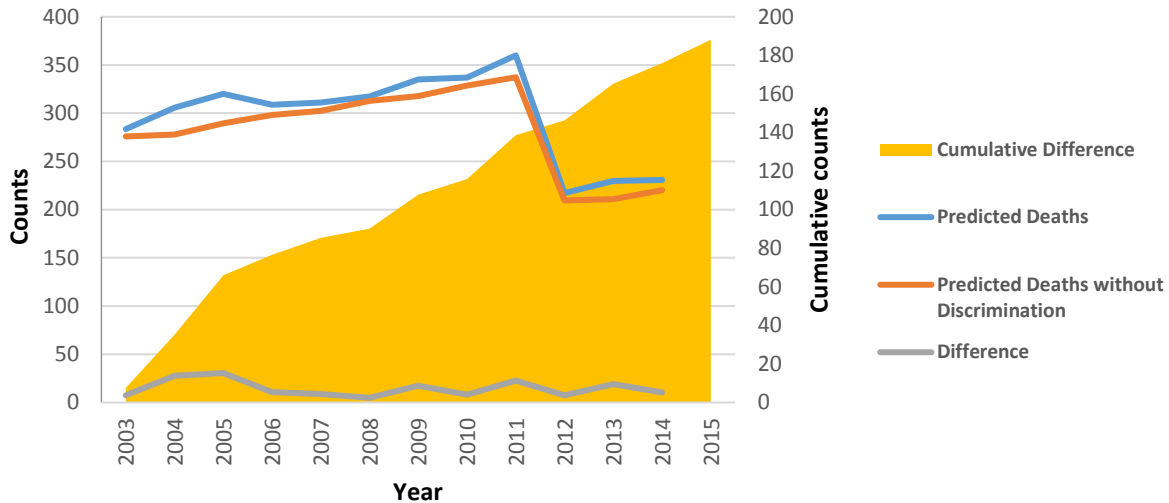


Most of the lives saved are for persons 15 to 24 years of age. Assuming annual losses of $76,316.47[13] a year due to premature death from drowning and assuming a life expectancy of 75 years of age and 55 years of foregone earnings, the gross cost of these 188 lives lost is $789,112,299.80, or nearly a billion dollars. It is hard to know what it would take to produce the additional Hispanic lifeguards whose presence, according to the model estimates, would induce fewer drownings. But to the friends and family members who have lost a young adult to drowning, even the paltry $76,000 estimate of foregone earnings grossly underestimates the loss. To society as a whole, those 188 lives lost due to discrimination might mean, for example, fewer teachers, fewer dentists, and carpenters and therefore, fewer tax-payers. Moreover, among those 188 arguably are fewer lifeguards and fewer water safety instructors. So, even if it costs $1 billion dollars to eliminate observed discriminatory gaps in Hispanic versus white Non-Hispanic lifeguard employment rates, it would be $1 billion efficiently invested in making for a better world.

One way to increase lifeguard employment rates among Hispanics is to expand existing organizations such as the USA Swimming Association's "Make a Splash" campaign and target racial minority group members who are underrepresented in the competitive swimming world. Another way to increase lifeguard employment among minorities is to expand publicity about why and how lives can be saved by expanding minority access to swimming careers. Programs such as that sponsored by Sigma Gamma Rho Sorority, Inc. elevate the exposure to swimming among racial minority groups. Sigma Gamma Rho Sorority, Inc., a historically black organization founded in 1922 at Butler University in Indianapolis, is the presenting sponsor at the 2017 FINA World Junior Swimming Championships at the Indiana University Natatorium (USA Swimming, 2017). Through its *Swim* 1922, Sigma Gamma Rho sponsors water safety programming and community pools throughout the country (Taylor, 2016). The organization boasts, among its members, Maritza McClendon, the first black female swimmer to make a U.S. Olympic swim team and Alia Atkinson, who broke the 100-meter breaststroke world record at the Rio Olympics. Maritza, born in Puerto Rico and raised in Florida, is an excellent role model for minorities of all ages.

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[13] This figure is based on Hirth, et al. (2000) and expressed in 2017 dollars.

**Table 2**

| YEAR | Predicted Deaths | Predicted Deaths without Discrimination | Difference | Cumulative Difference |
|---|---|---|---|---|
| 2003 | 283.3626 | 275.8624 | 7.5002 | 7.500244 |
| 2004 | 305.5859 | 277.7861 | 27.7998 | 35.30011 |
| 2005 | 319.9362 | 289.3706 | 30.5656 | 65.86566 |
| 2006 | 308.7155 | 298.0115 | 10.704 | 76.56964 |
| 2007 | 311.183 | 302.3903 | 8.7927 | 85.36234 |
| 2008 | 317.4277 | 312.5695 | 4.8582 | 90.22052 |
| 2009 | 335.1067 | 317.6344 | 17.4723 | 107.6928 |
| 2010 | 337.0088 | 328.7596 | 8.2492 | 115.9419 |
| 2011 | 359.943 | 337.2025 | 22.7405 | 138.6824 |
| 2012 | 217.116 | 209.5439 | 7.5721 | 146.2545 |
| 2013 | 229.8332 | 210.8067 | 19.0265 | 165.281 |
| 2014 | 230.6552 | 220.0529 | 10.6023 | 175.8833 |
| 2015 | 234.043 | 221.8443 | 12.1987 | 188.0819 |

The FINA World Junior Swimming Championships will bring together the world's top 18-and-under swimmers, who are vying for the 2020 Olympics in Tokyo. These nationally televised competitions offer the hope of seeing more Hispanics and other minorities compete, and will inspire many youths to obtain their certifications as lifeguards. The resulting increase in lifeguards will help reduce minority drowning rates.

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# Occupational Injuries, Pain and Productivity of U.S. Farmworkers

## Anita Alves Pena[*][14]

Although the agricultural sector employs only a small percentage of the total U.S. workforce, agricultural workers face some of the most extreme occupational safety and health hazards in the country and agriculture consistently has one of the highest proportions of occupational-related injuries and fatalities. Agricultural workers are highly mobile and a large percentage of this special population is Hispanic and undocumented. Given these features, data collection is notably difficult and data sources for reliably studying occupational safety and health in agriculture are scarce. Furthermore, funding for education, training and health service interventions continue to be restricted and scientific evidence related to the true economic cost of negative health outcomes in agriculture is limited.

The U.S. Department of Labor, Employment and Training Administration's National Agricultural Workers Survey (NAWS) is one data source which has been purported as offering national representative data on hired workers in crop agriculture due to its distinctive sampling design based on employment locations as opposed to housing.  Although questions about injuries have been included in several survey waves, responses to these have not been released publicly until recently. The most recent release therefore provides an opportunity to identify broad patterns between worker characteristics and injuries, to ask if and how farm injuries are related to economic productivity outcomes, and ultimately to better understand potential costs.

In a recent conference paper, I examine both short and long-run worker outcomes. Particularly, I examine wages per hour and hours per week to better understand short-term outcomes in terms of worker wellbeing and contributions to the farm labor force. Likewise, I examine time allocations over the course of the year across work in different sectors, time spent not working, and time spent abroad as longer-run worker indicators of losses to productivity.

While there is some indication of annual time allocation differences between those who report injuries and those who do not, no notable relationships are found with regards to wages or hours per week.  Although not conclusive, this suggests that economic effects of injuries may be more discernable over a longer as opposed to shorter time frame. Finally, I argue that this analysis further points to data limits and continuing questions, and illustrates the continued need for new and creative data sources beyond the NAWS for ongoing study informing public policy.

**Methods and Findings**

The NAWS is both a worksite-based, nationally and regionally representative sample survey of employed U.S. farmworkers based on several agricultural regions which has been conducted seasonally since 1989. Survey weights are used in analysis to account for the sampling design. I focus on identifying associations between binary variables indicating the presence of a farm injury within the last year and indicating work-related

musculoskeletal pain respectively, and several productivity outcome variables.[15] The data also include a wide variety of demographic and work-related characteristics and attributes including detailed information on legal status.[16]

Although the overall public-use NAWS sample spans 1989-2014, both the injury and the pain variables are constructed based on questions that only were asked in survey years 1999-2004, 2008-2011, and again in 2014. There are 26,994 observations in this final pooled sample. The fraction reporting injuries is around two percent of this sample (0.75 percent of workers report injuries but not pain and 1.21 percent report both injuries and pain). Those reporting musculoskeletal pain alone are 17.28 percent of the overall sample. Approximately 81 percent of the sample neither reports injuries nor pain.

**Demographic Associations with Farmworker Injuries and Pain**

Table 1 allows for examination of broad patterns across groups in order to better understand which demographic and work-related factors are associated with occupational injury. Key observations are that the injured subsample is more highly comprised of men than is the subsample reporting pain alone, or neither injury nor pain. These patterns may relate to female risk aversion being higher all else equal as documented elsewhere (and hence fewer injuries), or may be due to differences in reporting propensities or other sample characteristics among other possible explanations.

Education, farm experience and tenure with current employer are highest for the subsample reporting both injuries and pain. On the other hand, a higher fraction of the non-injured and no pain sample reports being undocumented than of the other categories. This observation could be due to systematic differences in reporting for the purpose of retaining employment when legal status is uncertain, or could be due to increased caution around hazards than otherwise similar workers because of limited health insurance coverage, medical treatment options, and access to worker compensation. Workers with neither injuries nor pain also are more likely to be younger and to have limited family in the U.S., which is further indication that the composition of these workers may be fundamentally different than the broader sample.

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[15] The questionnaire of the NAWS survey instructs surveyors to state the following: "I would like to ask you some questions about injuries or accidents that you may have had in the last 12 months while doing farm work in the United States…They could also be things like:…

…injuries from a car accident traveling to and from work;

…cutting yourself with a sharp tool or knife;

…hurting yourself lifting heavy objects, such as crates;

…hurting yourself by falling, for example falling off a ladder or crate, or tripping in the field; or

…getting sick from working too long in the hot sun, being bitten or stung by an insect, or

breathing pesticides while working in the fields." The public use version of the data then includes the question: "Have you had any injuries that were like what I just described to you?"

A second question asks about whether the worker had any occupationally-related musculoskeletal problems in the year preceding the interview. The farmworker is then asked: "During the last 12 months [from Oct. of last year until now (month of current year)], have you had pain or discomfort?"

[16] The NAWS is well-known within farming communities as a confidential survey. Only about one percent refuse to answer the legal status questions, though some misreporting is likely due to the sensitivity of the topic.

**Table 1: Survey-weighted Means of Demographic and Work-Related Variables by Reported Injury and Pain Categories**

|  | Injury Only | Pain Only | Both | Neither |
|---|---|---|---|---|
| Female=1 | 0.16 | 0.31 | 0.18 | 0.23 |
| Age (years) | 35.27 | 36.81 | 36.63 | 33.59 |
| Education (years) | 7.93 | 7.29 | 8.20 | 7.63 |
| Farm Experience (years) | 11.65 | 12.61 | 13.31 | 10.48 |
| Tenure (years) | 5.89 | 5.60 | 6.69 | 4.81 |
| Hourly=1 | 0.88 | 0.80 | 0.82 | 0.82 |
| Piecerate=1 | 0.05 | 0.14 | 0.09 | 0.12 |
| Combo Pay=1 | 0.01 | 0.02 | 0.04 | 0.03 |
| Salary=1 | 0.06 | 0.04 | 0.05 | 0.03 |
| Has Spouse in U.S.=1 | 0.50 | 0.47 | 0.53 | 0.41 |
| Children in U.S. (number) | 1.24 | 0.82 | 0.91 | 0.80 |
| U.S. born=1 | 0.26 | 0.25 | 0.32 | 0.23 |
| Naturalized Citizen=1 | 0.03 | 0.06 | 0.07 | 0.03 |
| Green Card or Other Auth.=1 | 0.32 | 0.26 | 0.24 | 0.22 |
| Undocumented=1 | 0.39 | 0.43 | 0.37 | 0.52 |
| Speaks English=1 | 0.33 | 0.35 | 0.47 | 0.32 |
| from Mexico=1 | 0.72 | 0.70 | 0.66 | 0.73 |
| Field Crops=1 | 0.26 | 0.15 | 0.20 | 0.15 |
| Fruit Crops=1 | 0.25 | 0.34 | 0.34 | 0.36 |
| Horticulture=1 | 0.27 | 0.18 | 0.24 | 0.22 |
| Vegetables=1 | 0.21 | 0.29 | 0.19 | 0.24 |
| Misc. Crops=1 | 0.02 | 0.04 | 0.04 | 0.04 |
| Pre-harvest=1 | 0.12 | 0.19 | 0.20 | 0.23 |
| Harvest=1 | 0.16 | 0.27 | 0.21 | 0.26 |
| Post-Harvest=1 | 0.17 | 0.14 | 0.20 | 0.12 |
| Semi-skill=1 | 0.26 | 0.20 | 0.21 | 0.23 |
| Other Task and Supervisor=1 | 0.30 | 0.20 | 0.18 | 0.16 |
| California=1 | 0.22 | 0.37 | 0.30 | 0.35 |
| East=1 | 0.15 | 0.13 | 0.17 | 0.15 |
| Southeast=1 | 0.20 | 0.15 | 0.09 | 0.11 |
| Midwest=1 | 0.18 | 0.17 | 0.21 | 0.17 |
| Southwest=1 | 0.13 | 0.08 | 0.07 | 0.08 |
| Northwest=1 | 0.13 | 0.10 | 0.16 | 0.13 |
| Observations | 203 | 4,665 | 326 | 21,800 |

Notes: For binary variables (noted as "=1" above), sample averages are interpreted as fractions.

The fraction of respondents indicating good English-speaking ability and both injury and pain is relatively high. This finding is contrary to the expectation that injuries may be more frequent when training activities and materials may be presented in a language mismatched to a large part of the workforce. There are also associations with crops, tasks and regions.

**Relationships between Injuries, Pain, and Worker Outcomes**

Injuries and occupational-related pain may reduce economic productivity which may be measured via wages received, especially in the case of piece rate workers who are paid based on physical output delivered. In fact, workers who are paid piece rate disproportionately appear in the subsample that indicates pain, a feature possibly consistent with performing strenuous physical work quickly. Productivity also may be measured based on time usage (hours or weeks worked). As such, six outcome variables are considered in linear regression models of (1) natural logarithmic wages, (2) hours in farmwork per week, (3) weeks of farmwork per year, (4) weeks worked in other sectors, (5) weeks spent not working, and (6) weeks spent abroad. These outcomes are meant to approximate effects on worker productivity both via wages and hours in the short term and time allocations over the longer term. Table 2 gives marginal effects from a model examining associations between injuries and pain and these six productivity proxies.

**Table 2: Marginal Effects of Injuries from Accidents and Pain on Worker Productivity Outcomes**

|  | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
|  | LOG WAGE (2014USD) | HOURS PER WEEK | FARM WORK WEEKS IN LAST YEAR | NON-FARM WORK WEEKS IN LAST YEAR | NON-WORK WEEKS IN LAST YEAR | WEEKS ABROAD IN LAST YEAR |
| Injury | -0.00484 | 1.047 | 5.304*** | -1.515 | -1.492* | -1.723* |
|  | (0.0159) | (1.464) | (1.318) | (1.138) | (0.859) | (0.937) |
| Pain | -0.000880 | -0.438 | -0.929* | 0.910* | 0.183 | 0.396 |
|  | (0.00738) | (0.478) | (0.516) | (0.510) | (0.439) | (0.408) |
| Injury*Pain | 0.0199 | -1.575 | -2.877 | -2.103 | 3.882** | 0.141 |
|  | (0.0269) | (1.928) | (2.069) | (1.428) | (1.803) | (1.232) |
| Observations | 27,090 | 27,272 | 27,694 | 27,694 | 27,694 | 27,694 |
| R-squared | 0.330 | 0.136 | 0.208 | 0.127 | 0.183 | 0.256 |

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; regressions include demographic and work-related characteristics as in table 1 including a linear time trend, and a constant. Injury and pain (and their interaction) are binary variables.

There are no statistically significant patterns between injuries and either of the short-run productivity outcomes of hourly wages received or hours worked per week. Although not conclusive, this is seemingly not consistent with hypotheses of compensating wage differentials associated with types of work which may result in injury and pain. Over the course of the year however, there are some notable effects on week by week time allocations. Particularly, workers who reported injuries reported more than five more weeks worked in farmwork all else equal on average in comparison to workers who did not report injuries and pain. In contrast, these workers experienced fewer weeks not working (neither farm nor non-farm) and fewer weeks spent abroad. Workers with pain but not injuries had fewer farm work weeks but more non-farm work weeks on average. This would be consistent with modified work that is interrelated with pain. Likewise, injury and pain together was strongly associated with more (more than two) weeks without any work.

**Discussion and Conclusions**

While the results show some statistically significant relationships, they fall short of indicating true economic significance and the direction of causality. This is due to both the limits of the released information in the public use dataset and to sample selection. It is possible for example that there is substantial attrition from the sample by those with severe injuries given that the sample is representative of only those who are currently working. Workers in the sample therefore who report injuries are those who experienced relatively

minor injuries and were able to return to work, and these may not be the most economically significant types of agricultural injuries. Analysis of the effects of injury reports on economic outcomes also provides limited insight. Those who spend more time working, for example, may be more likely to be injured, and pinpointing the direction of relationships is beyond the scope of this work.

This analysis reaffirms the importance of alternative data sources that may offer more complete data on both workers who experience injuries and return to work, and those who experience injuries and do not. Details pertaining to different types of accidents and specific timing are not included in the public-use NAWS data. Social and economic costs of farm injuries extend beyond value of time and labor productivity, and may include physical and physiological impacts on individuals, families, and communities that are associated with morbidity and mortality, medical care, worker compensation programs, and a wide variety of other opportunity costs. Future and more complex data collection therefore will be crucial for understanding more about true costs associated with farm injuries and pain.

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