# ETHNIC ATTRITION, ASSIMILATION, AND THE MEASURED HEALTH OUTCOMES OF MEXICAN AMERICANS

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Two puzzles stand out from the immigrant health literature. The assimilation puzzle asks why Hispanic natives often lag well behind non-Hispanic whites on measures of health. The puzzle of immigrant advantage, sometimes referred to as a version of the Hispanic Health Paradox, asks why Hispanic immigrants often have better health than U.S.-born Hispanics. While numerous studies have attempted to explain these patterns, almost all studies rely on subjective measures of ethnic self-identification to identify immigrants' descendants. This can lead to bias due to "ethnic attrition," which occurs whenever a U.S.-born descendant of a Hispanic immigrant fails to self-identify as Hispanic. In this paper, we exploit information on parents' and grandparents' place of birth to show that Mexican ethnic attrition, operating through intermarriage, is sizable and selective on health, making subsequent generations of Mexican immigrants appear less healthy than they actually are. Consequently, we find that the puzzles of poor assimilation and immigrant advantage have both been significantly overstated.

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## I. INTRODUCTION

Two puzzles emerge from the literature on the health of immigrants and their U.S.-born descendants. The first, a key element in the long-running debate over immigration policy, is the puzzle of poor assimilation: why do U.S.-born Hispanics often lag behind non-Hispanic whites on measures of health (Hummer et al. 2007; Antecol and Bedard 2006), just as they do on other measures of human capital (Borjas 1994; Smith 2003)? The second, documented across many, though not all, health outcomes (Singh and Siahpush 2002; Bates et al. 2008; Acevedo-Garcia et al., 2005; Tavernise 2013), is the puzzle of immigrant health advantage, sometimes described as a version of the Hispanic Health Paradox (Riosmena et al. 2014): why are first-generation Hispanic immigrants sometimes found to be in better health than U.S.-born Hispanics?

While the literature has explored the roles of selective migration (Palloni and Arias 2004; Riosmena et al. 2012) and regression toward the mean (Giuntella 2014a) in explaining the Hispanic Health Paradox more broadly,[1] the predominant explanation is the negative acculturation hypothesis (Escarce et al. 2006; National Research Council 2006). According to this view, immigrants arrive in the U.S. with habits and customs that are more protective of health and gradually assimilate to less-healthy U.S. norms (Antecol and Bedard 2006; Riosmena et al. 2014). Ironically, this means that just as the process of intergenerational assimilation may lead to convergence in health status between U.S.-born Hispanics and non-Hispanic whites, assimilation may also erode any health advantage held by first-generation immigrants.

Importantly, the literature exploring these puzzles relies almost universally on self-reported ethnic identity to identify Hispanic individuals. In contrast, several recent studies have

[1] With regard to death rates in particular, one explanation sometimes offered for the paradox vis-à-vis non-Hispanic whites stems from differences in reporting of ethnic identity by next-of-kin on death certificates relative to self-reporting of ethnicity on national surveys (Rosenberg 1999). While investigations of this explanation do not constitute an extensive portion of the literature, they do hint at problems inherent in the use of subjective measures of ethnic identity more broadly.

emphasized the importance of distinguishing between self-identification and ancestry in making comparisons across generations and ethnic groups (Duncan and Trejo 2011a, 2011b, 2011c; Antman and Duncan 2014). Most significantly, Duncan and Trejo (2011a) document significant rates of Mexican "ethnic attrition" which occurs whenever a U.S.-born descendant of a Mexican immigrant fails to self-identify as Mexican. Moreover, this pattern of ethnic attrition is found to be selective on socioeconomic status (SES): the descendants of Mexican immigrants who do not identify as Mexican are more educated than those who self-identify, resulting in a downward bias in estimates of intergenerational educational progress for Mexican Americans.

In this paper we investigate whether selective ethnic attrition can also explain the immigrant health puzzles described above. To focus the analysis, we restrict attention to the experience of Mexicans in particular, as they form the single largest immigrant group in the United States. Thus, we explore the extent to which focusing only on groups of self-identified Mexicans gives an incomplete picture of intergenerational health profiles of all Mexican immigrants by obscuring the experience of individuals with Mexican ancestry who do not identify as Mexican. Importantly, this problem plagues virtually all health studies of the descendants of immigrants since they rely on subjective measures of ethnic self-identification rather than on more objective measures of lineage. Instead, we use parents' and grandparents' place of birth to more objectively identify descendants of Mexican immigrants. We also ask whether ethnic attrition is selective on health and consequently, whether it biases estimates of the health of U.S-born Mexicans when the analysis sample consists solely of those who self-identify as Mexican. To explore possible mechanisms, we investigate whether intermarriage is also selective on health and whether it produces the ethnic attrition that we observe. Finally, we ask whether selective ethnic attrition biases the perceived health gap between Mexican natives and

non-Hispanic whites, and also whether it might exacerbate the perceived immigrant health advantage.

On the one hand, one might expect a positive correlation between health, intermarriage, and ethnic attrition, since the latter two factors are positively correlated with SES just as health and SES are positively correlated (Adler and Ostrove 2006). Since ethnic attritors approach the SES of non-Hispanic whites more rapidly than those who continue identifying as Mexican, one might also expect health outcomes of ethnic attritors to converge more quickly with those of non-Hispanic whites, at least relative to the path of self-identified Mexicans. Thus, one would expect that focusing only on self-identified Mexicans would make it appear that Mexicans are in worse health than they actually are. This would result in overestimated gaps between U.S.-born Mexicans and non-Hispanic whites, making Mexicans look more poorly assimilated. Assuming an immigrant health advantage exists, this would also lead to an overestimated gap between Mexicans immigrants and U.S.-born Mexicans. In short, both puzzles would be overstated.

On the other hand, Mexican self-identification itself might arguably serve as a measure of acculturation, since individuals with Mexican ancestry who do not identify as Mexican might be more readily identifying with the mainstream non-Hispanic white culture instead. Assuming an immigrant health advantage exists at the outset, one might then expect ethnic attritors to make lifestyle choices closer to the mainstream and thus adopt less-healthy lifestyles than individuals who identify as Mexican.[2] This type of mechanism would be consistent with the negative acculturation hypothesis. If these less-healthy behaviors are more common among ethnic attritors than non-attritors, we should expect that calculations that exclude individuals based on

[2] This is similar to the mechanism suggested by Giuntella (2014b) to be the root cause for the decline in birth weight observed across immigrant generations, which he attributes to the intermarriage of non-Hispanic whites with second-generation Hispanic immigrants who are then more likely to adopt risky behaviors such as smoking during pregnancy.

their lack of Mexican self-identification would make Mexicans appear to be in better health. As a result, we should expect to underestimate the gap between U.S.-born Mexicans and non-Hispanic whites. The same would be true for the gap between Mexicans immigrants and U.S.-born Mexicans, again assuming the health outcome under study implied an immigrant advantage. In sum, both puzzles would be understated.

Since negative acculturation and positive socioeconomic factors are both possible channels contributing to the over- or under-estimates of health premiums assessed over generations and across ethnic groups, we investigate these questions empirically. We find that at higher-order immigrant generations, ethnic attritors display better health outcomes than non-attritors and are closer to those of non-Hispanic whites. We also show that this pattern can be traced to selective intermarriage: marriages between Mexicans and non-Mexicans are more likely to involve spouses in better health, and are more likely to produce children that are not identified as Mexican who are also in better health. Moreover, once we control for parental health and SES, the health differential by ethnic attrition disappears, reinforcing the view that the relationship between ethnic attrition and child health is driven by parental characteristics. Together, this collection of results implies that estimates relying on ethnic self-identification bias researchers toward finding that Mexican Americans are in worse health than they actually are. Consequently, the twin puzzles of poor health assimilation and immigrant health advantage have both been overstated.

The remainder of this paper proceeds as follows. Section II describes the data used in the analysis and presents a version of the twin puzzles as they might be presented in the literature relying on measures of self-identification. Section III presents the results comparing the health of intermarried individuals and their offspring, taking into account whether or not individuals

choose to identify as Mexican. A discussion of the bias introduced by ethnic attrition follows. Section IV concludes.

## II. DATA

The data we use come from the 1996-2014 Current Population Survey March Supplement. While the CPS is largely regarded as a labor force survey, covering standard questions about labor force participation and employment outcomes, it also collects important demographic information about respondents and household members that facilitate the analysis below. As mentioned above, we focus our analysis on Mexicans, the largest group of country-specific immigrants to the U.S. With regard to health outcomes, the March Supplement collects information on self-rated health (SRH), a measure that is widely used in the literature on immigrant health outcomes (Acevedo et al. 2010, Antecol and Bedard 2006, Riosmena et al. 2012). Specifically, respondents are asked to rank the subject's health on a 5-point scale indicating excellent, very good, good, fair, or poor health status. We follow the literature in assigning a poor health indicator equal to one if the respondent indicates poor or fair health and equal to zero if the respondent reports that health is good, very good, or excellent.[3] While some may be concerned about the subjective nature of self-rated health, this measure has been shown to track results using more objective health outcomes such as obesity/body mass index (Antecol and Bedard 2006), predict future disability (Idler and Kasl 1995), and serve as an even better indicator of subsequent mortality than more complex health indicators (Kuhn et al. 2006). Its robust relationship with mortality in particular, documented in a wide variety of settings and

[3] We follow the shorthand, common in the literature, of describing this outcome as a poor health indicator, although, as noted above, it also includes those reported to be in fair health. Typically the literature constructs the SRH measure as a binary measure of health status, reflecting the fact that indicators for poor or fair health in particular are good predictors of subsequent health outcomes such as mortality (Wolinsky and Johnson 1992).

replicated in numerous studies, suggests that SRH provides an important dimension of health not captured by other measures (Idler and Benyamini 1997).

As mentioned above, the vast research on immigrant health and the Hispanic Health Paradox in particular has almost universally relied on self-reported ethnicity to identify the descendants of Hispanic immigrants. From this perspective, individuals are identified as Hispanic if they respond affirmatively to the Hispanic origin question which asks respondents if they are Hispanic, Spanish, or Latino. Respondents that answer affirmatively are then asked with which Hispanic sub-group they identify. For instance, Mexican immigrants and their descendants are identified based on whether they identify themselves as Mexican on the Hispanic origin question. Foreign-born individuals are identified as first-generation immigrants, U.S.-born individuals with at least one foreign-born parent are identified as 2$^{nd}$ generation immigrants, and U.S.-born individuals with no foreign-born parents are identified as 3$^{rd}$+ generation immigrants. Thus, assimilation and intergenerational progress are tracked across generations of individuals who identify as Mexican, ignoring the possibility that some individuals with Mexican ancestry may not identify themselves as Mexican.

To make these notions concrete, Table 1 presents the percentage of 20-64 year-old adults reported to have poor health status as they might be presented in the literature relying on measures of ethnic self-identification. Comparing the health outcomes of 3$^{rd}$+ generation self-identified Mexicans (column 3) with 3$^{rd}$+ generation non-Hispanic whites (column 4) illustrates the perceived problem of poor immigrant assimilation: only 9.24 percent of 3$^{rd}$+ generation non-Hispanic white men are in poor health while the analogous statistic for 3$^{rd}$+ generation Mexican men is 12.05. Similarly, comparing the health outcomes of 3$^{rd}$+ generation self-identified Mexicans (column 3) with first generation Mexican immigrants (column 1) illustrates the

perceived puzzle of immigrant health advantage: only 9.47 percent of first generation Mexican male immigrants are found to be in poor health while 12.05 percent of 3rd+ generation Mexican men are in poor health. Importantly, both of these gaps hinge on unbiased estimation of the health status of 3rd+ generation men. This paper investigates the extent to which selective ethnic attrition may skew those estimates, thus biasing the comparison of health outcomes across generations and ethnic groups. While a higher percentage of women report poor health status, similar comparisons can be made for Mexican women across generations and self-identified ethnic groups.

One typical question raised in the literature on immigrant health is whether these puzzles can be explained by differences in observable characteristics—at a minimum age, but also SES indicators such as educational attainment. Importantly, the regressions that investigate this question should not be interpreted as causal, as they only indicate whether the correlations between immigrant generation, ethnicity, and health persist after accounting for these important differences. We reproduce this style of regressions in Table 2, where the dependent variable is an indicator for poor or fair health, and the sample includes 1st, 2nd, and 3rd+ generation Mexicans as well as 3rd+ generation non-Hispanic whites (the reference group). As the latter are mutually exclusive and exhaustive categories, the estimates in columns (1) and (4) generate the raw differences across groups and can be used to reproduce the summary statistics from Table 1. Thus, we can confirm that 3rd+ generation Mexicans are 2.81 percentage points more likely to be in poor health than 3rd+ generation non-Hispanic whites, an estimate that is statistically significant at the 1 percent level. Columns (2) and (5) add in basic controls such as age, age squared, and a set of dummy variables for survey year and location. Additionally, columns (3) and (6) follow the literature by controlling for years of education as a measure of SES. Here we

find that 3rd+ generation Mexican men are 2.01 percentage points more likely to be in poor health than 3rd+ generation non-Hispanic whites, thus indicating that the puzzle of poor immigrant assimilation cannot be explained by differences in observable characteristics. At the same time, 3rd+ generation Mexican men are 7.99 percentage points (.0201- -.0598) more likely to be in poor health than 1st generation Mexican male immigrants, suggesting that the puzzle of immigrant health advantage is only exacerbated by accounting for differences in SES.

Interestingly, the puzzle of immigrant advantage also rules out one possible explanation for the puzzle of immigrant assimilation: 3rd+ generation Mexicans are not in worse health than 3rd+ generation non-Hispanic whites because unhealthy Mexicans arrive in the U.S. In fact, after controlling for socioeconomic status, we see that 1st generation Mexicans immigrants are actually less likely to be in poor health than non-Hispanic whites (point estimate -.0598). More importantly, the twin puzzles presented here suggest that something must be happening across immigrant generations in the U.S. that is making the descendants of Mexican immigrants less healthy, or at least appear to be less healthy. The remainder of this paper investigates the extent to which selective ethnic attrition skews our perception of that phenomenon.

Throughout the paper we use the following definitions to classify immigrant generation based on more objective information on place of birth of parents and grandparents. 1.5 generation Mexicans are children born in Mexico. 2nd generation Mexicans are U.S.-born and have at least one parent born in Mexico. 3rd generation Mexicans are U.S.-born, have two U.S.-born parents, and at least one grandparent born in Mexico.[4] Finally, 4th+ generation Mexicans are U.S.-born, have two U.S.-born parents, have no grandparents born in Mexico, and at least one parent who identifies as Mexican on the Hispanic origin question. As a comparison, 4th+ generation whites have no parents or grandparents who are foreign born, and themselves and

[4] We emphasize that this is the "exact" 3rd generation as opposed to 3rd generation and higher.

both parents are identified as non-Hispanic on the Hispanic origin question and white only on the race question.

The CPS provides information on the country of birth of an adult respondent's parents, but not of his or her grandparents. Unfortunately, this makes it impossible for us to construct an objective measure of 3rd and 4th+ generation Mexican adults. However, by linking children to their parents' records, we are able to identify the country of birth of a child's grandparents. For this reason, the analysis sample in the remainder of the paper is limited to children ages 17 and younger living in intact families at the time of the survey, since information on parents and grandparents on both sides of an individual's family are only available for this group. While our focus on children is necessary due to data limitations, it also means this study makes another important contribution to the literature on immigrant advantage and intergenerational health which typically focuses on adult health outcomes. However, the fact that the immigrant children we observe came to the U.S. at an early age suggests they are likely to display health outcomes much closer to their U.S.-born counterparts compared with immigrants who arrived as adults. This caveat is further complicated by the fact that children are generally less likely than adults to be in poor health. As a result, it is not obvious that we should expect to see the same story of declining immigrant advantage which we observed for adults in Table 1. Nevertheless, we can still examine the role of selective ethnic attrition in biasing estimates of health status for U.S.-born Mexicans. As we presume any health differentials will be compounded over the life course, we expect that any biases observed here are likely to be understated compared with estimates we might obtain if it were possible to observe ethnic attrition in a sample of 3rd+ generation adults.[5]

[5] While it is possible, strictly speaking, to analyze the selectivity of ethnic attrition in our sample of 2nd generation adults, ethnic attrition rates are very small for this group (less than 8 percent), perhaps unsurprisingly since they are the children of immigrants.

## III. RESULTS

Table 3 begins by documenting the extent of ethnic attrition of the children in our sample and linking this with whether their parents intermarried, that is whether they have Mexican ethnicity on one or both sides of their family. The definition of Mexican ethnicity on one side of the family is consistent across all generations. For example, a child has Mexican ethnicity on his father's side of the family if any of the following are true: (1) the child has a paternal grandparent who was born in Mexico; (2) the child's father was born in Mexico; or (3) the child's father self-identifies as Hispanic.[6]

As can be seen from Table 3, one important empirical result is that Mexican identification is strongly linked with intermarriage. Across all generations, Mexican identification is almost universal (close to 98%) among children of endogamous marriages, that is, those children with Mexican ethnicity on both sides of the family. In contrast, rates of ethnic identification are far lower (59% to 67%) for individuals with Mexican ethnicity on only one side of the family, that is, children of intermarriages between one Mexican and one non-Mexican. These patterns are also fairly consistent regardless of whether the Mexican ethnicity is on the father's or mother's side of the family.

It follows that the extent of ethnic attrition across generations will be closely linked with the extent of intermarriage across generations. This pattern is confirmed in Table 3. For instance, a very small share of 2nd generation children have intermarried parents (10%), that is, Mexican ethnicity on only one side of the family. Thus, it comes as no surprise that there is very little ethnic attrition at the 2nd generation, and in fact, almost 94.61% of 2nd generation children

[6] By construction, all of the children in our sample have Mexican ethnicity on at least one side of the family. In order to distinguish children who are the product of an ethnic intermarriage from ethnic in-marriages, we look for any indication that the child also has Mexican ethnicity on the other side of his family.

identify as Mexican.[7] In contrast, rates of intermarriage are quite substantial for the parents of 3rd and 4th+ generation children (43.3% and 60.4%, respectively). Consequently, rates of Mexican identification are far lower for the latter groups (80.74% and 76.56%, respectively). This implies that substantial shares of 3rd and 4th+ generation children are not identified as Mexican (19.26% and 23.44%, respectively). Since ethnic attrition is a phenomenon primarily occurring at the 3rd and higher generations, in the remainder of the paper, we limit our analysis of ethnic attrition to these groups.

Thus far, we have established that intermarriage rates are substantial at the 3rd and higher generations and ethnic attrition is closely linked with parental intermarriage. We now proceed in connecting parental intermarriage with parental health. This is done in Table 4, which shows the percent of parents in poor health based on whether children have two Mexican parents (Mexican on both sides of the family) or one Mexican and one non-Mexican parent (Mexican on one side of the family). With regard to intermarriage, it is noteworthy that both fathers and mothers in intermarriages are less likely to be in poor health. For example, about 6% of fathers who are intermarried report poor SRH, whereas 8 to 9% of fathers who are not intermarried report poor SRH at the 3rd and 4th + generations, respectively.[8] Thus, intermarriage between Mexicans and non-Mexicans appears to be selective on health.

Table 5 completes the picture by linking parental health directly with children's ethnic identification. Since previous tables have already established the close connection between ethnic attrition and intermarriage, it should come as no surprise that the pattern of results look

[7] This is similar to the rate of Mexican identification among 1.5 generation children (97.7%), who we emphasize are immigrants themselves. This suggests that ethnic attrition is largely occurring outside of 1.5 and 2nd immigrant generations.

[8] In extended analysis not emphasized here, both the Mexican and non-Mexican spouse are likely to report better health. This is similar to the result from the assortative mating literature which finds that individuals are matched on measures of human capital such as education.

strikingly similar to Table 4. For the most part, health status is better for parents of those children who are not identified as Mexican (parents of ethnic attritors), compared with the parents of children that are identified as Mexican (parents of non-attritors). For instance, about 8% of fathers of 4th+ generation children identified as Mexican report being in poor health compared with only about 4.8% of fathers of 4th+ generation children not identified as Mexican. The same pattern of worse health for parents of ethnic attritors versus non-attritors is apparent for fathers of 3rd generation children, albeit with a smaller gap (7.5% versus 5.5%). Assuming an intergenerational correlation in health status, this would suggest that ethnic attritors themselves are also likely to be in better health compared with non-attritors.

Table 6 addresses this question directly by documenting the percentage of children reporting poor health status by generation and ethnic identification. As expected given the results from above, ethnic attrition is selective on the health of children, with the degree of selectivity varying by generation. 3rd generation Mexican children who do not identify as Mexican are somewhat less likely to report being in poor health compared with 3rd generation Mexican children who identify as Mexican (1.64% versus 1.77%, respectively). Thus, the percent of 3rd generation Mexicans estimated to be in poor health which includes all 3rd generation Mexicans based on grandparents' place of birth (1.75%) is virtually identical to the estimate which relies on Mexican self-identification (1.77%). For the 4th+ generation, however, the gap in poor health status is more striking for ethnic attritors versus non-attritors (1.24% versus 1.85%, respectively). As a result, the overall percentage of 4th+ generation Mexicans reported to be in poor health (1.71%) is lower than the estimate based on self-identification (1.85%). In short, as ethnic attritors are positively selected on health, conventional estimates of

health outcomes for higher-order immigrant generations make them appear to be in worse health than they actually are.

Table 6 also provides answers to the question of how selective ethnic attrition might bias our estimates of Mexican immigrant health assimilation and comparisons of health outcomes across generations of Mexican immigrants.[9] Before discussing these results, it should be emphasized that the 1.5 generation immigrants in our sample came to the U.S. as children and are thus likely to display health outcomes much closer to those of U.S.-born children than, say, adults who were born in Mexico and migrated as adults. This caveat is compounded by the fact that in general children are less likely to be in poor health relative to adults and thus health differentials are likely to be understated for this group. As a result, for child self-rated health, as with other outcomes in the literature on immigrant health (Riosmena et al. 2012), we do not find a clear story of immigrant advantage. However, ultimately our goal is not to document the HHP and assimilation gaps in the SRH of children, but rather to use our sample of children to estimate the extent of ethnic attrition in the Mexican American population and the degree to which it is selective on health. While there are no studies to our knowledge that indicate how child SRH translates into adult SRH, if we reasonably presume that they are correlated we can use the Table 6 results to get a rough estimate of the magnitude of the effect ethnic attrition has on the adult patterns seen in Table 1. This may be a lower bound estimate if, for example, a parent's adult SRH is transmitted to her child, but this is more likely to show up in adult SRH versus child SRH. To the extent that additional ethnic attrition occurs as children transition into adulthood, we might also regard this as an underestimate.

[9] Owing to the smaller sample sizes, we consider outcomes for girls and boys together and do not examine the selectivity of ethnic attrition at the 1.5 and 2nd generations, where rates of ethnic attrition are especially low.

Thus, we use the estimates from Table 6 to obtain a rough estimate of the size of the bias due to ethnic attrition which could affect estimates of the HHP and assimilation in the adult population documented in Table 1. In particular, the estimates from Table 6 suggest that ethnic attrition increases the likelihood of reporting poor health status by 8.19% (1.85-1.71/1.71). If the same effect were to apply to the 3rd+ generation adults in Table 1, the corrected percentage of respondents reporting poor health status would be 11.14% (12.05/1.0819). This implies that the gap between 3rd+ and 1st generation Mexicans (the healthy immigrant puzzle) is 35% smaller (11.14-9.47 versus 12.05-9.47) than suggested by conventional estimates based on subjective measures of ethnic identification. Similar analysis implies that using more objective measures of ethnic identification would yield a 32.5% reduction (11.14-9.24 versus 12.05-9.24) in the health gap between 3rd+ generation Mexicans and 3rd+ generation whites (the assimilation puzzle). In other words, both the immigrant health advantage and assimilation puzzles are substantially overstated. This bias stems from the relatively large difference in health status between ethnic attritors and non-attritors at the 4th+ generation.

Table 7 examines these health differentials further by investigating whether they survive after accounting for observable differences such as gender, age, and SES.[10] To do this, we first estimate a regression on the sample of all groups included in Table 6, where the dependent variable is an indicator for poor health status and the right-hand side contains a mutually exclusive and exhaustive set of dummy variables including all of the categories featured at the top of Table 6, with the exception of 4th+ generation non-Hispanic whites (the reference group). Thus, the estimates in column (1) can be used to reproduce the differences in health outcomes

[10] To be consistent with the literature, the SES controls include mother's and father's years of education and employment status (Antecol and Bedard , 2006).While the latter measure in particular is not included to estimate a causal relationship, it can be viewed as a control that may capture important differences across individuals, such as access to health care.

across the columns from Table 7, and confirm that ethnic attritors at the 4th+ generation have health outcomes similar to those of 4th+ generation non-Hispanic whites (coefficient estimate -.0003). Column (2) adds basic controls for gender, age, year, and location, with little change in the results: self-identified Mexicans at the 4th+ generation are about 0.57 percentage points more likely to be in poor health relative to 4th+ generation non-Hispanic whites. However, this health differential is cut nearly in half once we add controls for socioeconomic status (column 3), dropping the coefficient estimate on 4th+ generation self-identified Mexicans to 0.0027 and reducing the statistical significance of the estimate to the 10 percent level. Once we control for parental health characteristics (column 4), the difference between self-identified Mexicans and non-Hispanic whites disappears almost completely (coefficient estimate 0.0014) and is no longer statistically significant. More importantly, the health differential between ethnic attritors and non-attritors at the 4th+ generation is no longer statistically significant after controlling for parental characteristics. This suggests that the relationship between health and ethnic attrition is driven by parental characteristics—the health differential between ethnic attritors and non-attritors effectively disappears once we control for those parental characteristics determining ethnic attrition.

## IV. CONCLUSION

This paper has investigated the role of ethnic attrition in biasing estimates of the health status of U.S.-born Mexicans. We find that at higher-order immigrant generations, ethnic attritors display better health outcomes than non-attritors and closer to those of non-Hispanic whites. This implies that estimates of health status which rely on ethnic self-identification make Mexican Americans appear to be in worse health than they actually are. As a result, the puzzle of poor assimilation—why U.S.-born Mexicans appear to be in significantly worse health than

non-Hispanic whites—has been overstated. Similarly, these results suggest that failing to account for the relatively better health of ethnic attritors is likely to overstate any estimated immigrant health advantage which relies on self-reported ethnic identification.

Additionally, we find that once we control for parental health and SES, the health differential by ethnic attrition disappears, reinforcing the view that ethnic attrition is driven by parental characteristics. We also show that intermarried individuals are likely to be in better health, and are more likely to produce children that are not identified as Mexican who are also in better health. Together, this collection of results suggests that selective ethnic attrition, driven by parental characteristics that are culled through a process of selective intermarriage, biases our estimates of the health of U.S.-born Mexicans and thus skews our perceptions of immigrant assimilation and intergenerational progress.

While our estimates suggest that ethnic attrition is an important phenomenon overlooked by research studies that rely solely on subjective measures of lineage, it should be noted that our estimates of the magnitude of ethnic attrition and resulting biases are likely to be understated. Since the analysis here is limited to children, it is likely that over time ethnic attrition rates will be even higher than what we observe here just as differences in health outcomes are likely to become all the more salient as children transition to adulthood. Consequently, we should expect the bias due to ethnic attrition that is present in current estimates of health differentials across immigrant generations and ethnic groups to be even larger in magnitude than what is suggested here.

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**Table 1: Percentage of adults aged 20-64 reporting poor health status, by Mexican generation**

| | Mexicans | | | 3rd+ Generation Whites |
|---|---|---|---|---|
| | 1st Generation | 2nd Generation | 3rd+ Generation | |
| Men's poor health | 9.47 | 9.46 | 12.05 | 9.24 |
| | (.18) | (.34) | (.30) | (.05) |
| Sample size | 27,968 | 7,562 | 11,886 | 286,446 |
| Women's poor health | 12.61 | 10.95 | 14.17 | 10.07 |
| | (.21) | (.34) | (.30) | (.05) |
| Sample size | 24,973 | 8,383 | 13,449 | 301,645 |

Source: 1996-2014 CPS March supplement data.
Note: Standard errors are shown in parentheses. The sample includes men and women ages 20-64. Mexicans are identified by the Hispanic origin question. 3rd+ generation whites are non-Hispanic white only.

**Table 2: Poor health regressions for Mexican generations relative to 3rd+ generation whites, by gender**

| | Men | | | Women | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| 1st generation Mexican | .0023 | .0267*** | -.0598*** | .0254*** | .0441*** | -.0509*** |
| | (.0018) | (.0020) | (.0021) | (.0020) | (.0022) | (.0024) |
| 2nd generation Mexican | .0022 | .0333*** | .0076** | .0088*** | .0382*** | .0105*** |
| | (.0034) | (.0035) | (.0034) | (.0034) | (.0035) | (.0035) |
| 3rd+ generation Mexican | .0281*** | .0446*** | .0201*** | .0410*** | .0537*** | .0259*** |
| | (.0027) | (.0028) | (.0028) | (.0027) | (.0028) | (.0028) |
| Years of education | | | -.0189*** | | | -.0206*** |
| | | | (.0002) | | | (.0002) |
| Basic controls | No | Yes | Yes | No | Yes | Yes |
| Sample size | 333,862 | 333,862 | 333,862 | 348,450 | 348,450 | 348,450 |

Source: 1996-2014 CPS March supplement data.

Note: Standard errors are shown in parentheses. The sample includes 1st, 2nd, and 3rd+ generation Mexicans and 3rd+ generation non-Hispanic whites (the reference group), ages 20-64. Mexicans are identified by the Hispanic origin question. Basic controls include age, age squared, and dummy variables for survey year, division of the country, individual states NY, NJ, IL, FL, TX, NM, AZ, CA, and urban area.

**Table 3: Mexican identification of children ages 17 and younger, by source of Mexican ethnicity**

| | 2nd Generation | 3rd Generation | 4th+ Generation |
|---|---|---|---|
| Percent with Mexican ethnicity on: | | | |
| Both sides of the family | 90.0 | 56.7 | 39.6 |
| One side of the family | 10.0 | 43.3 | 60.4 |
| Father's side only | 5.5 | 21.9 | 30.3 |
| Mother's side only | 4.5 | 21.4 | 30.1 |
| All | 100.0 | 100.0 | 100.0 |
| | | | |
| Percent identified as Mexican with: | | | |
| Mexican on both sides of the family | 97.69 | 97.25 | 98.59 |
| | (.10) | (.32) | (.19) |
| Mexican on one side of the family | 66.96 | 59.10 | 62.11 |
| | (.94) | (1.09) | (.65) |
| Mexican on father's side only | 65.45 | 61.95 | 60.18 |
| | (1.28) | (1.51) | (.92) |
| Mexican on mother's side only | 68.81 | 56.20 | 64.05 |
| | (1.38) | (1.56) | (.91) |
| All | 94.61 | 80.74 | 76.56 |
| | (.14) | (.57) | (.44) |
| | | | |
| Sample Size | 24,848 | 4,745 | 9,308 |

Source: 1996-2014 CPS March supplement data.

Note: Standard errors are shown in parentheses. The samples include U.S.-born children ages 17 and below who live in intact families. 2nd generation Mexicans are U.S.-born and have at least one parent born in Mexico. 3rd generation Mexicans are U.S.-born, have two U.S.-born parents, and at least one grandparent born in Mexico. 4th+ generation Mexicans are U.S.-born, have two U.S.-born parents, have no grandparents born in Mexico, and at least one parent who identifies as Mexican on the Hispanic origin question.

**Table 4: Poor health status of parents of children ages 17 and younger, by source of Mexican ethnicity**

| | 3rd Generation | 4th+ Generation |
|---|---|---|
| Percent of fathers reporting poor health status: | | |
| Mexican on both sides of the family | 7.95 | 9.17 |
| | (.52) | (.48) |
| Mexican on one side of the family | 6.04 | 6.05 |
| | (.53) | (.32) |
| All | 7.12 | 7.28 |
| | (.37) | (.27) |
| Percent of mothers reporting poor health status: | | |
| Mexican on both sides of the family | 6.69 | 7.65 |
| | (.48) | (.44) |
| Mexican on one side of the family | 5.79 | 7.01 |
| | (.52) | (.34) |
| All | 6.30 | 7.26 |
| | (.35) | (.27) |

Source: 1996-2014 CPS March supplement data.

Note: Standard errors are shown in parentheses. The samples include U.S.-born children ages 17 and below who live in intact families. 3rd generation Mexicans are U.S.-born, have two U.S.-born parents, and at least one grandparent born in Mexico. 4th+ generation Mexicans are U.S.-born, have two U.S.-born parents, have no grandparents born in Mexico, and at least one parent who identifies as Mexican on the Hispanic origin question.

**Table 5: Poor health status of parents of children ages 17 and younger, by child's Mexican identification**

| | 3rd Generation | 4th+ Generation |
|---|---|---|
| Percent of fathers reporting poor health status: | | |
| Child identified as Mexican | 7.52 | 8.06 |
| | (.43) | (.32) |
| Child not identified as Mexican | 5.47 | 4.77 |
| | (.75) | (.46) |
| All | 7.12 | 7.28 |
| | (.37) | (.27) |
| Percent of mothers reporting poor health status: | | |
| Child identified as Mexican | 6.24 | 7.41 |
| | (.39) | (.31) |
| Child not identified as Mexican | 6.56 | 6.78 |
| | (.82) | (.54) |
| All | 6.30 | 7.26 |
| | (.35) | (.27) |

Source: 1996-2014 CPS March supplement data.
Note: Standard errors are shown in parentheses. The samples include U.S.-born children ages 17 and below who live in intact families. 3rd generation Mexicans are U.S.-born, have two U.S.-born parents, and at least one grandparent born in Mexico. 4th+ generation Mexicans are U.S.-born, have two U.S.-born parents, have no grandparents born in Mexico, and at least one parent who identifies as Mexican on the Hispanic origin question.

**Table 6: Percentage of children ages 17 and younger reporting poor health status, by Mexican generation**

| | Mexicans | | | | | | $4^{th}$+ Generation White |
|---|---|---|---|---|---|---|---|
| | 1.5 Generation | 2nd Generation | 3rd Generation Identified as Mexican | | 4th+ Generation Identified as Mexican | | |
| | | | Yes | No | Yes | No | |
| Poor health (%) | 2.64 | 2.60 | 1.77 | 1.64 | 1.85 | 1.24 | 1.26 |
| | (.23) | (.10) | (.21) | (.42) | (.16) | (.24) | (.03) |
| Sample size | 4,923 | 24,848 | 3,831 | 914 | 7,126 | 2,182 | 186,223 |
| | | | All $3^{rd}$ Generation | | All $4^{th}$ Generation | | |
| Poor health (%) | | | 1.75 | | 1.71 | | |
| | | | (.19) | | (.13) | | |
| Sample size | | | 4,745 | | 9,308 | | |

Source: 1996-2014 CPS March supplement data.

Note: Standard errors are shown in parentheses. The samples include U.S.-born children ages 17 and below who live in intact families. 1.5 generation Mexicans are children born in Mexico. $2^{nd}$ generation Mexicans are U.S.-born and have at least one parent born in Mexico. $3^{rd}$ generation Mexicans are U.S.-born, have two U.S.-born parents, and at least one grandparent born in Mexico. $4^{th}$+ generation Mexicans are U.S.-born, have two U.S.-born parents, have no grandparents born in Mexico, and at least one parent who identifies as Mexican on the Hispanic origin question. 4th+ generation whites have no parents or grandparents who are foreign born, and themselves and both parents are identified as non-Hispanic on the Hispanic origin question and white only on the race question.

**Table 7: Child poor health regressions for Mexican generations relative to 4th+ generation whites.**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| 1.5 generation Mexican | .0138*** | .0139*** | .0018 | .0045** |
| | (.0017) | (.0018) | (.0019) | (.0019) |
| 2nd generation Mexican | .0133*** | .0143*** | .0048*** | .0057*** |
| | (.0008) | (.0009) | (.0011) | (.0011) |
| 3rd generation Mexican: | | | | |
| Identified as Mexican | .0051*** | .0054*** | .0027 | .0019 |
| | (.0020) | (.0020) | (.0020) | (.0020) |
| Not Identified as Mexican | .0038 | .0034 | .0018 | .0011 |
| | (.0040) | (.0040) | (.0040) | (.0039) |
| 4th+ generation Mexican: | | | | |
| Identified as Mexican | .0059*** | .0057*** | .0027* | .0014 |
| | (.0014) | (.0015) | (.0015) | (.0015) |
| Not Identified as Mexican | -.0003 | -.0004 | -.0023 | -.0025 |
| | (.0026) | (.0026) | (.0026) | (.0026) |
| Basic controls | No | Yes | Yes | Yes |
| SES | No | No | Yes | Yes |
| Parental health | No | No | No | Yes |

Source: 1996-2014 CPS March supplement data.

Note: Standard errors are shown in parentheses. The samples include U.S.-born children ages 17 and below who live in intact families. 1.5 generation Mexicans are children born in Mexico. 2nd generation Mexicans are U.S.-born and have at least one parent born in Mexico. 3rd generation Mexicans are U.S.-born, have two U.S.-born parents, and at least one grandparent born in Mexico. 4th+ generation Mexicans are U.S.-born, have two U.S.-born parents, have no grandparents born in Mexico, and at least one parent who identifies as Mexican on the Hispanic origin question. 4th+ generation whites have no parents or grandparents who are foreign born, and themselves and both parents are identified as non-Hispanic on the Hispanic origin question and white only on the race question. 4th+ generation whites is the reference group. Basic controls include age, age squared, and dummy variables for gender, survey year, division of the country, individual states NY, NJ, IL, FL, TX, NM, AZ, CA, and urban area. SES controls include controls for mother's and father's years of education and employment status. Parental health controls include dummy variables for mother's and father's self-reported health status.

# ETHNIC ATTRITION AND THE OBSERVED HEALTH OF LATER-GENERATION MEXICAN AMERICANS

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Numerous studies find that U.S.-born Hispanics differ significantly from non-Hispanic whites on important measures of human capital, including health. Nevertheless, almost all studies rely on subjective measures of ethnic self-identification to identify immigrants' U.S.-born descendants. This can lead to bias due to "ethnic attrition," which occurs whenever a U.S.-born descendant of a Hispanic immigrant fails to self-identify as Hispanic. In this paper, we show that Mexican American ethnic attritors are generally more likely to display health outcomes closer to those of non-Hispanic whites. This suggests that conventional estimates of Mexican American health are likely to be biased away from suggesting patterns of assimilation and convergence with non-Hispanic whites.

JEL Classification: J15, J12, I14

Keywords: assimilation, ethnic attrition, identity

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# I. INTRODUCTION

A fundamental issue in the long-running debate over immigration policy is the criticism that Hispanics are poorly assimilated. These views are supported by numerous studies which show that Hispanics often differ significantly from non-Hispanic whites on measures of human capital such as education (Smith 2003) and health (Antecol and Bedard 2006). Nevertheless, almost all studies rely on subjective measures of ethnic self-identification to identify immigrants' U.S.-born descendants. This can lead to bias due to "ethnic attrition," which occurs whenever a U.S.-born descendant of a Hispanic immigrant fails to self-identify as Hispanic. Duncan and Trejo (2011) show that since ethnic attritors are positively selected on socioeconomic status, conventional estimates of educational progress for Mexican Americans are biased downward. In this paper we investigate whether ethnic attrition can also account for some of the perceived health gaps between ethnic groups. To focus the analysis, we restrict attention to the experience of Mexicans in particular, the single largest immigrant group in the U.S., and identify ethnic attritors as individuals with at least one parent who identifies as Mexican/Mexican American, but who is not himself identified as Mexican/Mexican American. The results from comparing health outcomes across groups indicate that Mexican American ethnic attritors are generally more likely to display health outcomes closer to those of non-Hispanic whites compared with individuals who identify as Mexican Americans. This suggests that conventional estimates of Mexican American health relying solely on measures of self-identification are likely to be biased away from suggesting patterns of assimilation and convergence with non-Hispanic whites.

The remainder of this paper proceeds as follows. Section II describes the data used in the analysis, Section III presents the results comparing health outcomes of self-identified Mexicans, ethnic attritors, and non-Hispanic whites, and Section IV concludes.

## II. DATA

The data we use come from the 2000-2014 waves of the National Health Interview Survey (NHIS), the major source of detailed data on a broad range of health outcomes and related characteristics of the U.S. population. Since the NHIS does not have direct information on country of birth outside the U.S., we restrict our sample to children, ages 0-17, living with both of their parents, so that we may connect ethnic self-identification of parents with their children.[1] Thus, Mexican ethnic attritors are defined in this study as those individuals who are not identified as Mexican/Mexican Americans, despite the fact that they have at least one parent who ethnically self-identifies as Mexican/Mexican American. We follow standard definitions used in the literature to describe immigrant generation. "1.5" generation children are foreign-born children with at least one foreign-born parent.[2] 2nd generation children are U.S.-born children with at least one foreign-born parent. 3rd+ generation children are U.S.-born individuals who have two U.S.-born parents. Since the focus of this paper is on Mexican/Mexican American immigrants and their descendants, all 1.5, 2nd, and 3rd generation children must have at least one parent who self-identifies as Mexican/Mexican American. We later compare outcomes for ethnic attritors and non-attritors to those of non-Hispanic white children, defined as 3rd+ generation children who are "white only" and whose parents are also non-Hispanic "white only."

While the NHIS collects a wide variety of health outcomes, we focus here on those outcomes less likely to be subject to endogeneity concerns surrounding diagnosis. For instance, individuals with higher socioeconomic status may have better access to health care and thus may be more likely to report a bad diagnosis. The most objective of these health measures are

[1] See Antman, Duncan, and Trejo (2015) for an analysis using the Current Population Survey, which allows us to exploit information on parental place of birth, but has fewer health outcomes to explore.
[2] These might also be described as first generation immigrants, but we use the term "1.5 generation," as others have done, to emphasize that they arrived as children.

indicators that the child had low birth weight and is currently obese, respectively.[3] Finally, to make use of the extensive health data available in the NHIS, we also report results from variables indicating a child had at least one health condition reported at the time of the survey and a separate indicator for whether the child had an activity limitation.[4] To compare our findings with others in the literature, we also report the results from a binary indicator for poor self-rated health (SRH), the results of a question asking whether the respondent considers the sampled child's health to be poor or fair, as compared with good, very good, or excellent. We follow the literature in defining this "poor health" indicator to be equal to 1 if the sampled individual is reported to be in poor or fair health. While some may be concerned about the subjective nature of self-rated health, an extensive literature suggests that SRH captures an important dimension of health, even beyond other measures (Idler and Benyamini 1997).

Although the NHIS has several survey modules that relate to children's health, not all health questions are asked of all children in the sample. In particular, detailed information on health outcomes is only collected in the "child sample" survey which consists of one randomly selected child from each household. Further, information on weight and height to construct the obesity measure used here are only collected for children between the ages of 12 and 17 in more recent waves of the survey. Finally, we note that since our analysis focuses on children, and the NHIS requires respondents to be household members who are at least 18 years of age, none of

[3] Low birth weight is classified as having birth weight below 2,500 g. Obese children have a body mass index (BMI) greater than or equal to the sex- and age-specific 95$^{th}$ percentile from the 2000 CDC Growth Chart.
[4] The list of health conditions include: autism, Asperger's, down syndrome, cerebral palsy, muscular dystrophy, cystic fibrosis, sickle cell anemia, diabetes, arthritis, congenital heart disease, other heart condition, asthma, hay fever, respiratory allergy, food/digestive allergy, eczema/skin allergy, frequent diarrhea/colitis, anemia, ear infections, seizure, frequent headaches/migraines, stutter/stammer, trouble seeing, and an impairment/health problem that limited their ability to run/walk/play. An activity limitation is a limitation in activity due to a chronic health condition, related to the following list of health conditions: vision/problem seeing, hearing problem, speech problem, asthma/breathing problem, birth defect, injury, intellectual disability, other developmental problem (e.g., cerebral palsy), other mental, emotional, or behavioral problem, bone, joint, or muscle problem, epilepsy or seizures, learning disability, attention deficit/hyperactivity disorder (ADD/ADHD), or other impairment problem.

the individuals in our sample are responding for themselves. While this may raise questions about whether child ethnic self-identification is truly captured by the survey, we argue that it is likely that parents or close relatives are responding for children and there is a high correlation between how children view themselves and how they are viewed by the survey respondent. In any case, at a minimum, our estimate of ethnic attrition is likely to be an underestimate of the degree of ethnic attrition we might expect if we solicited this information from the children sampled in later years when they have separated from their parents and formed their own households.

## III. RESULTS

Table 1 documents the extent of ethnic attrition in our sample by linking whether children are identified as Mexican American with whether one or both parents identify as Mexican/Mexican American. As such, it also links the concept of ethnic attrition of children with the intermarriage rates of parents, which is much more common for children at the 3rd+ generation. For all groups of children (1.5, 2nd, and 3rd+ generations), those with both parents identified as Mexican/Mexican American are almost universally identified as Mexican themselves with rates of ethnic identification higher than 99 percent. In contrast, children of intermarried parents are far less likely to be identified as Mexican, with rates of identification around 60 to 70 percent.[5] This implies ethnic attrition rates of 30 to 40 percent for children of intermarried parents. Thus, intermarriage itself is closely linked with ethnic attrition. Since intermarriage rates are highest for the parents of 3rd+ generation children (almost 45 percent) versus intermarriage rates for parents of 1.5 generation children (2 percent) and 2nd generation

[5] This result is strongly consistent with analysis of ethnic attrition rates and intermarriage rates from the Current Population Survey where ethnic identification can be defined using measures of birthplace (Antman, Duncan and Trejo 2015). This suggests that the ethnic attrition measure we construct here relying on self-identification of parents is broadly consistent with measures relying on birthplace or ancestry.

children (10 percent), it is understandable that ethnic attrition is far higher for children at the 3rd+ generation. This is shown at the bottom of the table, where Mexican identification rates for children at the 3rd and higher generation are 85.85 percent versus over 95 percent for the 1.5 and 2nd generation children. This implies that ethnic attrition rates are 14.15 percent (100-85.85) for 3rd generation children and below 5 percent for 1.5 and 2nd generation children. This justifies the focus of our analysis on 3rd+ generation children, which we turn to in Table 2.

Table 2 compares the health outcomes of ethnic attritors with those of individuals identified as Mexican/Mexican American at the 3rd+ generation, as well as with those of non-Hispanic whites. In general, we find a pattern which suggests that ethnic attritors more closely resemble non-Hispanic whites on measures of health. For example, 0.88 percent of both the group of Mexican ethnic attritors and non-Hispanic whites are reported to be in poor health, resulting in a .002 percentage point gap between the two groups (row 5). In contrast, 1.59 percent of children identified as Mexican are reported to be in poor health, resulting in a 0.71 percentage point gap with non-Hispanic whites that is statistically significant at the 1 percent level (row 4). Thus, it comes as no surprise that the gap between attritors and non-attritors (row 6) is also 0.71 percentage points and statistically significant at 1 percent level.

Looking across other outcomes also confirms that ethnic attritors more closely resemble non-Hispanic whites on measures of health: 7.68 percent of children identified as Mexican had low birth weight, compared with 6.97 percent of non-Hispanic whites and 6.81 percent of ethnic attritors. Similarly, 14.65 percent of children identified as Mexican are obese, compared with 10.38 percent of non-Hispanic whites and 13.19 percent of ethnic attritors. While these more objective measures suggest that children identified as Mexican are more likely to be in worse health that non-Hispanic whites and ethnic attritors, the reverse pattern is suggested by the

remaining outcomes related to reported health conditions and activity limitations. Here, the analogous statistics are 39.63 and 5.73 for children identified as Mexican, 41.85 and 6.57 for non-Hispanic whites, and 44.08 and 6.01, respectively, for ethnic attritors. The latter two sets of results, although somewhat surprising, may be consistent with the difficulties surrounding using measures of diagnosed health conditions that may reflect access to health care. Regardless, these findings are consistent with the overall results emphasized here that ethnic attritors are generally closer to non-Hispanic whites on measures of health compared with individuals identified as Mexican.

Row 7 shows that adding controls for child's gender, child's integer age fixed effects, a quadratic function of mother's and father's age, mother's and father's education fixed effects, region fixed effects, and year fixed effects does not change the overall pattern of gaps between non-attritors and attritors presented in row 6. This suggests that the results are robust to concerns that differences in health outcomes across ethnic attritors and non-attritors are being driven purely by differences in socioeconomic status. While not all gaps are statistically significant, it is also telling that the differences between individuals identified as Mexican and non-Hispanic whites are all statistically significant (row 4), while those between ethnic attritors and non-Hispanic whites are smaller in magnitude and not statistically significant (row 5). This also suggests that ethnic attritors are closer to non-Hispanic whites on measures of health compared with individuals identified as Mexican.

Row 8 summarizes the results by showing the gap between non-attritors and attritors relative to the gap between individuals identified as Mexican and non-Hispanic whites ([row 2 – row3]/[row 2 – row 1] = row 6/row 4). Thus, it provides a measure of how much closer to the non-Hispanic white health measures are Mexican attritors relative to those who are identified as

Mexican. For example, because there is essentially no gap between Mexican ethnic attritors and non-Hispanic whites with respect to poor self-related health, Mexican attritors are 100 percent closer to non-Hispanic whites relative to individuals identified as Mexican (0.71/0.71). The analogous ratios for the low birth weight, obese, health condition, and activity limitation outcomes are 123, 34.2, 200.1, and 33.6 percent, respectively. The fact that all entries in row 8 are positive shows that for all outcomes, attritors are closer to non-Hispanic whites than are individuals identified as Mexican.

## IV. CONCLUSION

This paper has investigated the differences in health outcomes across groups of Mexican ethnic attritors, non-attritors, and non-Hispanic whites. The evidence suggests that ethnic attritors display health outcomes closer to non-Hispanic whites and away from individuals that identify as Mexican. These results are strongly consistent with further work using additional data sources containing information on parent's and grandparent's place of birth to identify ethnic attrition (Antman, Duncan, and Trejo 2015). As implied by the results here, explicit estimates of the bias introduced by ethnic attrition indicate that conventional estimates of Mexican American health are likely to be biased away from suggesting patterns of assimilation and convergence with non-Hispanic whites.

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**Table 1: Mexican Identification of Children with a Mexican Origin**

| | Mexican Generation | | |
|---|---|---|---|
| | 1.5 | 2nd | 3rd+ |
| Percent with: | | | |
| Mexican on both sides of the family | 97.97 | 89.91 | 55.05 |
| Mexican on one side of the family | 2.03 | 10.09 | 44.95 |
| Total | 100.00 | 100.00 | 100.00 |
| | | | |
| Percent identified as Mexican: | | | |
| Mexican on both sides of the family | 99.59 | 99.32 | 99.38 |
| | (0.08) | (0.05) | (0.09) |
| Mexican on one side of the family | 68.38 | 59.45 | 69.28 |
| | (4.32) | (0.82) | (0.61) |
| All | 98.96 | 95.30 | 85.85 |
| | (0.13) | (0.11) | (0.31) |
| | | | |
| Sample size | 5,754 | 35,499 | 12,818 |

Source: 2000-2014 National Health Interview Survey (NHIS).

Note: Standard errors are shown in parentheses. The sample includes children ages 0-17 living with both biological parents, at least one of which lists a Mexican/Mexican-American origin. 1.5 generation Mexican children are foreign born children with at least one foreign born parent. 2nd generation Mexican children are U.S. born children with at least one foreign born parent. 3rd+ generation Mexican children are U.S. born with two U.S.-born parents...

**Table 2: Health Measures of 3rd+ Generation Children**

| | Poor Health | Low Birth Weight[1] | Obese[1,2] | Health Condition[1] | Activity Limitation |
|---|---|---|---|---|---|
| 1. Non-Hispanic White | .88 | 6.97 | 10.38 | 41.85 | 6.57 |
| | (.03) | (.12) | (.38) | (.22) | (.08) |
| Sample Size | 98,776 | 46,668 | 6,599 | 48,294 | 98,776 |
| 3rd+ generation Mexican: | | | | | |
| 2. Child identified as Mexican | 1.59 | 7.68 | 14.65 | 39.63 | 5.73 |
| | (.09) | (.38) | (1.37) | (.70) | (.23) |
| 3. Child not identified as Mexican (Mexican Ethnic Attritors) | .88 | 6.81 | 13.19 | 44.08 | 6.01 |
| | (.23) | (.88) | (3.24) | (1.66) | (.58) |
| Sample Size | 12,818 | 5,500 | 603 | 5786 | 12,818 |
| Differences: | | | | | |
| 4. Identified as Mexican (2) - Non-Hispanic White (1) | 0.71*** | 0.71* | 4.27*** | -2.22*** | -0.84*** |
| | (0.10) | (0.39) | (1.42) | (0.74) | (0.25) |
| 5. Mexican Attritors (3) - Non-Hispanic White (1) | 0.002 | -0.16 | 2.81 | 2.23 | -0.56 |
| | (0.23) | (0.88) | (3.26) | (1.68) | (0.58) |
| 6. Identified as Mexican (2) - Mexican Attritors (3) | 0.71*** | 0.87 | 1.46 | -4.45** | -0.28 |
| (or (4) – (5)) | (0.25) | (0.95) | (3.52) | (1.81) | (0.62) |
| 7. Identified as Mexican (2) - Mexican Attritors (3) | 0.44* | 0.64 | 0.33 | -5.04*** | -0.84 |
| (with controls) | (0.25) | (0.95) | (3.46) | (1.79) | (0.62) |
| 8. How much closer to the non-Hispanic white health measures are Mexican attritors relative those identified as Mexican (in percent)? | 99.7 | 123.0 | 34.2 | 200.1 | 33.6 |

Source: 2000-2014 National Health Interview Survey (NHIS). The sample includes U.S.-born children ages 0-17 living with both biological parents.
Sample further limited to: [1]sample children, [2]ages 12-17 in the sample years 2008-2014.
Note: Standard errors are shown in parentheses. The reference group "white" are 3rd+ generation children who themselves and both parents are non-Hispanic white only. Individuals with poor health are those whose self-reported health status is fair or poor on a five point scale. Low birth weight is less than 2,500g. Obese children have a body mass index (BMI) greater than or equal to the sex- and age-specific 95th percentile from the 2000 CDC Growth Chart. A child with a "health condition" reported one or more health condition. An activity limitation is a limitation in activity due to a chronic health condition. Controls include child's gender, child's integer age fixed effects, mother's and father's age (quadratic), mother and father's education fixed effects, region fixed effects, and year fixed effects.