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Willingness to Pay for Legal Visas:  
A Case Study of Agricultural Workers in Southern  
California

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## Abstract

This paper presents a case study of a sample of Mexican agricultural workers in Southern California based on primary data collected by the authors from rural areas in and around Bakersfield. The ultimate aim of this study is to characterize and explore more deeply the complex array of variables that enter the migration decision of a typical worker in this region, and analyze the interrelationships between these variables. The administered survey was designed to accommodate questions that attempt to elicit responses about preferences in addition to those with easily quantifiable answers. This paper presents a descriptive summary of the survey results followed by the two main empirical questions and the results of the inquiry that constitute the main innovation of this work: i) to empirically estimate and analyze a “home premium”: the non pecuniary benefit of being in Mexico and its possible determinants and ii) empirically estimate what factors affect the willingness to pay for annual legal visas among the undocumented workers in the region. The second question is an interesting and topical one because of the current debate about a possible temporary guest worker program. However, this paper does not take a policy perspective to the question but simply attempts to estimate the relative importance of different sources of the possible benefit of legalization to an undocumented worker. The data suggest that a significant home premium exists that is not significantly different between migrants of the two statuses, nor does it diminish with years spent in the U.S. The analysis of WTP suggests that the perceived benefit of legal status to a migrant comes mainly from a perception of higher wages in this status and through a perceived reduction in the average unemployment spell when first entering the U.S. by becoming legal.

## 1 Introduction

Undocumented Mexican migration to the U.S. has been a recurrent theme dictating INS (currently, USCIS) policy. The continuously interactive responses of policy makers in the U.S. and undocumented workers from Mexico over the last three decades has created a unique situation that poses various complex and extremely interesting questions. This has naturally resulted in a significant bi-national research effort between demographic economists and sociologists on both sides of the border. This study is motivated by a small but important subset of issues that affect the migration decision of a Mexican worker. The paper proceeds with Section 2 providing a summary of trends in Mexican immigration to the U.S. which make this migratory flow uniquely interesting. Section

3 discusses the relevance of this case study to the wider questions and briefly discusses the data collected for this work through surveys administered to agricultural workers in the Bakersfield area and also summarizes the interesting results from the survey. Section 4 discusses the relevance of the Willingness to Pay approach in valuing legal visas and presents the empirical results. Section 5 presents the discussion and empirical analysis of the “home premium” and Section 6 concludes.

## **2 Historical, Current and Expected Future Trends in Mexican Immigration**

Historically, the first notable increase in undocumented migration was caused by the end of the Bracero Program in 1964. This was a bi-national agreement that instituted a guest-worker program in 1942, partly in response to labor shortages caused by the Second World War. This let millions of Mexican workers (largely agricultural) enter the U.S on temporary legal visas. This program was extended through the 1950’s but was unilaterally terminated by the U.S after successful lobbying efforts of organized labor in 1964 (Orrenius 2001). As a result, many “Braceros” simply started to migrate illegally, because of the abrupt change in their status. This phenomenon was facilitated by an important residual of the Bracero program - the “network effects”. The program had established vital links between employers in the U.S., recruiters on both sides of the border and the migrant workers that lowered the risks of migrating to the U.S. even after the termination of the program. Studies based on survey data clearly establish the importance of these networks in increasing the propensity to migrate. (Massey et al. 1987). This has sparked a renewed interest among both economists and sociologists in the concept of “Social Capital” which is currently the subject of a significant body of collaborative research among the two

disciplines<sup>1</sup>.

Since the *actual* number of undocumented entries into the U.S. cannot be directly measured, these are estimated based on the number of apprehensions at the border by the INS, after controlling for factors like increased apprehension activity due to additional funding allocated to the Border Patrol, etc. National surveys in Mexico support the estimates of Massey and Singer (1995), who report the following general trend: The *Gross* inflow of undocumented migrants grew on average by 20% from 1965 to 1978, when it reached nearly 1.5 million, levelling off till Mexico's economic crisis in the early eighties that prompted another period of rapid expansion, peaking at 3.8 million in 1986. This number fell into the 2.5 to 3 million range till 1990. Their estimate gives a total of 36.5 million entries by undocumented Mexicans over the period 1965-1990, which they say is broadly consistent with a recent national survey in Mexico, that reveals that one-third of all Mexicans have been to the U.S. at some point in their lives<sup>2</sup>. What is clear from these figures is that the significant portion of Mexican migration to the U.S. is temporary and repetitive in nature. Figure 1 shows estimated gross and net undocumented migration that illustrates the importance of return migration. Gross migration steadily increases from the early eighties following the Mexican Crisis and falls substantially following the passage of the Immigration Reform and Control Act in 1986<sup>3</sup>.

Massey and Singer (1995) predict that over the period of 1965 to 1990, 86% of all illegal entries into the U.S were offset by departures, which would imply a net inflow of only 5.2 million workers over this 25 year period.

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<sup>1</sup>See Taylor (1986), Massey (1990), Davis and Winters (2001), Winters, de Janvry, and Sadoulet (2001), Curran and Rivero-Fuentes (2003)

<sup>2</sup>Current Population of Mexico: 99,600,000.

<sup>3</sup>This decrease is attributed more to the fact that many undocumented workers were legalized and now crossed the border freely than a more effective Border Patrol through increased funding.

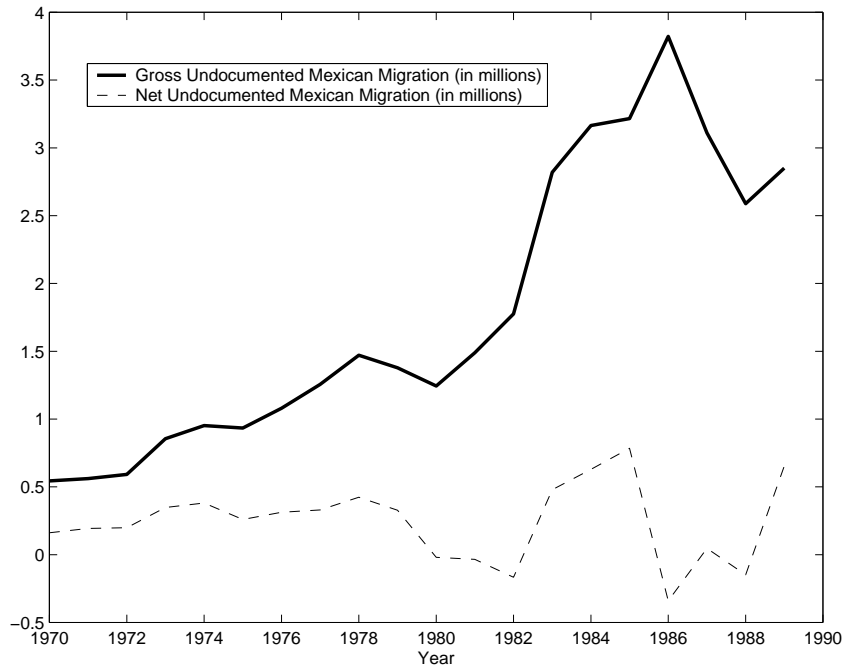


Figure 1: **Estimated Gross and Net undocumented in-migration from Mexico**  
Source: Massey and Singer (1995)

According to the most recent estimates of the Urban Institute in 2004 based on the Current Population Survey and census data, 27% of the 34.5 million foreign born population living in the United States is currently undocumented (Figure 2 illustrates the breakdown of the total foreign born population in the U.S.). This puts the undocumented population figure in the United States at approximately 9.3 million. The largest single contributor to this population is Mexico that accounts for 57% or a total of 5.3 million workers. All other Latin American countries together contribute another 23% to the total. More than half of the Mexican born population in the United States (9.9 million) is undocumented as compared to the relatively smaller one in six for this average in the rest of the foreign born population.

As for the legal immigrants in the United States who sum to around 10.5 million,

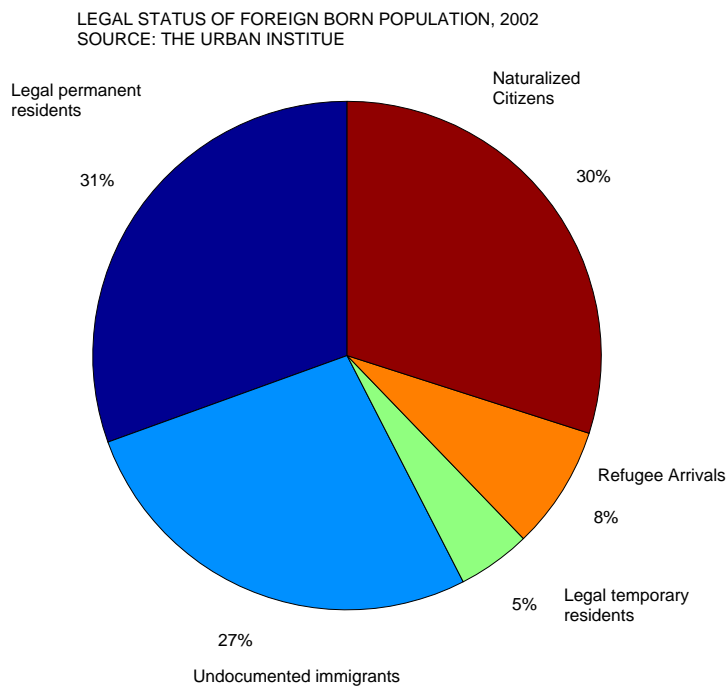


Figure 2: **Legal Status**

Mexico accounts for about a fifth of this population. The most substantial component of Mexican legal workers derive their status from the Immigration Reform and Control Act (IRCA) passed in 1986 which gave amnesty to more than 2 million workers, most of whom were seasonal agricultural laborers.

Even though currently about half of the Mexican population in the U.S. is undocumented, around 80% of newly arrived immigrants are undocumented and this trend seems more or less stable, unless the U.S. experiences either significant and sustained deterioration in the economy or changes in immigration policy. According to the Urban Institute the U.S. can anticipate 14 million entries between 2000 and 2010 and the net migration of 400,000 Mexicans per year. This would result in more than 10% of the Mexican born population living in the U.S. with less than 90% living in Mexico (approximately 9% of Mexican born population now lives in the U.S.).

26% of the total undocumented population of the U.S. lives in California, more than twice that of the next largest concentration in Texas. According to the Public Policy Institute of California, through the mid 1980s, net undocumented immigration increased to reach its peak at more than 200,000 people between April 1989 and April 1990. However, in the early 1990s, California saw a sharp fall in net undocumented immigration; by the early 90's the net annual flow may have declined to fewer than 100,000. According to the latest Census, more than 2 million undocumented immigrants live in California, which represents more than 6.5 percent of the state's population.

In summary the factors that make the phenomenon of Mexican migration to the U.S. unique are i) The size of the Mexican born population in the U.S. compared to that from other countries and ii) the temporary and repetitive nature of much of this migration. The second of these factors stresses the ties of this population to the home community maintained by an extensive system of economic and social networks spanning both countries. This paper explores a small subset of these issues through a case study for California, the largest participant in this migratory phenomenon.

### **3 Survey Results**

The survey covered over 70 undocumented workers and 30 legal workers but the full sample could not be used for all tests due to missing observations in some of the variables. After accounting for the missing observations, the minimum sample size used in any test was no less than 59 for undocumented and 30 for documented workers.



### **3.1 Survey Methodology**

The survey was conducted over a two week period in the towns of Arvin and Lamont on the outskirts of Bakersfield. The city of Arvin, CA with a population of approximately 13,000 is a farming community located approximately 18 miles southeast of Bakersfield. Lamont, CA is also a predominantly farming community, located approximately 10 miles from Bakersfield, with a population of roughly 14,000. Undocumented workers typically migrate to Lamont and Arvin to work in the grape and carrot fields. In fact, Arvin is home to one of the world's largest manufacturers of carrots, Grimmway Farms. One can often find migrant farm workers resting and relaxing after a full day's work, in many of the public parks in these cities. Our survey was conducted in these locations over the two week period.

The sole qualifier for survey subjects was that they be from Mexico and of majority age. The typical surveyee was someone randomly approached by the surveyors and asked to participate. Upon the provision of consent and the confirmation of majority age, the survey<sup>4</sup> was administered, either in English or Spanish as needed. The key to participation by undocumented workers was our assurance of the maintenance of confidentiality of the responses as well as the non-identification of each surveyee. As such we were able to survey approximately 100 individuals.

### **3.2 Years in the U.S. since the First Trip**

The sample showed a significant positive difference between the age of the legal and undocumented workers. In order to explore if this suggested a presence of a longer time for networking, the difference between the age of the migrant and the age when the

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<sup>4</sup>Actual survey provided upon request.

migrant made his or her first trip to the U.S. was taken. For this variable as well, we found a significant difference between these years for legal and illegal workers. The data are illustrated in Figure 3 which shows that this profile differs strikingly between the two statuses. If a longer time for networking implies a higher probability of acquiring legal

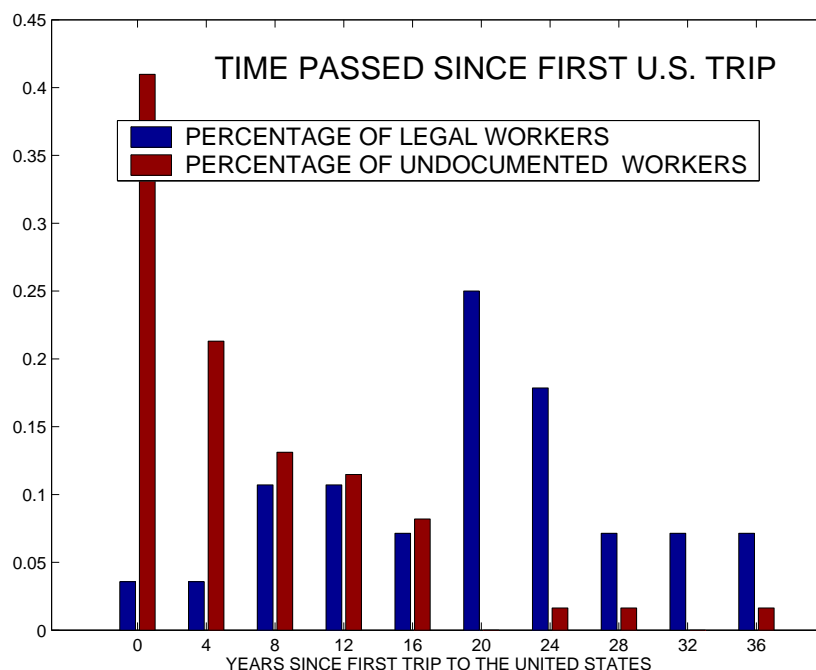


Figure 3: Years Since First U.S. Trip

status is however not easily deduced from this result. This result is probably more due to an historical “anomaly”, the Immigration Reform and Control Act (IRCA) passed in 1986 that gave legal status to more than 2 million workers most of whom were Seasonal Agricultural Workers (SAWS). Hence more time spent in the U.S. since the first trip is probably directly related to the chances of the migrant having acquired this status under the IRCA.

Another interesting finding was that even though the number of trips back home since the first was significantly higher for legal workers, this was obviously related to the

amount of time spent in the U.S. since there was no significant difference in the average frequency of visiting home between the legals and the illegal migrants. This is especially interesting since the average migration cost for illegal workers is significantly higher than legals. However, compared to the legal workers in the sample, a much bigger fraction of undocumented workers reported having the majority of their dependents in Mexico, which is discussed in the next section.

### 3.3 Location of Dependents

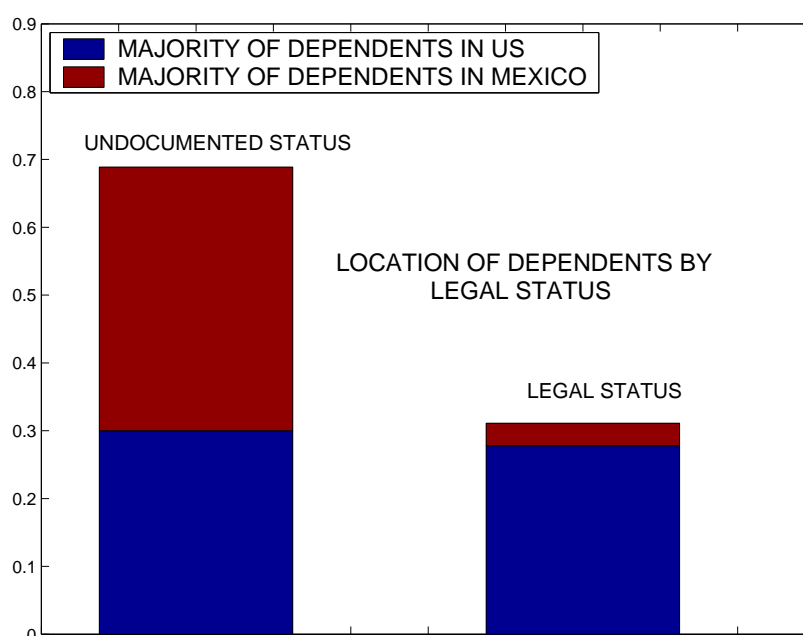


Figure 4: **The Location of the Majority of a Migrant’s Dependents**

Where the majority of the dependents of a migrant live determines the nature of social and economic ties to either country. This variable might not only affect the willingness to pay for a legal visa but of course may itself be determined by the legal status of the migrant. Even though a slight majority of the sample (54%) reported as having most

of their dependents living in the U.S. compared to the 46% with dependents mostly in Mexico, the disaggregation of these figures by status is more instructive.

Statistically, there was a significantly higher proportion of undocumented workers with dependents in Mexico than documented workers. The numbers are summarized in Figure 4. This breakdown is instructive in analyzing the longer term effects of legalization. As mentioned in the last section, it is interesting to note that even though this difference in the location of dependents exists, there no significant difference between the frequency of visits between legal and illegal workers. This may be due to a number of reasons that can counter the effect of the location of dependents : i) the cost of going back and forth for illegal workers is higher due to the cost of avoiding detection, ii) even though the majority of the dependents of legal workers may be in the U.S., the extended family system in Mexico's rural sending communities preserves social ties to Mexico, iii) higher incomes<sup>5</sup> among legal workers may produce the standard income effect on the number of trips home.

### 3.4 Remittances to Mexico

Given the constraints of the survey construction, one may consider the frequency of the number of trips home as an indicator of social ties to Mexico while remittances back home can indicate economic ties. Even though we do not see a difference in the frequency of visits between the two statuses in the sample, there is a clear difference in the amounts remitted home per month. The statistical difference becomes even more significant when we consider the proportion of monthly income sent home by the migrants. The numbers are summarized in Figure 5. While this comparison is to the large extent dependent on the location of dependents, it is noteworthy that the remittances by legal workers

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<sup>5</sup>This is discussed in more detail in the next section.

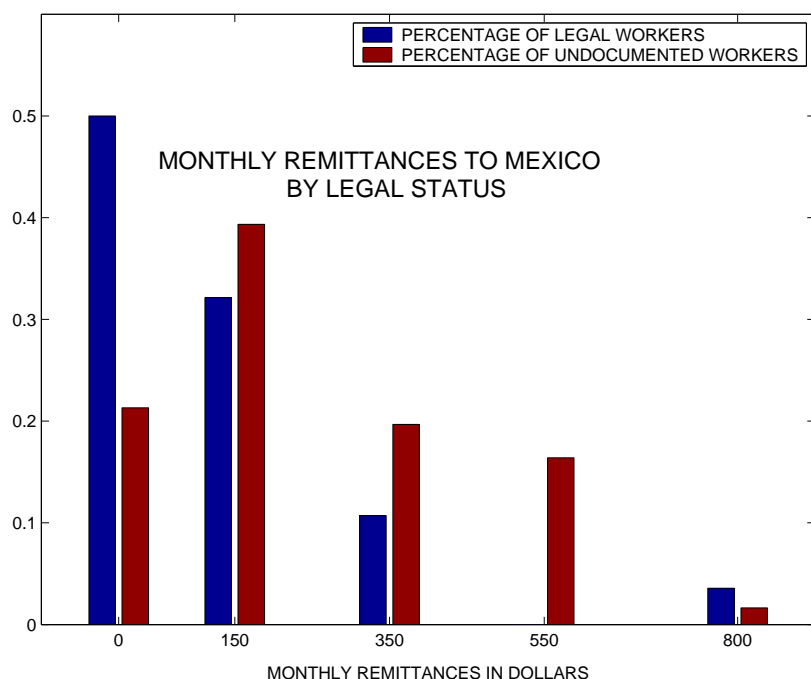


Figure 5: **Monthly Remittances to Mexico by Status**

whose dependents overwhelmingly reside in the U.S., is significantly positive. Another interesting result regarding remittances is that even after controlling for legal status, data show a significant and negative relationship between monthly remittances to Mexico and years in the U.S. since the first trip, showing that such economic ties may tend to diminish over time. Moreover, the data also show that there exists no significant income effect on remittances to Mexico (and equivalently, in an alternative specification, the data show the proportion of income sent home as remittances is negatively related to years in the U.S.). However, this result (of an insignificant income effect) is quite possibly due the fact that our sample does not contain much variation in income, since it comes from a somewhat homogenous (in terms of occupation and skill level) group of agricultural workers. Previous studies have found a positive relationship between remittances home and the level of skill amongst Mexican workers (Durand et al., 1996).

### 3.5 Perceived Wage Differences between Legal and Undocumented Work among Mexican Migrants

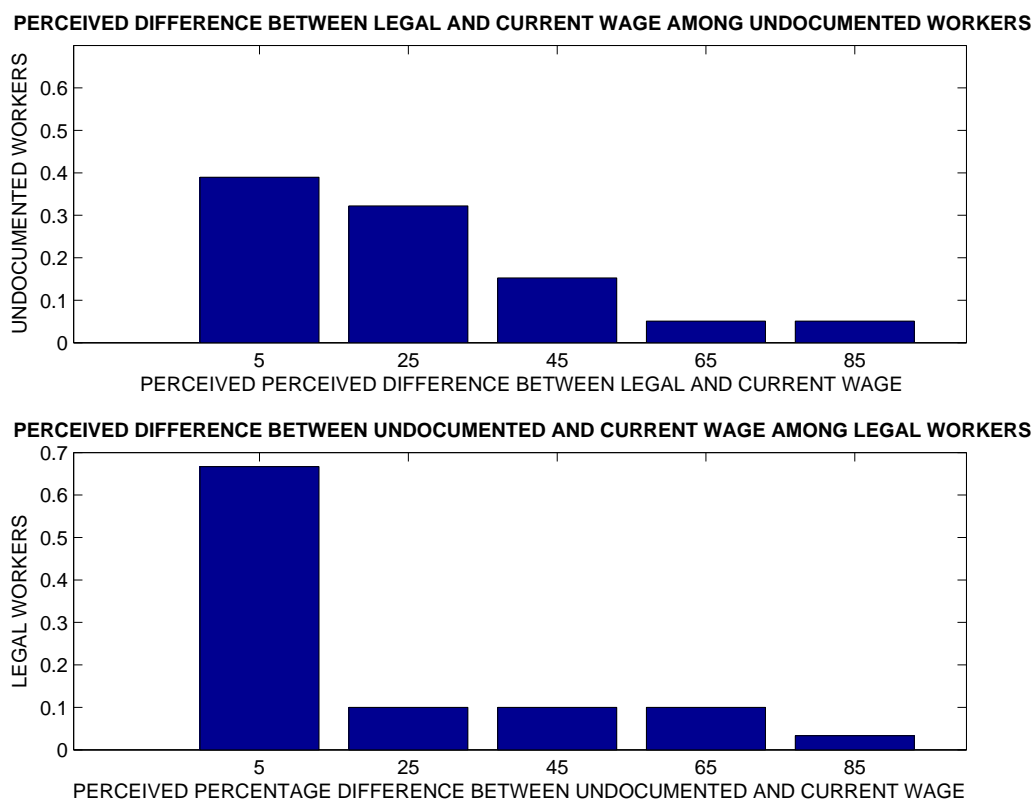


Figure 6: Perceived Wage Differences

The survey asked the migrants what they perceived their wage to be in the alternate status for the same occupation given their particular characteristics. For the undocumented migrants the difference between the perceived legal wage and their current wage was taken as a percentage of their current wage to calculate a perceived premium to acquiring legal status. For the documented migrants, the difference between a perceived undocumented wage and their current legal wage was taken as a percentage of the perceived undocumented wage to again estimate a perceived wage premium from legal status.

This was motivated by three concerns:

i) Since it is ultimately the perception about wages that affect the perceived benefits from legal status (the possibility of which must enter the migration decision), these numbers should be useful in analyzing the willingness to pay for legal papers.

ii) Even though the survey elicits *actual* wage differences between legal and illegal workers, a true comparison (i.e. holding experience, English language proficiency, skills, etc. constant) might be elusive given lack of data on some of these migrant characteristics. However, this exercise does show a significant difference between the legal and illegal wage (the level of skill does not vary much in the sample and the years spent in the U.S. (as a proxy for experience) is held constant, confirming the perceptions to some extent<sup>6</sup>. As seen in Figure 6, an interesting finding is that there appears to be a slight difference in the distribution of perceptions between the legal and the undocumented workers. The reasons can be differences in information content (some legal workers might have been previously undocumented but not vice-versa) or simply due to variation caused by different sample sizes. Since the survey was drawn randomly from areas where documented and undocumented workers socialized freely and worked together, it throws some doubt on the theory of asymmetric information between two status groups.

## 4 Home Premium

In order to gauge if a significant non-pecuniary benefit to living at home as opposed to a foreign country exists among migrants, migrants were asked about a minimum acceptable wage they would have to make in Mexico to not migrate to the U.S. This wage was sub-

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<sup>6</sup>Regression estimates put the legal wage at 44% above undocumented wage with an insignificant effect of years spent in the U.S.

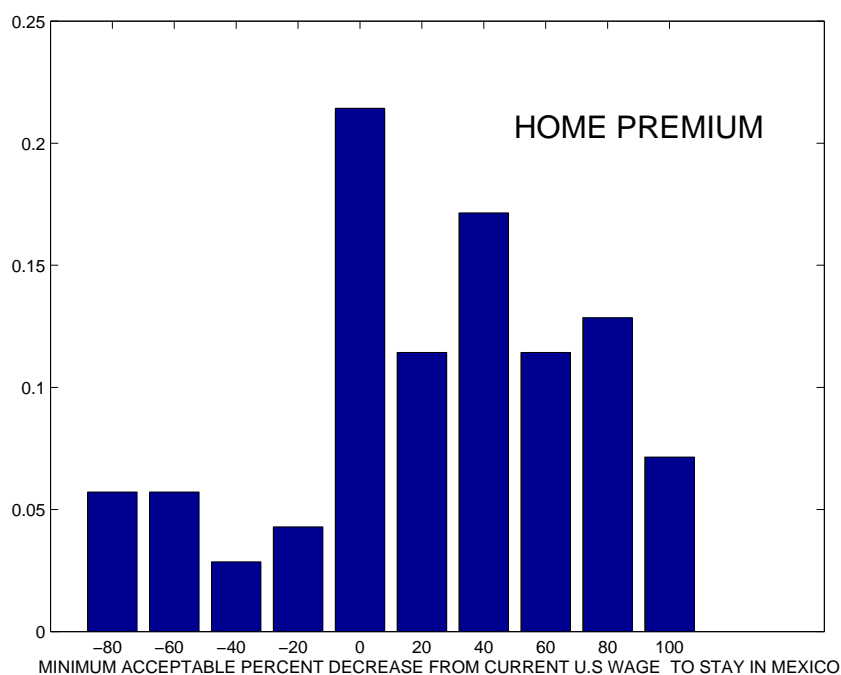


Figure 7: **Premium Associated with Living in Mexico**

tracted from the current wage a migrant made in the U.S. and the difference was taken as a percentage of their U.S. wage. This variable is the “Home Premium” - it answers the question “What percent of his or her current income would a migrant be willing to forgo to be living in Mexico?” The results are summarized in figure 7. What was interesting in these findings was that while some attached a negative value to living in Mexico, overall, the Home Premium was significantly greater than zero. Another interesting though somewhat quizzical result was that the location of the migrant’s dependents was not a significant determinant of the home premium. Probably due to this reason, the data does not support any significant difference between the home premia of documented and undocumented workers. This finding supports the earlier result that even with the dependents of legal workers living overwhelmingly in the U.S., the frequency of trips made home was not statistically different from that of undocumented workers. Moreover, un-



like remittances that seem to decrease with the years spent in the U.S., like frequency of trips home, the home premium is not affected by the period of time the migrant has spent in the U.S. since his or her first visit. These preliminary results suggest that there might strong and non diminishing social ties to Mexico, a phenomenon much bigger and more complex than these rudimentary results can do justice to. The regression results are displayed in Table 1. Summarizing, we only find a significant income effect on the home premium, while status, location of dependents or time spent in the U.S. do not show any significant effect.

Table 1: Home Premium: OLS Results

<i>Parameter</i>	<i>Coeff</i>	<i>SE</i>	<i>t-stat</i>	$P >  t $
<i>Constant</i>	-76.152	45.404	-1.68	0.098
<i>Wage</i>	0.673	0.126	5.36	0.000
$d_{status}$	-4.645	80.357	-0.06	0.954
$d_{dep}$	-5.744	34.299	-0.17	0.867
<i>Res</i>	0.832	3.440	0.24	0.810
R-squared	0.383			
$AdjR^2$	0.348			

where the variables are defined as follows: *Wage* is the weekly U.S. wage;  $d_{status}$  is a status dummy, with 1 = legal and 0 = undocumented;  $d_{dep}$  is a dependent dummy, with 1 = dependents living in the U.S. and 0 = dependents living in Mexico; *Res* is the number of years spent in the U.S. since the first trip across the border.

## 5 Willingness to Pay for Legal Visas among Undocumented Workers

There is an overwhelming concentration of willingness-to-pay studies in the environmental valuation literature which concentrate on a set of issues unique to such problems. The question of a migrant's willingness-to-pay for legal status is being approached in this paper not from the policy perspective typically used in WTP studies, where the valuation is typically of a public good, real or hypothetical, provided by the government where often a contingent valuation technique is employed to measure welfare changes. A legal work permit is an example of a private (excludable) but non-market good being provided by the public sector, and using the WTP valuation for this good is not very different from rarer instances where such methodology is used to value new goods or quality improvements in an existing good being considered for market release. The difference here is that we are not interested as much in the mean or median WTP which is usually a primary concern in environmental valuation studies or which is used to determine pricing strategies for new goods but more in the sources that affect the WTP for legal visas. We interpret this WTP as the perceived benefit to acquiring legal status and are interested in the factors that determine this perceived benefit. Equivalently, this WTP can be interpreted as an implicit cost to being undocumented that is alleviated by acquiring legal papers and are interested in exploring the sources of this cost.

Let us consider the migrant's utility maximization problem subject to a budget constraint where the migrant's legal status ( $U$  for undocumented,  $L$  for legal) is determined by the government and is thus exogenous to the migrant. The migrant then chooses the level of a composite market good ( $x_m$ ), where  $p_m$  is the price of the market good and  $y$  is the income. The consumer's utility maximization yields the Marshallian demand

$x_m(p_m, y, U)$  where  $U$  signifies the undocumented status of the migrant. The indirect utility associated with this outcome is  $v(p_m, y, U)$ . The value that a migrant derives from a change in status can be measured by the magnitude of WTP that ensures that the following equality holds:

$$v(p_m, y - WTP, L) - v(p_m, y, U)$$

so that the utility from legal status after accounting for the WTP is just equal to the utility from being undocumented at no cost.

Alternatively, we can also derive WTP from the consumer's expenditure minimization problem holding the level of utility constant. This produces the familiar Hicksian demand curve,  $x_h(p_m, \bar{U}, U)$  where  $\bar{U}$  is the level of utility. The indirect expenditure function associated with this Hicksian demand is  $m(p_m, \bar{U}, U)$ . In this case value of legal status to an undocumented migrant can be derived from

$$WTP = m(p_m, \bar{U}, U) - m(p_m, \bar{U}, L)$$

Since derived from standard economic theory, most of the contentious issues in WTP studies arise in the discussion of methodology, especially elicitation techniques. A few common problems are typically noted: i) Incentive incompatibility, where a respondent may not find it optimal to reveal his or her true preference since this may affect how much the respondent is finally asked to pay for the good or service and ii) Hypothetical bias, where the respondent may behave differently in a real situation compared to a hypothetical scenario, or that a respondent finds it hard to value a hypothetical good, especially one that is a public good. In the case of the WTP for legal visas, these concerns are not really relevant since a) it is clear to respondents that the possibility of a temporary work visa program in no way depends on this survey and b) they are not being asked to value a hypothetical public good but a private good with which they are very familiar.

The survey is drawn from areas where legal and undocumented workers work and live together, so it seems realistic to assume that they would have a clear idea of the benefits from acquiring legal status. The survey employed an open ended method to elicit an exact willingness-to-pay since the usual caveats associated with this method are not very relevant (due to the same reasons as above).

Table 2: Annual Fee for Legal Status: OLS Results

<i>Parameter</i>	<i>Coeff</i>	<i>SE</i>	<i>t-stat</i>	<i>P &gt;  t </i>
Constant	-766.950	794.484	-0.97	0.342
<i>U</i>	161.618	52.696	3.07	0.005
<i>D<sub>ul</sub></i>	28.781	11.860	2.43	0.022
<i>Income</i>	0.431	0.250	1.72	0.095
<i>D<sub>UM</sub></i>	-0.070	0.026	-2.64	0.013
<i>Cost</i>	-0.153	0.211	-0.73	0.473
R-squared	0.442			
<i>Adj R<sup>2</sup></i>	0.346			

where the variables are defined as follows: *U* is the variable indicating the number of weeks a migrant was unemployed upon arrival into the U.S.; *D<sub>ul</sub>* is the perceived percentage difference in income between legal and undocumented workers; *Income* is the yearly U.S. income; *D<sub>UM</sub>* is the percentage difference between income in U.S. and income in Mexico prior to migration; *Cost* is the cost of migration.

As the results of the regression shown in Table2, the WTP for legal visas (measured as an annual fee) is significantly and positively related to the perceived wage difference between legal and undocumented workers. For a 1 percent increase in this wage difference,

WTP for a legal work permit rises by 28 dollars. The second significant impact on the WTP is the number of unemployed weeks spent in the U.S. upon migration. The coefficient on yearly U.S. income is positive and significant only at the 10% level. One paradoxical result is the significant (and robust across specifications) coefficient of the percentage difference between income made in the U.S. and Mexico prior to migration which is of the wrong sign.

## 6 Conclusion

This paper is based on primary data collected by the authors from around the Bakersfield region in Southern California. The survey was designed to elicit not just easily quantifiable migrant characteristics and labor market conditions they face, but responses on perceptions and preferences. It was administered to both legal and undocumented Mexican agricultural workers. Some of the interesting results of the survey are: i) while economic ties of migrants to Mexico (as measured through remittances sent home) may diminish with years spent in the U.S., social ties (as measured by the frequency of trips to Mexico) do not. ii) We also find that perceptions of the legal-illegal wage gap differ among the two status groups. The main innovation of this work is to a) empirically estimate the determinants of the willingness-to-pay for legal status among undocumented workers where we find that the benefit of legal status to a migrant comes mainly from a perception of higher wages in this status and through a perceived reduction in the average unemployment spell when first entering the U.S. by becoming legal and b) we also estimate a “Home Premium”, an implicit benefit to living in Mexico and find that even though significantly positive, it does not differ significantly across legal and illegal workers or diminish with years spent in the U.S.

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