Updated Estimates of Hispanic-White Wage Gaps for Men and Women

Peter McHenry[a] and Melissa McInerney[b]

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Abstract

We incorporate controls for cost of living in updated estimates of Hispanic-white wage gaps for men and women using the National Longitudinal Survey of Youth 1997 (NLSY97). Conditional on pre-market skills (i.e., years of education and AFQT score) and cost of living, Hispanic men earn significantly lower hourly wages than non-Hispanic white men. The gap is concentrated among men with relatively low levels of education—high school degree or less. Conditional on pre-market skills, Hispanic women earn significantly *higher* wages than non-Hispanic white women, but the difference disappears after controlling for cost of living. We also show that non-immigrant Hispanics in the NLSY97 are rather representative of non-immigrant Hispanics in the U.S. overall (measured with the larger American Community Survey). However, immigrant Hispanics in the NLSY97 have higher levels of education and wages than the immigrant Hispanics in the ACS, even after restricting to those ACS respondents who have been in the U.S. since 1997. Researchers should take this limitation into account when extrapolating results for Hispanic immigrants in the NLSY97 to the Hispanic population as a whole.

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[a, b] Department of Economics and the Thomas Jefferson Program in Public Policy at the College of William and Mary, Williamsburg, VA, USA.
Email addresses: pmchenry@wm.edu (P. McHenry) and mpmcinerney@wm.edu (M. McInerney)

1. Introduction

Concern about labor market discrimination motivates the investigation of wage gaps between Hispanic and other ethnic groups (e.g., non-Hispanic whites). An additional motivation is concern over the assimilation of immigrants in the labor market, since many immigrants to the U.S. have Hispanic origins. Finally, the Great Recession of 2007-2009 reduced employment and wages across a wide swath of the U.S. labor market, but there is concern that minority groups bore a disproportionate share of labor market losses (see, e.g., Hoynes, Miller, and Schaller 2012; Winters and Hirsch, 2012).[1]

In this paper, we provide estimates of recent wage differentials between Hispanic and non-Hispanic white workers using the 1997 cohort of the National Longitudinal Survey of Youth (NLSY97). Acknowledging that selection out of the labor force could bias wage gap estimates, we account for such selection by imputing potential wages for non-workers and focusing on differences in median wages across groups (Johnson, Kitamura, and Neal, 2000; Neal, 2004). The NLSY97 data allow us to account for important differences between workers that might impact wages. First, we include a proxy for labor market skills, score on the AFQT test, to provide comparisons between similarly capable workers (Neal and Johnson, 1996), as well as a control for years of education (Lang and Manove, 2011). After including these controls, we find modest evidence of a wage penalty for Hispanic men and evidence of a wage premium for Hispanic women.

However, these estimates are sensitive to the inclusion of controls for ethnic differences in local costs of living, a control shown to be important in estimating wage gaps by race and

[1] Defreitas (1986) demonstrated with earlier data that employment among Hispanics was more sensitive to the business cycle than employment among whites and blacks.

ethnicity (Black et al., 2012; McHenry and McInerney, 2014). We demonstrate that Hispanics live in locations (e.g., cities) with significantly higher average housing costs than non-Hispanic whites. Consistent with this finding, we show that conditional ethnic wage gap estimates are very sensitive to the inclusion of cost-of-living controls; including a control for cost of living reduces Hispanic wages, relative to whites, by between 0.06 and 0.1 log points. After we include controls for labor market skills and cost of living, we find a statistically significant wage penalty for Hispanic men and no statistically significant wage differences between Hispanic and non-Hispanic white women. The wage penalty estimates for Hispanic men are driven by non-Mexicans and by less-educated workers.

We also provide some evidence about how well the National Longitudinal Surveys of Youth represent the U.S. Hispanic population, as measured by the 2010 American Community Survey (ACS). Hispanic immigrants in the NLSY97 cohort have significantly higher hourly wages and education levels than Hispanic immigrants with the same birth years in the ACS. However, U.S.-born Hispanics in the NLSY97 are very similar to U.S. born Hispanics in the ACS, so we focus on wage gap estimates in U.S.-born populations.

2. Related Literature

When estimating wage differentials between Hispanics and whites, it is critical to incorporate those factors that have been shown to be important in estimates of black-white wage gaps—AFQT score, years of education, and local cost of living—as well as selection out of the labor force (see, e.g., Neal and Johnson, 1996; Lang and Manove, 2012; Black et al., 2012; McHenry and McInerney, 2014). Of course, it is also important to account for factors specific to Hispanics in the U.S. Since they are a heterogeneous group and many have recent immigration in their family histories, empirical specifications should allow flexibility by immigrant status and country of origin or heritage (Trejo, 1997). Further, since many Hispanics acquire fewer years of labor market experience than their white counterparts, many estimates also include controls for actual labor market experience so that estimates capture wage differentials conditional on a broad set of labor market productivity differences (see, e.g., Antecol and Bedard, 2002, 2004; Duncan et al., 2006). Previous estimates of Hispanic wage differentials incorporate some, but not all of these important factors, and prior estimates are derived from different datasets at different points in time.

Further, the estimates of the wage gap fall in a wide range. In a seminal chapter about the progress of Hispanics in the labor market, Duncan et al. (2006) write, "…while the employment and earnings of Hispanics tend to lag behind those of whites, almost all of the differences relative to whites can be accounted for by a relatively small number of measures of human capital, namely, years of schooling, English proficiency, and potential work experience" (p. 228). Accordingly, there are several estimates of no ethnic wage differences for men (e.g., Fryer, 2011). However, other recent estimates find a wage penalty of between 0.1 and 0.12 log points for Hispanic men (Black et al., 2012; Winters and Hirsch, 2012), as shown in Appendix Tables A1 and A2. In this paper, we incorporate in a common dataset at a single point in time the factors shown to be important in estimating conditional wage gaps across ethnic groups. We therefore derive updated estimates of Hispanic-white wage gaps and provide guidance into the importance of these various factors.[2]

[2] It is also important to control for English proficiency when estimating Hispanic wage differentials. Unfortunately, the English proficiency variable in the dataset used in this analysis, the NLSY97, is not comparable to the English proficiency variable in the Decennial Census, American Community Survey, or Current Population Survey. Therefore, we do not include English proficiency in the estimates presented here.

Following Neal and Johnson (1996), we include a common control for a worker's pre-market skill: the respondent's score on the Armed Forces Qualification Test (AFQT). On average, Hispanics have lower AFQT scores than non-Hispanic whites, and since there is a wage return to a higher score on the AFQT, omitting the test score results in overstated estimates of Hispanic wage penalties. Neal and Johnson (1996) find that including a respondent's AFQT score can reduce estimated wage penalties among young Hispanic workers by between 0.11 and 0.14 log points. However, although the AFQT was administered to respondents of the NLSY97 (and NLSY79), this important measure of pre-market skill is not available in many of the datasets used to derive Hispanic-white wage differentials, such as the Decennial Census, American Community Survey (ACS), or Current Population Survey (CPS). Instead, these other datasets include a measure of the highest degree of education attained, which may mis-measure how well Hispanics perform relative to whites. In the estimates presented in this paper, we are able to include a control for AFQT score, as in recent estimates that use the NLSY79 or NLSY97 (e.g., Black et al., 2012; Fryer, 2011).[3]

Recent work by Lang and Manove (2011) shows that controlling for AFQT score in a regression without also including years of education is appropriate only if, conditional on AFQT, Hispanics and whites attain the same level of education. The authors first present a model of statistical discrimination and educational sorting that is consistent with minority groups acquiring more years of education than whites, conditional on AFQT score. Consistent with the model, Hispanics in the NLSY79 obtain higher levels of education than whites, conditional on AFQT scores: Hispanic men with AFQT scores in the middle of the distribution acquire 0.7

[3] The NLSY79 and NLSY97 are used for most of the recent estimates of black-white wage gaps, so there is not as much variability in the measure of pre-market skill included in this literature.

more years of education than whites, and Hispanic women acquire one additional year of education. To our knowledge, the present work is the first to incorporate both AFQT score and years of education in estimates of Hispanic wage gaps.

Both Black et al. (2012) and Winters and Hirsch (2012) present recent estimates of wage penalties for Hispanic men after including detailed controls for cost of living. Both estimates include Metropolitan Statistical Area (MSA) fixed effects as well as indicators for observations in the balance (non-MSA area) of the state. Using the NLSY97, Black et al. (2012) find a wage penalty of 0.10 log points in 2009 after controlling for age, AFQT score, and detailed location. Winters and Hirsch (2012) use the Current Population Survey (CPS) and find an hourly wage penalty of 0.13 log points in 2010 for native workers, after controlling for education but not AFQT score. We reconcile these estimates by controlling for AFQT score and examining the wage differential among all Hispanic men (i.e., native born as well as immigrants) and non-immigrants only. To our knowledge, our estimates of Hispanic-white wage differentials for women are the first to include a control for cost of living.

Failing to account for selection out of work could overstate how Hispanic men perform in the labor market relative to white men if Hispanic men with low potential wages are more likely to select out of work than white men. In fact, Duncan, Hotz, and Trejo (2006) show that Hispanics get less labor market experience than whites, which suggests that accounting for selection out of work may have an important impact on estimates of wage differentials. To our knowledge, Winters and Hirsch (2012) is the only study that examines the role of selection out of work in estimates of Hispanic-white labor market outcomes, though they estimate differences in *annual earnings* (not hourly wages). They find that including imputed earners widens the earnings gap by 0.02 log points, from 0.13 log points to 0.15 log points. To our knowledge, our estimates are the first to account for selection out of work in estimates of ethnic disparities of hourly wages for men or women. For women, neglecting selection out of work would result in Hispanics appearing to perform better if Hispanic women with *low* potential wages are more likely to select out of work than white women and if white women with *high* potential wages choose not to work more frequently than Hispanic women.

Recent trends in immigration play a large role in the composition of the U.S. Hispanic population. Assimilation and changes in immigrant selection over time imply that wage gaps between Hispanic and non-Hispanic white U.S. workers may change substantially across time and generations. Trejo (1997) shows that Hispanics' labor market outcomes, relative to whites', improve with successive generations among Americans with Mexican heritage (e.g., between immigrants and their children). This evidence suggests that researchers should carefully consider how to incorporate controls for immigrant status. The prior literature includes estimates that restrict attention to native born Hispanics and whites only (e.g., Winters and Hirsch, 2012; Antecol and Bedard, 2002, 2004) as well as estimates that may pool immigrant and non-immigrant Hispanics (e.g., Black et al., 2012; Fryer, 2011; Neal and Johnson, 1996). We present estimates that pool immigrant and non-immigrant Hispanics and include an indicator variable control for immigrant status. We also present separate estimates of wage differentials among non-immigrants alone. In estimates of *annual earnings* differentials, Winters and Hirsch (2012) find that adding immigrants to the estimation sample actually *reduces* the wage penalty from 0.13 log points to 0.12 log points. One possible explanation for this is given in Duncan and Trejo (2012), who find that among men with less than a high school degree, foreign-born men are more likely to work than native born men.

We also note that the category "Hispanic" includes a heterogeneous set of groups with quite different experiences of the U.S. Some studies focus on a more narrowly-defined group based on country of family origin, such as Mexican (e.g., Trejo, 1997; Antecol and Bedard, 2002, 2004). We also present separate estimates for Hispanics of Mexican descent both because the sample size in the NLSY97 is sufficient to estimate wage differentials for this group and because, as Trejo (1997) shows, individuals of Mexican descent have long been one of the most economically disadvantaged in the U.S.

As shown in Duncan et al. (2006), Hispanics have fewer years of actual labor market experience than whites. Therefore, comparing white and Hispanic individuals with the same *potential* experience would tend to understate the human capital white workers have developed. We expect that estimates of Hispanic-white wage differences that only include controls for a worker's age or potential experience would result in Hispanics appearing to earn lower wages, relative to whites. Antecol and Bedard (2004) show that differences in education and labor market experience account for a little more than half of the Hispanic-white wage gap among men, and Antecol and Bedard (2002) show that the same variables account for most of the Hispanic-white wage gap among women. In more recent estimates, Alon and Haberfeld (2007) report higher conditional wages of Hispanic relative to non-Hispanic white women after controlling for experience. For comparability to the prior literature, and to quantify the return to an hour of work for workers with similar human capital, we also present estimates that include a control for actual labor market experience.

3. Data and Empirical Strategy

3A. Estimating Strategy

We begin by providing ordinary-least squares (OLS) estimates of the wage gap between Hispanic and non-Hispanic white workers in the 2010 survey of the NLSY97, conditional on standard human capital controls. The NLSY97 is a longitudinal survey of 8,984 individuals who were 12 to 16 years old when first interviewed in 1997 and 25 to 31 years old in 2010. The data include detailed information about hourly wages, labor force participation, educational attainment, and Armed Forces Qualification Test (AFQT) score.[4] We acquired the restricted-use files so that we can identify respondents' counties of residence within the U.S. (to measure local cost of living). Our initial estimation equation on a sample of Hispanic and non-Hispanic white respondents is:

$$Ln(wage_i) = \propto\ + \beta HISPANIC_i + \delta_1 age_i + \delta_2 age_i^2 + \varepsilon_i \quad (1)$$

where $HISPANIC_i$ is an indicator for person *i* having Hispanic origins. The estimate for β represents the conditional ethnic wage difference.

We then examine the impact of accounting for selection into the workforce. In recent work, the most common approach to address selection is to impute a potential wage for the non-workers in the sample, and estimate median regressions of wage differentials (e.g., Johnson et al., 2000; Chandra, 2003; Neal, 2004). We assume that the imputed wage and the wage an individual could potentially earn (potential wage) fall on the same side of the conditional median. Under this assumption, wage gap estimates are consistent for the population median but are not sensitive to the chosen imputed value.

[4] The AFQT is a test used by the U.S. armed forces to allocate personnel across tasks. NLSY97 respondents took the AFQT regardless of their military affiliation. We use the AFQT score as a measure of cognitive ability. It is a strong positive predictor of wages.

Our approach differs for men and women. For men, we impute a low potential wage of $1 in two alternative ways. In some specifications, we impute a low wage for all non-working men, where "non-working" means that the respondent recorded zero weeks of work in 2008, 2009, and 2010. In other specifications, we impute a low wage for non-working men who have no post-secondary education.

For women, we account for differential selection by imputing low and high potential wages. We impute a low potential wage of $1 for those non-working women who: (1) received any benefits from the Temporary Assistance for Needy Families (TANF); Women, Infants, and Children (WIC); Food Stamp; or other welfare programs between 2006 and 2010; (2) have a high school degree or less education; and (3) report no spousal income in the previous five years. We adopt these strict criteria to reduce the chance of errors because systematically imputing erroneously-low potential wages for women of one ethnic group would impact our estimate of racial wage differences. For example, improperly imputing low potential wages for white women would result in overstated Hispanic relative wages.

We impute a high potential wage for non-working women who meet the following two criteria: (1) married to a high earning spouse and (2) earned at least some college education. We define "high earning spouse" in two ways. In our more conservative estimate, a high earning spouse has average annual earnings over the past five years that place him at or above the 90th percentile for men of his ethnic group in the 2010 NLSY97. We then broaden this definition somewhat to include women whose spouse earns above the 75th percentile for men of his ethnic group. Improperly imputing high potential wages for Hispanic (but not non-Hispanic) women would result in overstated Hispanic relative wages. These criteria for imputation help ensure that the imputed wages are on the same side of the median as the respondent's potential wage;

however, adhering to these criteria leaves several groups of non-working women without imputed wages, such as highly educated, unemployed, single women.[5] If our decision rule leaves more highly skilled non-Hispanic white women without an imputed wage than similar Hispanic women, then we would overstate relative Hispanic wages.[6]

The estimation in Equation (1) does not control for labor market skills, although they may differ between Hispanic and white workers. In order to compare similar Hispanic and white workers' wages, our preferred specifications control for respondents' AFQT scores and years of education. The AFQT score is a strong predictor of wages and a very helpful proxy for a person's cognitive ability (Neal and Johnson 1996). If, conditional on AFQT score, Hispanic workers acquire more years of education than white workers, then omitting years of education bias upward the coefficient estimate for the Hispanic indicator variable (Lang and Manove 2011). So, we also estimate wage gap specifications that control for years of education.

We also control for local cost of living in our preferred wage gap estimates. To justify these controls, we demonstrate that Hispanic and non-Hispanic white women face systematically different costs of living. Figures 1a and 1b illustrate the density of where Hispanic and non-Hispanic white respondents to the 2010 decennial census live, by county. These figures show that both Hispanics and non-Hispanic whites are concentrated in large, urban areas. The most striking difference between the two figures is that Hispanics are nearly exclusively located in

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[5] We include respondents who are temporarily unemployed in our main OLS sample if they were working and had an observed wage in 2009 or 2008.

[6] We do not impute wages for 105 non-working women in the NLSY97. 46 of these women had at least some college education. Including these women would increase our sample size by only 2.5 percent and is unlikely to impact estimates of the wage gap.

those large, urban areas. There are large swaths of the country where the Hispanic population in a county is only between 0 and 1,000.

To incorporate the differences in the cost of living by where Hispanics and non-Hispanic whites live, we construct a cost index to proxy for local costs of living. We measure locations as commuting zones (CZs), which are collections of counties that have significant economic integration, measured by journey-to-work links (Tolbert and Sizer, 1996). In metropolitan areas, CZs and metropolitan statistical areas (MSAs) overlap significantly. The CZ definition provides economically meaningful boundaries in rural areas, which are often dropped from analyses or pooled together within a state.

Since housing is the most important local price in consumers' budgets, we examine differences in housing costs for Hispanic and non-Hispanic respondents to the NLSY97 in 2010. Table 1 describes average housing costs in CZs where the Hispanic and non-Hispanic white men and women in the 2010 wave of the NLSY97 live. That is, we calculate average gross monthly rent (including utility costs) for 2 and 3 bedroom dwellings in each CZ with the pooled 2009 to 2011 ACS.[7] Column (1) shows Hispanics face higher costs of living on average: the Hispanic men in our sample face a mean monthly rent of $1,014 versus $856 for non-Hispanic men (women's costs of living show the same pattern). This difference is statistically and economically significant, and the remaining columns of the table show that Hispanics face higher

[7] The smallest identifiable area in the ACS is the public use microdata area (PUMA), a Census-defined place with population over 100,000. Some PUMA boundaries do not perfectly align with counties. When this is the case, we assign PUMA characteristics to a CZ based on the PUMA's population share in the CZ (see McHenry, forthcoming). The housing cost variable is similar to the one in Moretti (2013).

rent at several quantiles of the cost-of-living distribution. These very large differences imply that it is important to control for cost of living when comparing earnings between Hispanics and non-Hispanic whites. Otherwise, the comparison will overstate the standard of living that Hispanics can afford with their earnings.

For the wage regressions, we construct a measure of relative housing costs for each CZ using the method in McHenry and McInerney (2014).[8] We define relative housing costs as the mean rent in a CZ divided by the average rent over all CZs. We use these relative housing costs to construct a cost of living index that reflects that housing costs comprise only 41 percent of household expenditures (from the 2011 consumer price index (CPI-U) calculation).[9]

Incorporating these methods, our preferred estimate of the Hispanic-white wage gap is the estimate for β in:

$$Ln(wage_i) = \propto + \beta HISPANIC_i + \gamma_1 AFQT_i + \gamma_2 AFQT_i^2 + \delta_1 age_i + \delta_2 age_i^2 + \phi COL_i + \lambda EDUC_i + e_i \quad (2)$$

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[8] Banzhaf and Farooque (2012) compare alternative methods for measuring local housing costs and find that average rental prices perform well: they are closely associated with housing transaction price data (which are more costly to collect), and rental prices are closely associated with measured local amenities and average incomes.

[9] That is, the CZ housing cost measure is computed as follows:

$HousingCost_{CZ} = \frac{MeanRent_{CZ}}{\left(\sum_{CZ=1}^{N} MeanRent_{CZ}\right)/N}$ and the cost of living is computed as

$CostofLiving_{CZ} = .4146 * HousingCost_{CZ} + .5854 * 1$. The 41.46 percent housing expenditure share in 2011 is from the Bureau of Labor Statistics web page (http://www.bls.gov/cpi/cpiri2011.pdf).

This equation includes local cost of living (*COL*) and measures of labor market skills: AFQT score and years of education (*EDUC*). We estimate Equation (2) using OLS and median regression. The observed log hourly wage among workers is the dependent variable for our OLS estimates. Median regression estimates also include non-workers with imputed potential wages, as described above.

3B. NLSY97 Data

Tables 2a and 2b describe the samples of non-Hispanic white and Hispanic respondents we use in our analysis of wage differences. Table 2a focuses on men, while Table 2b focuses on women. Columns (1) and (2) present descriptive statistics for the Hispanic and non-Hispanic white respondents in the samples we use for our OLS analysis, who worked and have valid wage information in 2010, 2009, or 2008. We first collect wage data from the 2010 survey,[10] but for those missing wages in 2010, we impute the 2009 wage if it is available and otherwise the 2008 wage if it is available. We convert wages to 2010 dollars using the Consumer Price Index (CPI-U). Unconditional mean and median hourly wages are higher for non-Hispanic white workers than Hispanic workers, for both men and women. Of course, comparing unconditional means (or medians) does not take labor market skills into account. Years of education, AFQT scores,[11] and

[10] The variable we use is the hourly wage at the current or most recent job.

[11] Schooling and experience influence AFQT scores, so our AFQT score variable is standardized by birth year (or equivalently, age when taking the test). We calculate the mean and standard deviation of raw AFQT scores within each birth year cohort. Our AFQT variable is the difference between a respondent's raw score and the cohort mean, divided by the cohort's standard deviation. The method follows Neal and Johnson (1996).

work experience are all greater in the non-Hispanic white subsamples than the corresponding Hispanic subsamples (men and women).

Columns (3) through (6) of Table 2a describe the subsamples of men for whom we impute low potential wages (non-workers and non-workers with no post-secondary schooling). Within ethnic group, non-working men have lower AFQT scores and fewer years of education than workers. The differences are much more pronounced in the sample of men with no post-secondary schooling (columns 5 and 6). Columns (3) through (8) of Table 2b present descriptive statistics for women with imputed potential wages. Women with low imputed wages (columns 3 and 4) have much lower education and AFQT scores than workers in their own ethnic group, while women with high imputed wages (columns 5 through 8) have relatively high education levels and AFQT scores. While our imputation rules imply that the education differences mechanical, the differences in AFQT scores between respondents who have valid wages and respondents with imputed wages (low or high) tend to support our imputation levels.

4. Results

In Table 3, we present the coefficient estimate for β from Equation (1). Results for men are in columns (1) through (4), and results for women are in columns (5) through (8). For men, we find that on average, Hispanic men earn 12.8 percent less per hour than white men of the same age.[12] Since outliers can influence OLS estimates, in column (2) we present the median regression analog of equation (1). The estimate (-0.131) is very similar in magnitude to the corresponding OLS estimate. We note that these estimates do not take into account selection out of the labor

[12] The coefficient estimate is -0.1375, so the (conditional) percent difference is 100*[exp(-0.1375)-1]=-12.8.

market, even though selection patterns may differ across ethnic groups. Therefore, in columns (3) and (4) we account for selection out of the labor market in two different ways.[13] In column (3), we impute a low potential wage for all non-working men, as in Johnson, Kitamura, and Neal (2000). We note that accounting for selection out of work in this way slightly reduces the Hispanic penalty, from 0.133 log points to 0.118 log points. This is likely because 72 percent of non-working men are white.[14] In column (4), we now only impute a low potential wage for those non-workers whose highest level of education is a high school degree or less. We now only impute a low potential wage for half as many white men, and the Hispanic wage penalty becomes slightly larger, now 0.126 log points.

In columns (5) through (8), we now present results for women. In column (5) we see that, on average, Hispanic women earn 0.055 log points (5.4 percent) less per hour than white women of the same age. Median regression estimates yield a similar result—a penalty of 0.068 log points. For women, we address selection out of the labor force by imputing wage values for certain groups of non-working women under the assumption that imputed wages fall either below or above the conditional median. In column (3), we add 52 women to the sample, 11 with high imputed wages and 41 with low imputed wages. We find that the conditional wage penalty for Hispanic women falls slightly, from -0.068 log points in column (6) to -0.0786 log points in column (7). In column (8), we add to the sample 15 women whose spousal earnings fall between

[13] For men, we always assume that imputed wages fall below the conditional median wage.

[14] In column (3), where we do not impose a restriction by educational attainment, we impute a low potential wage for 90 white men and 35 Hispanic men. In column (4), where we only impute a low potential wage for men with a high school degree or less, we impute a low potential wage for 45 white men and 21 Hispanic men.

the 75th and 89th percentiles in the distribution of earnings. We continue to find a negative and statistically significant wage penalty.[15]

In Panel II, we add controls for a respondent's AFQT score (and its square). Including this proxy for cognitive skill has a dramatic effect on estimates of the Hispanic wage penalty. For men, estimates of the penalty fall by more than half. That is, the Hispanic wage penalty falls from 12.8 percent in Panel I to 6 percent in Panel II. Estimates with median regression are even more striking: coefficient estimates are even closer to zero and no longer statistically significant. For Hispanic women, in all cases we find that including a control for AFQT score results in a *wage premium* for Hispanic women of 9.8 percent (column 5). Estimates in columns (7) and (8) show that this wage premium is not explained away by accounting for selection.

In Panel III, we consider the role of educational attainment. Lang and Manove (2011) show that after controlling for AFQT score, Hispanic men in the NLSY79 obtain between 0.3 and 0.7 more years of education than white men with the same AFQT score, and Hispanic women acquire between 0.72 and 1 additional years of education. If patterns of educational attainment by ethnicity are similar in the NLSY97, then we would expect that the estimates in Panel II are biased upward. We first examine patterns of educational attainment by ethnicity, conditional on AFQT score in the NLSY97 by regressing years of education on an indicator for Hispanic ethnicity, age (and its square), and AFQT score (and its square). Although we find the coefficient on Hispanic is positive, it is small and not statistically significant (for men, the

[15] We impute a low potential wage for 13 Hispanic women and 28 white women. In column (7), we impute a high potential wage for 3 Hispanic women and 8 white women. In column (8), we impute a high potential wage for one additional Hispanic woman and 14 additional white women.

coefficient estimate is 0.09 with a standard error of 0.12, and for women the coefficient estimate is 0.16 with a standard error of 0.12).[16] Not surprisingly, when we include a control for years of education, the estimates in Table 3 change very little for men or women.

The bottom panel in Table 3 also includes a control for cost of living in an area. Figures 1a and 1b and Table 1 showed that Hispanics live in CZs characterized by higher cost of living, as measured by mean housing rents. We find that the estimate of the wage penalty for Hispanic men falls dramatically after controlling for local cost of living, now ranging between 8 percent and 12 percent. Including a control for cost of living eliminates all estimates of a wage premium for Hispanic women. None of the coefficient estimates is statistically significant, and the magnitudes of the coefficients are very close to zero. This suggests that it is critically important to include a measure of the cost of living so as not to overstate Hispanic wages relative to white wages in estimates of ethnic wage gaps.

4A. Wage Differences Among Non-Immigrants

The estimates in Table 3 include both immigrants and non-immigrants. Labor market experiences of immigrants may differ substantially from those of born in the U.S., especially among Hispanics. Since individuals are only included in the NLSY97 data if they were in the United States in 1997, we were concerned that the survey would not do a good job representing Hispanic immigrants, in particular those who arrived between 1997 and 2010. Consequently, we

[16] The corresponding estimates are somewhat larger in magnitude and achieve statistical significance in the older cohort in the NLSY79: 0.18 for men and 0.41 for women. This suggests that differential patterns in educational attainment by ethnicity have gotten smaller in younger cohorts.

examine how representative the Hispanics in the NLSY97 are of U.S. Hispanic residents with the same ages in 2010.

In Table 4, we examine mean hourly wages and years of educational attainment in 2010 for Hispanics in the NLSY97 and Hispanics in the 2010 American Community Survey (ACS). The ACS is a very large survey that is designed to be representative of U.S. residents each year. We first observe that Hispanics in the NLSY97 report higher hourly wages and more years of education than the Hispanics in the ACS. However, when we compare non-immigrants, we see that the Hispanics in the NLSY97 are quite comparable to the non-immigrant Hispanics in the ACS.

One notable difference between the immigrants in the NLSY97 and the ACS is that those immigrants in the NLSY97 are restricted to have been in the U.S. since 1997. When we restrict attention to Hispanic immigrants in the ACS who have been in the U.S. since 1997, we still find that Hispanic immigrants in the NLSY97 have higher mean wages and more years of education. We infer that this means that the NLSY97 does not include as many less-skilled immigrant Hispanics as the ACS. In fact, only 53 percent of Hispanic immigrants in the NLSY97 have a high school degree or less education whereas 68 percent of male Hispanic immigrants in the ACS (who were in the U.S. before 1997) are in this lower education category.[17] Not only is there a smaller share of Hispanic immigrants in the NLSY97 with lower levels of education, but the less-educated Hispanic immigrants in the NLSY97 have higher mean hourly wages and more years of education. Among men, mean hourly wages in this group are $14.75, versus $13.30 for

[17] For women, the corresponding shares are 59 percent of Hispanic immigrant women in the NLSY97 are less educated, versus 63 percent of the Hispanic immigrant women who were in the U.S. before 1997.

their counterparts in the ACS. And the less-educated Hispanic men in the NLSY97 acquired 11.57 years of education, on average, versus 9.9 among their counterparts in the ACS. Since the NLSY97 is much more representative of the non-immigrant Hispanic population, we now examine our main results among non-immigrant Hispanics and non-immigrant whites.

In Table 5, we restrict the sample to non-immigrants (i.e., we drop both Hispanic and white immigrants).[18] For men, the pattern of the coefficients is very similar to the results presented in Table 3. If anything, the results suggest a smaller penalty for Hispanic men. Baseline estimates suggest that Hispanics earn between 10 and 12 percent less than their white male counterparts, after controlling for age. However, this penalty is eliminated once we control for skill with AFQT score. In fact, unlike the estimates in Table 3, none of the coefficient estimates in Panel II (with AFQT score) or Panel III (with AFQT score and years of education) is statistically significant. The estimated wage penalties in Panel IV (with cost of living) are slightly smaller than the corresponding estimates in Table 3, now ranging between a penalty of 7.1 and 10.5 percent. The results that are the most striking are those for women: we find no evidence of a wage penalty among non-immigrant Hispanic women controlling only age. Results in Panels II through IV are rather similar to the corresponding results in Table 3. Controlling for labor market skills reveals a very large wage premium for Hispanic women, relative to white women, but the control for local cost of living erases any evidence of a conditional ethnic wage gap.

Appendix Table A1 compares our preferred Table 5 results to an alternative specification that replaces the direct cost of living control with indicators for region (South, North Central,

[18] We exclude 12 white immigrant men and 65 Hispanic immigrant men from the results in column (3).

West) and an indicator for living in an urban area. This is a somewhat common approach to controlling for location (e.g., Antecol and Bedard 2002, 2004). Panels I and II repeat results from the bottom two panels of Table 5. Panel III of Table A1 shows that wage gap estimates controlling for region and urban status are somewhat smaller for men than those with direct cost of living controls. Columns 5 through 8 demonstrate that region and urban status controls are not sufficient to explain away the Hispanic wage premium among women that arises after controlling for AFQT score. Evidently, cost of living influences wages within region and urban status. We believe this is strong evidence in favor of more detailed location controls (like location fixed effects in Winters and Hirsch 2012 or Black et al. 2012) or direct measures of cost of living.

4B. Wage Differences Between Mexicans and Whites

Table 6 provides results from several alternative subsamples and specifications. The first issue we address is that the U.S. Hispanic population is heterogeneous, including a wide variety of origins and experiences in the country. Individuals from different countries of origin may be perceived differently in the labor market, so we provide estimates of wage differences for Hispanics from a common country of origin. In the NLSY97, the majority of Hispanic respondents have a Mexican heritage, so we focus on the differences between their wages and those of non-Hispanic white men and women.

The first row of Table 6 repeats Panel IV of Table 5, our preferred wage gap estimates for non-immigrant Hispanic and white men and women, controlling for age, AFQT score, education, and local cost of living. The second results row of Table 6 shows analogous specifications that restrict the Hispanic sample to those with Mexican descent.[19] In addition to providing evidence based on a common country of origin, these estimates are more directly comparable to prior estimates in the literature (see, e.g., Antecol and Bedard 2002, 2004). Excluding non-Mexican Hispanics reduces the sample size by over 200 individuals, for both men and women. What is most striking about these results is that there is little evidence of wage penalties for non-immigrant Mexican men in our preferred specifications. That is, even after we include cost of living, OLS estimates suggest a much smaller wage penalty than the corresponding estimates for all non-immigrant Hispanics: 0.06 log points versus 0.11 log points. Further, we find no evidence of a wage penalty in the median regressions and the coefficients are all closer to zero. We continue to find no evidence of a wage penalty among women once we control for cost of living (columns 5 through 8 of the second row of Table 6).

4C. Differences by Educational Attainment

Table 6 also shows differences in ethnic wage gap estimates between respondents with more and less education. We present our preferred results (analogous to Panel IV in prior tables, with cost of living) separately for those with a high school degree or less (third row) and those with some college (fourth row).[20] The OLS results for men presented in column (1) suggest a similar penalty for the more- and less-educated groups. However, estimates from median regression suggest that the observed penalties in median regression estimates are driven by individuals with

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[19] Respondents with Mexican descent in the NLSY97 are the subset of respondents we previously identified as Hispanic who also selected "Mexican" as their primary ethnicity in the 1999 survey.

[20] Unlike the second row, the third and subsequent rows reflect samples that include Mexican and non-Mexican Hispanics, although they do not include immigrants (the sample from Table 5).

a high school degree or less, because there is no statistically significant wage penalty in columns (2) through (4) for the more-educated sample. Although only one coefficient is statistically significant in the estimates for women, the pattern of coefficients is striking because it is so different than the pattern of coefficients for men. That is, coefficient estimates are always positive for the less-educated women and always negative for the more-educated women. However, we note that the confidence intervals are large for the median regression estimates. For example, in column (8), the 95 percent confidence interval for the coefficient estimate of .0442 in the sample with a high school degree or less ranges from a penalty of 0.04 log points to a premium of 0.13 log points. The confidence interval for the corresponding coefficient estimate of -.0386 in the highly educated sample is a wage penalty of 0.15 log points and a premium of 0.07 log points.

4D. Role of Actual Labor Market Experience

Antecol and Bedard (2002, 2004) show that since labor market attachment differs by ethnicity, actual experience explains much more of the wage gap than potential experience. Although for Mexican men, actual experience explains only 3 percent of the wage penalty (Antecol and Bedard, 2004), for women they find that differences in actual years of experience explain between 54 and 61 percent of the wage penalty (Antecol and Bedard, 2002). Since differences in actual labor market experience may arise due to discrimination in hiring and retention, specifications that do not control for actual experience incorporate a potentially fuller picture of labor market discrimination and differential opportunities across groups. Nevertheless, we choose to examine estimates of ethnic wage differences that control for actual labor market experience for comparability to Antecol and Bedard (2002, 2004). In the last row of Table 6, we find that including a control for actual years of experience reduces or eliminates the wage penalty experienced by non-immigrant Hispanic men. OLS estimates in column (1) show the penalty falls from 0.11 log points to 0.083 log points, and we find no evidence of a wage penalty in median regression results. Among women, including years of actual labor market experience does not change the qualitative conclusion that there are no statistically significant wage differences (premium or penalty) after controlling for cost of living.

5. Discussion and Conclusion

Prior work has shown that including cost of living has an important impact on estimates of racial and ethnic wage gaps (e.g., Black et al., 2012; McHenry and McInerney, 2014). We show here the importance of controlling for cost of living in estimates of wage gaps for Hispanic men and women. Without cost of living controls, the NLSY97 data show no difference in hourly wages between Hispanic and non-Hispanic white men, and they show a wage premium for Hispanic women relative to white women (Panel III of Table 5). Our preferred estimates (e.g., Panel IV of Table 5) show that including a control for cost of living results in a wage penalty for Hispanic men and no conditional wage gap between Hispanic and white women. These are large changes in estimates of the wage gap that arise from the inclusion of an often-overlooked control variable.

Further, we find that controlling for region and urban status does not sufficiently take into account differences in cost of living faced by Hispanic versus non-Hispanic whites in the NLSY97. As shown in Appendix Table A3, we find that within a region, even after controlling urban residence, Hispanics live in CZs with housing costs between four and five percent greater than non-Hispanic whites. Evidence in Appendix Table A4 further shows that the common approach of including controls for region and urban status in estimates of ethnic wage gaps is not sufficient. Controlling for region and urban status (which is common in the literature) -- instead of cost of living more directly -- results in smaller wage gap estimates for men and does not erase the Hispanic premium among women.

We also demonstrate that the NLSY97's non-immigrant Hispanic respondents are similar on average to their counterparts in the ACS. However, the NLSY97's Hispanic immigrants are significantly more-educated and earn more than Hispanic immigrants in the ACS. As a result, it may be difficult to describe Hispanic immigrants' experiences using the NLSY97. We focus our wage gap estimates on native-born Hispanic and white subsamples.

Our estimated wage gaps are not direct evidence of labor market discrimination, since there remain unobserved characteristics of workers that may differ between Hispanic and white groups (e.g., mis-measured labor market skills or preferences). However, we believe that our findings offer useful evidence about the most likely locations and magnitudes of labor market discrimination. In particular, our findings of substantial hourly wage penalties for Hispanic relative to similar white workers are consistent with pay discrimination against Hispanic men. On the other hand, it appears less likely that there exists widespread discrimination against Hispanic women, since their hourly wages are very similar to those of white women after conditioning on labor market skills, local cost of living, and selection into the workforce.

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Figure 1a: Hispanic Population by County (2010 U.S. Census)

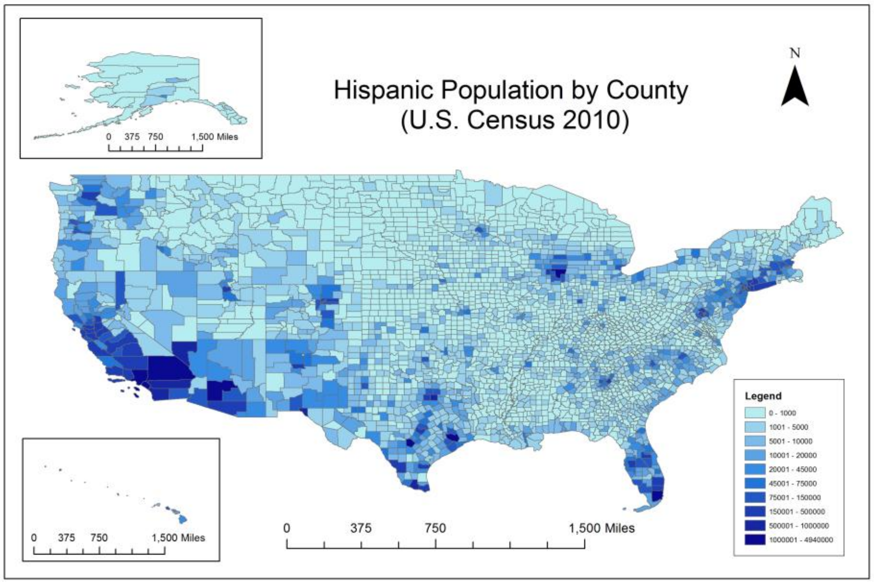

Figure 1b: Non-Hispanic White Population by County (2010 U.S. Census)

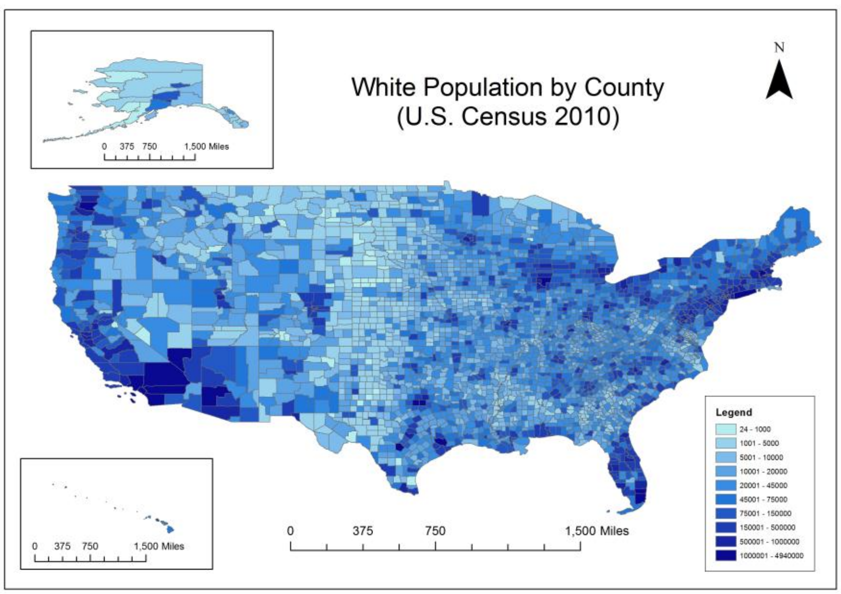

Table 1: Local Cost of Living by Ethnicity, Characteristics of Locations where NLSY97 Respondents Live

	(1)	(2)	(3)	(4)	(5)	(6)
		Percentile in the Distribution of NLSY97 Respondents' Locations				
	Mean	10th	25th	50th	75th	90th
Average Rent for 2-3 Bedroom Property						
Hispanic Men	1014	644.7	801.5	959.1	1321	1329
	(279.3)					
White Men	856.1	594.9	670	805.2	995.6	1191
	(241.5)					
Ratio Hispanic/White	1.184***	1.084***	1.196***	1.191***	1.326***	1.116***
Hispanic Women	1017	633.9	794.3	959.1	1324	1352
	(291.2)					
White Women	857.5	589.7	665.3	805.2	1011	1305
	(248.6)					
Ratio Hispanic/White	1.186***	1.075***	1.194***	1.191***	1.311***	1.036

NOTES: Table contains summary statistics about the average monthly rent for 2- and 3-bedroom single-family dwellings in the NLSY97 respondent's commuting zone (CZ) in the year 2010. CZ-average monthly rent data calculated using the pooled 2009-2011 ACS samples from IPUMS (Ruggles et. al. 2010). We calculate average "gross monthly rent" over households in each PUMA and aggregate to CZs with averages weighted by population overlaps between PUMAs and CZs. Left-most column shows for each respondent category the mean and standard deviation (in parentheses); the remaining columns show percentiles of the residence CZ rental price distribution. There are 543 Hispanic men, 1,505 non-Hispanic white men, 548 Hispanic women, and 1,415 non-Hispanic white women in the NLSY97 sample. Asterisks indicate statistical significance of differences between cost of living experienced by Hispanics and whites (***p<0.01 **p<0.05 *p<0.1).

Table 2A: Descriptive Statistics for Men from the NLSY97 (2010)

	(1)	(2)	(3)	(4)	(5)	(6)
Sample:	OLS Sample		Individuals with Low Imputed Wages (Non-workers)		Low Imputed Wages (Non-workers Whose Education Level is High School or Less)	
	Hispanic Men	White Men	Hispanic Men	White Men	Hispanic Men	White Men
Mean Hourly Wage	16.07	19.25	1	1	1	1
(Cols 3-6: Imputed Wage)	(8.681)	(15.29)				
Median Hourly Wage	14.42	15.65	1	1	1	1
(Cols 3-6: Imputed Wage)						
Age (years)	27.87	27.86	28.23	27.71	28.29	27.93
	(1.426)	(1.427)	(1.416)	(1.581)	(1.488)	(1.643)
AFQT score (standardized)	-.344	.4139	-.4623	.3505	-.7234	-.0092
	(.9121)	(.9611)	(.8482)	(.9834)	(.7273)	(1.03)
Education (years)	12.8	13.91	12.29	12.98	10.81	11.13
	(2.495)	(2.75)	(2.334)	(2.445)	(1.537)	(1.424)
Immigrant status	.1202	.0087	.1429	0	.1429	0
	(.3256)	(.093)	(.355)	(0)	(.3586)	(0)
Urban	.9137	.7298	.8824	.7753	.8571	.7045
	(.2812)	(.4442)	(.327)	(.4198)	(.3586)	(.4615)
Northeast	.1443	.1852	.1429	.1111	.1905	.1111
	(.3517)	(.3886)	(.355)	(.316)	(.4024)	(.3178)
North Central	.0862	.3028	.0571	.2222	.0476	.2667
	(.2809)	(.4597)	(.2355)	(.4181)	(.2182)	(.4472)
South	.3226	.3123	.4	.3778	.4286	.3778
	(.468)	(.4636)	(.4971)	(.4875)	(.5071)	(.4903)
West	.4469	.199	.3429	.2889	.3333	.2444
	(.4977)	(.3994)	(.4816)	(.4558)	(.483)	(.4346)
N	499	1,377	35	90	21	45

NOTES: Standard deviations in parentheses. In some specifications, we impute a low potential wage of $1 for men who are not working. In other specifications, we impute a low potential wage of $1 for men who are not working and have no more than a high school level education.

Table 2B: Descriptive Statistics for Women from the NLSY97 (2010)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample:	OLS Sample		Individuals with Low Imputed Wages		Individuals with High Imputed Wages (Spouse's Earnings At or Above 90th Percentile)		Individuals with High Imputed Wages (Spouse's Earnings Fall Between 75th and 89th Percentile)	
	Hispanic Women	White Women	Hispanic Women	White Women	Hispanic Women	White Women	Hispanic Women	White Women
Mean Hourly Wage	15.03	16.57	1	1	45	45	45	45
(Cols 3-8: Imputed Wage)	(9.118)	(11.75)						
Median Hourly Wage	13	13.5	1	1	45	45	45	45
(Cols 3-8: Imputed Wage)								
Age (years)	27.9	27.92	27.08	28.21	26.33	28.38	30.00	27.93
	(1.399)	(1.439)	(1.038)	(1.5)	(.5774)	(1.188)	(0)	(1.492)
AFQT score (standardized)	-.3415	.4826	-.9133	-.6881	.5504	.9875	.6002	.6106
	(.854)	(.8969)	(.3781)	(.7983)	(1.173)	(.8574)	(0)	(.7246)
Education (years)	13.3	14.57	11.08	10.75	14	15.25	13	14.5
	(2.642)	(2.71)	(1.256)	(1.713)	(0)	(1.982)	(0)	(1.225)
Immigrant status	.1446	.0131	.1538	0	0	0	0	0
	(.3521)	(.1136)	(.3755)	(0)	(0)	(0)	(0)	(0)
Urban	.9	.7283	.7692	.6429	1	.625	1	.5714
	(.3003)	(.445)	(.4385)	(.488)	(0)	(.5175)	(0)	(.5136)
Northeast	.1527	.1638	.2308	.0714	0	.125	0	.0714
	(.3601)	(.3703)	(.4385)	(.2623)	(0)	(.3536)	(0)	(.2673)
North Central	.0916	.2862	.0769	.25	0	.25	1	.1429
	(.2888)	(.4521)	(.2774)	(.441)	(0)	(.4629)	(0)	(.3631)
South	.2851	.3508	.2308	.4643	1	.125	0	.5714
	(.4519)	(.4774)	(.4385)	(.5079)	(0)	(.3536)	(0)	(.5136)
West	.4684	.1985	.4615	.2143	0	.5	0	.2143
	(.4995)	(.399)	(.5189)	(.4179)	(0)	(.5345)	(0)	(.4258)
N	491	1,300	13	28	3	8	1	14

NOTES: Standard deviations in parentheses. We impute a low potential wage of $1 for women who: (1) received any benefits from government welfare programs between 2006 and 2010; (2) have a high school degree or less education; and (3) report no spousal income in the previous three years. We impute a high potential wage of $45 for women who meet the following two criteria: (1) earned at least some college education and (2) married to a high earning spouse. A spouse is considered “high earning” if spousal average annual earnings over the past three years place him at or above the 90th percentile for men of his ethnicity in the 2010 NLSY97 (in columns 5 and 6) or above the 75th percentile for men of his ethnicity (in columns 7 and 8).

Table 3: Ethnic Differences in Hourly Wages in 2010, NLSY97

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Men				Women			
	OLS	Median regression	Median regression	Median regression	OLS	Median regression	Median regression	Median regression
		No imputation	Impute low potential wages for non-workers	Impute low potential wages for non-workers whose education level is high school or less		No imputation	Impute low potential wages; impute high potential wages if spouse earns above 90th percentile	Impute low potential wages; impute high potential wages if spouse earns above the 75th percentile
Panel I: Control for age, age squared								
	-.1375***	-.1331***	-.1183***	-.1263***	-.055*	-.0682**	-.0786**	-.0857**
	(.0289)	(.0283)	(.0353)	(.0324)	(.0297)	(.0338)	(.0335)	(.0348)
Panel II: Controls in I + AFQT, AFQT squared								
	-.0624**	-.0453	-.0533	-.0518	.0932***	.0925***	.1074***	.106***
	(.0294)	(.0347)	(.0342)	(.035)	(.031)	(.0331)	(.0356)	(.0349)
Panel III: Controls in II + Years of Education								
	-.0618**	-.0453	-.0298	-.0381	.0857***	.0919***	.1047***	.1031***
	(.0284)	(.0295)	(.0273)	(.0266)	(.0297)	(.0278)	(.0279)	(.0264)
Panel IV: Controls in III + Cost of Living								
	-.1249***	-.0994***	-.0961***	-.0848**	.0134	-.0396	-.0136	-.0187
	(.0291)	(.032)	(.0354)	(.0342)	(.0303)	(.0284)	(.0259)	(.0306)
N	1,876	1,876	2,001	1,942	1,791	1,791	1,843	1,858

NOTES: ***p<0.01 **p<0.05 *p<0.1. Data from the NLSY97. Dependent variable is the natural log of the hourly (or imputed) wage. Each regression includes age, age2, and immigrant status. In columns (1) and (5), heteroskedasticity robust standard errors are in parentheses. Columns (2)-(4) and (6)-(8) contain results from median regression where standard errors are computed by bootstrap (100 replications). In columns (3) and (4), low wages are imputed for men who are detached from the labor market. In columns (7) and (8), wages are imputed for women who are detached from the labor market but for whom we infer high or low potential wages based on education and household income. See text for imputation details.

Table 4: Comparison of Hispanics in the American Community Survey and NLSY97

	Hourly Wage		Years of Education	
	Men	Women	Men	Women
NLSY97 (birth years 1980-1984)				
All	16.33	15.47	12.66	12.96
	(8.656)	(9.351)	(1.881)	(2.008)
	N=446	N=438	N=543	N=548
Not immigrants	16.23	15.61	12.62	13.04
	(8.789)	(9.646)	(1.894)	(2.005)
	N=387	N=372	N=477	N=467
Immigrants	16.99	14.64	12.94	12.49
	(7.764)	(7.486)	(1.771)	(1.969)
	N=59	N=66	N=66	N=81
High School Degree or Less	14.75	11.97	11.57	11.31
	(4.405)	(3.709)	(.9353)	(1.257)
	N=27	N=35	N=30	N=48
Some College	18.89	17.65	14.08	14.21
	(9.402)	(9.388)	(1.461)	(1.495)
	N=32	N=31	N=36	N=33
American Community Survey (birth years 1980-1984)				
All	14.99	14.51	11.35	12.07
	(10.48)	(9.743)	(3.373)	(3.264)
	N=9,373	N=7,499	N=16,559	N=15,647
Not immigrants	17	15.8	12.5	13.11
	(11.46)	(9.972)	(2.415)	(2.425)
	N=4,843	N=4,894	N=8,464	N=8,774
Immigrants	12.84	12.08	10.15	10.76
	(8.819)	(8.799)	(3.789)	(3.696)
	N=4,530	N=2,605	N=8,095	N=6,873
In U.S. since 1997	14.8	13.83	11.03	11.82
	(9.033)	(8.996)	(3.457)	(3.204)
	N=1,495	N=1,106	N=2,613	N=2,339
High School Degree or Less	13.3	11.28	9.892	10.25
	(7.532)	(7.278)	(3.244)	(2.914)
	N=1,052	N=578	N=1,928	N=1,462
Some College	18.38	16.62	14.24	14.43
	(11.08)	(9.836)	(1.414)	(1.525)
	N=443	N=528	N=685	N=877
Immigrated after 1997	11.87	10.79	9.726	10.21
	(8.548)	(8.426)	(3.867)	(3.813)
	N=3,035	N=1,499	N=5,482	N=4,534

NOTES: Data from the NLSY97 and ACS (Ruggles et al. 2010). Samples of only Hispanic respondents. All data refer to year 2010 and describe the same cohort (born from 1980 to 1984).

Table 5: Ethnic Differences in Hourly Wages for Non-Immigrants in 2010, NLSY97

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Men				Women			
	OLS	Median regression	Median regression	Median regression	OLS	Median regression	Median regression	Median regression
		No imputation	Impute low potential wages for non-workers	Impute low potential wages for non-workers whose education level is high school or less		No imputation	Impute low potential wages; impute high potential wages if spouse earns above 90th percentile	Impute low potential wages; impute high potential wages if spouse earns above the 75th percentile
Panel I: Control for age, age squared								
	-.1183***	-.1265***	-.1029***	-.1145***	-.0363	-.0481	-.0419	-.0458
	(.0289)	(.0297)	(.0306)	(.0355)	(.0298)	(.037)	(.037)	(.0424)
Panel II: Controls in I + AFQT, AFQT squared								
	-.046	-.0284	-.04	-.0298	.1078***	.1077***	.1255***	.1179***
	(.0294)	(.0316)	(.035)	(.038)	(.0311)	(.0367)	(.0394)	(.0371)
Panel III: Controls in II + Years of Education								
	-.0466	-.0391	-.0179	-.0288	.0959***	.0969***	.1153***	.1134***
	(.0286)	(.0241)	(.0317)	(.0277)	(.03)	(.0263)	(.0293)	(.0309)
Panel IV: Controls in III + Cost of Living								
	-.1113***	-.0848***	-.0781**	-.0733**	.022	-.0195	-.0032	-.0025
	(.0295)	(.031)	(.0333)	(.0365)	(.0306)	(.0294)	(.0328)	(.0293)
N	1,804	1,804	1,924	1,867	1,703	1,703	1,753	1,768

NOTES: ***p<0.01 **p<0.05 *p<0.1. Data from the NLSY97, sample of non-immigrants only. Dependent variable is the natural log of the hourly (or imputed) wage. Each regression includes age and age2. In columns (1) and (5), heteroskedasticity robust standard errors are in parentheses. Columns (2)-(4) and (6)-(8) contain results from median regression where standard errors are computed by bootstrap (100 replications). In columns (3) and (4), low wages are imputed for men who are detached from the labor market. In columns (7) and (8), wages are imputed for women who are detached from the labor market but for whom we infer high or low potential wages based on education and household income. See text for imputation details.

Table 6: Ethnic Differences in Hourly Wages for U.S. Residents in 2010, Various Specifications, NLSY97

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Men				Women			
	OLS	Median regression	Median regression	Median regression	OLS	Median regression	Median regression	Median regression
		No imputation	Impute low potential wages for non-workers	Impute low potential wages for non-workers whose education level is high school or less		No imputation	Impute low potential wages; impute high potential wages if spouse earns above 90th percentile	Impute low potential wages; impute high potential wages if spouse earns above the 75th percentile
Sample of Non-Immigrant Hispanics and Non-Hispanic Whites (Repeated from Table 5)								
	-.1113***	-.0848**	-.0781**	-.0733**	.022	-.0195	-.0032	-.0025
	(.0295)	(.0355)	(.0322)	(.0348)	(.0306)	(.0274)	(.0325)	(.0288)
N	1,804	1,804	1,924	1,867	1,703	1,703	1,753	1,768
Sample of U.S. Residents of Mexican Descent and Non-Hispanic Whites Only								
	-.064*	-.0523	-.0243	-.0365	.0147	-.0288	-.0216	-.0239
	(.0373)	(.039)	(.0369)	(.0345)	(.0372)	(.0372)	(.0419)	(.0392)
N	1,582	1,582	1,684	1,632	1,501	1,501	1,547	1,562
Sample with High School Degree or Less								
	-.1049***	-.1266***	-.1127***	-.1127***	.0913*	.0165	.0442	.0442
	(.0389)	(.0433)	(.0432)	(.0393)	(.0515)	(.0399)	(.0381)	(.0396)
N	778	778	841	841	558	558	597	597
Sample with at Least Some College								
	-.1069**	-.0373	-.0303	-.0373	-.0199	-.0416	-.0368	-.0386
	(.0439)	(.056)	(.0594)	(.0552)	(.0379)	(.0453)	(.0436)	(.0484)
N	1,026	1,026	1,083	1,026	1,145	1,145	1,156	1,171
Controlling for Actual Experience Instead of Age								
	-.0831***	-.0439	-.0306	-.0439	.0375	.0183	.0386	.0353
	(.0288)	(.0308)	(.0307)	(.0331)	(.0306)	(.0313)	(.0322)	(.0257)
N	1,804	1,804	1,924	1,867	1,703	1,703	1,753	1,768

NOTES: ***p<0.01 **p<0.05 *p<0.1. Data from the NLSY97, sample of non-immigrants only. Dependent variable is the natural log of the hourly (or imputed) wage. In the top three panels, each regression includes age (and its square), AFQT (and its square), years of schooling, and cost of living. The bottom panel specifications substitute for age and its square with actual experience and its square. In columns (1) and (5), heteroskedasticity robust standard errors are in parentheses. Columns (2)-(4) and (6)-(8) contain results from median regression where standard errors are computed by bootstrap (100 replications). In columns (3) and (4), low wages are imputed for men who are detached from the labor market. In columns (7) and (8), wages are imputed for women who are detached from the labor market but for whom we infer high or low potential wages based on education and household income. See text for imputation details.

Appendix Table A1: Select Estimates of Hispanic Wage Differentials for Men

Study	Wage Diff.[a]	Year of Estimate	Data Used	Include AFQT Score?	Include Years of Educ.?	Control for Cost of Living	Native-born only?	Hispanics of Mexican origin only?	Control for Actual Experience
Black et al. (2012)	-.098[b]	2009	NLSY97	Yes	No	MSA fixed effects, balance of state	No(?)	No	No
Winters and Hirsch (2012)	-.125[b]	2010	ACS	No	Yes	MSA fixed effects, balance of state	Yes	No	No
Fryer (2011)	-.014	2006	NLSY97	Yes	No	No	No(?)	No	No
Neal and Johnson (1996)	.005	1991	NLSY79	Yes	No	No	No(?)	No	No
Trejo (1997)[c]	-.064[b]	1979	CPS	No	Yes	9 Census divisions, metro. Status indicator, separate indicators for CA or TX residence	Yes	Yes	Yes

[a] Represents coefficient estimate on Hispanic indicator variable in regressions of log(hourly wages).
[b] Coefficient estimate statistically significant (p<.10, p<.05, or p<.01).
[c]Trejo (1997) also includes estimates of Mexican-white wage differentials that control for English proficiency. This Mexican-white wage differential with a control for English proficiency is -.018 (and not statistically significant).

Appendix Table A2: Select Estimates of Hispanic Wage Differentials for Women

Study	Wage Diff. [a]	Year of Estimate	Data Used	Include AFQT Score?	Include Years of Educ.?	Control for Cost of Living	Native-born only?	Hispanics of Mexican origin only?	Control for Actual Experience
Fryer (2011)	.035	2006	NLSY97	Yes	No	No	No(?)	No	No
Alon and Haberfeld (2007)	-.048, -.055	????	NLSY79	Yes	Yes	No	No(?)	No	Yes
Neal and Johnson (1996)	.145[b]	1991	NLSY79	Yes	No	No	No(?)	No	No

[a] Represents coefficient estimate on Hispanic indicator variable in regressions of log(hourly wages).
[b] Coefficient estimate statistically significant (p<.10, p<.05, or p<.01).
[c]Trejo (1997) also includes estimates of Mexican-white wage differentials that control for English proficiency. This Mexican-white wage differential with a control for English proficiency is -.018 (and not statistically significant).

Table A3: Ethnic Differences in Within-Region Commuting Zone Housing Costs in 2010, NLSY97

	(1) Men	(2) Women
Hispanic	.0483***	.0395***
	(.0079)	(.0085)
Urban	.0936***	.0851***
	(.008)	(.0085)
North Central	-.155***	-.1737***
	(.0101)	(.0114)
South	-.1196***	-.1404***
	(.0097)	(.0108)
West	-.0059	-.0126
	(.0102)	(.0113)
N	1,802	1,699
Mean (St.Dev.) of Dep. Var.	1.159	1.162
	(.1639)	(.1721)

NOTES: ***p<0.01 **p<0.05 *p<0.1. Data from the NLSY97. Dependent variable is the housing index (described in the text) for the respondent's commuting zone of residence. Sample size differs from Table 5, because here we exclude those with missing urban or region variables in the public use NLSY97.

Appendix Table A4: Ethnic Differences in Hourly Wages for Non-Immigrants in 2010, NLSY97

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Men				Women			
	OLS	Median regression	Median regression	Median regression	OLS	Median regression	Median regression	Median regression
		No imputation	Impute low potential wages for non-workers	Impute low potential wages for non-workers whose education level is high school or less		No imputation	Impute low potential wages; impute high potential wages if spouse earns above 90th percentile	Impute low potential wages; impute high potential wages if spouse earns above the 75th percentile
Panel I: Control for age, age squared, AFQT, AFQT squared, Years of Education								
	-.0466	-.0391	-.0179	-.0288	.0959***	.0969***	.1153***	.1134***
	(.0286)	(.0284)	(.0316)	(.0302)	(.03)	(.0276)	(.0299)	(.028)
Panel II: Controls in I + Cost of Living								
	-.1113***	-.0848***	-.0781**	-.0733**	.022	-.0195	-.0032	-.0025
	(.0295)	(.0309)	(.0372)	(.0348)	(.0306)	(.0251)	(.0335)	(.0357)
Panel III: Controls in I + Region and Urban								
	-.0705**	-.0576*	-.049	-.0511	.0733**	.0726**	.0804***	.0789***
	(.0297)	(.0304)	(.0315)	(.0352)	(.0312)	(.0291)	(.0305)	(.0299)
N	1,803	1,803	1,921	1,865	1,701	1,701	1,751	1,766

NOTES: ***p<0.01 **p<0.05 *p<0.1. Data from the NLSY97, sample of non-immigrants only. Dependent variable is the natural log of the hourly (or imputed) wage. Each regression includes age and age2. In columns (1) and (5), heteroskedasticity robust standard errors are in parentheses. Columns (2)-(4) and (6)-(8) contain results from median regression where standard errors are computed by bootstrap (100 replications). In columns (3) and (4), low wages are imputed for men who are detached from the labor market. In columns (7) and (8), wages are imputed for women who are detached from the labor market but for whom we infer high or low potential wages based on education and household income. See text for imputation details.