IMPACTS OF MIGRATION

The Participation of Mexican-born Households in Means-tested U.S. Welfare Programs

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Introduction

Participation by the foreign born in welfare programs is the focus of considerable scrutiny in the United States. Presumably motivated by the notion that legal and unauthorized immigrants participate in some sense "too much" in such programs, Congress passed the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. This Act restricts the access of even legal immigrants to welfare utilization. In spite of the passage of this legislation, many questions regarding immigrant utilization of public assistance programs remain only partially answered or unanswered. Precisely which public assistance programs are used relatively much by which entry cohort of which foreign-born group relative to which native-born group? The answers remain obscure. In this paper, we provide an unusually detailed analysis of public assistance utilization by Mexican-born households relative to various control groups of native-born households.

Dramatic changes in the number of immigrants entering the United States, in the source country composition, and in the age composition over the past 25 years have rekindled research interest and policy debate regarding the impact of immigrants on the U.S. economy. For example, what effects do immigrants have on U.S. factor markets, on the education system, and on the health care system? The research conducted here is focused in that it attempts to answer one specific question that stems from this recent immigration policy debate: Do Mexican immigrants use means-tested public programs more intensively than otherwise similar natives? The means-tested programs studied here are Aid to Families with Dependent Children (AFDC) and Supplemental Security Income (SSI). Social insurance programs constitute another type of public program. They refer to programs funded by payroll taxes on working individuals, primarily Social Security.[1] We account for Social Security income in this study, but we do not specifically study participation in the Social Security system.

Significant growth has occurred in immigrant welfare participation since 1970. As reported in Borjas and Trejo (1993), the percentage of households receiving welfare increased substantially for both native and immigrant households between 1970 and 1980. However, as shown in Table 1, the increase in the participation rate for immigrant households (5.9% in 1970 to 8.8% in 1980) was greater than that for native households (6.1% in 1970 to 7.9% in 1980). Table 1 also shows that the participation rate for immigrant households increased again to 9.1% in 1990, whereas that for native households actually decreased to 7.4%. Furthermore, female-headed households, whether native or immigrant, are more likely to receive welfare than male-headed households (Table 1).

Table 1
Percentage of Native and Foreign Born Households Receiving Welfare, 1970-1990

	All Households		Male-headed Households		Female-headed Households	
Year	Natives	Foreign Born	Natives	Foreign Born	Natives	Foreign Born
1970	6.1	5.9	3.7	4.5	14.8	10.4
1980	7.9	8.8	4.8	6.5	16.2	14.5
1990	7.4	9.1	N/A	N/A	N/A	N/A

Source: Borjas and Trejo (1993) and Borjas (1994)

This paper makes two important advances in the analysis of participation in means-tested welfare programs by native-born and Mexican-born households. First, although several previous studies have empirically examined welfare participation by immigrants (e.g., Blau, 1984; Borjas and Trejo, 1991, 1993; Jensen, 1988; Tienda and Jensen, 1986; and Trejo, 1992), only Borjas and Trejo (1993) is based on an explicit, underlying theoretical model. In the section titled "Theoretical Model," a household utility maximization model is developed for the decision to participate in welfare (and social insurance) programs. Drawing from Moffitt (1981, 1983), welfare stigma is incorporated into the utility function and is allowed to vary across immigrant and native households. In the context of the theoretical model, private transfer income also is separated from other non-labor income because households receiving private transfers are likely to display different program participation patterns than households not receiving such transfers.

Second, a seven-equation simultaneous system is developed for empirical analysis that allows for explicit links between head and spouse hours worked, head and spouse wages, household consumption, and household welfare and social insurance participation. This model is more detailed than the models used in previous research and more accurately depicts the household decision-making process.

In the empirical work reported below we not only distinguish female-headed households and male-headed households, but we also separately identify single female-headed households. Single female-headed households have especially high AFDC participation rates. Moreover, within each type of household, we distinguish the age of the head (29 and under, 30-49, 50-64, and 65 and over). This last distinction allows for a better understanding of AFDC users, who tend to be relatively young, and SSI users, who tend to be somewhat older (primarily 65 and over). Finally, the types of models developed here study the foreign born relative to a control group of native-born persons. We consider four different native-born control groups (Mexican ancestry natives, all natives, white natives, and black natives). The various distinctions in the data in combination with the various control groups used in the analysis allow for a more complete understanding of welfare utilization of the foreign born.

The rest of this paper proceeds as follows: the following section, titled "Previous Findings," discusses the previous literature relating to welfare and social insurance participation by the foreign born. The next section lays out the theoretical model. The data set is discussed in the section titled "Data." The empirical model and estimation techniques are described in the section titled "The Model and Estimation Techniques." The next section presents the empirical results, and the final section provides a summary and conclusions.

Previous Findings

Several studies over the past 20 years examine the probability of social program participation by immigrants versus natives in the United States. However, none of these studies include all of the relevant explanatory variables (many times due to data availability problems), nor do they explore the link between hours worked and public program participation, as is done here. In general, previous studies show that immigrant households are less likely than otherwise comparable native households to participate in welfare programs, although the raw data indicate that immigrant households are more likely to participate than natives (Table 1). These studies typically focus on two variables: foreign-born status and year of entry. The foreign-born status variable is generally a simple dummy variable coded as one if the household head or spouse is foreign born and zero if native born. The year of entry variable is usually a series of dummy variables indicating when the head of the foreign-born household entered the U.S.; for example, head entered 0-5 years ago, 6-10 years ago, or head entered between 1975 and 1979 or between 1970 and 1974. These year of entry variables are usually interacted with the foreign-born status variable to examine immigrant participation differences across various entry cohorts. Certain studies, such as Borjas and Trejo (1991) and Jensen (1988), pool data from two U.S. Censuses. This procedure allows for the identification of cohort effects (by examining participation by different entry cohorts), assimilation effects (by examining the relationship between program participation and years since migration), and period effects (by examining participation differences due to being observed in the 1970 vs. 1980 Census), but not all three at once.[2]

A third variable, age at arrival, has rarely been included in empirical analyses of immigrant program participation, although its effect on program participation may be important. If immigrants arrive at younger ages, the majority of their human capital (education, experience, etc.) is accumulated in the U.S. Immigrants arriving at older ages, on the other hand, have little incentive to accumulate U.S.-specific human capital due to the shortness of their remaining work careers. Those immigrating at older ages may therefore place a greater burden on the SSI program, whereas those arriving at younger ages are more probable AFDC participants.

Blau (1984) is the only previous study that examines participation in both welfare and social insurance programs. Using the 1976 Survey of Income and Education, Blau conducts her analysis separately for male-and female-headed households. Focusing on six year of entry groups interacted with foreign-born status and controlling for various personal characteristics, Blau finds that foreign-born male-and female-headed families are initially significantly less likely to participate in both types of programs than are otherwise similar natives. Although length of time in the U.S. and probability of welfare recipiency do not display any consistent

pattern, Blau finds that the probability of immigrant participation in social insurance programs increases with time in the U.S. After residing in the U.S. for 16 (26) years, male (female) immigrants become significantly more likely to participate in social insurance programs than natives.

Borjas and Trejo (1991) pool the 1970 and 1980 Public Use Microdata Sample (PUMS) of the U.S. Census to examine immigrant welfare participation rates, allowing them to identify the cohort and assimilation effects on immigrant welfare usage. Among their findings, Borjas and Trejo (1991) report that more recent immigrant cohorts are more likely to enter the welfare system than are earlier cohorts (cohort effect) and that immigrant households are more likely to use welfare the longer they have been in the U.S. (assimilation effect). Borjas and Trejo also conclude that immigrant welfare participation rates have risen between 1970 and 1980, which is largely attributable to the shift in national origin mix of immigrants from European countries to Asian and Latin American countries. Finally, they calculate that the increased welfare participation of immigrants between the 1950-59 cohort and the 1975-80 cohort has increased welfare costs by over $5 billion.

Most studies account for the effect of Hispanic origin on the probability of program participation by including a dummy variable equal to one if the head is of Hispanic origin. Using such a strategy, Blau (1984), for example, finds that male-headed and female-headed Hispanic households are more likely to receive welfare, but less likely to receive social insurance, than are their otherwise similar non-Hispanic counterparts.[3]

Borjas and Trejo (1993) use the 1980 PUMS to compute unadjusted and adjusted welfare participation rates for 62 source countries for both male-and female-headed households.[4] For immigrants from Mexico, the male-headed participation rates are 8.7% (unadjusted) and 9.6% (adjusted) whereas the female-headed participation rates are 29.3% (unadjusted) and 22.2% (adjusted). By way of comparison, the mean participation rates for immigrants from all 62 countries are 5.1% (unadjusted) and 7.6% (adjusted) for male-headed households and 13.0% (unadjusted) and 16.6% (adjusted) for female-headed households. In all cases, immigrant households from Mexico are more likely welfare participants than are immigrants from all other countries on average.

Tienda and Jensen (1986) and Jensen (1988) analyze welfare participation differences between Hispanic immigrant households and native Hispanic households.[5] Both studies split the Hispanic group into Mexican, Puerto Rican, and other Hispanic households. Tienda and Jensen (1986) use the 1980 PUMS. Whereas the raw data indicate that immigrant Hispanic households are more likely to receive public assistance than native Hispanic households, the estimated model shows otherwise. Hispanic immigrant families are 9% less likely than otherwise

comparable natives to have received public assistance income in 1979. Within the Hispanic group, Mexicans are less likely, and Puerto Ricans more likely, to receive welfare payments than other Hispanics. Furthermore, recent Hispanic immigrants (those entering between 1975 and 1979) are 9% less likely to participate than otherwise similar Hispanic natives. Mexican families that immigrated between 1970 and 1980 are also less likely to participate in public assistance than are other Hispanic immigrant families or native families.

Jensen (1988) conducts essentially the same analysis as Tienda and Jensen (1986); however, he combines 1970 and 1980 Census (PUMS) data to examine differences in participation for each immigrant group both for different entry cohorts (e.g., 0-5 years ago, 6-10 years ago) and across the two time periods. Multivariate logistic regression analyses show that immigrants are generally less likely to use welfare than their native counterparts. Focusing on changes across the two time periods, he concludes that the lower likelihood of Hispanic immigrants using public assistance is specific to 1979. When Jensen (1988) beaks down immigrants by entry cohort, he further concludes that recent Hispanic immigrants in 1970 are more likely to participate, but Hispanic immigrants who entered 0 to 5 and 6 to 10 years ago in 1980 are significantly less likely to participate. Furthermore, recent Mexican immigrants are less likely to receive public assistance income.

Three important shortcomings are evident in nearly all of the studies discussed above. First, with the exception of Borjas and Trejo (1993), none of the studies base their empirical work on an underlying theoretical model. The Borjas-Trejo model, however, is significantly different than that developed in the following section titled "Theoretical Model." The authors model both the decision to immigrate to the U.S. and the decision to participate in a welfare program given immigration. As such, welfare participation becomes a function of source-country characteristics including income, income inequality, and distance from the U.S. (representing the cost of immigration). Participation in social insurance programs is not addressed, nor does the model allow for comparisons between otherwise similar immigrants and natives.

In the present paper, a utility maximization model is constructed following Moffitt (1983), which allows the family to explicitly choose participation or nonparticipation. Whereas the Moffitt model deals only with welfare program participation, the model employed here allows the family to separately choose to participate in welfare and social insurance programs. The model yields a system of equations for welfare program participation, social insurance participation, consumption, and labor supply.

Second, welfare stigma may play an important role in the participation decision, yet this issue is not covered in any previous studies. Moffitt (1981) incorporates stigma into a model of welfare participation by assuming that an individual receives disutility from participation in the AFDC program. Moffitt (1983) takes a

slightly different approach by allowing for a flat component of stigma, resulting from participation in and of itself, as well as for variable stigma, which is related to the size of the welfare benefit received. Given Moffitt's finding that stigma arises from participation and does not vary with the amount of the benefit given participation, the model employed in this paper incorporates only a flat component of stigma. Furthermore, stigma is associated with participation in welfare programs and not with participation in social insurance programs.

Third, private intra-family transfers may provide an important safety-net for families and may therefore influence both participation in and benefit levels received from welfare and social insurance programs. Although several studies (e.g., Cox and Jakubson, 1995; Schoeni, 1991) have examined the extent to which private transfers within families are crowded out by public transfer programs, none has addressed the reverse of this issue: To what extent, and in which direction, does the presence of private intra-family transfers influence the probability of participation in, and the level of payments received from, public transfer programs? For welfare programs, the effect is expected to be negative; however, the effect of private transfers on social insurance participation is more ambiguous.

Some descriptive statistics are illustrative of the importance of private transfers and the differences in private transfer behavior across countries of origin. Cox and Jakubson (1995) use 1979 survey data from the President's Commission on Pension Policy (PCPP). They find that private transfers make up about 10.3% of family income for those families receiving such transfers, while mean public transfers received for these families account for about 19.2% of family income (Cox and Jakubson, 1995, Table 1). In the PCPP survey, 25.9% of the families reported receiving private transfers within the sample time interval. Unfortunately, this sample relates to a very small number of families (4,232 family units were included) and does not make any distinction as to the foreign-born or native-born status of the families surveyed.

In a review article, Cox and Jimenez (1990) present descriptive statistics relating to private transfers in other countries. Private transfers are more prevalent and make up a larger share of total family income in other countries than in the U.S. For example, in rural India, 93% of households reported receiving some form of private transfer, with the average transfer amount accounting for 11% of household income. In Malaysia, between 19% and 30% of households received a private transfer. Here the average transfer amount accounted for 11% of household income. The comparable figures reported for the United States are 15% of households receiving private transfers, making up 1% of household income on average (Cox and Jimenez, 1990, Table 1).

Although the statistics presented above are quite general, they support two claims. First, private intra-family transfers are received by a significant number of

households in both the United States and other countries. If the hypothesis that private transfers affect the propensity to use public transfer programs is correct, then excluding private transfers from the model would be a serious omission. Second, the observed differences in private transfer patterns across countries lend support to the argument that immigrants from various countries may behave differently than natives with respect to public program participation. These differences may stem from cultural differences and therefore would not be detected by simply holding constant such characteristics as age and education.

Only two previous studies, Tienda and Jensen (1986) and Jensen (1988), attempt to control for private transfers. Both do so by including a dummy variable for extended family status as an explanatory variable in the welfare program participation equations. The hypothesis is that extended families are more likely to provide informal support within the family and should therefore exhibit lower propensities to participate in welfare programs, all else equal. Indeed, Wolpin (1980) demonstrates that immigrant families, especially Mexicans and Asians, are more likely to reside in non-nuclear households. However, Tienda and Jensen (1986) and Jensen (1988) both find that extended family status increases the probability of welfare participation. This proxy for the actual presence and amount of private intra-family transfers is clearly not satisfactory, but more satisfactory measures are rarely available in the data.

In this study, private transfers directly enter the utility maximization model as a form of non-labor income in the budget constraint and carry through to become an argument in the demand equations for welfare and social insurance participation. Private transfers should therefore enter the empirical model, although data availability presents a significant constraint here. This issue is discussed further in the section titled "Data."

The results obtained in a number of previous studies are sensitive to the control group of native-born persons that is chosen as the comparison group for the foreign born (Greenwood and McDowell, 1986). For example, a common control group is otherwise comparable native-born persons of the same ancestry as the foreign-born group (e.g., Davies, 1996). However, other control groups also are meaningful to study, such as all native-born persons, white native-born persons, black native-born persons, and even other foreign-born groups. In this study, we examine persons born in Mexico relative to a number of alternative control groups.

Census data on welfare participation do not distinguish the precise program in which the individual or household participated. Thus, Aid to Families with Dependent Children (AFDC) and Supplemental Security Income (SSI) are bundled together in "welfare income." This aggregation is problematic because the two types of programs mainly are used by different types of individuals. For example, AFDC utilization is oriented toward single-parent, female-headed households, whereas

SSI is oriented toward aged persons and the disabled. During 1990 and 1991, of SSI recipients who were lawful resident aliens, almost 65 percent were aged whereas about 35 percent were blind or disabled. A better understanding of participation in means-tested welfare programs by the foreign born thus requires considerable disaggregation of the population. In this study, we distinguish various age groups, and we also specifically identify single-parent households.

Theoretical Model

The model presented below examines the separate decisions of households to participate in welfare programs and social insurance programs. This is a micro-oriented approach to the problem, as opposed to the more macro-oriented model of Borjas and Trejo (1993), and appropriately places the participation decision at the household level, rather than at the individual level. Allowing the household to separately choose welfare and social insurance participation within a single utility maximizing framework represents a significant advance over previous theoretical work in this area.

Furthermore, drawing from Moffitt (1981, 1983), the model incorporates welfare stigma into the utility function and includes a parameter that allows stigma to vary across immigrant and native groups. The foreign-born and native-born may respond differently to the stigma of welfare participation, due to unobservable cultural differences.

Moreover, the model developed here separates private transfer income from other non-labor income, because households receiving such private transfers are presumably less likely to participate in welfare and social insurance programs than otherwise similar households not receiving private transfers. As with welfare stigma, this response is expected to differ between natives and the foreign born. Several papers (e.g., Cox and Jakubson, 1995; Schoeni, 1991) have examined the relationship between private and public transfers. However, these papers are primarily concerned with the crowding out effects of public transfers on private transfers. The effect of private transfers on the propensity to participate in public transfer programs is not examined, nor are differences in such relationships between immigrants and natives explored. Our model remedies these shortcomings.

Our model presented is based on a model developed by Moffitt (1983). However, several modifications make it more amenable to foreign born-native born comparisons of program participation. In Moffitt (1983), the unit of analysis is the individual and the decision of interest is participation or non-participation in a welfare program (namely, AFDC). Because the model presented in this paper is applied to participation in both welfare and social insurance programs, it is more appropriate that the household be the unit of analysis. Specifically, household utility

is specified as a function of consumption by each member of the household, c_i, and labor supply of each member, h_i, where I=1,...,n. The household head is assumed to be the decision maker. The general form of this utility function is

$$(1)\quad U = u(c_1,...,c_n,h_1,...,h_n) - \lambda\phi A_2.$$

Each member's consumption c_i can be thought of as a vector of goods with associated price vectors p_i. Alternatively, each c_i may be considered an individual specific composite commodity with price p_i. The utility function is assumed to be concave.

A distinguishing feature of this utility function is the ($-\phi A_2$) term representing welfare stigma. A_2 is a dichotomous variable equal to 1 if the household participates in a welfare program and equal to 0 if the household does not participate. The stigma parameter ϕ indicates the reduction of utility due to participation in a welfare program. Moffitt (1983) also includes such a term, defined as the flat component of stigma. A variable component of stigma is included by Moffitt (1983) as well, allowing stigma to change with the level of welfare benefits received. However, Moffitt finds this variable component to be insignificant; hence, it is not included in the model developed here.

No stigma is associated with participation in a social insurance program. Participation in such programs is in some sense a right (entitlement) people acquire as a result of tax contributions throughout their working years, whereas welfare program participation many times signifies the inability of a person or family to provide for themselves. The λ parameter attached to ($-\lambda\phi A_2$) is an adjustment parameter allowing the effects of stigma from welfare participation to vary across immigrant and native households. Here, λ will be greater than, equal to, or less than one depending upon whether immigrants attach more, the same, or less stigma, respectively, to participation than natives. For native households, λ is equal to one.

The budget constraint facing the household simply equates expenditures on consumption goods by each member of the household to full household income

$$(2)\quad \sum_{i=1}^{n} p_i c_i = \sum_{i=1}^{n} w_i h_i + N + X + A_1 T + A_2 B,$$

where w_i is member I's wage, N is total household non-labor income, and X is total household private transfer income. Household income from social insurance programs is taken into account by the A_1T term where A_1 is a dichotomous variable equal to 1 if the household receives social insurance benefits and equal to 0 if the household does not receive such benefits. T is the household's benefit from social

insurance programs. Household welfare income enters the budget constraint as A_2B, where A_2 is the dichotomous welfare participation variable and B is the household's welfare benefit.

As noted above, private transfer income is included in the model because households receiving private transfers presumably are less likely to participate in welfare and perhaps social insurance programs. Total private transfers may be defined as $X = X_1 + X_2$, where X_1 denotes private transfers within the household and X_2 is private transfers from other households. A household's participation in a welfare or social insurance program may be influenced more by private transfers from other households than by those within the household. Private transfers within the household do not alter the total resources available to the household, but simply redistribute these resources. Therefore, within-household private transfers should have little effect, if any, on a household's participation in welfare and social insurance programs.

Given that welfare programs are means-tested, providing an income guarantee $\overline{G}$ and taxing earned income at rate t, an additional constraint, defining the welfare program benefit level, must accompany the budget constraint

$$(3) \quad B = \overline{G} - t\sum_{i=1}^{n} w_i h_i.$$

The income guarantee, $\overline{G}$, and the program tax rate, t, are expected to be important variables for the empirical analysis because they can vary greatly by state for welfare programs such as AFDC. For example, state AFDC benefit guarantee levels for a family of two (one adult and one child) in 1989 ranged from a low of $88 per month in Alabama to a high of $752 per month in Alaska, with a mean of $313. The nominal program tax rate is currently set by federal statute at 100%. In other words, AFDC benefits are reduced by $1 for every $1 of earned income (beyond some minimal excludable amount for work-related transportation expenses). However, the effective AFDC program tax rate is much lower and varies greatly by state. Fraker, Moffitt, and Wolf (1985) estimate these effective tax rates over the period 1967 to 1982. In 1979, for example, the effective AFDC tax rate ranged from a low of 13% in Georgia, Mississippi, and South Carolina, to a high of 55% in Illinois, with a mean of 29%. The effective tax rate is the more relevant measure for the empirical analysis because it accounts for income and asset exclusions allowed for under AFDC rules. However, measures of the effective tax rate for 1989 may not be available and may be difficult to estimate due to data limitations. This issue is discussed further in the section titled "Data."

The household's problem is then to maximize (1) subject to (2) and (3). Given that A_1 and A_2 are dichotomous variables (i.e., participate or do not participate), the household can be thought of as first maximizing utility (1) by choosing c_i and h_i for

all I=1,...,n holding A_1 and A_2 constant. A_1 and A_2 are then chosen to maximize (indirect) utility through some combination of participation and non-participation. Solution of the first-order conditions yields a consumption demand equation and a labor supply equation for each household member I. These are standard Marshallian demands with arguments including individual specific prices, (net) wages and family income from sources other than labor:

(4a)
$$h_i = h_i^*(p_1,...,p_n, w_1(1-A_2t),...,w_n(1-A_2t), N + X + A_1T + A_2\overline{G}) \quad \forall i,$$

and

(4b)
$$c_i = c_i^*(p_1,...,p_n, w_1(1-A_2t),...,w_n(1-A_2t), N + X + A_1T + A_2\overline{G}) \quad \forall i.$$

A feature of these demand equations is that the price and wage facing each individual household member is an argument in member I's consumption demand and labor supply functions, which adds some notion of interdependence between household members in making consumption and labor supply decisions.

Substituting (4a) and (4b) into the utility function (1) produces the indirect utility function, given A_1 and A_2

(5)
$$V(p_1,...,p_n, w_1(1-A_2t),...,w_n(1-A_2t), N + X + A_1T + A_2\overline{G}; A_1, A_2)$$
$$= u(c_1^*,...,c_n^*, h_1^*,...,h_n^*) - \lambda\phi A_2.$$

The stigma term ($-\lambda\phi A_2$), which is allowed to vary across immigrant and native groups, is incorporated into the indirect utility function, although it does not appear in the demand equations (4a) and (4b). The object is now for the household head to simultaneously determine social insurance participation (A_1) and welfare participation (A_2) in order to "maximize" household indirect utility.

An important issue to be considered here is that of eligibility for the welfare and social insurance programs under consideration. As discussed by Moffitt (1983), eligibility for the means-tested welfare programs is included in the model by virtue of the benefit level equation (3) and the welfare stigma term ($-\lambda\phi A_2$). Some households may not participate because income is too high to generate a positive benefit level. Others may be eligible based on income, but may choose not to participate due to the reduction of utility through welfare stigma. Eligibility for social insurance programs is a bit more difficult to deal with. In the case of Social Security, for

example, quarters of covered employment and age are the primary determinants of a household's eligibility. Those households not meeting the minimum eligibility requirements may be thought of as facing an additional constraint, eliminating the choice of $A_1 = 1$.

The household head maximizes indirect utility by choosing the combination of A_1 and A_2 that yields the greatest indirect utility. More formally, two threshold functions, A_1^* and A_2^*, are created to represent the demand for participation in each type of program:

(6a)
$$A_1^* = V(p_1,...,p_n, w_1(1-A_2t),...,w_n(1-A_2t), N + X + T + A_2\overline{G}; 1, A_2)$$

$$-V(p_1,...,p_n, w_1(1-A_2t),...,w_n(1-A_2t), N + X + A_2\overline{G}; 0, A_2);$$

and

(6b) $$A_2^* = V(p_1,...,p_n, w_1(1-t),...,w_n(1-t), N + X + A_1T + \overline{G}; A_1, 1)$$

$$- V(p_1,...,p_n, w_1,...,w_n, N + X + A_1T; +A_1 0).$$

If the household head compares indirect utility with participation to indirect utility without participation, the decision rule for each program becomes:

(7a) $A_1 =$
$$\begin{cases} 1 \text{ if } A_1^* > 0 \text{ (participate)} \\ 0 \text{ if } A_1^* \leq 0 \text{ (do not participate);} \end{cases}$$

7b) $A_2 =$
$$\begin{cases} 1 \text{ if } A_2^* > 0 \text{ (participate)} \\ 0 \text{ if } A_2^* \leq 0 \text{ (do not participate).} \end{cases}$$

The choice of participation or non-participation essentially comes down to the question of whether the additional utility received from additional income given participation outweighs the stigma associated with participation. If the utility gain from participation is greater than the utility loss from stigma, then the household participates. If not, it does not participate. The participation decision is a single decision made by the household head on behalf of the entire household. This formulation of the stigma term allows for differing participation behavior across immigrant and native households.

Equations (4a), (4b), (7a), and (7b) can all be combined to form a system of demand equations for estimation purposes.

Demand for social insurance program participation:

$$A_1 = \begin{cases} 1 \text{ if } A_1^* > 0 \\ 0 \text{ if } A_1^* \le 0 \end{cases} \quad \text{where } A_1^* \text{ is given by (6a)}$$

Demand for welfare program participation:

$$(8)\quad A_2 = \begin{cases} 1 \text{ if } A_2^* > 0 \\ 0 \text{ if } A_2^* \le 0 \end{cases} \quad \text{where } A_2^* \text{ is given by (6b)}$$

Demand for consumption:

$$c_i = c_i^*(p_1,...,p_1, w_1(1-A_2t),...,w_1(1-A_2t), N + X + A_1T + A_2\overline{G}) \quad \forall i$$

Labor supply:

$$h_i = h_i^*(p_1,...,p_1, w_1(1-A_2t),...,w_1(1-A_2t), N + X + A_1T + A_2\overline{G}) \quad \forall i.$$

The system (8) is used as the basis of the empirical model of the section titled "The Model and Estimation Techniques."

Data

The data set employed for the empirical analysis is the 5% sample of the 1990 Public Use Microdata Sample (PUMS) of the United States Census (Bureau of the Census, 1992a). This data set contains both household records and person records for the individuals comprising each household. For the entire country, several million observations are available on over 200 different variables. Of particular interest for this study are the geographic identifier variables on the household record and the relationship, place of birth, year of immigration, and income variables on the person records. The geographic identifier variables are important in that they allow identification of the state and the metropolitan statistical area (MSA) in which each household resides. Thus, differences in welfare eligibility rules and benefit payments across states can be taken into account, as can differences in participation behavior in metropolitan and nonmetropolitan areas.

The place of birth and year of immigration variables are clearly of central importance to this study. The sample is designed to include foreign-born households from Mexico and native-born households of Mexican ancestry, as well as various other native-born households. The year of entry variable allows for the identification of eight different year of entry categories for the foreign-born population. These categories are as follows: 1985-90, 1980-84, 1975-79, 1970-74, 1965-69, 1960-64, 1950-59, and before 1950. Use of these year of entry variables is important for several aspects of this study.

Most previous studies have counted as foreign born only those households with a foreign-born head, ignoring the place of birth of the spouse. In this study, we classify as foreign born all households in which either the head or the spouse (if present) was born in another country. This classification method results in more complete coverage of the foreign-born population.

Finally, the income variables are of great importance. For each individual, eight sources of income are identified in the PUMS: wage and salary income; nonfarm self-employment income; farm self-employment income; interest, dividends, and net rental income; social security income; public assistance income; retirement income; and all other income. Each income measure refers to income of that type received in 1989. Public assistance income is the key measure for this study. As noted above, public assistance income includes income from both Aid to Families with Dependent Children (AFDC) and Supplemental Security Income (SSI). A household is classified as a public assistance program participant if it had positive income from the public assistance programs. Because separate measures of AFDC and SSI are not available, we distinguish the groups most likely to receive each by age and other characteristics.

The analysis conducted in this study is a household-level analysis. Individual income measures are combined to yield, at the household level, measures of earned income, nonearned income, social security income, and public assistance income. Several of the individual-level characteristics are preserved, however. Education levels and head and spouse income measures are maintained at the person level for use in estimated wage and hours worked equations.

With aggregation of individual characteristics to the household level, an issue arises concerning which member's characteristics to use for such household characteristics as ancestry, place of birth, and year of entry. The procedure adopted here is to use the characteristics of the head. For example, household ancestry for native-born households is determined by the ancestry of the household head. The foreign-born characteristics such as place of birth and year of entry are determined by the relevant characteristics of the individual conferring foreign-born status on the household. If the head is the foreign-born member, the household's place of birth and year of entry are those of the head. If the household head is native-born,

but the spouse is foreign-born , then the spouse confers foreign-born status on the household and the household's place of birth and year of entry are those of the spouse. Individual-level ancestry, place of birth, and year-of-entry variables also are maintained for the head and the spouse. These are important variables for the estimated wage and hours worked equations. No attempt is made to create a household education-level variable, because this and other characteristics like it are specific to individuals and are maintained as such in the data.

Households with no persons residing in them (presumably vacant households) and households with negative values for any of the income measures are trimmed from the sample, as are institutional units such as prisons, nursing homes, retirement homes, and mental institutions. Households with either the head or the spouse on active military duty also are deleted from the sample because active duty military personnel participate in a different human capital accumulation process than does the non-military population, and are therefore likely to behave differently with respect to program participation. A variable does, however, identify military veterans. This dummy variable is included as an independent variable in all estimated equations to control for any potential behavioral and/or human capital differences of those who have served in the military.

Another important data-related issue has to do with the use of sample weights. Data from the 1980 PUMS are self-weighted, which implies that the sample was a random sample of the entire population. However, the 1990 PUMS contains two different types of weights, a household weight and a person weight. Each household is assigned a unique household weight and each person within each household is also assigned a unique person weight. According to the PUMS documentation, these weights are to be applied when analyzing the data so that estimates can be taken to be nationally representative. In other words, the 1990 PUMS is not a random sample. The weights are designed to correct for over-sampling of certain groups and under-sampling of other groups.

If the analysis utilized only household records, the household weight would be the appropriate choice. Likewise, the person weight would be appropriate if only person records were being analyzed. However, this analysis makes use of both household variables and person variables, some of which have been combined to create household-level characteristics. Given this information, neither the person weights nor the household weights are used in any part of the analysis. This is done for two primary reasons. First, no aggregating is done beyond the household level, so weighting does not seem appropriate. Second, and perhaps more important, the sample properties upon which the household and person weights were derived are in some sense destroyed in the process of eliminating households as described above. Because, for example, individuals on active military duty were deleted, person-weighted estimates will be no more "nationally representative" than the

unweighted estimates. All regression results and descriptive statistics presented below are based on the raw, unweighted data and therefore represent the actual contents of the PUMS data set created and used here.[6]

Several variables necessary for the analysis are constructed from the raw Census data, including years of education, potential labor market experience, the log of head and spouse wages, and head and spouse hours worked. Each of these is briefly discussed in the following paragraphs. For years of education, the 1990 PUMS provides a variable called YEARSCH which has 17 education categories ranging from no completed years of school to doctorate degree. However, the coding of this variable does not allow it to be used as a continuous measure of educational attainment. We therefore assigned a number to each category to represent the number of years of education necessary to reach that level. For example, the category "Bachelor's degree" was assigned 16 years of education. In this way, we created a continuous educational attainment variable called EDUC that is used in several of the estimated equations.[7] The variable EDUC is then used to create a measure of potential labor market experience, EXPER, as typically used in Mincer earnings equations. EXPER is computed as age less education less six.[8] The experience variable also is used in the estimated wage equations.

Head and spouse hours worked and the logarithm of head and spouse wages also are created. Hours worked are defined as the product of number of weeks worked in 1989 and average hours worked per week in 1989, which results in the variables HHOURS for household heads and SHOURS for spouses. Although this is a somewhat imperfect measure of hours worked, it is the best that is available in the 1990 PUMS. The wage is created by dividing wage and salary income in 1989 by HHOURS for household heads and by SHOURS for spouses. The logarithm of the wage is then taken to create head's log wage, LHWAGE, and spouse's log wage, LSWAGE. Various descriptive statistics are reported in Appendix 2.

One final issue to discuss here is that of private transfer income. Private transfer income is referred to in the section titled "Previous Findings" as an important explanatory variable that has been excluded from all previous studies and is included in the theoretical model of the section titled "Theoretical Model." Due to the limitations of the Census data, we are unable to compute a reasonable measure for this variable. Therefore, household private transfer income is excluded from the empirical work of this study.[9]

The Model and Estimation Techniques

The empirical model is derived based on the demand equations from the theoretical model presented above. However, a number of changes were made due to shortcomings of the data set. First, private transfers are not separated from

nonearned income as is done in the theoretical model since no measure of private transfers is available in the 1990 PUMS. Presumably, private transfers received from other family members are included in the "All Other Income" component of nonearned income.

Two other compromises from the theoretical equations are made for the purpose of empirical tractability. Whereas the theoretical model calls for the estimation of a labor supply equation and a consumption equation for each member of the household, the empirical model estimates a labor supply equation only for the household head and spouse (if present) and a single household-level consumption equation. The closest measure of consumption available is gross rent (for renters) and selected monthly owner costs (for owner-occupied homes, condominiums, and mobile homes). These cover primarily rent, mortgage payments, utilities, and insurance (Bureau of the Census, 1992b). These measures are transformed into a measure of annual spending for each household. Admittedly, several problems arise in measuring consumption in this way, perhaps the most important of which is the investment-like features of housing and housing services expenditures. Unfortunately, it is the best measure available in the 1990 PUMS.

The empirical model consists of seven equations for each household: head hours worked, spouse hours worked, head wage, spouse wage, social security participation, public assistance participation, and household consumption. The complete empirical model is as follows:

$$(9)\quad hhours = \beta_0 + \beta_1 sspart + \beta_2 pastpart + \beta_3 shours + \beta_4 lhwage + x_1\psi_1 + \varepsilon_1$$

$$(10)\quad shours = \gamma_0 + \gamma_1 sspart + \gamma_2 pastpart + \gamma_3 hhours + \gamma_4 lswage + x_2\psi_2 + \varepsilon_2$$

$$(11)\quad lhwage \mid (hhours > 0) = \delta_0 + x_3\psi_3 + \delta_1 hmills + \varepsilon_3$$

$$(12)\quad lswage \mid (shours > 0) = \eta_0 + x_4\psi_4 + \eta_1 smills + \varepsilon_4$$

$$(13)\quad sspart = \theta_0 + \theta_1 lhwage + \theta_2 lswage + \theta_3 pastpart + x_5\psi_5 + \varepsilon_5$$

$$(14)\quad pastpart = \pi_0 + \pi_1 lhwage + \pi_2 lswage + \pi_3 sspart + x_6\psi_6 + \varepsilon_6$$

$$(15)\quad yspend = \mu_0 + \mu_1 lhwage + \mu_2 lswage + \mu_3 sspart + \mu_4 pastpart + x_7\psi_7 + \varepsilon_7$$

where the variables are defined in Appendix 1. The vectors x_1 through x_7 are vectors of exogenous explanatory variables which may contain common elements. These explanatory variables include household head characteristics, other household characteristics, area characteristics, and foreign-born characteristics in order to ensure the comparison of "otherwise similar households."

The model is simultaneous due to the appearance of endogenous explanatory variables in the labor supply, program participation, and consumption equations. Given this simultaneity, the system must be identified so that meaningful estimates of the coefficients may be obtained. In order to ensure identification, the rank and order conditions are checked (Kmenta, 1986). The system passes both conditions for identification and can therefore be estimated by any appropriate systems estimation technique.

The estimation technique adopted here is a two-stage procedure. In the first stage, reduced-form equations are estimated for all right-hand-side endogenous variables (i.e., hhours, shours, sspart, and pastpart). These reduced-form equations cannot be estimated by ordinary least squares due to the nature of the dependent variables. Head and spouse hours, for example, are left censored at zero due to the presence of non-working heads and spouses in the sample. Tobit is the appropriate estimation method for the head and spouse hours worked equations. The program participation variables, on the other hand, are dichotomous variables equal to one if the household participates and zero otherwise. With this type of dependent variable, probit is the appropriate estimation technique. The fitted values from these reduced-form equations are retained and renamed by adding the extension "ht" to the variable name.

As part of the first stage, the log-wage equations are estimated for the subsamples of working heads and spouses. The estimated wage equations are run separately for the household head and spouse (if present). Those who did not work in 1989 are initially assigned a wage of zero. However, this cannot be used as their wage in estimating equations (9) through (15) above. As described in the labor supply literature, a wage of zero does not imply that the individual has no market earnings. It means that the wage that individual could command in the labor market, given his or her skills and ability, is less than that individual's reservation wage. This being the case, the individual chooses not to work. For purposes of estimating the model above, a predicted wage must be derived for the subsample of non-working heads and spouses based on his or her human capital and socioeconomic characteristics.

The estimated wage equations take a standard form, including sex, potential market experience and its square, education, work limitation status, ability to speak English, and a vector of foreign-born status indicators as independent variables.[10] The wage equation is run for the subsample of working heads or spouses, including

the inverse Mill's ratio as a correction for sample selection bias. The inverse Mill's ratio is derived from Tobit estimates of the parameters from the head (spouse) hours worked equation. Inserting this inverse Mill's ratio (sometimes called Heckman's lambda) into the estimated wage equation has become a standard method of correcting for sample selection bias.[11] The estimated parameters are applied to the characteristics of the full sample of heads (spouses), both working and not working, to arrive at a predicted or estimated wage for each head (spouse) in the sample. When no spouse is present in the household, the spouse's estimated wage is set equal to zero. The variables LHWAGEHT and LSWAGEHT refer to predicted head and spouse log wages, respectively.

The second stage involves estimating the structural equations of the model (equations 9, 10, 13, 14, and 15) using the first stage fitted values in place of the right-hand-side endogenous variables. The structural equations for head and spouse hours are estimated by Tobit while those for social security and public assistance participation are estimated by Probit. Household consumption is estimated by ordinary least squares (OLS).

A variable is included in the analysis to control for age at entry into the U.S. This variable is constructed as current age less the midpoint of the year group in which entry occurred. For natives, age at entry is set equal to zero. Friedberg (1993), in the context of immigrant labor market assimilation, shows that age at arrival is an important explanatory variable, though it has been excluded from nearly all previous studies. She finds that immigrants arriving at older ages earn less at every stage of assimilation than otherwise similar immigrants arriving at younger ages. Furthermore, controlling for age at arrival reduces the rate at which immigrants close the earnings gap with otherwise similar natives.

In the case of welfare participation, age at arrival may play a similarly important role. For example, foreign-born persons arriving while young may gain greater knowledge of the U.S. welfare system and may therefore be more likely participants than otherwise similar foreign-born persons arriving at older ages. Furthermore, those arriving earlier in their lives may lose the feelings of stigma attached to welfare participation in their home country as they grow up more like Americans. If this is the case, welfare participation and age at arrival will be negatively related. On the other hand, foreign-born persons arriving at younger ages may have made greater earnings progress through the assimilation process than otherwise similar foreign-born persons arriving later in life and may therefore be less likely to participate in welfare programs. These hypotheses are empirically tested below.

Friedberg (1993) also points out an important identification issue when including age at arrival as an explanatory variable. For the foreign born, current age is equal to years since arrival plus age at entry. Including all three explanatory

variables in the same equation leads to perfect colinearity and the parameters are not identified. However, by including both foreign born and natives in the sample, identification of these three parameters is possible because the relation "current age equals years since arrival plus age at entry" does not hold for natives. Friedberg (1993) correctly argues that if one imposes the restriction that the effects of current age on participation are the same for the foreign born and natives, then the parameters on current age, years since arrival, and age at entry can all be identified. This identification method is employed here, although it imposes no true restriction on the model since foreign-born and native households are to be pooled, and a single coefficient is estimated for the current age variable, regardless of the inclusion of the age at entry variable. A simple addition, including the age at entry variable represents an important advance over previous studies of welfare program participation by the foreign born.

Empirical Results

In the results reported below, several types of households are studied: (1) all households; (2) all households, by age (49 or less, 50-64, 65 or over); (3) all female-headed households; (4) all female-headed households, by age (29 or less, 30-49, 50-64, 65 and over); (5) single female-headed households; (6) single female-headed households, by age (29 or less, 30-49, 50-64, 65 and over); (7) male-headed households; (8) male-headed households, by age (29 or less, 30-49, 50-64, 65 and over). For all households, two sorts of models are reported. The first is a "country model" that contains a dummy variable distinguishing household heads (or spouses) born in Mexico. The second is a "country/entry cohort model" that contains a set of dummy variables for Mexican-born household heads indicating the period of their U.S. entry (1985-90, 1980-84, etc.). For other household types, only the country/entry cohort model is reported. The country/entry cohort model provides more detail about the participation behavior of Mexican-born households relative to native-born households. Moreover, four different control groups of native-born households are used: (1) Mexican ancestry natives; (2) all natives[12]; (3) black-headed natives; (4) white-headed natives. The various control groups are used selectively.

The sample splits we have made are motivated by drastic differences in welfare participation rates across the groups as presented in Table 2. For example, female-headed households display participation rates that are more than double those for male-headed households. This difference is even more pronounced for single female-headed households. Although male-headed households tend to have relatively low participation rates, these households are examined due to their large sample sizes relative to female-headed households. Participation rates for the Mexican born and

Table 2
1990 Welfare Participation Rates by Headship Configuration, Foreign-born Status, and Age

Group	All Female-Headed Households	Single Female-Headed Households	All Male-Headed Households	All Households
Mexican-Born	24.2%	28.0%	8.7%	11.8%
Households	(15,445)	(10,524)	(62,126)	(77,571)
29 and under	20.0%	25.5%	5.6%	
	(3,409)	(1,574)	(15,305)	
30-49	22.5%	26.5%	6.7%	9.1%*
	(7,092)	(4,668)	(32,988)	(58,794)
50-64	22.5%	23.0%	12.2%	14.5%
	(2,565)	(2,059)	(9,074)	(11,639)
65 and over	37.0%	37.5%	26.1%	29.8%
	(2,379)	(2,223)	(4,759)	(7,138)
Mexican Ancestry	27.4%	29.5%	8.3%	14.2%
Native Households	(20,739)	(17,378)	(46,244)	(66,983)
29 and under	30.1%	33.6%	6.9%	
	(4,953)	(3,727)	(9,447)	
30-49	23.6%	26.0%	5.8%	12.0%*
	(8,795)	(7,176)	(23,353)	(46,548)
50-64	23.9%	24.7%	10.4%	14.4%
	(3,858)	(3,472)	(9,292)	(13,150)
65 and over	38.1%	38.2%	20.6%	28.1%
	(3,133)	(3,003)	(4,152)	(7,285)
All Native	13.5%	14.3%	4.6%	7.4%
Households	(130,135)	(109,360)	(275,788)	(405,923)
29 and under	17.7%	19.8%	4.0%	
	(18,859)	(13,913)	(36,244)	
30-49	13.0%	14.6%	3.3%	6.5%*
	(43,237)	(33,045)	(124,225)	(222,555)
50-64	13.2%	14.0%	5.0%	7.3%
	(23,561)	(20,081)	(62,519)	(86,080)
65 and over	12.3%	12.5%	7.5%	9.7%
	(44,488)	(42,321)	(52,800)	(97,288)

* Indicates that figures are for 49 and under age group.

Source: Authors' computations from 1990 PUMS. Number of households in each group in parentheses.

for Mexican ancestry natives typically increase from the young to the old, suggesting that SSI usage is quite high among these groups. This pattern is not as strong for the group of all native households.

In the discussion below, we focus primarily on the dummy variable for Mexico (country model) and the set of dummy variables indicating entry cohort (country/entry cohort model). Other variables are discussed selectively. All Probit coefficients reported below have been transformed following Green (1997) so that they may be interpreted as marginal effects.

All Households

Table 3 indicates that households headed by Mexican-born persons are only slightly more likely to participate in welfare than otherwise comparable households headed by native-born persons of Mexican ancestry. Furthermore, they are no more likely to participate than households headed by native-born persons in general. However, they are more likely to participate than native white households, but are less likely to participate than native black households.

Several variables in the models are included to control for eligibility to receive welfare. Among these are the number of household members 17 years old or younger (SHHLE17), the number 65 years old or older (SHHGE65), and the number disabled (SHHDISAB). Each of these variables has been interacted with the MEXICO dummy variable. Relative to each control group, Mexican-born households are more likely to receive welfare, presumably SSI, if they contain persons 65 and over, but they are less likely to receive it (presumably AFDC) if they contain persons 17 or younger. Moreover, they are less likely to receive welfare if the household has a disabled person or persons in it.

The models also include three variables that reflect characteristics of the place of residence: the state's average monthly AFDC payment (AFDCAVG), the state's average SSI payment (SSIAVG), and residence in a metropolitan area (INMA). Relative to all native households and to white-headed native households, Mexican-born households are more likely to receive SSI in states that provide supplements to this national program. Relative to native households of Mexican ancestry and to white-headed native households, they are also more likely to receive AFDC if they reside in states with relatively generous AFDC benefits.

The country/entry cohort models reported in Table 4 provide a more precise depiction of welfare usage by Mexican-born households. Relative to each control group, Mexican-born households are significantly less likely to participate in welfare if they entered the United States more or less recently, which is to say between 1970 and 1990. Because persons are most likely to migrate during their childbearing years, this empirical result suggests that Mexican-born households are less

Table 3
1990 Welfare Participation by All Households, Country Model: Marginal Effects Based on Probit Estimates

Variable	Mexican Ancestry Control	All Native Control	Black Native Control	White Native Control
intercept	-0.187***	-0.129***	-0.219***	-0.120***
lhwageht	-0.047***	0.006***	-0.027***	0.003*
lswageht	-0.002	0.029***	0.027***	0.024***
sspartht	-0.019***	-0.015***	-0.024***	-0.011***
sothinc2	-0.000***	-0.000***	-0.000***	-0.000***
sextfam	-0.001	0.003***	0.001	0.000
mexico	0.006*	0.000	-0.015**	0.006***
entage	-0.001***	0.000	-0.001***	0.000
hsex	0.052***	0.033***	0.060***	0.027***
heduc	-0.001***	-0.005***	-0.003***	-0.004***
hage	0.001***	0.000***	0.001***	0.000***
hwrklim	-0.046***	-0.032***	-0.055***	-0.027***
hwrkprev	0.021***	0.008***	0.022***	0.008***
hunemply	0.118***	0.074***	0.143***	0.061***
hwidowed	-0.020***	-0.020***	-0.021***	-0.021***
spouse	-0.037***	-0.059***	-0.100***	-0.044***
seduc	-0.001**	-0.003***	-0.002***	-0.003***
sage	0.000***	0.000***	0.000***	0.000***
sunemply	0.046***	0.026***	0.052***	0.022***
engonly	-0.007***	-0.006***	-0.008*	-0.007***
shhle17	0.034***	0.023***	0.044***	0.018***
shhge65	0.054***	0.013***	0.021***	0.010***
shhdisab	0.082***	0.058***	0.096***	0.051***
mex65	0.019***	0.036***	0.063***	0.034***
mex17	-0.015***	-0.014***	-0.022***	-0.010***
mexdisab	-0.007***	-0.006***	-0.007**	-0.005***
mexwid	0.008	0.026***	0.017***	0.029***
afdcavg	0.000***	-0.000	0.000	0.000***
ssiavg	-0.000	0.000***	-0.000	0.000***
inma	-0.003	-0.011***	-0.012***	-0.014***
N	144,554	483,494	116,722	435,000
log L	-42,722.554	-105,081.311	-38,157.308	-85,919.187

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

Table 4
1990 Welfare Participation by All Households, Country/Entry Cohort Model: Marginal Effects Based on Probit Estimates

Variable	Mexican Ancestry Control	All Native Control	Black Native Control	White Native Control
intercept	-0.160***	-0.124***	-0.196***	-0.115***
lhwageht	-0.047***	0.007***	-0.024***	0.004**
lswageht	0.004	0.028***	0.024**	0.025***
sspartht	-0.012***	-0.015***	-0.017***	-0.010***
sothinc2	-0.000***	-0.000***	-0.000***	-0.000***
sextfam	0.000	0.004***	0.002	0.001**
img8590	-0.040***	-0.024***	-0.064***	-0.016***
img8084	-0.023***	-0.017***	-0.047***	-0.010***
img7579	-0.020***	-0.019***	-0.046***	-0.012***
img7074	-0.008*	-0.013***	-0.033***	-0.006***
img6569	0.002	-0.006**	-0.021***	0.000
img6064	0.020***	0.007**	-0.000	0.011***
img5059	0.019***	0.009***	-0.001	0.012***
imgle49	-0.003	0.007***	-0.018***	0.010***
entage	-0.000	0.000***	0.000**	0.000***
hsex	0.051***	0.034***	0.060***	0.027***
heduc	-0.001***	-0.005***	-0.003***	-0.004***
hage	0.000	-0.000***	-0.000*	0.000***
hwrklim	-0.045***	-0.031***	-0.054***	-0.027***
hwrkprev	0.020***	0.008***	0.022***	0.008***
hunemply	0.118***	0.074***	0.143***	0.061***
hwidowed	-0.016***	-0.018***	-0.013***	-0.019***
spouse	-0.039***	-0.055***	-0.085***	-0.041***
seduc	-0.001***	-0.003***	-0.001***	-0.003***
sage	-0.001***	-0.000***	-0.001***	0.000***
sunemply	0.046***	0.026***	0.052***	0.023***
engonly	-0.009***	-0.006***	-0.002	-0.008***
shhle17	0.033***	0.022***	0.042***	0.017***
shhge65	0.056***	0.015***	0.029***	0.012***
shhdisab	0.084***	0.058***	0.099***	0.051***
mex65	0.012***	0.027***	0.051***	0.026***
mex17	-0.014***	-0.012***	-0.020***	-0.008***
mexdisab	-0.012***	-0.010***	-0.013***	-0.008***
mexwid	0.000	0.014***	-0.002	0.019***
afdcavg	0.000***	-0.000	0.000*	0.000***
ssiavg	-0.000*	0.000***	-0.000	0.000***
inma	-0.003	-0.012***	-0.012***	-0.014***
N	144,554	483,494	116,722	435,000
log L	-42,659.366	-104,910.437	-38,097.006	-85,766.813

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

likely to participate in AFDC than the various native-born households, which is a finding further supported by evidence reported below.

More distant Mexican-born cohorts are more likely to receive welfare than most of their native-born counterparts, except blacks. For example, those who migrated between 1950 and 1964 are significantly more likely to participate than otherwise comparable native-born households of Mexican ancestry. Relative to white-headed native households, the same is true for those who entered the United States in 1964 or earlier. The participation of these very distant entry cohorts is almost certainly in the SSI program.

Certain other results are also of some importance. For example, in both the country model and the country/entry cohort model, and relative to all four native control groups, household heads with higher education levels are significantly less likely to participate. The same effect is evident for spouse education. Furthermore, household heads who are widows or widowers are significantly less likely to participate in all cases. Finally, households with an unemployed head or spouse are significantly more likely to receive welfare payments.

For all households, Tables 5 and 6 distinguish three age groups (49 or less, 50-64, 65 or over). The idea behind this distinction is to better identify those groups that are most likely to participate in AFDC (49 or less) and those that are most likely to participate in SSI (65 or over). The tables contain only the country/entry cohort models, and they report findings for two control groups—Mexican ancestry natives (Table 5) and all natives (Table 6).

For the group less than 50 years old, only the most recent entry cohort from Mexico (entered 1985-90) is significantly less likely to participate in welfare than native-born households of Mexican ancestry. Those who entered before 1970 are more likely to participate. The results are similar when all natives form the control group. Mexican-born households in this age class with persons 65 or over are less likely to use welfare than Mexican ancestry natives but more likely to use it than native whites. Relative to both control groups, Mexican-born households with persons 17 or under and with disabled persons are less likely to participate.

For the group 50 to 64 years of age, no statistically significant differences are evident for any entry cohort relative to Mexican ancestry natives. However, relative to all natives, more distant entry cohorts (especially those before 1970) are more likely to participate. Results for the 65 or over age class are similar for recent entry cohorts, except that the foreign-born group is marginally more likely to use welfare than each control group. For more distant entry cohorts, the Mexican-born group is no more likely to participate than all natives.

Where AFDC payments are relatively high, the youngest age group is more likely to participate in welfare, and where SSI payments are generous the oldest group is more likely to participate. This pattern is consistent with the eligibility

Table 5
1990 Welfare Participation by All Households by Age Group Mexican Ancestry Control: Marginal Effects Based on Probit Estimates

Variable	49 and under	50–64	65 and over
intercept	-0.136***	-0.399***	-0.676***
lhwageht	-0.040***	0.076***	0.119***
lswageht	-0.054***	0.016	0.186***
sspartht	-0.052***	-0.021***	0.070**
sothinc2	-0.000***	-0.000***	-0.000***
sextfam	-0.002*	-0.004	0.003
img8590	-0.019***	-0.019	0.035
img8084	-0.007	0.019	0.158**
img7579	-0.006	0.022	0.114**
img7074	0.003	0.010	0.100**
img6569	0.009**	0.021	0.079*
img6064	0.023***	0.019	0.088**
img5059	0.020***	0.014	0.033
imgle49	0.024**	0.020	-0.011
entage	-0.000***	-0.000	-0.001
hsex	0.054***	0.076***	0.107***
heduc	-0.001**	-0.007***	-0.018***
hwrklim	-0.037***	-0.039***	-0.115***
hwrkprev	0.022***	0.055***	0.068***
hunemply	0.103***	0.092***	0.138***
hwidowed	0.004	-0.025***	-0.036***
spouse	0.026**	-0.070*	-0.416***
seduc	0.002***	-0.003**	-0.009***
sunemply	0.043***	0.032***	0.049***
engonly	-0.004*	-0.019**	-0.010
shhle17	0.027***	0.044***	0.064***
shhge65	0.108***	0.088***	0.021
shhdisab	0.078***	0.098***	0.128***
mex65	-0.002***	0.012	0.013
mex17	-0.010***	-0.020***	-0.027***
mexdisab	-0.022***	-0.007	0.006
mexwid	-0.008	0.017	-0.028
afdcavg	0.000***	0.000*	-0.000***
ssiavg	-0.000***	-0.000	0.000***
inma	0.005**	-0.023***	-0.070***
N	105,342	24,789	14,423
log L	-26,542.232	-8,098.710	-7,443.915

Note: *** Indicates significance at the .01 level; ** Indicates significance at the .05 level; * Indicates significance at the .10 level.

Table 6
1990 Welfare Participation by All Households by Age Group, All Native Control: Marginal Effects Based on Probit Estimates

Variable	49 and under	50–64	65 and over
intercept	-0.085***	-0.108***	-0.254***
lhwageht	-0.024***	-0.016	0.027***
lswageht	-0.035***	0.032***	0.091***
sspartht	-0.016***	-0.014***	0.055***
sothinc2	-0.000***	-0.000***	-0.000***
sextfam	0.001**	0.004**	0.017***
img8590	0.004	0.002	0.003
img8084	0.002	0.022*	0.052*
img7579	0.003	0.021*	0.038*
img7074	0.008***	0.017*	0.033*
img6569	0.012***	0.021**	0.028
img6064	0.020***	0.024***	0.032*
img5059	0.019***	0.022***	0.014
imgle49	0.022***	0.022***	-0.004
entage	-0.000***	-0.001***	0.000
hsex	0.030***	0.010*	0.033***
heduc	-0.002***	-0.002***	-0.010***
hwrklim	-0.024***	-0.041***	-0.064***
hwrkprev	0.013***	0.034***	0.030***
hunemply	0.065***	0.045***	0.025***
hwidowed	0.006***	-0.008***	-0.036***
spouse	0.017***	-0.068***	-0.181***
seduc	0.002***	-0.003***	-0.005***
sunemply	0.024***	0.012***	0.009**
engonly	-0.001	-0.003	-0.017***
shhle17	0.017***	0.026***	0.047***
shhge65	0.038***	0.018***	0.003
shhdisab	0.047***	0.061***	0.069***
mex65	0.009***	0.029***	0.007
mex17	-0.008***	-0.014***	-0.035***
mexdisab	-0.017***	-0.008***	0.004
mexwid	-0.011**	0.002	0.012*
afdcavg	0.000***	0.000*	-0.000***
ssiavg	-0.000	0.000**	0.000***
inma	0.004***	0.001	-0.031***
N	281,349	97,719	104,426
log L	-51,161.317	-20,633.389	-31,145.791

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

requirements for participation in each program. As for the results presented above for all households, higher educational attainment by the household head reduces the probability of participation for households in all three age groups. Head and spouse unemployment status are positively related to participation in welfare programs, and this result also is consistent across age groups.

Female-headed Households

The incidence of AFDC usage is far higher among female-headed households than among male-headed households. This is clearly evident in Table 2, which indicates that the 1990 welfare participation rate for native female-headed households is 13.5%. That for native, single female-headed households is 14.3%, and for native male-headed households is 4.6%. Comparable figures for Mexican-born households are 24.2% (female-headed), 28.0% (single female-headed), and 8.7% (male-headed). For two control groups (Mexican ancestry natives and all natives), Table 7 reports the welfare participation results for female-headed households. Moreover, this table includes both the country model and the country/entry cohort model.

Mexican-born, female-headed households are more likely to participate in welfare than otherwise comparable Mexican ancestry natives, but the relationship is only marginally significant. When Mexican-born households are compared to all natives, no statistically significant differences are evident. The country/entry cohort model suggests that these results are due to offsetting tendencies for recent and more distant entry cohorts. Relative to each control group, more recent entry cohorts are less likely to use welfare but more distant cohorts are more likely to use it. These results provide further evidence that Mexican foreign-born households tend to use less AFDC but more SSI than their comparison groups. Again, these findings are reinforced by coefficients on the interaction terms that entail household members 65 or over (MEX65) and 17 or younger (MEX17). When more household members 65 and over are present, the Mexican-born households participate more than the native control group. The opposite is true when more household members 17 and under are present.

Specifically focusing on single, female-headed households narrows the population of welfare users to the broad group with the highest incidence of usage (Table 2). However, the empirical results for single, female-headed households presented in Table 8 are almost identical to those for all female-headed households, which suggests that the former group drives the results of the latter. The only substantive difference is in the country/entry cohort model with all natives as the control group. For all female-headed households, entry cohorts before 1960 participate significantly more than natives, but for single, female-headed

Table 7
1990 Welfare Participation by Female-headed Households Born in Mexico: Marginal Effects Based on Probit Estimates

Variable	Mexican Ancestry Control, Country Model	Mexican Ancestry Control, Country/Entry Cohort Model	All Native Control, Country Model	All Native Control, Country/Entry Cohort Model
intercept	-0.108***	-0.127***	-0.151***	-0.148***
lhwageht	-0.226***	-0.150***	0.025***	0.036***
lswageht	-0.029	-0.094**	0.026**	0.012
sspartht	-0.010	-0.002	-0.029***	-0.028***
sothinc2	-0.000***	-0.000***	-0.000***	-0.000***
sextfam	-0.020***	-0.018***	0.001	0.003**
mexico	0.020*	–	0.007	–
img8590	–	-0.116***	–	-0.060***
img8084	–	-0.065***	–	-0.041***
img7579	–	-0.052***	–	-0.039***
img7074	–	-0.015	–	-0.016**
img6569	–	0.002	–	-0.009
img6064	–	0.027*	–	0.006
img5059	–	0.032**	–	0.020***
imgle49	–	0.001	–	0.021***
entage	-0.003***	-0.001**	-0.001***	0.000
heduc	0.005**	0.000	-0.012***	-0.013***
hage	0.001***	0.000	-0.001***	-0.001***
hwrklim	-0.062***	-0.054***	-0.048***	-0.046***
hwrkprev	-0.006	0.005	0.021***	0.020***
hunemply	0.278***	0.279***	0.152***	0.152***
hwidowed	-0.068***	-0.057***	-0.034***	-0.029***
spouse	-0.050	0.068	-0.072***	-0.042***
seduc	-0.002	-0.000	-0.003***	-0.002**
sage	-0.002***	-0.002***	-0.001***	-0.002***
sunemply	0.142***	0.139***	0.079***	0.078***
engonly	-0.012	-0.020***	-0.009***	-0.010***
shhle17	0.079***	0.076***	0.051***	0.050***
shhge65	0.125***	0.122***	0.034***	0.035***
shhdisab	0.143***	0.144***	0.102***	0.101***
mex65	0.016	0.009	0.035***	0.027***
mex17	-0.032***	-0.027***	-0.033***	-0.026***
mexdisab	-0.014*	-0.024***	-0.017***	-0.025***
mexwid	0.045***	0.018	0.044***	0.015***
afdcavg	0.000***	0.000***	0.000	0.000*
ssiavg	-0.000***	-0.000***	0.000***	0.000***
inma	0.014	-0.002	-0.025***	-0.027***
N	36,184	36,184	145,580	145,580
log L	-15,926.659	-15,903.916	-45,271.396	-45,187.061

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

Table 8
1990 Welfare Participation by Single Female-headed Households Born in Mexico: Marginal Effects Based on Probit Estimates

Variable	Mexican Ancestry Control, Country Model	Mexican Ancestry Control, Country/Entry Cohort Model	All Native Control, Country Model	All Native Control, Country/Entry Cohort Model
intercept	-0.030	0.022	-0.184***	-0.174***
lhwageht	-0.403***	-0.381***	0.035***	0.039***
sspartht	-0.015	-0.011	-0.034***	-0.033***
sothinc2	-0.000***	-0.000***	-0.000***	-0.000***
sextfam	-0.022***	-0.019***	0.003	0.005**
mexico	0.022	–	0.007	–
img8590	–	-0.192***	–	-0.083***
img8084	–	-0.127***	–	-0.067***
img7579	–	-0.086***	–	-0.056***
img7074	–	-0.040**	–	-0.031***
img6569	–	0.008	–	-0.018*
img6064	–	0.028	–	-0.001
img5059	–	0.038**	–	0.014
imgle49	–	-0.004	–	0.016*
entage	-0.004***	-0.001**	-0.001***	0.000
heduc	0.014***	0.012***	-0.014***	-0.014***
hage	0.003***	0.001**	-0.001***	-0.001***
hwrklim	-0.100***	-0.098***	-0.058***	-0.057***
hwrkprev	-0.024	-0.021	0.021***	0.021***
hunemply	0.329***	0.329***	0.176***	0.176***
hwidowed	-0.081***	-0.067***	-0.040***	-0.035***
engonly	-0.003	-0.010	-0.007**	-0.008***
shhle17	0.088***	0.085***	0.058***	0.057***
shhge65	0.154***	0.150***	0.037***	0.036***
shhdisab	0.164***	0.168***	0.115***	0.116***
mex65	-0.002	-0.004	0.026***	0.023**
mex17	-0.031***	-0.023***	-0.037***	-0.027***
mexdisab	-0.023**	-0.036***	-0.024***	-0.034***
mexwid	0.047***	0.012	0.045***	0.013*
afdcavg	0.000***	0.000***	0.000	0.000
ssiavg	-0.000	-0.000	0.000***	0.000***
inma	0.065***	0.059***	-0.027***	-0.029***
N	27,902	27,902	119,884	119,884
log L	-12,881.819	-12,850.738	-38,199.308	-38,118.723

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

households this is not the case. The probable reason for this difference is that cohorts that entered before 1960 are somewhat older, and older single-female headed households are not likely to have young dependent children present as required for AFDC eligibility.

Tables 9 and 10 provide age-specific welfare participation results for all female-headed households where the respective control groups are Mexican ancestry natives and all natives. Relative to both control groups, recent entry cohorts (since 1975) of Mexican-born females less than 30 years of age are less likely to participate in welfare (AFDC). Relative to all natives, those who entered during the 1960s are more likely to participate. Moreover, those aged 30 to 49 who entered between 1950 and 1969 are more likely to participate than either control group.

Other factors held constant, including entry cohort, age at entry makes a difference in welfare participation. Relative to each control group, Mexican-born females between the ages 30 and 64 are less likely to use welfare if they entered at an older age. However, relative to all natives, those aged 65 and over who entered at older ages are more likely to participate (almost certainly in SSI), suggesting that SSI is being used in place of Social Security by the elderly foreign born who do not qualify for the latter.

Previously, we observed that Mexican-born households are more likely to receive welfare if they contain persons 65 or over, but are less likely to receive it if they have persons 17 or younger or who are disabled. Tables 9 and 10 provide more details. If their households include persons 17 or younger, Mexican-born, female-headed households under the age of 50 are less likely to use welfare than otherwise comparable households of Mexican ancestry natives and of all natives. If their households include persons 65 or older, they are less likely to participate than otherwise comparable households of Mexican ancestry natives and no more likely to participate than the households of all natives. The higher welfare usage of the Mexican-born, female-headed households arises from the group aged 50-64, and this finding holds for each control group.

The availability of AFDC plays an important role in the welfare usage of Mexican-born females below 50 years of age. Moreover, state supplements to SSI exert a significant influence on the welfare usage of those 65 and over.

The age-specific results for single, female-headed households show few significant differences between the Mexican-born population and the native-born control groups in terms of entry cohort (Tables 11 and 12). The only noteworthy coefficients suggest that single, female-headed households from Mexico under the age of 30 are less likely to participate in welfare than their Mexican-ancestry native counterparts if they entered the United States between 1975 and 1990.

Table 9
1990 Welfare Participation by Female-headed Households Born in Mexico by Age Group, Mexican Ancestry Native Control: Marginal Effects Based on Probit Estimates

Variable	29 and under	30-49	50-64	65 and over
intercept	-0.153***	-0.243***	-0.317***	-0.623***
lhwageht	-0.146***	-0.020	0.003	0.059
lswageht	-0.189***	-0.079*	-0.131**	0.013
sspartht	-0.051	-0.069***	-0.024	0.027
sothinc2	-0.000***	-0.000***	-0.000***	-0.000***
sextfam	-0.017***	-0.020***	-0.015	-0.008
img8590	-0.197***	0.003	0.058	-0.289*
img8084	-0.108**	0.011	0.078	-0.139
img7579	-0.103***	0.023	0.075	-0.113
img7074	-0.035	0.037	0.096	-0.103
img6569	0.026	0.039*	0.079	-0.075
img6064	0.057	0.074***	0.063	-0.055
img5059	-0.082	0.044**	0.089**	-0.069
imgle49	-0.879	0.027	0.055	-0.130*
entage	0.003	-0.002***	-0.004**	0.001
heduc	0.001	-0.004	-0.007**	-0.021***
hwrklim	-0.066*	-0.019	-0.064**	-0.113***
hwrkprev	-0.023	0.006	0.111***	0.080*
hunemply	0.280***	0.269***	0.162***	0.240***
hwidowed	-0.012	-0.017	-0.071***	-0.095***
spouse	0.157*	-0.025	0.084	-0.122
seduc	0.002	0.000	0.007**	-0.008
sunemply	0.161***	0.125***	0.093***	-0.015
engonly	0.013	-0.046***	-0.066***	-0.038
shhle17	0.091***	0.065***	0.077***	0.069***
shhge65	0.202***	0.218***	0.096***	0.050
shhdisab	0.171***	0.139***	0.155***	0.152***
mex65	-0.136**	-0.084***	0.101***	0.055
mex17	-0.037***	-0.020***	-0.028***	-0.063***
mexdisab	-0.055**	-0.033**	-0.035**	0.021
mexwid	0.029	-0.005	0.061***	0.010
afdcavg	0.001***	0.000***	0.000	-0.001***
ssiavg	-0.000***	-0.000***	-0.000	0.000***
inma	-0.006	-0.023*	-0.015	-0.067***
N	8,362	15,887	6,423	5,512
log L	-3,386.361	-6,266.820	-2,759.176	-3,199.684

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

Table 10
1990 Welfare Participation by Female-headed Households Born in Mexico by Age Group, All Native Control: Marginal Effects Based on Probit Estimates

Variable	29 and under	30-49	50-64	65 and over
intercept	-0.142***	-0.044**	-0.080**	-0.233***
lhwageht	-0.031**	-0.133***	-0.095***	-0.018
lswageht	-0.190***	-0.026*	-0.021	0.092***
sspartht	-0.012	-0.029***	-0.034***	0.125***
sothinc2	-0.000***	-0.000***	-0.000***	-0.000***
sextfam	-0.005	-0.001	0.008**	0.018
img8590	-0.099***	-0.023	0.015	-0.058
img8084	-0.049*	-0.014	0.055	0.015
img7579	-0.045**	0.004	0.042	0.027
img7074	0.006	0.024*	0.059	-0.057
img6569	0.042**	0.027**	0.049	-0.038
img6064	0.041*	0.049***	0.037	-0.030
img5059	0.002	0.043***	0.057**	-0.029
imgle49	-0.505	0.016	0.047**	-0.057*
entage	0.002	-0.001**	-0.002***	0.002**
heduc	-0.009***	0.003*	-0.002	-0.011***
hwrklim	-0.031**	-0.055***	-0.069***	-0.085***
hwrkprev	0.015	0.004	0.076***	0.038***
hunemply	0.173***	0.152***	0.096***	0.050***
hwidowed	-0.089***	0.016***	-0.022***	-0.056***
spouse	0.195***	-0.037	-0.060	-0.219***
seduc	0.008***	-0.001	0.003	-0.003
sunemply	0.087***	0.082***	0.033***	0.001
engonly	0.001	-0.004	-0.007	-0.020***
shhle17	0.073***	0.041***	0.052***	0.056***
shhge65	0.055*	0.065***	0.036***	-0.003
shhdisab	0.095***	0.090***	0.103***	0.104***
mex65	-0.026	-0.004	0.068***	0.010
mex17	-0.041***	-0.018***	-0.029***	-0.061***
mexdisab	-0.037***	-0.028***	-0.030***	-0.005
mexwid	0.096**	-0.030***	0.015	0.016
afdcavg	0.000***	0.000***	0.000	-0.000***
ssiavg	-0.000**	-0.000	0.000	0.000***
inma	-0.009	0.024***	0.024***	-0.026***
N	22,268	50,319	26,126	46,867
log L	-7,025.651	-14,233.100	-7,695.962	-15,469.302

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

Table 11
1990 Welfare Participation by Single Female-headed Households Born in Mexico by Age Group, Mexican Ancestry Native Control: Marginal Effects Based on Probit Estimates

Variable	29 and under	30-49	50-64	65 and over
intercept	-0.129*	-0.117	-0.179	-0.552***
lhwageht	-0.253***	-0.171**	-0.114	0.032
sspartht	-0.021	-0.079**	0.003	-0.038
sothinc2	-0.000***	-0.000***	-0.000***	-0.000***
sextfam	-0.010	-0.018***	-0.021***	-0.012
img8590	-0.295***	-0.110*	-0.177	-0.416**
img8084	-0.197***	-0.087*	-0.117	-0.282
img7579	-0.155***	-0.052	-0.104	-0.237
img7074	-0.069	-0.027	-0.042	-0.159
img6569	0.020	0.022	-0.053	-0.117
img6064	0.072	0.060**	-0.053	-0.086
img5059	–	0.035	0.004	-0.098
imgle49	–	0.033	-0.007	-0.168**
entage	0.005	-0.001	-0.001	0.003
heduc	0.003	0.004	-0.002	-0.020***
hwrklim	-0.173***	-0.052*	-0.067**	-0.145***
hwrkprev	0.020	-0.005	0.073	0.094**
hunemply	0.368***	0.334***	0.171***	0.246***
hwidowed	-0.083	-0.018	-0.086***	-0.090***
engonly	0.024	-0.038***	-0.064***	-0.027
shhle17	0.110***	0.072***	0.085***	0.063***
shhge65	0.215***	0.250***	0.090***	0.063
shhdisab	0.268***	0.151***	0.157***	0.173***
mex65	-0.221**	-0.104***	0.109***	0.063
mex17	-0.037***	-0.014***	-0.026***	-0.057***
mexdisab	-0.102**	-0.045**	-0.052***	0.020
mexwid	0.010	-0.023	0.061**	0.003
afdcavg	0.000***	0.001***	0.000	-0.001***
ssiavg	-0.000	-0.000***	-0.000	0.000***
inma	0.019	0.012	0.014	-0.063***
N	5,301	11,844	5,531	5,226
log L	-2,243.164	-4,921.863	-2,397.253	-3,038.578

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

Table 12
1990 Welfare Participation by Single Female-headed Households Born in Mexico by Age Group, All Native Control
Marginal Effects Based on Probit Estimates

Variable	29 and under	30-49	50-64	65 and over
intercept	-0.170***	-0.056*	-0.060	-0.244***
lhwageht	0.001	-0.165***	-0.126***	-0.023
sspartht	-0.096**	-0.044***	-0.037***	0.139***
sothinc2	-0.000***	-0.000***	-0.000***	-0.000***
sextfam	0.000	-0.000	0.003	0.017***
img8590	-0.051	-0.087***	-0.165**	-0.054
img8084	-0.038	-0.067**	-0.096	0.024
img7579	-0.031	-0.038	-0.098	0.042
img7074	0.024	-0.011	-0.048	-0.075
img6569	0.040	0.022	-0.048	-0.046
img6064	0.011	0.041**	-0.049	-0.037
img5059	–	0.041***	-0.005	-0.034
imgle49	–	0.033	-0.004	-0.066**
entage	-0.001	-0.000	0.001	0.002**
heduc	-0.015***	0.004*	0.000	-0.010***
hwrklim	-0.059***	-0.066***	-0.082***	-0.096***
hwrkprev	0.026	-0.009	0.079***	0.040***
hunemply	0.214***	0.195***	0.110***	0.052***
hwidowed	-0.111***	0.012*	-0.026***	-0.058***
engonly	0.006	-0.003	0.000	-0.021***
shhle17	0.083***	0.052***	0.057***	0.056***
shhge65	0.103***	0.082***	0.049***	-0.004
shhdisab	0.132***	0.107***	0.118***	0.112***
mex65	-0.106*	-0.012	0.061***	0.011
mex17	-0.041***	-0.020***	-0.025***	-0.060***
mexdisab	-0.052**	-0.040***	-0.049***	-0.006
mexwid	0.062	-0.040***	0.015	0.019*
afdcavg	0.000***	0.000***	0.000*	-0.000***
ssiavg	-0.000*	-0.000*	0.000	0.000***
inma	-0.019***	0.032***	0.032***	-0.023***
N	15,487	37,713	22,140	44,544
log L	-4,975.052	-11,118.921	-6,612.380	-14,724.546

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

Male-Headed Households

Male-headed households are the final group analyzed. Both the country and country/entry cohort models are estimated using both Mexican ancestry native households and all native households as the control group. The country/entry cohort model is then estimated by age group against both control group. The results generally indicate that the more recent Mexican-born, male-headed entry cohorts are less likely to participate than either native control group (Table 13). The more distant entry cohorts are more likely to participate than the control of male-headed Mexican ancestry natives, but are not statistically different from the control of all native male-headed households. Male-headed Mexican-born households with members 17 years old and younger are less likely to participate than either native control group, whereas those with members 65 years old and older tend to be more likely to participate.

The age-specific results presented in Table 14 (Mexican ancestry native control) and Table 15 (all native control) indicate that male-headed, Mexican-born households in the older three age groups are somewhat more likely to participate in welfare programs than otherwise comparable natives from each control group. For example, all eight entry groups in the 30 to 49 year old group are significantly more likely to participate than Mexican ancestry native households. Seven of the eight in this age group are more likely to participate than households in the all native control. Several of the entry cohorts in the 65 and over age group are significantly more likely to participate than male-headed households in each control group. Mexican-born, male-headed households with members 17 and younger are significantly less likely to participate than otherwise comparable natives. This result is consistent across both control groups and all age groups.

Summary and Conclusions

This paper presents an econometric analysis of participation in means-tested programs by Mexican-born households in the United States. Household-level records are created from the 1990 Public Use Microdata Sample of the U.S. Census. Several control groups are explored, as are several subsamples of the data, in order to provide a more complete analysis of welfare participation differences between Mexican-born and native-born households. Two models are run for most of the subsamples. The country model simply uses a dummy variable to distinguish between Mexican-born and native households. The country/entry cohort model is more detailed, replacing the country dummy with a series of eight entry cohort dummies. Furthermore, the data are separated into age groups for some of the subsamples in order to examine differences in participation behavior between the young and the old. This allows us to examine those

Table 13
1990 Welfare Participation by Male-headed Households Bor in Mexico: Marginal Effects Based on Probit Estimates

Variable	Mexican Ancestry Control, Country Model	Mexican Ancestry Control, Country/Entry Cohort Model	All Native Control, Country Model	All Native Control, Country/Entry Cohort Model
intercept	-0.189***	-0.158***	-0.124***	-0.118***
lhwageht	-0.023***	-0.032***	0.002	0.002
lswageht	0.030***	0.046***	0.040***	0.044***
sspartht	-0.017***	-0.013***	-0.009***	-0.008***
sothinc2	-0.000***	-0.000***	-0.000***	-0.000***
sextfam	0.005***	0.005***	0.004***	0.005***
mexico	-0.002	–	-0.005**	–
img8590	–	-0.025***	–	-0.015***
img8084	–	-0.017***	–	-0.013***
img7579	–	-0.018***	–	-0.017***
img7074	–	-0.011***	–	-0.014***
img6569	–	-0.004	–	-0.008***
img6064	–	0.011**	–	0.002
img5059	–	0.010**	–	0.003
imgle49	–	-0.006	–	0.002
entage	-0.000	0.000**	0.000**	0.000***
heduc	-0.001***	-0.001**	-0.003***	-0.003***
hage	0.001***	0.001***	0.000***	0.000***
hwrklim	-0.038***	-0.039***	-0.027***	-0.027***
hwrkprev	0.023***	0.023***	0.006***	0.006***
hunemply	0.069***	0.069***	0.045***	0.045***
hwidowed	0.017***	0.019***	-0.005***	-0.004**
spouse	-0.023*	-0.040***	-0.021***	-0.023***
seduc	-0.003***	-0.003***	-0.004***	-0.005***
sage	-0.001***	-0.001***	-0.001***	-0.001***
sunemply	0.033***	0.033***	0.018***	0.019***
engonly	-0.006**	-0.007***	-0.005***	-0.005***
shhle17	0.019***	0.018***	0.011***	0.011***
shhge65	0.044***	0.048***	0.010***	0.012***
shhdisab	0.067***	0.069***	0.045***	0.046***
mex65	0.013***	0.007	0.029***	0.022***
mex17	-0.008***	-0.008***	-0.006***	-0.005***
mexdisab	-0.006***	-0.010***	-0.002**	-0.005***
mexwid	0.009	0.002	0.028***	0.020***
afdcavg	0.000	0.000	-0.000	-0.000
ssiavg	0.000	0.000	0.000***	0.000***
inma	-0.008***	-0.009***	-0.012***	-0.012***
N	108,370	108,370	337,914	337,914
log L	-26,242.388	-26,194.498	-58,186.156	-58,084.246

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

Table 14
1990 Welfare Participation by Male-headed Households Born in Mexico by Age Group, Mexican Ancestry Native Control: Marginal Effects Based on Probit Estimates

Variable	29 and under	30-49	50-64	65 and over
intercept	-0.027	-0.208***	-0.354***	-0.455***
lhwageht	-0.076***	0.030**	0.069**	0.038
lswageht	0.010	0.046***	0.097***	0.178***
sspartht	-0.058***	-0.050***	-0.015**	0.027
sothinc2	-0.000	-0.000***	-0.000***	-0.000***
sextfam	0.002	0.003***	-0.001	0.008
img8590	-0.036**	0.033***	-0.018	0.051
img8084	-0.026**	0.029***	0.021	0.117*
img7579	-0.013	0.013**	0.022	0.114**
img7074	-0.006	0.012**	-0.001	0.121***
img6569	-0.007	0.010**	0.014	0.099**
img6064	0.018	0.015***	0.013	0.100***
img5059	0.070*	0.009*	0.003	0.051*
imgle49	–	0.017*	0.018	0.015
entage	0.001	-0.001***	0.000	-0.000
heduc	0.000	-0.003***	-0.006***	-0.011***
hwrklim	-0.041***	-0.022***	-0.038***	-0.114***
hwrkprev	0.029**	0.036***	0.027***	0.060***
hunemply	0.047***	0.057***	0.074***	0.107***
hwidowed	0.075**	0.037**	-0.009	0.023
spouse	-0.035**	-0.082***	-0.160***	-0.355***
seduc	0.000	-0.003***	-0.006***	-0.009***
sunemply	0.038***	0.028***	0.025***	0.045***
engonly	-0.000	-0.011***	-0.010	0.001
shhle17	0.022****	0.013***	0.034***	0.060***
shhge65	0.054***	0.095***	0.088***	0.030**
shhdisab	0.079***	0.063***	0.086***	0.118***
mex65	0.013	-0.029***	-0.016	-0.004
mex17	-0.008***	-0.004***	-0.017***	-0.020**
mexdisab	-0.042***	-0.014***	0.000	0.002
mexwid	-0.086	-0.009	0.055**	-0.013
afdcavg	0.000***	0.000	0.000	-0.000**
ssiavg	-0.000**	-0.000	-0.000	0.000***
inma	0.005	-0.020***	-0.035***	-0.056***
N	24,752	56,341	18,366	8,911
log L	-5,023.768	-11,229.854	-5,266.798	-4,193.281

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

Table 15
1990 Welfare Participation by Male-headed Households Bor in Mexico by Age Group, All Native Control: Marginal Effects Based on Probit Estimates

Variable	29 and under	30-49	50-64	65 and over
intercept	-0.054***	-0.080***	-0.093***	-0.225***
lhwageht	-0.036***	-0.004	-0.010	0.029**
lswageht	-0.011*	-0.001	0.091***	0.060***
sspartht	-0.034***	-0.011***	-0.010***	0.022
sothinc2	-0.000***	-0.000***	-0.000***	-0.000***
sextfam	0.002**	0.003***	0.001	0.014***
img8590	-0.012	0.009*	0.009	0.005
img8084	-0.007	0.008**	0.024*	0.035
img7579	0.000	0.003	0.021**	0.038*
img7074	0.004	0.005*	0.010	0.045**
img6569	0.004	0.007**	0.015*	0.032*
img6064	0.020***	0.011***	0.018**	0.037**
img5059	0.056**	0.009***	0.013**	0.017
imgle49	–	0.015***	0.019***	0.004
entage	0.000	-0.000***	-0.000**	0.000
heduc	-0.001**	-0.001***	-0.002**	-0.006***
hwrklim	-0.020***	-0.016***	-0.043***	-0.063***
hwrkprev	0.021***	0.015***	0.021***	0.024***
hunemply	0.037***	0.037***	0.033***	0.017***
hwidowed	0.020	0.024***	0.002	-0.016***
spouse	0.003	-0.005	-0.117***	-0.100***
seduc	0.001	-0.001***	-0.008***	-0.005***
sunemply	0.024***	0.015***	0.010***	0.006*
engonly	0.000	-0.002*	-0.001	-0.012***
shhle17	0.017***	0.007***	0.018***	0.039***
shhge65	0.029***	0.029***	0.013***	0.004
shhdisab	0.049***	0.036***	0.056***	0.055***
mex65	0.015	0.005	0.018***	0.007
mex17	-0.009***	-0.002***	-0.009***	-0.023***
mexdisab	-0.027***	-0.010***	-0.003	0.010***
mexwid	-0.030	-0.009	0.022**	0.020*
afdcavg	0.000***	0.000	0.000	-0.000***
ssiavg	-0.000***	0.000	0.000*	0.000***
inma	0.002	-0.003**	-0.014***	-0.025***
N	51,549	15,7213	71,593	57,559
log L	-7,917.711	-20,887.892	-12,670.314	-15,281.022

Note: *** indicates significance at the .01 level; ** indicates significance at the .05 level; and * indicates significance at the .10 level.

households more prone to AFDC usage separately from those households more prone to SSI usage.

The empirical results of this study indicate that Mexican-born households are no more likely to use welfare than either otherwise comparable native-born households of Mexican ancestry or otherwise comparable native-born households in general. However, they are more likely to participate than native whites, but less likely than native blacks. Moreover, recent cohorts from Mexico are less likely to use welfare than any control group, whereas more distant cohorts are more likely users.

Essentially the same basic results hold when households are partitioned into those headed by females and those headed by males. The highest incidence of welfare usage is among single female-headed households, but Mexican-born females in this group are significantly less likely to participate in welfare (AFDC) if they entered the United States in recent cohorts. This finding holds relative to different control groups, and it holds as well for young female household heads (less than 30 years old) born in Mexico.

The same general finding holds for male-headed households from Mexico, as well as for young male-headed households from Mexico. Recent entry cohorts participate less in welfare (AFDC) than otherwise comparable households both of Mexican ancestry and of all natives. However, Mexican-born male-headed households 65 years old and over who entered the U.S. in more distant cohorts show some tendency to use welfare (SSI) significantly more than otherwise comparable native-born households of Mexican ancestry. Although a similar relationship holds relative to all native households 65 and over, it is less strong.

Borjas and Trejo (1993) conclude that immigrants assimilate into welfare. Findings of the present study do not directly address the assimilation issue because we do not employ two Censuses to form synthetic cohorts that are followed through time. However, the present results suggest some caution in drawing conclusions regarding the assimilation of Mexican immigrants into welfare. When they are young, recent entrants in the U.S., the Mexican-born population is less likely to use welfare, which is almost certainly AFDC. When they grow older, or enter at older ages, they are more likely to use SSI.

In studies of this type, in which the foreign born are analyzed relative to a control group of native-born households, investigators may impute behavior to the foreign born when the native-born control is in some sense more responsible for a finding. The apparently higher use of SSI by the Mexican-born population is almost certainly due to their not qualifying for Social Security during their retirement years. The control group of natives has Social Security income available to it, which in turn lessens its reliance on SSI. Indeed, it is not clear whether the results of the present study are due to the lesser use of SSI by older natives or the higher use of SSI by older persons born in Mexico.

Notes

1. Although several other public programs could be analyzed, such as public schooling, and while one could also include Food Stamps and Unemployment Insurance in the welfare program group and Medicaid in the social insurance group, the analysis here is limited to the welfare programs AFDC and SSI and the social insurance program Social Security. This restriction is a direct result of the data set used, the 1990 Public Use Microdata Sample of the U.S. Census. See the section titled "Data" for more details.

2. Assimilation effects are only analyzed in Borjas and Trejo (1991).

3. Blau (1984) also analyzes the level of benefits received given participation. For male-headed Hispanic households, she finds that the level of welfare benefits received is significantly higher, and the level of social insurance benefits received is not significantly different, than that of male-headed non-Hispanic households. For female-headed Hispanic households, the level of welfare benefits received is significantly higher, and the level of social insurance benefits received is significantly lower, than for female-headed non-Hispanic households.

4. The adjusted rates are predicted from OLS welfare participation regressions in which age, education, marital status, year of immigration, and English language proficiency of the head, as well as the number of disabled household members, the age composition of the household, and household size are included as independent variables.

5. Tienda and Jensen (1986) and Jensen (1988) also examine welfare participation for Asian, black, and white immigrant and native households. These results are not discussed here.

6. To test the validity of our choice not to use the sample weights, some regressions have been run both with and without the sample weights. The results from the weighted and unweighted regressions are essentially the same.

7. The EDUC variable actually appears as HEDUC, for head's education, and SEDUC, for spouse's education, in the empirical work.

8. As with the educational attainment variable, in the empirical work below, EXPER appears as HEXPER, for head's experience, and SEXPER, for spouse's experience.

9. Since no explicit measure of private transfer income is available in the 1990 PUMS, we consider the 1990 Survey of Income and Program Participation (SIPP) in an effort to impute private transfer income into the 1990 PUMS. The SIPP is the only data set available that identifies private transfer income and provides detailed variables on foreign-born status. The core records from the 1990 SIPP are combined with the migration history variables from the 1990 Wave 2 Topical Module. Records are excluded and variables are created to as closely as possible match the format of the 1990 PUMS data set created earlier. The primary variable of interest in the 1990 SIPP is "money received from family or friends." This source of income can be identified by households as one of ten income sources from a list of 36 possible sources. If so identified, the dollar amount received in each month of the panel is also reported. These monthly amounts are converted to annual amounts to match the private transfer income definition that is needed in the 1990 PUMS. Descriptive statistics indicate that 404 of the 8663 households analyzed, or 4.7%, report receiving private transfers. Mean private transfer income among these 404 households is $2,177.77 with a standard deviation of $4,034.65 and a range from $3.75 to $30,375.00. By way of comparison, mean household earned income for this same group is $26,538.57.

Following Cox and Jakubson (1995), Cox and Rank (1992), and Cox (1987), a model is developed to explain private transfer receipt and the level of private transfers received.

The following independent variables are included in the model: age of the household head, age squared, education level of the household head, age interacted with education, sex of the household head, a dummy variable indicating the presence of a married spouse, household earned income, dummy variables for the race of the household head (Black, Asian, and Hispanic), a foreign-born dummy variable, and a dummy variable indicating the presence of foreign-born household members other than the head.

The model is estimated by each of two methods. First, a tobit model is fit to explain the amount of private transfers received by all households. The tobit model is appropriate here because it accounts for left censoring of private transfer income at zero dollars. Second, a two-stage model is estimated in which the first stage consists of a probit explaining receipt or non-receipt of private transfers. From this probit, the Mill's ratio is computed. The second stage then involves fitting a least squares equation to the level of private transfers received, with the sample restricted to only those households with positive private transfer income. The Mill's ratio is included as an independent variable in this regression to correct for sample selection bias.

Although both models produce generally significant coefficients of the expected signs, imputing private transfers into the 1990 PUMS based on these estimated coefficients produced negative values for all households. Given this result, private transfer income is not added to the 1990 PUMS data set, nor is it included in the empirical model reported below. However, the estimated coefficients on the foreign-born dummy variables are large, positive, and highly statistically significant. In fact, the foreign-born coefficient from the tobit model indicates that foreign born households receive nearly $1,800 more per year in private transfers than do otherwise similar native-born households. Notwithstanding these findings, private transfer income may be captured in the 1990 PUMS as part of the "all other income" measure included in non-labor income. However, even if this is the case, the effects of private transfer income on welfare participation cannot be separately examined.

10. Killingsworth (1983) discussed wage equations in the labor supply context. Friedberg (1993) analyzes wage and earnings equations including foreign-born characteristics.

11. Killingsworth (1983), Heckman (1979), and Maddala (1983), among others, provide very detailed discussions of this procedure.

12. The all native control represents a 10% random sample of all native-born households in the 1990 PUMS.

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Appendix 1
Variable Definitions

Variable Name	Variable Definition
Household Characteristics	
PASTPART	Public assistance participation dummy (equal to 1 if household participates)
SSPART	Social security participation dummy (equal to 1 if household participates)
SOTHINC2	Sum of household's dividend, interest, and net rental income, retirement income, and all other income
SEXTFAM	Number of extended family members living in the household
SPOUSE	Equal to 1 if a married spouse or unmarried partner is present
ENGONLY	Equal to 1 if English is the only language spoken in the household
SHHLE17	Number of household members less than or equal to 17 years old
SHHGE65	Number of household members greater than or equal to 65 years old
SHHDISAB	Number of household members who are disabled
INMA	Equal to 1 if household is located in a metropolitan area
Head Characteristics	
LHWAGE	Head's log-wage
HSEX	Sex of household head (equal to zero if male, 1 if female)
HAGE	Age of household head
HEDUC	Head's years of completed education
HUNEMPLY	Equal to 1 if head is unemployed or not in the labor force
HWRKLIM	Equal to 1 if head has work limiting disability
HWIDOWED	Equal to 1 if head is a widow or widower
Spouse Characteristics	
LSWAGE	Spouse's log-wage
SAGE	Age of spouse
SEDUC	Spouse's years of completed education
SUNEMPLY	Equal to 1 if spouse is unemployed or not in the labor force
SWRKLIM	Equal to 1 if spouse has work limiting disability
SWRKPREV	Equal to 1 if spouse has work preventing disability

Appendix 1 (Continued)

Variable Name	Variable Definition
Foreign Born Characteristics	
MEXICO	Equal to 1 if household is of Mexican birth
MEX65	MEXICO interacted with SHHGE65
MEX17	MEXICO interacted with SHHLE17
MEXDISAB	MEXICO interacted with SHHDISAB
MEXWID	MEXICO interacted with HWIDOWED
MEXENG	MEXICO interacted with ENGONLY
MEXAFDC	MEXICO interacted with AFDCAVG
MEXSSI	MEXICO interacted with SSIAVG
ENTAGE	"Household's" age at entry into the U.S.
IMG8590	Equal to 1 if household immigrated between 1985 and 1990
IMG8084	Equal to 1 if household immigrated between 1980 and 1984
IMG7579	Equal to 1 if household immigrated between 1975 and 1979
IMG7074	Equal to 1 if household immigrated between 1970 and 1974
IMG6569	Equal to 1 if household immigrated between 1965 and 1969
IMG6064	Equal to 1 if household immigrated between 1960 and 1964
IMG5059	Equal to 1 if household immigrated between 1950 and 1959
IMGLE49	Equal to 1 if household immigrated before 1949
Area Characteristics	
AFDCAVG	State's average monthly AFDC payment
SSIAVG	State's average SSI payment

Appendix 2
Descriptive Statistics

Variable	All	All Natives	Mexican Ancestry Natives	Mexican-Born
n	483,494	405,923	66,983	77,571
hsex	0.30	0.32	0.31	0.20
hage	48.00	49.34	42.74	40.97
	(17.45)	(17.57)	(15.19)	(14.97)
hwrklim	0.15	0.16	0.13	0.09
hwrkprev	0.10	0.11	0.08	0.06
lhwage	1.74	1.75	1.76	1.66
	(1.24)	(1.27)	(1.13)	(1.03)
heduc	11.79	12.51	10.98	8.03
	(3.80)	(3.13)	(3.75)	(4.65)
hunemply	0.33	0.34	0.28	0.25
spouse	0.62	0.60	0.61	0.75
sage	27.29	27.13	24.24	28.15
	(24.36)	(25.16)	(22.08)	(19.64)
lswage	0.79	0.81	0.80	0.73
	(1.10)	(1.12)	(1.08)	(0.99)
seduc	7.36	7.57	6.85	6.25
	(6.32)	(6.49)	(6.03)	(5.20)
sunemply	0.28	0.26	0.26	0.43
mexico	0.16	–	–	1.00
img8590	0.02	–	–	0.12
img8084	0.03	–	–	0.17
img7579	0.03	–	–	0.19
img7074	0.03	–	–	0.17
img6569	0.02	–	–	0.10
img6064	0.01	–	–	0.07
img5059	0.02	–	–	0.09
imgle49	0.01	–	–	0.08
entage	3.68	–	–	22.62
	(9.44)			(10.98)
sothinc2	3,928.40	4,470.49	1,633.42	1,091.64
	(9971.79)	(10634.07)	(5171.11)	(4294.14)
sextfam	0.12	0.06	0.14	0.40
	(0.46)	(0.29)	(0.46)	(0.89)
shhdisab	0.25	0.26	0.23	0.19
	(0.53)	(0.53)	(0.52)	(0.49)

Appendix 2 (Continued)

Variable	All	All Natives	Mexican Ancestry Natives	Mexican-Born
shhle17	0.81	0.64	1.13	1.70
	(1.21)	(1.04)	(1.32)	(1.59)
shhge65	0.10	0.11	0.06	0.07
	(0.32)	(0.32)	(0.26)	(0.27)
sspart	0.26	0.29	0.17	0.13
pastpart	0.08	0.07	0.14	0.12
engonly	0.78	0.92	0.26	0.03
inma	0.66	0.63	0.78	0.86
afdcavg	365.67	352.50	359.93	434.58
	(156.66)	(142.62)	(199.68)	(202.19)
ssiavg	3,060.62	2,951.54	3,236.93	3,631.40
	(785.46)	(666.87)	(1026.95)	(1063.11)

Note: For dichotomous variables, the figures presented are sample proportions. For continuous variables, the figures presented are sample means. Standard deviation appears in parentheses.