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### **Food Stamp Program Participation of Refugees and Immigrants**

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## **I. Introduction**

Since 1980, over 16 million people have immigrated to the United States, among whom over 1 million arrived as refugees (INS, 2000). In 1996, after two decades of increasing use of cash and non-cash public assistance programs by immigrant households (Borjas and Hilton, 1996), the Personal Responsibility Work Opportunity Reconciliation Act drastically altered the availability of federal public assistance to legal immigrants but not to refugees (Fix and Tumlin, 1997). Immigrants who arrived in the U.S. prior to 1996 but were not yet naturalized became “unqualified” for federal benefits. Immigrants arriving after August 1996 were also labeled unqualified. In contrast, refugees were largely spared by the PRWORA. Under the new law, refugees were given “qualified” status. Therefore, refugees, regardless of their arrival date, qualify for food stamps, TANF, and Medicaid. Refugees were given a five-year exemption from Food Stamps and TANF rules, and a seven-year exemption from Medicaid rules that deny these benefits to other legal immigrants.

Few expected the changes in immigrant access to welfare to affect the participation patterns of refugee households, yet from 1994-1997, refugee participation in the Food Stamp Program fell by 37 percent (Fix and Passel, 1999). During the same period participation in the Food Stamp Program dropped by 30 percent for immigrants and 21 percent for natives.

The larger percentage change among refugees runs counter to expectations; the changes in federal and state laws established tougher standards for legal immigrants but not for refugees. While strong economic conditions may result in higher employment

rates for immigrants and refugees alike, the loss of public assistance benefits creates greater incentive for non-refugee immigrants to become self-supporting.

We estimate a model of food stamp program participation allowing for differences between refugees and immigrants. The model examines pre and post reform participation. It further isolates the effect of local labor markets. Prior work (Borjas, 1994; Borjas and Hilton, 1996; Loftstrom and Bean, 2002) has not separated refugees from other immigrants, largely because this distinction was not available in large cross sectional data sets. Using auxiliary information from the INS' *Statistical Yearbooks* we are able to identify the impact refugee status has on participation. Others (see Passel and Clark, 1998) have assigned refugee status using ad hoc rules. We demonstrate that regressions using such variables are subject to severe measurement error bias. We also correct for measurement error in the report of food stamp participation. The model estimates demonstrate the importance of both corrections.

Our results demonstrate that failing to separate refugees from immigrants substantially biases the coefficient on immigrants. Indeed, prior research which has suggested that immigrants are more likely to participate in Food Stamps (Borjas and Hilton, 1996), may in fact be dominated by the effect of refugees. We find that while refugees are dramatically more likely to participate in Food Stamps than either immigrants or native born, immigrants may be less likely than native born. This finding is particularly important within the context of the 1996 reforms. We also find that refugee participation in Food Stamps is far more sensitive to the local unemployment rate than either native born or other immigrants. Finally, we find that while immigrants' usage of food stamps increases or remains steady over the number of years in the U.S.,

refugees' usage declines with time since immigration. These findings demonstrate that refugees are a different population than other immigrants. The findings suggest that refugees are using the Food Stamp program as a social safety net while adjusting to a new life in the United States.

## **II. Background**

Immigration to the United States, numbers and policies for which are controlled by the U.S. Congress, increased significantly in the late 1980s and continued through the 1990s. In the decade 1991-2000, the 9 million immigrants entering the U.S. exceeded that of any previous decade, including the ten-year boom from 1901-1910 during which the country accepted nearly 8.8 million immigrants (INS, 2000, Table 1, p.18). In 2000, the INS granted nearly 850,000 immigrants legal permanent residence. Of those entering arriving in the U.S. in 2000, eight percent were refugees or asylees, down somewhat from 1997 when refugees comprised 14.0 percent of all immigrant arrivals. And the immigration applications keep coming. As of April 2003, over 5 million applications for immigration and change of legal status were pending at the Bureau of Citizenship and Immigration Services (INS, 2002 Statistical Yearbook).

For descriptive purposes we adopt the legal definition of immigrant, "persons lawfully admitted for permanent residence in the United States." (INS Annual Report: Legal Immigration, 2000) As we explain below, data limitations will complicate clear identification of immigrants as not all foreign-born people living in the U.S. are admitted for permanent residence. Most immigrants apply for an immigrant visa through the State Department while living abroad. If granted a visa, they become legal residents upon

entering the United States. Aliens who enter the U.S. on temporary visas such as temporary worker, student, or travel visas may apply to the BCIS for permanent resident status from within the U.S. Refugees are a distinct subset of all immigrants, those granted refugee status prior to coming to the U.S. because of clear and credible fear of persecution due to race or ethnicity, nationality, political or religious beliefs. Each year the President, after consulting with Congress, approves new refugee limits by region of the world based on an assessment of worldwide need (INS, 2000 Statistical Yearbook). Along with temporary workers and students, refugees also apply for an adjustment of their legal status to permanent resident after arriving in the United States.<sup>1</sup>

Prior to PRWORA, few researchers concerned themselves with the legal status of immigrants. Welfare policies made no distinction among immigrants. In fact, welfare policies made no distinctions between legal immigrants and natives. As long as the household met the categorical limits (such as being a single parent, disabled, or unemployed) and the means tests on income and assets the household qualified for benefits. Until recently, labor market issues dominated the economics research on immigrants (see Card et al, 2000; Card, 2001; Butcher and Card, 1991).

PRWORA enacted two sets of provisions, those that applied to all applicants or recipients and those that applied to the non-citizen immigrants. The broader provisions limited benefit reciprocity to 60 months, encouraged states to put program recipients to work, and gave states latitude to design programs which encouraged self-sufficiency while discouraging out-of-wedlock births. The second set of provisions placed eligibility restrictions on noncitizen immigrants. Immigrants who arrived in the U.S. prior to 1996 but were not yet naturalized became “unqualified” for federal benefits although states had

the option to provide them with TANF and Medicaid benefits. Immigrants arriving after August 1996 were also labeled unqualified; states are not allowed not extend to them TANF or Medicaid benefits for 5 to 7 years or until their household had accrued 40 quarters of qualified work or until they became naturalized citizens. Food Stamps were subsequently extended to children, disabled, and elderly immigrants in the U.S. prior to the signing of PRWORA.

Refugees were largely spared by the PRWORA. Under the new law, refugees were given “qualified” status and exempted from the immigrant restrictions for 5 to 7 years. Given refugees have a faster track to citizenship; most will be naturalized before they reach their exemption limit. Therefore, refugees, regardless of their arrival date, qualify for food stamps, TANF, Medicaid, Child health insurance programs and other federal aid such as Pell grants and student loans.

Measures of refugee status are typically not available in large cross sectional data sets of the type necessary for participation model estimation. Most post welfare reform studies have tried to identify immigrants and refugees using the CPS, SIPP, or the decennial census. For example, Borjas and Hilton (1996) provide a detailed study of the incidence and intensity of public assistance program usage among immigrants. However, they make no attempt to identify refugees. Using the Survey of Income and Program Participation, they classify anyone born abroad as an immigrant. In a similar approach, Lofstrom and Bean (2002) study the impact of local labor market conditions such as the MSA specific unemployment rate on immigrant welfare participation. Using the March 1995-2000 CPS, they classify households as immigrant households if the respondent foreign born, but again they make no attempt to identify refugees.

Borjas (2002) provides a detailed study of program participation among immigrants. Recognizing that refugees may be different than other immigrants, (2002) limits his sample to non-refugee households. He classifies a household as a refugee household if they came from one of the “main” refugee sending countries.<sup>2</sup> However, according to INS records, from 1972 - 1998, only 32% of immigrants from these “main” actually came as refugees.

Passel and Clark (1998) may represent the most comprehensive effort to disentangle the legal status of immigrants. The report breaks the foreign born population into six classifications: naturalized citizens, legal permanent residents, refugees, legal nonimmigrants, and undocumented or illegal aliens. Passel and Clark assign the status of refugee if, in the year of entry, more than half of immigrants from the sending country were refugees. Of the immigrants originating in the 31 countries who have sent refugees in the last 20 years, only 24% are refugees. This approach leads to substantial misclassification. Given the different paths of immigration to the U.S., the suddenness with which refugees are forced to leave their home country, and the lack of sponsors or family networks in the U.S., there is ample reason to suggest that refugees behave differently than immigrants, even immigrants from the same country.

The approaches taken above may be applicable to some studies, but they fail in the context of estimation of participation models. Failing to separate refugees from immigrants (such as Lofstrom and Bean, 2002; Borjas and Hilton, 1996) obviously does not allow for the specific study of refugees. Moreover, as we will show below, in the context of participation in food stamps, it substantially biases the coefficient on other immigrants. The approach taken by Borjas (2002) or Passell and Clark (1998) may be

appropriate in some contexts. However, assigning a dummy variable in this approach leads to measurement error bias. As long as some individuals from particular “refugee sending” countries are not refugees, and some individuals not classified as refugees are refugees, the slope coefficient will be biased.

### **III. Data**

The primary data for our food stamp participation analysis are the March Demographic files of the Current Population Survey for the years 1994 through 2001, which offer large sample sizes, program participation data, and reasonable immigrant data. These data have been widely used to study immigration (Fix and Passel, 1999). The CPS asks questions on citizenship and country of birth, which will allow us to assign an immigrant status for each individual. We focus on improving the identification of refugees, a subset of immigrants.

Rather than use aggregate measures of refugee shares from a sending country directly or to assign a refugee dummy, we take advantage of data provided by the Immigration and Naturalization Service titled “Immigrants Admitted to the United States” which are available for 1972 through 1998. These data contain the universe of all persons applying for Legal Permanent Resident status during a particular fiscal year. There are two types of immigrants captured in these files. The first type are new entrants: individuals who are entering the United States and simultaneously applying for Legal Permanent Resident status. The second type are conversions: individuals who have been living in the United States for some period of time under another type of Visa, and are now applying for adjustment to Legal Permanent Resident Status.

In addition to some demographic data, the INS data provide information on entry into the United States. Of particular interest here is the year of initial entry and status of entry. The year of entry establishes when the individual first came to the United States (comparable to the question in the CPS), while the status at entry determines the initial classification at entry. It is from this classification that we identify refugees and asylees. There are a number of codes establishing refugee and asylee status, which can change from year to year depending on circumstances within various countries.

From the 27 years of INS data, we construct files of persons entering the United States in each of the periods identified in the CPS data.<sup>3</sup> For all years after 1971, we have the universe of all entrants. Our treatment of potentially illegal immigrants is discussed below. For years prior to 1972, we only have individuals who entered and postponed their application for Legal Permanent Resident status to sometime after 1971.<sup>4</sup>

The INS data allow us to calculate the marginal proportion of refugees for each country by entry year and gender. Additionally, for country/entry year/gender groups with sufficient observations and variation in both refugee status and age at entry, we calculate probit models with age as the explanatory variable. Hence, all country/entry year/gender groups have a marginal proportion. Many (but not all) country time gender groups also have an intercept and slope coefficient from a probit model.

The relationship to age was typically negative. The average coefficient on age (across country/time/gender groups) was -.023 and 66.8% of the age coefficients calculated were negative. The minimum was -0.88, while the maximum was 0.047. In general, men were more likely to be refugees than women.

The results of the analysis of the INS data were then matched, by country/year of entry/gender to the individuals in the CPS data. For individuals who were not immigrants, the probability of being a refugee is set to zero. For those who were either born in a foreign country of native parents, or born in a US protectorate, the probability of being a refugee is also set to zero. For other immigrants whose country/entry year/gender groups yielded a valid probit model, we assign the probability of being a refugee from the probit model based the age at entry of the CPS individual. For immigrants whose country/entry year/gender group did not yield a valid probit, we use the marginal proportion of refugees. In many cases the reason that a particular country/entry year/gender did not have a valid probit was that all (or none) of the immigrants in that cell were refugees. Finally, because of the paucity of data in the pre-1950 period, we assigned zero probability of refugee status to immigrants from this period.

The data deriving from the CPS are household level observations with demographic information on the head of the household. For married heads we also include spouse data in our regression models. Armed forces households, nonfamily households and households with heads of household under the age of 18 are excluded from the sample. The final sample size is 231,536. We also exclude observations from the 1997 and 1998 CPS years (corresponding to 1996 and 1997 program participation years), the year including and following the passage of TANF. Excluding 1996 removes the “anticipation” effect while excluding 1997 allows for full implementation of the new policies. This sample, hereafter called the full sample, includes 217,288 households.

An important issue in this context is that of illegal immigrants. The Census Bureau maintains that illegal immigrants are included in the Current Population Survey. While we find this difficult to believe, we must allow for this possibility. Clearly, illegal immigrants are not a part of the population we intend to study. If they were identified, we would exclude them from our study. Following Clark and Passell (1998), we construct two samples which attempt to exclude illegal aliens. In the first sample we exclude all immigrants from Central America. In the second sample, we exclude immigrants from Central America with less than a high school education. We refer to these samples respectively as ‘illegals 1’ and ‘illegals 2.’ Our results are qualitatively the same across all three samples and where appropriate we present results from each sample.

Table 1 presents unweighted means for the variables used in the analysis for each of the three samples. Panel A presents the means for variables representing the household or the head of household. Panel B presents the means for the spouse when the head of the household is married with spouse present. The demographic statistics are not markedly different than those typically seen in microeconomic samples. The typical (average or modal) household is headed by a 47-year-old married white male with a high school degree. Female-headed households comprise approximately 34% of the sample. Households headed by an African American comprise 9.6% of the sample. Households headed by a married couple comprise about 77% of the sample. While High School graduates are the modal head of household (approximately 32% of the sample), the second and third largest educational categories are some college (18%) or a four-year degree (15%). In fact, nearly 50% of the sample has a head of household who has obtained some post-secondary education. About 8% of the sample reported receiving

food stamps sometime in the previous calendar year. As can be seen in panel A, approximately 4.7% (or 10,270) of the households are immigrants from Mexico or Central America. Dropping these households yields the Illegals 1 sample of 207,018 households. Approximately 3.2% (or 6,949) of the households are immigrants from Mexico or Central America with less than a high school education. Dropping these households yields the Illegals 2 sample of 210,339 households.<sup>5</sup> Overall there is little difference between the three samples.

The local unemployment rate variable was constructed from Bureau of Economic analysis annual unemployment rates. For households residing in an identified metropolitan statistical area, the unemployment rate for the MSA was assigned. For those households not assigned to a metropolitan area, the overall state unemployment rate was assigned.

The variable immigrant derives from the citizenship status reported in the CPS. Households headed by an individual who the CPS classifies as “Foreign Born” (as opposed to native) were considered immigrants with the following exceptions. Individuals born abroad of U.S. parents are classified as “Native, born abroad of U.S. parents.” Individuals born in U.S. territories (for example Guam) are also classified as Natives. Overall, nearly 13% of the households are immigrants. When all immigrants from Central America are dropped this percentage falls to 8.7%; when Central American immigrants with less than high school education are dropped about 10% of the sample are immigrants.

We provide three measures of refugees. The first one, **Refugee\_main**, compares to measures used by other researchers: individuals from the 13 “refugee sending

countries.<sup>1</sup> Based on the INS World Tables, 1,527,071 refugees enter the US between 1982 and 1998. Of the over 1.5 million refugees, over 300,000 (20%) derived from countries other than the 13 refugee sending countries. Furthermore, of all immigrants from the 13 main refugee sending countries, only 32% were refugees. Such a measure would count 2.5 million immigrants as refugees and fail to count over 300,000 refugees. We call this measure **Refugee\_main** and note that 1.6% of our sample is considered a refugee under this definition.

A second measure, **Refugee\_30**, has similar drawbacks. It considers an individual a refugee if their country has more than 30% of the total immigrants for the CPS time period classified as refugees. This measure has an advantage over the **Refugee\_main** measure in that it addresses changes over time. The percentage of immigrants who come as refugees from any particular country fluctuates substantially over time. For example, in 1982, 42% of all immigrants from Afghanistan were classified as refugees (from INS World Tables), while by 1995, less than 1% of immigrants from Afghanistan were classified as refugees. About 1.5% of the households in our sample are classified as refugees using **Refugee\_30**.

Our final measure of refugee status, which we will call **Refugee\_IV**, is the probability of being a refugee as derived from our INS models. Here, we see that the average probability is about 1% in our CPS sample.

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<sup>1</sup> Following Borjas (2002) these are: Afghanistan, Bulgaria, Cambodia, Cuba, Czechoslovakia, Ethiopia, Hungary, Laos, Poland, Romania, Thailand, Former Soviet Union, and Vietnam.

#### IV. Modeling and Estimation Approach

Following the standard participation literature, we estimate a threshold crossing model of food stamp program participation utilizing each of our three samples. Of primary focus here is the variable for refugee status. Ideally, we would have an indicator determining the refugee status for each individual (notationally,  $R$ ). The basic model is

$$FS = 1 \quad \text{if } D_i\beta + \gamma I_i + \delta R_i + \varepsilon_i > 0$$

$FS = 0 \quad \text{otherwise}$

The variable  $D$  represents demographic characteristics of the household (specifically the variables listed in Table 1), the variable  $I$  is an indicator that the head of the household is an Immigrant. We define immigrants based on the citizenship status variable in the CPS. The variable  $R$  is an indicator for refugee status; this is not available from census. We assume that  $\varepsilon_i$  is normally distributed, thus giving rise to a probit model for participation. It should be noted that since we do not condition on eligibility, this model represents an interaction between eligibility and participation.

The probit model implies that

$$\Pr\{FS = 1\} = F(D_i\beta + \gamma I_i + \delta R_i)$$

where  $F$  is the cumulative distribution of the standard normal density. Using the law of total probabilities, we can then decompose the above expression such that

$$\Pr\{FS = 1\} = F(D_i\beta + \gamma I_i + \delta) \Pr\{R_i = 1\} + F(D_i\beta + \gamma I_i) \Pr\{R_i = 0\}.$$

This expression then gives rise to a specification that can be estimated using maximum likelihood, since the unconditional probability  $\Pr\{R_i = 1\}$  is obtained from the immigration data as described above. One might be tempted to include  $R$  as a regressor in the probit model. However, this induces heteroskedasticity into the error

term that can bias probit estimation. Further, it induces a non-normal distribution that can also bias probit estimates. We examined this option as well and found that it overstated the coefficient  $\gamma$ .<sup>6</sup> The probability decomposition technique we employ suffers from none of these problems. Furthermore, the model and likelihood function are easily expanded to include terms that are interacted with the refugee status variable. The key assumption is that we have the correct probability of refugee status for each person. Essentially this is an instrumental variables approach. We are using year immigration, gender, country of origin and age at immigration as instruments.

A number of differences between our approach and that of other researchers are worth noting. As noted above, some researchers address the refugee issue by dropping immigrants from certain countries from the analysis. This approach is similar to including a crude measure of refugee status in that there are still many refugees unidentified in the data, and some non-refugees are excluded. Other researchers include country specific dummy variables. This again combines both refugees from those countries with non-refugees. It fails to identify the refugee specific effect. Our approach identifies the refugee specific effect, but, because we use country of origin as an instrument, prevents us from identifying country specific effects.

In addition to addressing the measurement problem in refugee status we address measurement error in reports of Food Stamp program participation. Bollinger and David (1997) demonstrate that there exists substantial misreporting of Food Stamp program participation in survey data. As discussed in both Bollinger and David (1997) and Hausman et al. (1998), the probability of reporting participation in food stamps can be written as

$$\Pr(\text{Reported Food Stamp Participation}) = (1 - p - q) \Pr\{\text{FS} = 1\} + p.$$

The terms  $p$  and  $q$  are the rates of false positives and false negatives respectively. We use the results of Bollinger and David (1997), specifically the estimated error rates, to construct the likelihood function. Bollinger and David (1997) find that the proportion of false positive rate to be about 0.32%, while the false negative rate is about 12.15%. The probability of true food stamp participation,  $\Pr\{\text{FS} = 1\}$ , is constructed from the decomposed probability discussed above. Hence maximum likelihood estimation maximizes the following log likelihood function with respect to  $\beta$ ,  $\gamma$ , and  $\delta$ :

$L =$

$$Y_i * \ln((1 - 0.1215 - 0.0032) * (F(D_i\beta + \gamma I_i + \delta) \Pr\{R_i = 1\} + F(D_i\beta + \gamma I_i) \Pr\{R_i = 0\}) + 0.0032) \\ + (1 - Y_i) * \ln((1 - 0.1215 - 0.0032) * \\ (1 - F(D_i\beta + \gamma I_i + \delta) \Pr\{R_i = 1\} - F(D_i\beta + \gamma I_i) \Pr\{R_i = 0\}) + 0.1215).$$

Here  $Y$  is the indicator for food stamp program participation. The estimates account for measurement error in the food stamp participation as well as providing consistent estimates for the effects of refugees.

## V. Estimation Results

To facilitate an understanding of the results we organize the results into three subsections. In the first subsection we present two sets of baseline results: one with no measure of refugees included and one using the crude **Refugee\_main** variable described above. This section establishes baseline results similar to studies that use imprecise or ad hoc measures of refugee status.<sup>7</sup> In the second subsection we present results using the

instrumental variables approach to consistently estimate the refugee coefficients. The results demonstrate the importance of a consistent estimation procedure and the impact that the mismeasurement of refugee status inherent to previous procedures. In the third subsection we present two final specifications. These specifications both include the correction for measurement error in the reporting of food stamps and include interactions with local unemployment rates and the years since immigration. This section presents our preferred results that support our main conclusion that refugees are substantively different than other immigrants in their usage of Food Stamps. Failure to account for this difference biases conclusions about immigrants in general and disguises the experiences of an important subpopulation.

#### **A. Base Line Estimates**

Tables 2 and 3 provide estimates that are similar to those found in previous literature, providing a basis of comparison for subsequent models. Table 2 presents participation models with only the indicator for immigrant across the three samples. An indicator for post reform is also included and interacted with the immigrant indicator. In addition to the covariates presented, state fixed effects were included in the regression to account for state differences in policy, administration, and enforcement of the food stamp program. Other specifications including year dummy variables were found to reveal similar results. The coefficients on the demographic variables are as one would expect. Age and education are negatively associated with Food Stamp program participation, while the presence of children or disabled persons increases the probability of participation.

The coefficient on post reform is negative and significant as has been well established in the literature. The coefficient on the local unemployment rate is positive, indicating that local labor market conditions are significant in determining participation. The coefficient on immigrant is negative for the full sample, but not statistically significant. When Central American immigrants are removed from the sample the coefficient becomes positive and significant. One explanation for the change in coefficients would be that we are now controlling for illegal immigrants. We have reservations about this conclusion. It is difficult to believe that 3 – 4% of the full households are illegal immigrants. While the change is consistent with removing a categorically ineligible subpopulation, the change is also consistent with removing a subpopulation which chooses not to participate. Hence, we will continue to report results from all three samples. Finally, the coefficient on the interaction with immigrant and post reform is negative and highly significant. This demonstrates that the reform has some effect upon participation.

Table 3 includes the **Refugee\_main** dummy variable as the measure of refugee status and an interaction with the post-reform indicator. Appendix Table A1 presents results using the refugee30 variable and appendix Table A2 presents results where households deriving from the 13 refugee sending countries are dropped from the analysis (as is done by other authors). In interpreting these results it is important to note that refugee is a sub-classification of immigrant: all refugees are also classified as immigrants. As can be seen, the coefficient on **Refugee\_main** is large and positive: refugees have a much higher propensity to participate in the Food Stamp program than other immigrants or native born (relative to native born add the coefficient on immigrants

to the coefficient on refugees). The coefficient on the immigrants has now become negative for all three samples. It is insignificant in the two illegals sample, but significant in the full sample. This indicates that, in general, non-refugee immigrants are not more likely to use food stamps than native born. It is the refugees who are more likely to use food stamps. Failing to separate out refugees appears to bias the conclusions. Finally, note that the coefficient on the interaction between immigrants and post reform remains negative (significant in two of the three samples). The coefficient on the interaction between **Refugee\_main** and post reform is a small positive and insignificant number. It appears that both immigrants and refugees have had a decline in participation that is even larger than that experienced by the native born population (recall again, all refugees are also immigrants and so the immigrant coefficients apply to them as well). The fact that there appears to be no difference between immigrants and refugees is somewhat puzzling since refugees were exempt from the more stringent rules applied to other immigrants.

## **B. Instrumental Variable Estimation**

Table 4 presents the same specification as Table 3, but uses the instrumental variable estimation approach described above. As can be seen the coefficient on the refugee variable, **Refugee\_IV**, increases dramatically compared to that of **Refugee\_main**. The mismeasured estimates (Table 3) are attenuated towards zero, as is often the case with mismeasured coefficients. Note also that the coefficients on immigrants are all negative and significant and have increased in magnitude relative to the coefficients reported in Table 3. Again, this is a typical result from measurement

error; other coefficients are biased as well, particularly those closely correlated with the mismeasured variable. In contrast, the coefficients on other variables have changed very little. For example, the coefficient on some college for the householder is very stable across all samples in both Tables 3 and 4 at about -0.146. Similarly the other coefficients on educational categories are stable across the samples and specifications.

Here we see that non-refugee immigrants are less likely to participate in Food Stamps than native born. In contrast, it is refugees who are heavy users of the Food Stamp program. Refugees tend to be disadvantaged in local labor markets due to poor language training and less preparation in general for economic life in the United States. Nearly all refugees are placed on food stamps upon arriving in the country. As we will see below, refugees do tend to work their way off food stamps over time as policy makers expect. Separating refugees from other immigrants shows that previous studies that conclude that immigrants in general are high users of Food Stamps are clearly in error. Still puzzling, however, is the fact that the coefficient on refugees interacted with the post-reform variable is negative but not significant. Since the coefficient on the interaction between immigrants and post-reform is negative and significant, it appears that forces acting on refugees and immigrants in the post reform period had the same effect on both groups. If anything, refugees may have had an even larger decline in participation than immigrants in general.

Predictions from this model are interesting and intuitive. Table 7 presents both pre and post reform participation percentages based on the results in Table 4, third column (illegals 2 sample). The values at which the probability is computed are the average (for continuous variable) or the mode (for indicator variables) in the

corresponding sample. The notes below the table provide a more complete accounting. It should be noted that there seems to be some variability in the local unemployment rate facing different groups over this time period. As one might expect, single headed households are more likely to participate in food stamps than their married counterparts. The presence of children increases the likelihood of participation as well. As noted above, the coefficient on immigrant is negative, hence holding constant the demographic variables, immigrants are less likely to participate in food stamps (comparing row 1 and row 6) than native born counterparts. However, it can also be noted that immigrants have characteristics that increase the likelihood of participation (comparing rows 1, 6 and 7). Similarly, we note that, as expected, refugees are markedly more likely to participate in food stamps than either other immigrants or their native-born counterparts (comparing rows 1, 6, 7 and 8). When evaluated at the immigrant values, the probability rises even higher. The evaluation at the **Refugee\_main** values is slightly lower than at the immigrant values.

### **C. Extended Specification**

The results in this section now include the correction for response error in reporting of Food Stamp discussed in the methodology section. Table 5 presents the first results to correct for measurement error in reporting food stamp program participation.

Additionally, the specification presented in Table 5 includes an interaction between the local unemployment rate and the indicators for both immigrants and refugees.

As noted in Bollinger and David (1997), the main effect of response error in food stamp program participation is attenuation of slope coefficients. For example, the

coefficient on having some college changes from -.146 in Table 4 to -.170 in Table 5.

The increased magnitudes of the coefficients in Table 5 compared to prior tables are due to the correction for measurement error in food stamps (the specification in Table 4 was estimated with the measurement error correction as well, but is not included here).

The coefficients on post reform and immigrant both increase slightly in magnitude when correcting for measurement error in food stamp participation. Both remain negative and significant indicating that immigrants are less likely to use food stamps than native born and there was an overall decline in the use of food stamps in the post reform era. Similarly, the coefficient on the interaction between immigrants and the post reform era is larger in magnitude and still negative and significant. Again, the results indicate that food stamp program participation of immigrants fell even more sharply in the post reform era than native born.

The coefficient on **Refugee\_IV** has declined markedly. Additionally the coefficient on the interaction between **Refugee\_IV** and the post reform era has now become positive although is not significant at typical levels. The puzzling negative coefficient on **Refugee\_IV** and its post-reform interaction disappear when we control for refugees' interaction with local labor markets. Noting that the coefficient on the local unemployment rate has been positive and significant throughout the specifications presented here, we turn to the two interaction terms between the unemployment rate and the immigrant and refugee indicators. The coefficient on the interaction between the unemployment rate and immigrants is a very small and insignificant number. In general, immigrants appear to be no more sensitive to local labor market characteristics than native born. In sharp contrast, the coefficient on the interaction between the

unemployment rate and the refugee indicator is twice the size of the coefficient on the local unemployment rate. It is statistically and economically significant: refugees are three times as sensitive to fluctuations in the local unemployment rate as either native born or other immigrants. The two interaction terms for refugees imply that refugee's apparent decline in food stamp program participation in the post reform era is largely accounted for by the co-incidental improvement in the labor market. While insignificant, the size of the coefficient on the interaction between refugees and post reform nearly offsets the interaction between immigrant and post reform. This leaves changes in the unemployment rate to explain the fluctuations in the refugee participation rates.

Using the results in the third column of Table 5, we present the time series plot of the participation rate for native born, immigrants and refugees in Figure 1. The probabilities are evaluated at the overall values for the native born, the immigrant values for immigrant and the **refugee\_main** values for the refugees (see notes for Table 7). The unemployment rate is the average rate for the sample in each year. Each population has two plotted lines, one for what would have occurred in the presence of no reform, the second line includes the reform starting in 1997. The two lines coincide for the pre-reform period (1993 – 1996). As can be seen, regardless of the reform, food stamp program participation among refugees would have dropped dramatically in response to the improving economy.

This result is good news for both legislators and refugees. It suggests that far from indicating an unanticipated detrimental effect on refugees from the welfare reform, the

declining participation in the post reform period is largely due to improved economic conditions that effect refugees more dramatically than native born or other immigrants.<sup>8</sup>

Table 6 extends the specification of Table 5 to examine how food stamp program participation for immigrants and refugees changes with the length of time in the United States. Again, both the IV approach for addressing the refugee indicator and the correction for response error in food stamp participation are used. Examining the coefficient on Years in U.S. reveals that immigrant's participation in food stamps either increases slightly with time in the United States (in the full sample) or does not change at all. In sharp contrast is the large negative coefficient on the interaction between **Refugee\_IV** and Years in U.S. This coefficient is ten times the magnitude of the coefficient on years in U.S. for all immigrants. Clearly, over time, refugee use of food stamps declines dramatically. With the inclusion of this variable, the coefficient on **Refugee\_IV** has increased. Hence, refugees appear to be very heavy users of food stamps upon first arrival, with a steep decline over time.

Figure 2 presents plots of the food stamp program participation rate against years in the US. Again, immigrants are evaluated at the immigrant values and refugees are evaluated at the **refugee\_main** values. The initial high value is consistent with anecdotal evidence from discussions with refugee centers. The graph suggests that refugee participation rates have dropped to those of other immigrants and the native born after approximately 20 year in the United States.

The coefficient on the interaction between post reform and refugee is now significant and has increased in magnitude. Indeed, it suggests that in the post reform era refugees

have increased food stamp program participation, as it more than offsets the sum of the coefficients on post reform and its interaction with immigrants. The coefficient on the interaction between unemployment and **Refugee\_IV** has also increased in magnitude, further supporting the conclusion that the economic conditions were responsible for the apparent decline in refugee food stamp participation during the post reform era.

### **XIII. Conclusions**

We draw conclusions from this paper along two dimensions. The first is methodological. Ignoring refugees biases the coefficient on immigrants. The typical approach to measuring refugee status (as found in Table 3) underestimates the effects of refugee status on participation in Food Stamps. Additionally, failure to account for response error in program participation additionally understates the effects of all variables on participation. Hence studies failing to account appropriately for these problems are biased and cannot be used for policy analysis.

The far more important dimension is that the story of Food Stamp program participation among immigrants and refugees is a complex one. A simple dummy variable for immigrant and refugee status fails to capture important aspects of the story. Clearly, immigrants and refugees have very different patterns of usage. Refugees are far more likely to participate in food stamps near the time of arrival, but their participation rates are declining quickly with the time in the U.S. Secondly, Refugees are far more sensitive to the economic climate than both U.S. citizens and other immigrants.

This suggests a number of important policy implications. First, the decision of Congress in the mid 1990's to exempt refugees from the new eligibility rules imposed on

immigrants seems to have had the desired effect on refugees. Beyond the humanitarian issue, we see that this group has what might be described as a “good” program experience: they participate heavily in food stamps when they first arrive, but apparently become self sufficient over time and rely less upon food stamps. Secondly the decision to disqualify new immigrants from food stamps may have been somewhat irrelevant. As a whole, this group is less likely to participate in welfare programs. This suggests that the concern over immigrant use of food stamps was misplaced.

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Table 1 (Panel A): Means for Samples, Household and Householder Variables

Variable	Full Sample	Illegal 1 Sample	Illegal 2 Sample
Food Stamp Participation	0.082	0.078	0.079
Age	47.198	47.606	47.443
Female	0.337	0.336	0.336
African American	0.096	0.100	0.099
Hispanic	0.138	0.096	0.110
Asian	0.030	0.031	0.031
Native American	0.011	0.012	0.012
Elementary School	0.081	0.061	0.060
Some High School	0.091	0.087	0.085
High School - no diploma	0.012	0.012	0.011
High School Graduate	0.323	0.330	0.334
Some College	0.181	0.186	0.187
Associates/Technical Degree	0.074	0.076	0.076
College Graduate	0.152	0.158	0.157
Masters Degree	0.056	0.058	0.058
Terminal Degree	0.030	0.032	0.031
Married Spouse Present	0.772	0.777	0.775
Veteran	0.216	0.227	0.223
Disabled	0.099	0.102	0.101
Multi-family Household	0.080	0.074	0.076
Number of Children under age 5	0.261	0.248	0.252
Number of Children age 5 to 18	0.780	0.754	0.759
Local Unemployment Rate	5.127	5.058	5.076
Immigrant	0.129	0.087	0.101
<b>Refugee_main</b>	0.016	0.016	0.016
<b>Refugee_30</b>	0.015	0.015	0.015
<b>Refugee_IV</b>	0.010	0.011	0.011
Years in United States	2.303	1.676	1.883
Central American	0.047	0.000	0.016
Central American Less than HS	0.032	0.000	0.000
Sample Size	217,288	207,018	210,338

Table 1 (Panel B): Means for Married Spouse Present, Spouse Variable

	Full Sample	Illegal 1 Sample	Illegal 2 Sample
Age	46.645	47.045	46.899
Female	0.791	0.791	0.791
African American	0.058	0.060	0.059
Hispanic	0.125	0.087	0.099
Asian	0.034	0.035	0.035
Native American	0.009	0.009	0.009
Elementary School	0.066	0.047	0.049
Some High School	0.077	0.073	0.074
High School - no diploma	0.010	0.009	0.009
High School Graduate	0.362	0.370	0.370
Some College	0.170	0.175	0.174
Associates/Technical Degree	0.081	0.084	0.084
College Degree	0.160	0.166	0.165
Masters Degree	0.053	0.056	0.055
Terminal Degree	0.020	0.020	0.020
Disabled	0.078	0.079	0.079
Married Spouse Present Households	167,811	160,826	162,972

Table 2: Base Models with no Measure of Refugee Status

	Full Sample	Illegals 1	Illegals 2
<b>Householder Variables</b>			
Age	-0.017 (34.10)**	-0.018 (34.91)**	-0.018 (34.80)**
Female	0.613 (30.27)**	0.597 (28.13)**	0.600 (28.69)**
African American	0.401 (23.55)**	0.395 (22.93)**	0.396 (23.13)**
Hispanic	0.183 (10.02)**	0.226 (11.91)**	0.206 (11.05)**
Asian	0.123 (2.76)**	0.003 (0.06)	0.032 (0.70)
Native American	0.320 (8.43)**	0.325 (8.47)**	0.325 (8.50)**
Elementary School	0.380 (20.80)**	0.449 (22.12)**	0.466 (23.28)**
Some High School	0.388 (25.93)**	0.415 (26.65)**	0.425 (27.48)**
High School – No Diploma	0.199 (5.52)**	0.228 (5.97)**	0.240 (6.30)**
Some College	-0.145 (9.84)**	-0.147 (9.79)**	-0.145 (9.79)**
Associate/Technical Degree	-0.281 (12.47)**	-0.284 (12.40)**	-0.277 (12.27)**
College	-0.512 (21.63)**	-0.514 (21.38)**	-0.507 (21.37)**
Masters Degree	-0.627 (13.79)**	-0.629 (13.58)**	-0.615 (13.47)**
Terminal Degree	-0.594 (8.85)**	-0.614 (8.85)**	-0.591 (8.76)**
Married Spouse Present	-1.105 (31.03)**	-1.072 (29.00)**	-1.064 (29.04)**
Veteran	-0.011 (0.59)	0.010 (0.53)	0.009 (0.52)
Disabled	0.724 (50.51)**	0.715 (48.49)**	0.717 (48.79)**
<b>Spouse Variables</b>			
Age	0.001 (1.10)	-0.000 (0.62)	-0.001 (0.73)
Female	0.488 (18.78)**	0.474 (17.35)**	0.475 (17.59)**
African American	-0.008 (0.29)	-0.007 (0.23)	-0.008 (0.28)
Hispanic	0.018 (0.77)	0.032 (1.29)	0.046 (1.92)
Asian	0.370 (7.53)**	0.337 (6.77)**	0.344 (6.93)**
Native American	0.261 (4.85)**	0.264 (4.84)**	0.262 (4.81)**

Elementary School	0.275 (11.38)**	0.355 (12.94)**	0.341 (12.82)**
Some High School	0.319 (15.38)**	0.351 (16.14)**	0.343 (15.97)**
High School – no diploma	0.218 (4.19)**	0.212 (3.75)**	0.214 (3.85)**
Some College	-0.112 (5.11)**	-0.112 (4.98)**	-0.113 (5.08)**
Associates/Technical Degree	-0.244 (7.34)**	-0.252 (7.40)**	-0.252 (7.46)**
College Graduate	-0.356 (10.92)**	-0.356 (10.72)**	-0.353 (10.73)**
Masters Degree	-0.391 (5.93)**	-0.389 (5.76)**	-0.379 (5.72)**
Terminal Degree	-0.325 (3.26)**	-0.333 (3.24)**	-0.345 (3.38)**
Disabled	0.621 (29.81)**	0.625 (29.06)**	0.628 (29.34)**
<b>Household Level Variables</b>			
Multi Family Household	-0.029 (1.99)*	-0.006 (0.41)	-0.012 (0.80)
Number of Children Under 5	0.437 (54.09)**	0.440 (50.86)**	0.442 (52.13)**
Number of Children age 5 to 18	0.243 (55.01)**	0.242 (51.39)**	0.244 (52.44)**
Local Unemployment Rate	0.054 (20.63)**	0.053 (16.67)**	0.053 (17.47)**
Post Reform Period (1998 – 2000)	-0.211 (17.30)**	-0.215 (17.04)**	-0.215 (17.19)**
Immigrant	-0.031 (1.48)	0.110 (4.44)**	0.075 (3.25)**
Immigrant*Post Reform Period	-0.116 (4.40)**	-0.058 (1.68)	-0.077 (2.47)*
Constant	-1.164 (19.76)**	-1.105 (18.19)**	-1.122 (18.63)**
Observations	217288	207018	210339

Absolute value of z-statistics in parentheses. Estimated with state-level fixed effects.

\* significant at 5%; \*\* significant at 1%

Table 3: Using Mismeasured Refugee Status (**Refugee\_main**)

	Full Sample	Illegals 1	Illegals 3
<b>Householder Variables</b>			
Age	-0.017 (34.77)**	-0.018 (35.23)**	-0.018 (35.13)**
Female	0.616 (30.31)**	0.600 (28.22)**	0.603 (28.74)**
African American	0.410 (24.06)**	0.406 (23.52)**	0.407 (23.69)**
Hispanic	0.195 (10.65)**	0.223 (11.72)**	0.212 (11.39)**
Asian	-0.030 (0.64)	-0.090 (1.89)	-0.082 (1.75)
Native American	0.318 (8.37)**	0.326 (8.49)**	0.326 (8.51)**
Elementary	0.401 (21.87)**	0.457 (22.44)**	0.463 (23.06)**
Some High School	0.395 (26.33)**	0.419 (26.82)**	0.423 (27.28)**
High School - no diploma	0.204 (5.65)**	0.233 (6.07)**	0.237 (6.20)**
Some College	-0.146 (9.86)**	-0.146 (9.70)**	-0.145 (9.80)**
Associate/Technical Degree	-0.284 (12.56)**	-0.286 (12.45)**	-0.280 (12.37)**
College	-0.515 (21.61)**	-0.514 (21.27)**	-0.510 (21.36)**
Masters Degree	-0.624 (13.60)**	-0.624 (13.40)**	-0.612 (13.33)**
Terminal Degree	-0.613 (8.88)**	-0.628 (8.83)**	-0.607 (8.78)**
Married Spouse Present	-1.088 (30.48)**	-1.057 (28.53)**	-1.049 (28.58)**
Veteran	0.003 (0.17)	0.019 (1.03)	0.019 (1.04)
Disabled	0.725 (50.45)**	0.718 (48.58)**	0.720 (48.90)**
<b>Spouse Variables</b>			
Age	0.000 (0.39)	-0.001 (1.10)	-0.001 (1.25)
Female	0.487 (18.65)**	0.474 (17.28)**	0.474 (17.52)**
African American	-0.001 (0.04)	0.001 (0.03)	-0.001 (0.02)
Hispanic	0.023 (1.03)	0.032 (1.26)	0.047 (1.95)
Asian	0.329 (6.49)**	0.312 (6.11)**	0.314 (6.15)**
Native American	0.263 (4.88)**	0.267 (4.88)**	0.265 (4.85)**

Elementary	0.281 (11.61)**	0.349 (12.64)**	0.338 (12.62)**
Some High School	0.326 (15.64)**	0.355 (16.29)**	0.348 (16.19)**
High School - no diploma	0.225 (4.30)**	0.218 (3.85)**	0.221 (3.96)**
Some College	-0.111 (5.04)**	-0.109 (4.85)**	-0.112 (5.01)**
Associate/Technical Degree	-0.246 (7.36)**	-0.253 (7.40)**	-0.255 (7.51)**
College	-0.359 (10.89)**	-0.359 (10.70)**	-0.357 (10.76)**
Masters Degree	-0.397 (5.93)**	-0.394 (5.78)**	-0.386 (5.75)**
Terminal Degree	-0.375 (3.57)**	-0.374 (3.47)**	-0.392 (3.64)**
Disabled	0.620 (29.62)**	0.626 (28.99)**	0.629 (29.27)**
<b>Household Level Variables</b>			
Multi Family Household	-0.026 (1.73)	-0.005 (0.30)	-0.010 (0.63)
Number of Children Under Age 5	0.439 (54.19)**	0.441 (50.86)**	0.444 (52.20)**
Number of Children Age 5 to 18	0.245 (55.25)**	0.243 (51.42)**	0.244 (52.46)**
Local Unemployment Rate	0.053 (20.14)**	0.052 (16.28)**	0.051 (17.02)**
Immigrant	-0.126 (5.76)**	-0.023 (0.85)	-0.035 (1.41)
Post Reform Period (1998-2001)	-0.214 (17.50)**	-0.217 (17.16)**	-0.218 (17.38)**
Immigrant*Post Reform Period	-0.124 (4.39)**	-0.077 (1.93)	-0.089 (2.52)*
<b>Refugee_main</b>	0.772 (17.10)**	0.688 (14.44)**	0.698 (14.98)**
<b>Refugee_main</b> *Post Reform Period	0.076 (1.15)	0.033 (0.45)	0.044 (0.64)
Constant	-1.147 (19.42)**	-1.095 (17.99)**	-1.108 (18.37)**
Observations	217288	207018	210339

Absolute value of z statistics in parentheses. Estimated with state-level fixed effects.

\* significant at 5%; \*\* significant at 1%

Table 4: Instrumental Variables Estimation Results

	Full Sample	Illegals 1	Illegals 2
<b>Householder Variables</b>			
Age	-0.017 (34.78)**	-0.018 (35.20)**	-0.018 (35.09)**
Female	0.620 (30.46)**	0.605 (28.37)**	0.607 (28.88)**
African American	0.408 (23.87)**	0.403 (23.36)**	0.404 (23.53)**
Hispanic	0.191 (10.37)**	0.217 (11.32)**	0.207 (11.07)**
Asian	-0.014 (0.30)	-0.069 (1.44)	-0.065 (1.37)
Native American	0.315 (8.30)**	0.324 (8.44)**	0.324 (8.46)**
Elementary	0.410 (22.23)**	0.464 (22.67)**	0.468 (23.19)**
Some High School	0.398 (26.45)**	0.421 (26.90)**	0.424 (27.29)**
High School – no diploma	0.210 (5.78)**	0.238 (6.19)**	0.241 (6.28)**
Some College	-0.146 (9.88)**	-0.146 (9.70)**	-0.146 (9.82)**
Associate/Technical Degree	-0.284 (12.53)**	-0.286 (12.42)**	-0.280 (12.35)**
College	-0.524 (21.80)**	-0.521 (21.43)**	-0.518 (21.54)**
Masters Degree	-0.630 (13.60)**	-0.629 (13.39)**	-0.617 (13.33)**
Terminal Degree	-0.622 (8.91)**	-0.636 (8.85)**	-0.615 (8.80)**
Married Spouse Present	-1.089 (30.39)**	-1.057 (28.46)**	-1.049 (28.51)**
Veteran	0.007 (0.41)	0.022 (1.22)	0.022 (1.22)
Disabled	0.725 (50.27)**	0.718 (48.44)**	0.720 (48.76)**
<b>Spouse Variables</b>			
Age	0.000 (0.37)	-0.001 (1.08)	-0.001 (1.23)
Female	0.488 (18.64)**	0.475 (17.27)**	0.475 (17.51)**
African American	-0.001 (0.02)	0.001 (0.05)	0.000 (0.00)
Hispanic	0.022 (0.95)	0.028 (1.09)	0.044 (1.82)
Asian	0.285 (5.48)**	0.275 (5.26)**	0.275 (5.28)**
Native American	0.264	0.268	0.266

	(4.89)**	(4.90)**	(4.87)**
Elementary	0.284	0.348	0.339
	(11.67)**	(12.55)**	(12.57)**
Some High School	0.328	0.357	0.350
	(15.70)**	(16.33)**	(16.23)**
High School – no diploma	0.222	0.216	0.218
	(4.23)**	(3.79)**	(3.90)**
Some College	-0.112	-0.109	-0.112
	(5.07)**	(4.85)**	(5.03)**
Associate/Technical Degree	-0.248	-0.255	-0.257
	(7.40)**	(7.42)**	(7.54)**
College	-0.365	-0.364	-0.363
	(10.98)**	(10.77)**	(10.84)**
Masters Degree	-0.407	-0.403	-0.396
	(5.97)**	(5.82)**	(5.80)**
Terminal Degree	-0.394	-0.391	-0.410
	(3.64)**	(3.53)**	(3.71)**
Disabled	0.619	0.625	0.628
	(29.43)**	(28.84)**	(29.11)**
<b>Household Level Variables</b>			
Multi Family Household	-0.024	-0.004	-0.009
	(1.64)	(0.24)	(0.55)
Number of Children under age 5	0.441	0.442	0.446
	(54.25)**	(50.89)**	(52.25)**
Number of Children aged 5 to 18	0.245	0.243	0.245
	(55.15)**	(51.29)**	(52.34)**
Local Unemployment Rate	0.054	0.052	0.052
	(20.13)**	(16.30)**	(17.02)**
Immigrant	-0.151	-0.064	-0.066
	(6.76)**	(2.26)*	(2.57)*
Post Reform Period (1998 – 2001)	-0.214	-0.217	-0.218
	(17.50)**	(17.13)**	(17.37)**
Immigrant * Post Reform Period	-0.108	-0.045	-0.064
	(3.78)**	(1.08)	(1.76)
<b>Refugee_IV</b>	1.110	1.020	1.019
	(19.88)**	(16.91)**	(17.43)**
<b>Refugee_IV</b> * Post Reform Period	-0.003	-0.074	-0.050
	(0.04)	(0.82)	(0.57)
Constant	-1.150	-1.099	-1.112
	(19.44)**	(18.04)**	(18.41)**
Observations	217287	207017	210338

Absolute value of z-statistics in parentheses. Estimated with state-level fixed effects.

\* significant at 5%; \*\* significant at 1%

Table 5: IV and measurement error correction specification, including UE interactions

	Full Sample	Illegals 1	Illegals 2
<b>Householder Variables</b>			
Age	-0.020 (34.06)**	-0.021 (34.42)**	-0.021 (34.37)**
Female	0.690 (29.82)**	0.675 (27.79)**	0.676 (28.26)**
African American	0.461 (23.56)**	0.459 (23.14)**	0.459 (23.29)**
Hispanic	0.225 (10.54)**	0.249 (11.15)**	0.241 (11.07)**
Asian	-0.026 (0.45)	-0.080 (1.36)	-0.082 (1.41)
Native American	0.340 (7.76)**	0.352 (7.93)**	0.351 (7.94)**
Elementary School	0.489 (22.64)**	0.562 (23.09)**	0.562 (23.51)**
Some High School	0.455 (26.17)**	0.484 (26.53)**	0.485 (26.84)**
High School – no diploma	0.232 (5.59)**	0.264 (5.95)**	0.264 (5.97)**
Some College	-0.170 (9.96)**	-0.171 (9.76)**	-0.170 (9.89)**
Associates/Techican Degree	-0.324 (12.28)**	-0.327 (12.16)**	-0.320 (12.09)**
College	-0.654 (21.06)**	-0.650 (20.60)**	-0.646 (20.74)**
Masters Degree	-0.868 (12.62)**	-0.860 (12.35)**	-0.851 (12.37)**
Terminal Degree	-0.950 (7.51)**	-1.025 (7.30)**	-0.949 (7.46)**
Married Spouse Present	-1.055 (24.48)**	-0.988 (21.86)**	-0.981 (21.92)**
Veteran	0.019 (0.86)	0.040 (1.76)	0.039 (1.74)
Disabled	0.864 (49.71)**	0.865 (47.95)**	0.866 (48.29)**
<b>Spouse Variables</b>			
Age	-0.004 (4.67)**	-0.006 (6.71)**	-0.006 (6.84)**
Female	0.520 (17.15)**	0.506 (15.77)**	0.505 (15.97)**
African American	0.025 (0.74)	0.033 (0.98)	0.031 (0.91)
Hispanic	0.002 (0.07)	0.014 (0.45)	0.033 (1.14)
Asian	0.273 (4.19)**	0.258 (3.89)**	0.260 (3.95)**
Native American	0.314	0.326	0.323

	(5.01)**	(5.13)**	(5.10)**
Elementary School	0.358	0.455	0.440
	(12.38)**	(13.55)**	(13.58)**
Some High School	0.385	0.425	0.415
	(15.85)**	(16.55)**	(16.41)**
High School – no diploma	0.262	0.249	0.252
	(4.28)**	(3.68)**	(3.81)**
Some College	-0.122	-0.117	-0.122
	(4.60)**	(4.29)**	(4.53)**
Associates/Technical degree	-0.341	-0.353	-0.356
	(7.68)**	(7.66)**	(7.80)**
College	-0.501	-0.503	-0.499
	(10.29)**	(9.99)**	(10.08)**
Masters degree	-0.682	-0.665	-0.669
	(4.74)**	(4.44)**	(4.53)**
Terminal deg	-0.456	-0.475	-0.505
	(2.82)**	(2.67)**	(2.86)**
Disabled	0.767	0.787	0.791
	(29.81)**	(29.22)**	(29.55)**
<b>Household Level Variables</b>			
Multi family household	-0.027	-0.005	-0.010
	(1.54)	(0.26)	(0.54)
Number of Children under age 5	0.514	0.516	0.520
	(51.46)**	(48.14)**	(49.46)**
Number of Children aged 5 to 18	0.288	0.288	0.290
	(53.73)**	(49.99)**	(50.97)**
Local Unemployment Rate	0.060	0.059	0.059
	(15.67)**	(14.72)**	(14.91)**
Immigrant	-0.249	-0.141	-0.108
	(4.72)**	(1.54)	(1.52)
Post Reform Period (1998 – 2000)	-0.247	-0.251	-0.251
	(16.75)**	(16.66)**	(16.78)**
Immigrant * Post Reform Period	-0.128	-0.082	-0.095
	(3.54)**	(1.43)	(2.00)*
Immigrant * Local Unemployment	0.005	0.003	-0.000
	(0.84)	(0.27)	(0.04)
<b>Refugee_IV</b>	0.482	0.322	0.287
	(1.90)	(1.13)	(1.05)
<b>Refugee_IV</b> * Post Reform Period	0.246	0.204	0.223
	(1.88)	(1.40)	(1.60)
<b>Refugee_IV</b> * Local Unemployment	0.119	0.128	0.131
	(3.66)**	(3.48)**	(3.73)**
Constant	-1.072	-1.018	-1.032
	(15.52)**	(14.44)**	(14.72)**
Observations	217287	207017	210338

Absolute value of z-statistics in parentheses. Estimated with state-level fixed effects.

\* significant at 5%; \*\* significant at 1%

Table 6: IV and measurement error controls, including years in U.S.

	Full Sample	Illegals 1	Illegals 2
<b>Householder Variables</b>			
Age	-0.020 (33.63)**	-0.021 (33.73)**	-0.020 (33.60)**
Female	0.696 (29.92)**	0.684 (27.97)**	0.685 (28.44)**
African American	0.463 (23.61)**	0.460 (23.13)**	0.460 (23.27)**
Hispanic	0.258 (12.02)**	0.280 (12.46)**	0.272 (12.36)**
Asian	-0.050 (0.83)	-0.110 (1.81)	-0.113 (1.89)
Native American	0.341 (7.77)**	0.353 (7.95)**	0.353 (7.96)**
Elementary School	0.497 (22.84)**	0.569 (23.19)**	0.568 (23.62)**
Some High School	0.457 (26.14)**	0.484 (26.42)**	0.485 (26.73)**
High School – no diploma	0.234 (5.59)**	0.263 (5.88)**	0.262 (5.89)**
Some College	-0.168 (9.76)**	-0.167 (9.50)**	-0.166 (9.63)**
Associates/Technical degree	-0.322 (12.17)**	-0.325 (12.01)**	-0.317 (11.94)**
College	-0.671 (21.28)**	-0.666 (20.85)**	-0.661 (20.99)**
Masters degree	-0.879 (12.84)**	-0.873 (12.60)**	-0.863 (12.61)**
Terminal degree	-0.972 (7.76)**	-1.033 (7.71)**	-0.960 (7.76)**
Married Spouse Present	-1.067 (24.60)**	-1.006 (22.10)**	-0.998 (22.17)**
Veteran	0.024 (1.09)	0.043 (1.88)	0.042 (1.85)
Disabled	0.863 (49.53)**	0.864 (47.79)**	0.866 (48.14)**
<b>Spouse Variables</b>			
Age	-0.004 (4.61)**	-0.006 (6.54)**	-0.006 (6.67)**
Female	0.527 (17.29)**	0.518 (16.02)**	0.516 (16.22)**
African American	0.031 (0.93)	0.039 (1.15)	0.036 (1.07)
Hispanic	0.012 (0.42)	0.020 (0.65)	0.039 (1.35)
Asian	0.240 (3.54)**	0.218 (3.18)**	0.221 (3.24)**
Native American	0.320	0.332	0.329

	(5.10)**	(5.22)**	(5.18)**
Elementary School	0.358	0.455	0.439
	(12.30)**	(13.41)**	(13.45)**
Some High School	0.387	0.425	0.415
	(15.83)**	(16.48)**	(16.33)**
High School - no diploma	0.261	0.244	0.246
	(4.23)**	(3.56)**	(3.69)**
Some College	-0.117	-0.111	-0.116
	(4.39)**	(4.05)**	(4.29)**
Associates/Technical degree	-0.345	-0.357	-0.360
	(7.68)**	(7.66)**	(7.80)**
College	-0.520	-0.521	-0.516
	(10.47)**	(10.16)**	(10.24)**
Masters Degree	-0.649	-0.613	-0.625
	(5.21)**	(4.90)**	(5.00)**
Terminal degree	-0.560	-0.588	-0.615
	(3.25)**	(3.16)**	(3.33)**
Disabled	0.768	0.788	0.792
	(29.78)**	(29.18)**	(29.51)**
<b>Household Level Variables</b>			
Multi Family Household	-0.027	-0.005	-0.010
	(1.53)	(0.29)	(0.57)
Number of Children under age 5	0.518	0.520	0.523
	(51.56)**	(48.22)**	(49.53)**
Number of Children aged 5 to 18	0.288	0.289	0.291
	(53.39)**	(49.84)**	(50.82)**
Local Unemployment Rate	0.060	0.059	0.059
	(15.53)**	(14.67)**	(14.83)**
Immigrant	-0.364	-0.196	-0.136
	(6.26)**	(1.95)	(1.72)
Post Reform Period (1998 – 2000)	-0.250	-0.252	-0.253
	(16.85)**	(16.70)**	(16.83)**
Immigrant * Post Reform Period	-0.128	-0.074	-0.089
	(3.57)**	(1.29)	(1.88)
Immigrant * Local Unemployment	0.005	0.006	0.002
	(0.80)	(0.51)	(0.18)
Years in U.S.	0.006	0.001	-0.000
	(3.63)**	(0.36)	(0.14)
<b>Refugee_IV</b>	1.548	1.395	1.312
	(5.92)**	(4.86)**	(4.76)**
<b>Refugee_IV</b> * Post Reform Period	0.528	0.475	0.495
	(3.71)**	(3.05)**	(3.29)**
<b>Refugee_IV</b> * Local Unemployment	0.176	0.181	0.185
	(5.27)**	(4.99)**	(5.29)**
<b>Refugee_IV</b> * Years in U.S.	-0.101	-0.099	-0.096
	(12.40)**	(11.11)**	(11.09)**
Constant	-1.072	-1.035	-1.049
	(15.45)**	(14.62)**	(14.89)**

Absolute value of z-statistics in parentheses. Estimated with state-level fixed effects.

\* significant at 5%; \*\* significant at 1%

Table 7: Predicted Participation Percentage, Selected Demographic Variables (Using estimates from Table 4, illegals 2 sample).

Demographic Variables	Pre-Reform	Post-Reform
Non-Immigrants at overall values	1.01%	0.6%
Non-Immigrant Single Female	15.4%	10.8%
Non-Immigrants at Overall values with children	5.1%	3.2%
Non-Immigrant Single Female with kids	37.1%	29.1%
Immigrant at Overall values	0.8%	0.4%
Immigrant at Immigrant values	2.0%	1.0%
Refugee at Overall mode or Avg	8.5%	4.4%
Refugee at Immigrant mode or average	15.3%	8.7%
Refugee at Refugee_main mode or average	13%	7.3%

Overall Values: A 47 year old, white male head of household with high school degree. He is married to a 47 year old white female with a high school degree. Neither the head nor the spouse is disabled or a veteran. There are no children in the household. A 5.07% local unemployment rate is observed.

Single Female: A 44 year old single female head of household with a high school degree. She is neither not disabled or a veteran. There are no children in the household. A 5.3% local unemployment rate is observed.

With Children adds 2 children, one under age 5, one age 5 to 18.

Immigrant values: A 45 year old, Hispanic male head of household with a high school degree. He is married to a 44 year old Hispanic female with a high school degree. Neither the head nor the spouse is disabled or a veteran. There are no children in the household. A 6.05% unemployment rate is observed.

Refugee\_Main values: A 50 year old Hispanic male head of household with a high school degree. He is married to a 49 year old Hispanic female with a high school degree. Neither the head nor the spouse is disabled or a veteran. There are no children in the household. A 5.99% unemployment rate is observed.

Figure 1: Food Stamp Participation and Unemployment

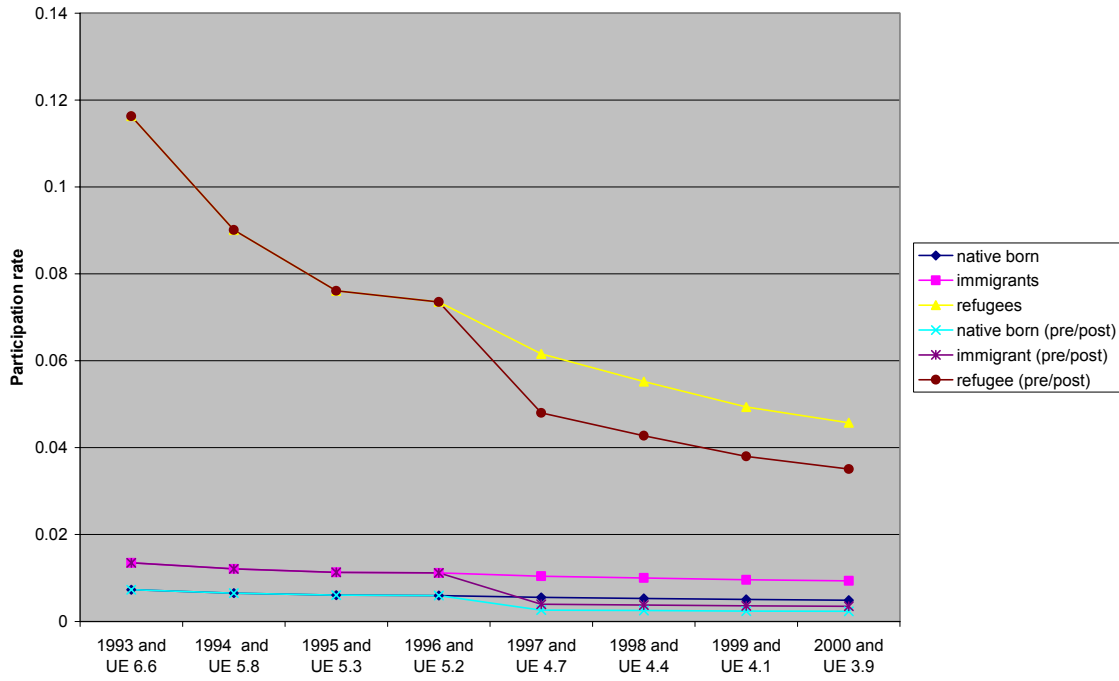
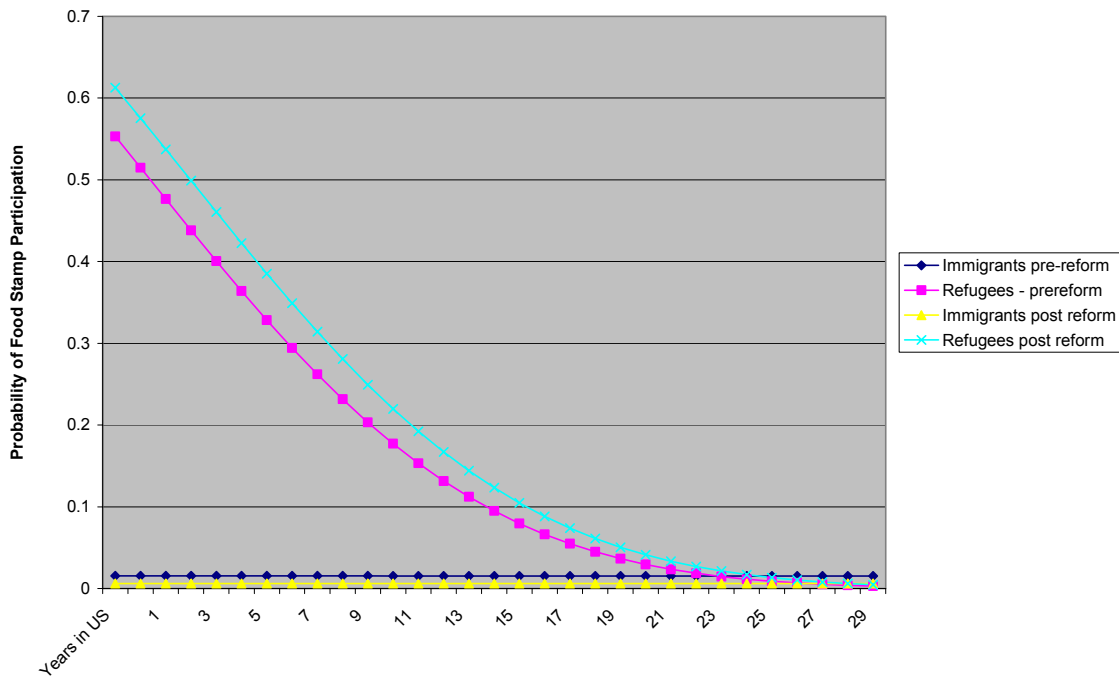


Figure 2: Food Stamp Participation and Years in US



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Endnotes:

<sup>1</sup> Refugees are eligible for adjustment to permanent resident status after living continuously in the U.S. for at least one year. We also treat asylees as refugees. While the process to gain legal residence in the U.S. differs from that of refugees, once granted asylee status, refugees and asylees are treated the same with respect to eligibility in means-tested programs.

<sup>2</sup> Borjas identifies the thirteen “main refugee-sending” countries for the period 1970-1995 as Afghanistan, Bulgaria, Cambodia, Cuba, Czechoslovakia, Ethiopia, Hungary, Laos, Poland, Romania, Thailand, the former Soviet Union, and Vietnam.

<sup>3</sup> CPS groups by years: prior to 1950, 1950-1959, 1960-1964, 1965-1969, 1970-1974, 1975-1979, 1980-1981, 1982-1983, ... 1996-1997, 1998-2001.

<sup>4</sup> We examined the proportion of refugees in the periods prior to 1971, as well as the countries of origin. While not a perfect match, the periods in the 1960’s are not inconsistent with the periods in the 1970’s fully observed. The 1950’s were less consistent, and the period prior to the 1950’s was clearly a selected sample.

<sup>5</sup> According to the Bureau of Census, some immigrants in the CPS are illegal aliens, most of who come from Mexico and Central America. Obviously not all immigrants from Mexico and Central America are illegal, nor are all Mexican and Central American immigrants with less than a high school education. Illegal immigrants are categorically ineligible for food stamps. Hence the full sample should understate the level of overall immigrant use of food stamps (thus biasing downward the coefficient on immigrant). In contrast, the samples which remove all Mexican and Central American Immigrants will bias the results only if legal Central American immigrants are more or less likely to participate in food stamps than other legal immigrants controlling for education and other characteristics. Since all legal immigrants must meet

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the same requirements, including demonstrating some economic viability, we argue that the samples excluding Mexican and Central American immigrants likely do not significantly bias coefficients. Interestingly, the main conclusions of this paper hold qualitatively across all three samples.

<sup>6</sup> Those results are available from the authors.

<sup>7</sup> Borjas (2002) also accounts for immigrant heterogeneity by including controls for cohorts, age at the time of arrival, and years in the U.S., variables we use as exclusion restrictions in our instrumental variable approach.

<sup>8</sup> This result is consistent with prior research suggesting changing economic conditions have a larger welfare participation effect on lower skilled workers than on relatively higher skilled workers. See Hoynes (2000).

Table A1: Using Mismeasured Refugee Status (Refugee30)

	Full Sample	Illegals 1	Illegals 3
<b>Householder Variables</b>			
Age	-0.017 (34.84)**	-0.018 (35.31)**	-0.018 (35.21)**
Female	0.616 (30.36)**	0.601 (28.26)**	0.603 (28.79)**
African American	0.407 (23.86)**	0.402 (23.33)**	0.403 (23.50)**
Hispanic	0.191 (10.47)**	0.221 (11.59)**	0.209 (11.22)**
Asian	0.006 (0.12)	-0.059 (1.25)	-0.050 (1.08)
Native American	0.317 (8.34)**	0.325 (8.47)**	0.325 (8.49)**
Elementary School	0.401 (21.85)**	0.457 (22.45)**	0.464 (23.10)**
Some High School	0.396 (26.34)**	0.419 (26.84)**	0.424 (27.33)**
High School – No Diploma	0.206 (5.70)**	0.234 (6.12)**	0.239 (6.26)**
Some College	-0.146 (9.90)**	-0.147 (9.74)**	-0.146 (9.84)**
Associate/Technical Degree	-0.284 (12.56)**	-0.286 (12.45)**	-0.280 (12.37)**
College	-0.517 (21.71)**	-0.516 (21.37)**	-0.512 (21.45)**
Masters Degree	-0.626 (13.67)**	-0.626 (13.46)**	-0.614 (13.39)**
Terminal Degree	-0.613 (8.91)**	-0.627 (8.85)**	-0.607 (8.80)**
Married Spouse Present	-1.089 (30.52)**	-1.058 (28.57)**	-1.050 (28.61)**
Veteran	0.002 (0.10)	0.018 (0.97)	0.018 (0.98)
Disabled	0.724 (50.35)**	0.717 (48.48)**	0.718 (48.80)**
<b>Spouse Variables</b>			
Age	0.000 (0.47)	-0.001 (1.03)	-0.001 (1.18)
Female	0.486 (18.65)**	0.474 (17.28)**	0.474 (17.52)**
African American	-0.003 (0.11)	-0.001 (0.04)	-0.002 (0.09)
Hispanic	0.023 (1.01)	0.031 (1.26)	0.047 (1.95)
Asian	0.313 (6.17)**	0.298 (5.83)**	0.299 (5.87)**

Native American	0.265 (4.91)**	0.268 (4.91)**	0.266 (4.88)**
Elementary School	0.283 (11.70)**	0.352 (12.75)**	0.341 (12.73)**
Some High School	0.326 (15.64)**	0.355 (16.29)**	0.348 (16.18)**
High School – no diploma	0.221 (4.22)**	0.214 (3.78)**	0.217 (3.89)**
Some College	-0.111 (5.03)**	-0.109 (4.85)**	-0.112 (5.01)**
Associates/Technical Degree	-0.246 (7.37)**	-0.253 (7.40)**	-0.255 (7.51)**
College	-0.357 (10.84)**	-0.357 (10.65)**	-0.355 (10.71)**
Masters Degree	-0.395 (5.91)**	-0.392 (5.76)**	-0.385 (5.73)**
Terminal Degree	-0.366 (3.49)**	-0.365 (3.40)**	-0.383 (3.57)**
Disabled	0.619 (29.56)**	0.624 (28.93)**	0.627 (29.21)**
<b>Household Level Variables</b>			
Multi family household	-0.026 (1.74)	-0.005 (0.30)	-0.010 (0.63)
Number of Children under age 5	0.438 (54.13)**	0.440 (50.80)**	0.443 (52.14)**
Number of Children age 5 to 18	0.244 (55.16)**	0.242 (51.35)**	0.244 (52.39)**
Local Unemployment Rate	0.054 (20.27)**	0.052 (16.42)**	0.052 (17.15)**
Post Reform Period (1998-2000)	-0.214 (17.46)**	-0.217 (17.12)**	-0.217 (17.34)**
Immigrant	-0.126 (5.77)**	-0.025 (0.90)	-0.036 (1.44)
Immigrant * Post Reform Period	-0.111 (3.97)**	-0.053 (1.34)	-0.071 (2.02)*
Refugee 30	0.740 (16.33)**	0.654 (13.63)**	0.663 (14.16)**
Refugee 30 * Post Reform Period	0.077 (1.11)	0.022 (0.29)	0.040 (0.56)
Constant	-1.149 (19.45)**	-1.096 (18.02)**	-1.110 (18.40)**
Observations	217288	207018	210339
Absolute value of z-statistics in parentheses			
* significant at 5%; ** significant at 1%			

Table A2: Estimates of Model (no refugee dummy, observations deriving from 13 refugee sending countries dropped)

Householder Variable	Immigrants from Refugee Sending Countries		
	Removed Full Sample	Illegals 1	Illegals 3
Age	-0.017 (34.65)**	-0.018 (35.13)**	-0.018 (35.05)**
Female	0.624 (30.31)**	0.609 (28.24)**	0.612 (28.76)**
African American	0.407 (23.72)**	0.402 (23.16)**	0.404 (23.34)**
Hispanic	0.203 (10.86)**	0.233 (11.93)**	0.221 (11.60)**
Asian	0.069 (1.36)	-0.003 (0.06)	0.005 (0.10)
Native American	0.314 (8.24)**	0.322 (8.35)**	0.321 (8.37)**
Elementary	0.415 (22.11)**	0.478 (22.79)**	0.484 (23.45)**
Some High School	0.399 (26.26)**	0.424 (26.78)**	0.428 (27.26)**
High School - no diploma	0.211 (5.74)**	0.240 (6.15)**	0.245 (6.29)**
Some College	-0.144 (9.64)**	-0.144 (9.47)**	-0.144 (9.57)**
Associate/Technical Degree	-0.285 (12.43)**	-0.287 (12.31)**	-0.281 (12.23)**
College	-0.543 (21.86)**	-0.543 (21.52)**	-0.539 (21.61)**
Masters Degree	-0.654 (13.48)**	-0.654 (13.24)**	-0.640 (13.19)**
Terminal Degree	-0.740 (8.94)**	-0.770 (8.86)**	-0.735 (8.84)**
Married Spouse Present	-1.054 (28.96)**	-1.017 (26.87)**	-1.010 (26.94)**
Veteran	0.020 (1.10)	0.038 (2.06)*	0.038 (2.05)*
Disabled	0.732 (50.09)**	0.724 (48.17)**	0.726 (48.50)**
<b>Spouse Variables</b>			
Age	-0.001 (1.09)	-0.002 (2.74)**	-0.002 (2.86)**
Female	0.488 (18.40)**	0.476 (17.03)**	0.476 (17.27)**
African American	0.017 (0.61)	0.020 (0.70)	0.019 (0.65)
Hispanic	0.025 (1.06)	0.036 (1.40)	0.052 (2.09)*

Asian	0.341 (6.13)**	0.317 (5.63)**	0.319 (5.69)**
Native American	0.266 (4.89)**	0.269 (4.89)**	0.267 (4.86)**
Elementary	0.290 (11.61)**	0.367 (12.78)**	0.354 (12.75)**
Some High School	0.334 (15.79)**	0.365 (16.48)**	0.358 (16.37)**
High School - no diploma	0.231 (4.33)**	0.227 (3.90)**	0.228 (4.00)**
Some College	-0.103 (4.63)**	-0.101 (4.42)**	-0.104 (4.59)**
Associate/Technical Degree	-0.257 (7.50)**	-0.265 (7.53)**	-0.267 (7.64)**
College	-0.404 (11.48)**	-0.406 (11.29)**	-0.403 (11.35)**
Masters Degree	-0.440 (6.00)**	-0.439 (5.85)**	-0.428 (5.82)**
Terminal Degree	-0.717 (4.33)**	-0.765 (4.22)**	-0.786 (4.35)**
Disabled	0.625 (29.09)**	0.631 (28.44)**	0.635 (28.72)**
<b>Household Level Variables</b>			
Multi Family Household	-0.026 (1.70)	-0.004 (0.27)	-0.009 (0.58)
Number of Children Under Age 5	0.444 (54.05)**	0.446 (50.70)**	0.449 (52.05)**
Number of Children Age 5 to 18	0.246 (54.72)**	0.245 (50.81)**	0.246 (51.88)**
Local Unemployment Rate	0.053 (19.64)**	0.051 (15.68)**	0.050 (16.42)**
Immigrant	-0.137 (6.18)**	-0.029 (1.02)	-0.040 (1.59)
Post Reform Period (1998-2001)	-0.216 (17.58)**	-0.220 (17.26)**	-0.221 (17.48)**
Immigrant*Post Reform Period	-0.124 (4.39)**	-0.079 (1.95)	-0.090 (2.54)*
Constant	-1.136 (19.04)**	-1.081 (17.57)**	-1.095 (17.95)**
Observations	213916	203646	206967

Absolute value of z statistics in parentheses

\* significant at 5%; \*\* significant at 1%