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Ineligible Parents, Eligible Children:

Food Stamps Receipt, Allotments and Food Insecurity among Children of Immigrants

Jennifer Van Hook

Bowling Green State University

Kelly Stamper Balistreri

Bowling Green State University

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Jennifer Van Hook

Kelly Stamper Balistreri

Center for Family and Demographic Research

Department of Sociology

Bowling Green State University

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ABSTRACT

This paper brings attention to the effects of PRWORA on household-level Food Stamps recipiency, Food Stamps allotments, and food security among children of immigrants using the Survey of Program Dynamics. This paper further seeks to examine the affect of cutbacks on welfare allotments on "mixed status" families and whether any such changes in Food Stamps receipt and allotments led to higher levels of food insecurity among children of non-citizens. Results indicate that food insecurity was higher for children of non-citizens who never naturalized immediately following welfare reform, but food insecurity levels declined and evened out across all groups by 2001. Reductions in allotments rather than reductions in Food Stamps receipt appear to explain the higher food insecurity levels of children of noncitizen parents. Reductions in unmet need for both receipt and allotments between 1997 and 2000 appear to partially explain the decline in food insecurity.

Keywords: food insecurity, food insufficiency, children, immigrants, food stamps, welfare

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The Personal Responsibility and Work Opportunity and Reconciliation Act of 1996 (PRWORA) and subsequent addendums eliminated welfare as an entitlement for working-aged adults and non-citizens while maintaining limited support for poor children regardless of citizenship. This policy change involved a shift in the treatment of mixed eligibility-status immigrant households. By "mixed eligibility-status" households (or "mixed-status" for short), we mean those that contain both those deemed ineligible for welfare (non-citizens) and those deemed "deserving" and eligible (poor children). Rather than providing full welfare benefits, current welfare policy tends to reduce or eliminate welfare benefits for mixed-status households. For example, in many states, the amount of Food Stamps a household may receive (the Food Stamps allotment) is now based on the number of eligible citizens in the households rather than total household size. The social cost of this new policy approach depends on the extent to which a reduction in allotments to mixed-status households harms children.

In this paper, we examine the effects of PRWORA on household-level Food Stamps recipiency, Food Stamps allotments, and food security among children of immigrants. Limited research has been conducted on the implications of PRWORA on the food insecurity of children of immigrants, especially research that focuses on how changes Food Stamps eligibility for non-citizen adults may have led to changes in the food security of their children. We evaluate three possible consequences of the recent policy changes. We first assess whether households containing non-citizen parents have become less likely to apply for or receive Food Stamps on behalf of their eligible children. Second, we assess whether immigrant families might have suffered a cutback in their welfare allotments because of the presence of non-citizen household

members. Finally, we assess whether any such changes in Food Stamps receipt and allotments led to higher levels of food insecurity among children of non-citizens.

The issue of food insecurity among children of immigrants is of public policy significance because children of immigrants comprise the fastest growing segment of the U.S. population under age 15. Currently, one-fifth of all children in the United States is the child of an immigrant (Passel and Van Hook 2000), and children of immigrants experience poverty levels two to three times higher than do non-Hispanic whites (Van Hook and Fix 2000; Van Hook, Brown, and Kwenda 2003). Understanding the factors that contribute to the well-being of children of immigrants is important because children of immigrants represent a high risk group and the childhood experiences of this population are likely to affect their social and economic integration in adulthood (Bean and Stevens 2003; Portes and Rumbaut 2001; Hernandez and Charney 1998). If welfare reform were to lead to longer and more frequent periods of hunger on the children of immigrants, this could have long-term consequences for the physical and cognitive development of this already-disadvantaged population (Johnston and Markowitz 1993; Moreley 1997).

Previous Research

PRWORA may put children in immigrant families at risk because it placed additional barriers to welfare programs that immigrant families have relied on in the past to make ends meet (Fix and Passel 1999, 2001; Fix 2001). In 1996, Congress enacted the 1996 Welfare Reform Act, making many legal non-citizens ineligible for most federally funded benefits (Espenshade, Baraka, Huber 1997; Zimmerman and Tumlin 1998). The specific details of welfare reform are presented elsewhere (Pavetti 2001; Zedlewski and Giannarelli 2001; Zimmerman and Tumlin

1998), but in general, eligibility for welfare eligibility became linked to visa status (refugees versus others), work history, and naturalization. With the exception of refugees, asylees, and veterans and their families, most immigrants are now ineligible for most types of public assistance until they have worked and paid taxes for 40 quarters (ten years) or become a U.S. citizen. Some benefits have since been restored. After the passage of the 2002 Farm Bill, Federal Food Stamps eligibility was fully restored to all legally-resident foreign-born children, the disabled, and the elderly, but not to working aged-adults (U.S.D.A. 2003).

Welfare reform also increased the complexity of immigrant welfare policy. For example, the immigrant eligibility restrictions included in the 1996 Welfare Reform Act have occurred incrementally and have differed by welfare program. In addition, PRWORA introduced substantial state-level variation in immigrant welfare policy. States now determine immigrants' eligibility not only for their own state-funded programs but also for certain joint federal and state funded programs. With respect to food assistance, states can opt to provide substitute services to those barred from the federal Food Stamps programs (Zimmerman and Tumlin, 1998; U.S. General Accounting Office, 1998). Over a dozen states, including the six states with the largest immigrant populations, in fact opted to provide state-funded food stamps or food assistance for immigrants. However, many states limited the substitute benefits provided to immigrants in important ways, such as by not offering benefits to working-aged non-citizens, or limited their food program to those who were already receiving Food Stamps at the time of PRWORA's enactment.

Prior to welfare reform, immigrant families were more likely than native families to be impoverished (Bean, Van Hook and Glick 1996) and to participate in cash and non-cash welfare programs (Bean et al., 1996; Borjas and Hilton 1996). Immediately following PRWORA's

enactment, Food Stamps caseloads and recipiency levels dropped for most groups, but most sharply among immigrants (Fix and Passel 1999, 2001; Fix 2001; Borjas 2001). Some research even suggests that the effects of PRWORA have spilled over to populations that were never the intended targets. Welfare caseloads and usage rates dropped disproportionately for non-citizens and children of non-citizens while remaining constant or (in some cases) growing for naturalized citizens and their children (Fix and Passel 1999, 2001; Fix 2001;Borjas 2000, 2001). Some researchers have attributed this "chilling" effect to heightened intimidation or confusion on the part of non-citizens (Borjas 2001b; Fix and Passel 1999, 2002; Capps 2001; Hagan, Rodriguez and Capps 1999; Zimmermann and Fix 1998).

The reductions in Food Stamps participation may have increased hardship for immigrant families. The Food Stamp program has been shown to alleviate food insecurity in general (Gundersen and Oliveira 2001) and is likely to have served as an important source of food for immigrant families (Borjas 2001). Indeed, several studies have documented increases in food insecurity following welfare reform for immigrant families, particularly those that left welfare (Capps 2001; Hagan, Rodriguez and Capps 1999; Lein 2002), and Borjas (2001) finds a (weak) linkage between changes in state-level policy and increases in food insecurity in immigrant households.

However, many of the studies that evaluate the effects of welfare reform on immigrants' well-being have been limited in important ways. First, no one has examined in a comprehensive way the effects of PRWORA on the food security among children of immigrants. Because children of immigrants live in "immigrant" families and households, the effects of PRWORA on food insecurity among children of immigrants may be expected to strongly resemble the patterns observed by Borjas (2001) for all immigrant families and households. However, as we show in

this paper, the effects of PRWORA on children's outcomes are unlikely to operate in such a simple, direct manner. The reason is that PRWORA did not technically restrict Food Stamps eligibility for the majority of children of immigrants. Although in many cases their working-aged parents were deemed ineligible, most children remained eligible because they were U.S. Born citizens, they lived in a state that provided substitute benefits to children, or if they were already on Food Stamps, they were "grandfathered" in under the old rules. Moreover, after the passage of the 2002 Farm Bill, Food Stamps eligibility was fully restored to all legally-resident foreign-born children (U.S.D.A. 2003). To the extent that PRWORA will continue to affect children's outcomes, these effects are likely to operate indirectly by altering the welfare participation behavior of their parents and by changing the distribution of welfare benefits within and across immigrant households.

A second limitation is that some of the studies have been restricted to a single state or metropolitan area, even though the changes in welfare policies varied considerably across states and even within states. For example, Hagan, Rodriguez and Capps (1999) find chilling effects of welfare reform, and Lein (2002) finds strong evidence of food insecurity and hardship among immigrant families following PRWORA. Kretsedemas (2003) finds evidence that confusion, fear and intimidation contributed to low levels of welfare usage among Haitian immigrants in Miami. However, both studies focus on states (Texas and Florida) that have historically provided a much less generous social safety net and whose political climates may be much less accommodating to the poor than other states. To what extent are the results of prior studies unique to particular locations? In our analysis, we attempt to reduce the influence of unique state-level political and social contexts by using a national-level sample and by controlling for state-level fixed effects in our multivariate models of Food Stamps receipt and food insecurity.

Third, most of the descriptive studies that compare outcomes of welfare leavers and stayers are problematic because they do not adequately account for the endogenous effects of Food Stamps recipiency. That is, former Food Stamps recipients, even if 'forced off' welfare, may be quite different from current Food Stamps recipients, and these differences could lead to differences in child well-being independent of the effects of Food Stamps receipt. One exception is that Borjas (2001) accounts for endogeneity by using variation in state policy as an instrument for Food Stamps receipt. Even though his findings are not statistically significant, he concludes that restrictions in the Food Stamps program may have increased food insecurity among immigrant households.

Fourth, prior studies (including the Borjas (2001) study) are limited by the fact that most rely on multiple years of cross-sectional data. The effects of PRWORA have been assessed largely by comparing average food security levels from the pre-reform period with average levels in the post-reform period. Without information about changes in the level of food security at the individual or household level, it is difficult to assess with certainty whether the changes at the aggregate level are due to real changes occurring to individuals, or whether they are due to "churning" or turnover in the population (e.g., due to selective internal migration, naturalization, the arrival of new immigrants, and emigration). For example, analyses of repeated years of cross-sectional data show that welfare caseloads declined disproportionately among non-citizens following welfare reform, which seemed to imply that non-citizens were more likely to go off welfare. However, longitudinal data shows that about half of this decline occurred because non-citizen welfare recipients naturalized (Van Hook 2003).

Like prior research on immigrant food insecurity (e.g., Borjas 2001), we make comparisons by citizenship status, but we go beyond this work in important ways. First, we

develop and test hypotheses concerning the indirect ways PRWORA might affect food insecurity among children of immigrants rather than immigrant households. Second, we examine Food Stamps allotments in addition to household-level receipt. Third, we use a national-level longitudinal data source (the Survey of Program Dynamics) to follow a cohort of children over an extended period of time (1994 to 2001).

Hypotheses

Many policy analysts and social scientists expect PRWORA to affect the well-being of children of immigrants, but the explanations underlying this expectation tend to vary. It is important to discern among the different explanations because each tends to carry different implications regarding the likely scope and duration of the effects of PRWORA on children. We generate below two distinct and potentially complementary explanations for the effects of PRWORA on children of immigrants.

Allotment Effects. The first hypothesis focuses on effects that come about from reductions in household-level Food Stamps allotments. PRWORA restricted guaranteed income and in-kind federal government support for non-citizens who arrived in the U.S. after August 22, 1996 (Espenshade, Baraka and Huber 1997). Immigrants' access to Food Stamps was especially limited; those who were receiving Food Stamps at the time PRWORA was enacted were actually kicked off the roles and new immigrant arrivals were barred from the program. Even though most children of immigrants remained eligible for welfare, many still are at risk if they live in households that contain non-citizens (75% of children of immigrants live in so-called "mixed status" households (Fix and Zimmermann 1999)). Since Food Stamp benefits are calculated based on the number of eligible citizens in the household, mixed-status families with noncitizen

parents and citizen children suffer a cutback in Food Stamp allotment (Fix and Zimmerman 1999).

This leads to the expectation that Food Stamps allotments would decline for children of immigrants, particularly among those living in mixed-status households and children with non-citizen parents. Furthermore, the reductions in Food Stamps allotments are expected to be linked directly to increases in food insecurity among children of immigrants.

Chilling Effects. The second hypothesis focuses on the possibility that welfare reform may have heightened immigrants' confusion about their eligibility for welfare or increased feelings of intimidation of the U.S. government, particularly among non-citizens. This may have had a "chilling" effect on immigrants' willingness to cooperate and interact with welfare agencies even among those who remain eligible for welfare or who have eligible children (Borjas 2001b; Fix and Passel 1999, 2002; Capps 2001; Hagan, Rodriguez and Capps 1999; Zimmermann and Fix 1998; Kretsedemas 2003). In prior research, evidence for a "chilling effect" has come from findings that, immediately following the enactment of welfare reform, welfare caseloads and usage rates dropped substantially for non-citizens and children of non-citizens while remaining constant or (in some cases) growing for naturalized citizens and their children (Fix and Passel 1999, 2001; Borjas 2000, 2001). This occurred even though most non-citizens remained eligible to receive welfare even in the year after welfare reform was passed because of legal provisions that "grandfathered" in immigrants in the country when welfare reform was passed. Other evidence for this idea is that mixed-status families with eligible children have become less likely to apply for or continue receiving Food Stamps at all. In fact, Food Stamp receipt declined among eligible poor children from 94% in 1994 to 75% in 1998 (CBPP 1999).

The "chilling effects" hypothesis predicts that non-citizens would be reluctant to apply for welfare benefits even if they or their children were eligible. More than just a reduction in allotment, the expectation is that entire immigrant households would go off Food Stamps following PRWORA, particularly mixed-status households, and that these changes would result in increased hardship and food insecurity.

Methods

Survey of Program Dynamics. We use the longitudinal files of the Survey of Program Dynamics (SPD). The SPD allows us to examine Food Stamp recipiency for a cohort of children in nearly all years between 1993 and 2000 (excluding 1995 and 1996), and it includes measures of food sufficiency in 1994 and food insecurity in 1998 and 2001. The SPD was developed by the Census Bureau to evaluate the short- and medium-term effects of Welfare Reform. The SPD sample includes roughly half of the original respondents from the 1992 and 1993 panels of the Survey of Income and Program Participation (SIPP), who are then followed up in the 1997 SPD Bridge Survey (a modified version of the March 1997 CPS), and in the SPD annual surveys from 1998 to 2001. The advantages of using the SPD are: (1) it is the only available source of data that contains information about children and their families over a time period spanning the years just before and after PRWORA's enactment, (2) it includes histories on immigration, naturalization, and welfare receipt, and (3) it includes information on food insecurity.

Our sample includes children ages 0-13 in 1993 (ages 5-18 in 1998 and ages 8-18 in 2001) who were followed up successfully in the 1998 SPD. Most children contribute a person-year for each year they are in the sample until they age out; for example, children age 13 in 1993 contribute person-years for 1993 through 1998 because they were older than 18 starting with the

1999 interview. We exclude children who were not living with a parent at the time of the interview. Because refugees are treated differently under PWRORA than legal immigrants, and because very few refugees are represented in the SPD, we exclude those coming from refugee-sending countries from the sample (Bean, VanHook and Glick 1997). Finally, about 200 children were dropped because they or their parents were born in Puerto Rico or other U.S. Outlying Areas; they comprise a group that may not be justifiably classified as native (because they share many characteristics of legal immigrants) but also do not fit in the "immigrant" category because they are U.S. citizens by birth. Once we exclude cases with missing values on any of the key independent or dependent variables, our final analytical sample contains 12,501 children.

Unit of Analysis. Other researchers who have examined food insecurity have used the household or family as the unit of analysis (Borjas 2001). Since our focus is well-being of children of immigrants and because not all immigrant households contain children, we use the individual child as the unit of analysis (Van Hook, Glick, and Bean 1999). Nevertheless, household-level information regarding food and hunger is used to measure children's food insecurity. For multivariate analyses that model changes in Food Stamps receipt, allotments, and food insecurity, the unit of analysis is the person-year. That is, each child contributes an observation for each year he or she is in the sample. In analyses of Food Stamps receipt and allotments, which uses all available years of data from 1993 through 2000, the final analytical sample include 57,957 person-years. For models of food insecurity, for which the dependent variable is available only in 1998 and 2001, the final analytical sample includes 15,767 person-years (13,545 children of natives, 955 children of citizens, 707 children of non-citizens who later naturalized, and 560 children of non-citizens who had not naturalized as of 2001).

Attrition. Even though the SPD offers unique advantages (it is the only data source that permits us to follow a cohort over time), the SPD suffers from high attrition rates. Of the children who were present in the 1993 data and who were eligible to be followed up in 1998, only 71.4 percent were followed up and have valid responses on the key dependent and independent variables; 28.6 percent dropped out by 1998. Furthermore, if we do not count as "dropping out" those who age out of the sample between 1998 and 2001, 44.3 percent of the original 1994 sample dropped out by the 2001 SPD (see Appendix A). Children of the U.S. born and children of non-citizens have similar attrition rates. Children of naturalized citizens have lower rates of attrition than other children.

To assess the extent to which attrition in the SPD is systematic rather than randomly distributed, we estimated models of sample retention. The analytic sample includes two person-years (for 1998 and 2001) for each person who was present in the 1994 sample and who was eligible to be followed up. The dependent variable is whether the person was actually followed up and had valid responses on the key dependent and independent variables. The independent variables, all measured as of 1993 or 1994, include standard demographic and economic variables (age, household composition, race/ethnicity, parental education, family income, parental nativity/citizenship) and the two outcome variables (food insecurity and Food Stamps receipt). Retention declined between 1998 and 2001 (Appendix B). Older children and children in larger households were less likely to be retained in the sample (most likely on account of "aging" out of the sample). Children in households containing large numbers of children, children with older parents, and children classified as "other" race/ethnicity were more likely to be retained. More importantly, none of the key independent and dependent variables (nativity/citizenship, food insecurity, and food stamps recipiency) were significantly related to

sample retention. For this reason, attrition is unlikely to present an insurmountable problem. Nevertheless, we attempt to adjust for sample selection bias statistically as described below.

Statistical Models. We estimate models of (1) household-level Food Stamps receipt (whether or not anyone in the household received Food Stamps in the previous year), (2) Food Stamps allotment, and (3) food insecurity. The first two sets of models attempt to estimate the effects of nativity/citizenship on changes in Food Stamps receipt and allotments. For both dependent variables, we estimate and test interaction effects between nativity/citizenship and year in order to examine the temporal patterns of Food Stamps receipt and allotments for immigrants relative to natives. The only major difference between the Food Stamps recipiency and allotment models is that the models of Food Stamps allotment are estimated for the sub-sample of children in households that receive Food Stamps.

We also estimate the effects of Food Stamps receipt and allotment (lagged one year) on food insecurity. This is difficult because households would not apply or qualify for the Food Stamps program if they were not at risk of being food insecure. Any comparison of Food Stamp recipients and non-recipients is likely to show higher levels of food insecurity among the recipients due to selection alone (Gundersen and Oliveira 2001). Even longitudinal studies that compare well-being among welfare leavers and stayers are problematic. An unknown fraction of welfare leavers undoubtedly would not have gone off the roles if they had not been forced off; therefore, their experiences may provide an indication of life without a welfare safety net. But others would have left welfare on their own due to the growth in the economy that occurred during the mid- to late-1990s (Wilson 2002).

Borjas (2001) approached this problem by using state-level policy variation as an instrument for Food Stamps receipt. Because we have longitudinal data, we are able to go

further by developing measures of "unmet need" for Food Stamps based on the extent to which an individual child's predicted participation levels changed since PRWORA's enactment. Participation in the Food Stamps program declined between 1993 and 1997 and again between 1997 and 2000 even after controlling for changes in wide array social, demographic, and economic characteristics. Changes in the probability of participation indicate the extent to which a person with a fixed set of characteristics would have participated in the Food Stamps program in the post-reform period *but did not* because of policy or other historical changes that occurred since 1993. We refer to this decline in the likelihood of participation as "unmet need." Thus, "unmet need" here refers to changes due to changes in propensities or "returns" to a child's characteristics on Food Stamps receipt or allotment while holding constant any changes in the child's characteristics or family circumstances.

To measure unmet need, we first estimate linear probability models of Food Stamps receipt, S, separately by year (1993, 1997, and 2000). Angrist and Krueger (2001) argue that probit or logit models to generate first-stage predicted values in the case of a dichotomous dependent variable (like Food Stamps receipt) is unnecessary and may produce inconsistent estimates in the second stage. We include a standard set of social and economic variables, citizenship/nativity status, an indicator of state welfare policy (whether the state provided substitute benefits to working-aged non-citizens[1]), and the interaction between citizenship/nativity and state policy. We generate predicted Food Stamps participation levels for individuals in 1997 and 2000 based on the coefficients from the 1997 and 2000 models and the individual's observed characteristics in each respective year ($\mathbf{X}_{i,j,97}'\beta_{97}$ and $\mathbf{X}_{i,j,00}'\beta_{00}$). To indicate what Food Stamps participation *would be* if conditions from 1993 prevailed (i.e., if no

changes in policy or climate occurred) for individuals in 1997 and 2000, we generate predicted values using the coefficients from the 1993 model and the individual's observed characteristics in 1997 and 2000 ($\mathbf{X}_{i,j,97}'ß_{93}$ and $\mathbf{X}_{i,j,00}'ß_{93}$). Our measure of unmet need, U, is the difference between the two sets of predicted values:

$$U_{i,j,97} = \mathbf{X}_{i,j,97}'(ß_{93} - ß_{97})$$

$$U_{i,j,00} = \mathbf{X}_{i,j,00}'(ß_{93} - ß_{00}).$$

We also generate parallel measures of unmet need of Food Stamps allotments. Instead of using household-level Food Stamps receipt as the dependent variables, we use Food Stamps allotment among Food Stamps recipients. Because the allotment models are restricted to a subsample, there are not enough cases to estimate models 3 and 4 separately. Therefore, we combine data from 1997 and 2000 in a single model and include interactions between nativity/citizenship and year in order to capture changes in allotments by nativity/citizenship. Although unmet need for Food Stamp allotments is estimated for all children (recipients and non-recipients alike), we weight it by the predicted probability of receiving Food Stamps.

We include the unmet need measures in our models of food insecurity. These models are estimated using person-years from 1998 and 2001 only, which are the only years in the SPD that include measures of food insecurity. We include most of the variables listed in equation 1 as well as pre-reform characteristics (food sufficiency, income, parental marital status). Time-varying variables, including unmet need, are lagged by one year. We expect that greater levels of unmet need for Food Stamps and allotments will be associated with higher levels of food insecurity and will explain the trends and variations in food insecurity by nativity and citizenship.

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[1] These states include California, Connecticut, Illinois, Main, Massachusetts, Minnesota, Nebraska, New Jersey,

Model Estimation. We estimate two-stage Heckman models. The first stage probit predicts sample retention and, in the case of allotment models, Food Stamps receipt. The second stage predicts Food Stamps receipt among those retained in the sample (specified as a probit model) or Food stamps allotment among Food Stamps recipients (specified as an OLS model). The model is identified because we use pre-reform characteristics in the first stage to predict sample retention or Food Stamps receipt, and time-varying characteristics to predict receipt and allotments in the second stage. When the measures of unmet need are included in the second stage Heckman model of food insecurity, the estimates become highly unstable. Therefore, we do not estimate Heckman models in the case of food insecurity. We estimate the Heckman models using maximum likelihood procedures in order to obtain efficient standard errors (StataCorp 2003).[2]

Key Variables

Food Insecurity. Food insecurity is our key dependent variable. We estimate the effects of changes in Food Stamps receipt and allotments (instrumented) on food insecurity in the post-reform period while controlling for food sufficiency in the pre-reform period. Food insecurity is measured in the SPD in 1998 and 2001 through a series of questions taken from the USDA-sponsored Food Security Supplement to the CPS. Bickel et al (2000) details the construction of both a continuous measure (ranging from 1 to 14) and a four category measure of food insecurity (food secure, food insecure without hunger, food insecure with hunger, and food insecure with severe hunger). When we experimented with both of these measures as well as a dichotomous indicator (food secure versus food insecure), they produced very similar results. We use both a

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Rhode Island, Washington, and Wisconsin (Schwartz 2001).

simple dichotomous measure indicating food insecurity (versus food secure) and the full 14-point scale in our descriptive analyses. Because the continuous measure is more appropriate as a dependent variable in linear models, and linear specifications are less sensitive to model specification when instrumental variables are used (Angrist and Krueger 2001), we opt to use the continuous measure in our models.

We control for food adequacy prior to welfare reform in 1994. The SIPP/SPD does not include the questions necessary to construct a measure of food insecurity for the pre-reform period that is directly comparable with the post-reform measure described above. However, the data do include a question pertaining to issues of food sufficiency in 1994, namely a single-question that indicates whether a household is experiencing a condition short of food sufficiency. This measure has four categories that roughly correspond with the categories in the measure of food insecurity.

Food Stamps Receipt. Food Stamps recipiency is measured for each calendar year from 1993 to 2000. We classify Food Stamps recipients as those living in households that reported receiving Food Stamps during the year. The SPD also collects information about the number of months the household received Food Stamps and the number of persons in the household who were covered by Food Stamps. We measure Food Stamps allotment (the amount of Food Stamps received) as the number of person-months of Food Stamps the household received (persons covered x months received); expressed as a proportion of the total possible if all persons in the household were covered for the entire year.

[2] In addition, due to the fact that the SPD uses a stratified clustering design, the standard errors would be biased if standard estimation procedures were used. To adjust for design effects, we estimate our models using survey routines available in STATA (StataCorp 2003).

Nativity/Citizenship. We categorize children by citizenship and nativity status of the child and the child's parents. Children of immigrants are identified as children with at least one foreign-born parent, and children of natives are those for whom both parents are US-born. We further divide the first group into three non-time-varying categories: children whose parents who were citizens in the pre-reform period (as of 1993), children with at least one non-citizen parent who later naturalized between 1993 and 2001, and children of at least one non-citizen parent who had not naturalized as of 2001.

Control Variables. We control as much as possible for factors that are associated with nativity/citizenship and which are likely to affect Food Stamps eligibility, participation and food insecurity. Non-time-varying control variables measured in the pre-reform time period include the race or ethnicity of the child (non-Hispanic white, non-Hispanic black, Mexican, other Hispanic, and Asian), and parental education (less than high school, high school, some college, and college or more). Time-varying control variables (lagged one year from the dependent variable) include: demographic factors (child's and parent's age, household size, number of children in the household, proportion of non-citizens living in the household, parental marital status, and whether the household contains extended family relatives), and household income (measured as a ratio of income to the family's poverty threshold).

We also attempt to control for state-level demographic and economic characteristics. We include the percentage of foreign-born living in the state (based on the 2000 Census data) in order to account for possible variations in the social support immigrants may receive from co-ethnics and for differences in the state political climate that may be associated with large foreign-born populations. This factor subsequently turned out to have insignificant effects on the dependent variables, so we dropped it from our final models. We also include a measure of the

average Food Stamps benefit for a family of three in order to account for variations and changes in the generosity and accessibility of their welfare programs. We include state-level unemployment rates (obtained from the Bureau of Labor Statistics) in order to control for regional- or state-level variations in labor market opportunities. Finally, all the models include a set of state fixed effects, which control for the influence of non-time-varying characteristics of states. Means for all of the variables used in the analyses are shown separately by nativity and citizenship status in Appendix C.

Results

Basic Patterns and Trends.

During the 1990s, the proportion of children covered by Food Stamps declined for all nativity and citizenship groups, and children of non-citizens who never naturalized saw the greatest declines (Table 1). This may possibly be explained by the fact that children of non-citizens started out with the highest levels in 1993 and thus had farther to fall. Children of parents who naturalized in the post-reform period also experienced large declines in recipiency between 1997 and 2000.

[Table 1 here]

Average food stamps allotments remained steady across all years among U.S. born recipients, and fluctuated from year to year among children of immigrants (Table 1). Although a pattern is difficult to discern, allotments generally increased until 1998 among children of citizens who naturalized during the pre-reform period. After 1998, allotments for this group declined. Among other children of immigrants, allotments tended to be lower in the years immediately following welfare reform (1997 and 1998) and higher in other (selected) years.

Finally, the children of non-citizens (primarily children of non-citizens who never naturalized) experienced the highest levels of food insufficiency (measured in 1994) or food insecurity (measured in 1998 and 2001) across all years (Table 1). This is the case whether we use the dichotomous or the continuous measures.

In order to assess change in food insecurity over time, we focus on *relative* change in the dichotomous measures because they are more comparable over time than the continuous measures (the 1994 continuous measure uses a 4-point scale while the 1998 and 2001 continuous measures use a 14-point scale). Children of parents who never naturalized were unique in that they saw increases between 1994 and 1998 in food insufficiency/insecurity while levels declined or stayed roughly the same for the other groups. Outcomes appear to have improved between 1998 and 2001 when food insecurity declined across all nativity and citizenship groups. However, these declines were greater and dipped considerably below the 1994 levels of food insufficiency for children of citizens but not among children of parents who never naturalized.

The overall picture is that children of non-citizens (particularly if they never naturalized) experienced the largest declines in Food Stamps recipiency, the greatest increases in food insecurity immediately following Welfare Reform, and the smallest recovery in the late 1990s.

Models of Food Stamps Receipt and Allotment. We next assess whether the changes in Food Stamps recipiency and allotment by nativity/citizenship may be explained by variations and changes in social and demographic characteristics. With social, demographic controls, and state fixed-effects included in models of Food stamps receipt and allotments, we tested the two-way interaction between year and nativity/citizenship.

In the models of Food Stamps receipt, the interaction was not statistically significant. The best-fitting model, which includes only the main effects, is presented in Table 2. As would

be expected, the likelihood of receiving Food Stamps tends to be higher among younger children who are racial or ethnic minorities, with single parents, lower levels of parental education, lower income-to-poverty ratios, and who live in households that contain many children and extended family relatives. Independent of these factors, Food Stamps receipt declined significantly between the pre-reform period (1993 and 1994) and the years immediately following welfare reform (1997 and 1998). Receipt declined still more at the end of the decade (1999 and 2000). Although recipiency levels significantly varied by nativity/citizenship status (with lower levels among children of parents who had naturalized in the pre-reform period), nativity/citizenship groups did not differ significantly in the extent to which receipt declined.

[Table 2 here]

In the models of Food Stamps allotments, the two-way interaction between year and nativity/citizenship was marginally significant ($p < .10$). The model containing the interaction between year and nativity/citizenship is presented in Table 2. In general, black and Asian children living in households with more children, fewer or no extended family relatives, and lower income-to-poverty ratios tend to have higher Food Stamps allotments. Independent of these factors, the effects of nativity/citizenship changed over time. To interpret the interaction effect, we estimated and graphed predicted Food Stamps allotment by year and citizenship/nativity based on the allotment model in Table 2 (Figure 1). Predicted allotments remained steady across all years for children of U.S. born parents. However, among children of parents who naturalized in the pre-reform period, allotments increased in 1997 and 1998 before declining at the end of the decade. Among children of non-citizen parents (particularly those who never naturalized), allotments declined in 1997 before increasing somewhat at the end of the decade.

[Figure 1 here]

Unmet Need. The changes in Food Stamps receipt and allotments appear to have occurred independently of changes in the income and other social characteristics of children. This conclusion is clearly supported by the fact that the "year" effects remained significant in models of receipt and allotments even under the influence of controls. In addition, members of some social categories appear to be more likely to experience declines (or increases) in receipt and allotments than others. This becomes evident not only by the significant interaction effects in the allotment models, but also when we examine variation and changes in unmet need. As described in the previous section, we constructed measures of unmet need for Food Stamps and allotment that capture how much more likely children in the post-reform period would be to receive Food Stamps, or how much greater an allotment they would receive, if they were to experience pre-reform conditions. As shown in Table 3, average levels of unmet need for Food Stamps and allotments tend to be higher among children of parents who never naturalized and lower among children of parents who naturalized prior to welfare reform and children of natives. Thus children of immigrants appear to have been in socioeconomic and demographic categories that were associated with greater declines in receipt and allotments. Furthermore, unmet need levels declined for all groups between 1998 and 2001 with the exception of those with parents who naturalized post-reform. This may have been a result of an improved economy or perhaps as states improved their implementation and outreach of their food assistance programs to those in need.

[Table 3 here]

Models of Food Insecurity. To what extent were changes in receipt and allotments associated with changes in food insecurity, particularly among children of immigrants? We

estimate linear models of food insecurity (using the 14-point scale) in 1998 and 2001 while controlling for pre-reform levels of food sufficiency. As a note, food insecurity is modeled using OLS regression, and all models control for pre-reform characteristics (food sufficiency, income-to-poverty ratio, and parental marital status in 1994), post-reform characteristics (income-to-poverty ratio, household size, parental marital status and education, and race/ethnicity)[3], and state fixed effects. We also estimated parallel models without state fixed-effects and the results were virtually identical.

We start out by simply examining the relationship between nativity/citizenship and food insecurity (Model 1, Table 4). Because the effects of nativity/citizenship significantly varied by time ($p<.10$), we include in our model the interaction between nativity/citizenship and year. In general, children from socioeconomic disadvantaged backgrounds tend to have higher levels of food insecurity (i.e., children with prior experiences with food insufficiency, lower income-to-poverty ratios, single parents, many other children living in the household, African American race/ethnicity, and parents with less than a high school education).

[Table 4 here]

Independent of controls, food insecurity levels were higher for children of non-citizens in 1998 but not in 2001. The coefficients for nativity/citizenship indicate group differences in food insecurity in 1998 only. Thus children with parents who never naturalized experienced the highest levels of food insecurity immediately following welfare reform in 1998. The coefficient for year indicates changes in food insecurity between 1998 and 2001 for children of natives while the interaction coefficients indicate deviations in changes from natives. The results thus

[3] In preliminary analyses, we tested models that included the full set of pre-reform and post-reform controls (including factors like parental and child's age, extended family living arrangements) but to enhance the model's efficiency, we eliminated the factors that were found not to be significantly related to food insecurity.

show that while all groups experienced declines in food insecurity between 1998 and 2001, children of parents who never naturalized experienced an especially large recovery. To better illustrate these effects, we present predicted levels of food insecurity by year and nativity/citizenship in Table 5. In 1998, children of parents who never naturalized stand out as particularly disadvantaged. However, by 2001, predicted food insecurity levels were lower and roughly equal across all groups.

[Table 5 here]

Can these patterns by explained by changes in Food Stamps receipt and allotment? We add the unmet need measures to models of food insecurity in order to assess whether they explain the variations and changes in food insecurity by nativity/citizenship (Models 2 and 3 in Table 4). When unmet need for Food Stamps receipt is added (Model 2), it exerts strongly positive and statistically significant effects on food insecurity, and partially explains the effects of current (post-reform) income, parental marital status, and parental education on food insecurity. As indicated by the predicted values shown in Table 5, the addition of unmet need for receipt does not reduce the effects of nativity/citizenship in 1998. Nativity differences barely change between Models 1 and 2 for children of parents who never naturalized; they even increase for children of parents who naturalized post-reform. Thus differences in unmet need for receipt fail to explain citizenship/nativity differences in food insecurity immediately following welfare reform. In 2001, however, food insecurity levels among children of non-citizens sink lower than children of natives once unmet need is accounted for. Thus children of non-citizens would be even better off in 2001 than children of natives if they had equally low levels of unmet need. In addition, declines in unmet need for Food Stamps appear to explain part of the recovery between 1998 and 2001, particularly among children of citizens and natives. Predicted change in

food insecurity is reduced by nearly three-fifths among children of parents who naturalized in the pre-reform period (from -.47 to -.21), by two-fifths for children of natives (from -.32 to -.19). The predicted change is reduced only by about ten percent among children of parents who never naturalized (from -1.03 to -.93).

We next add unmet need for allotments to the model (Table 4, Model 3). Unmet need for allotments also has strongly positive and statistically significant effects on food insecurity, and partially reduces the effects of some aspects of household composition (such as parental marital status, household size, and number of children). The addition of unmet need for allotment also reduces the effects of nativity/citizenship in both 1998 and 2001 (see Table 5). Predicted nativity differences are reduced by one third (from .59 to .40) for children of parents who never naturalized, and in 2001, food insecurity levels for children of non-citizens fall even lower than when only unmet need for Food Stamps was accounted for. Finally, reductions in unmet need for allotment appear to explain part of the recovery between 1998 and 2001 independent of changes in unmet need for receipt. The predicted change in food insecurity is further reduced for all groups of children, and is reduced nearly to zero among children of pre-reform citizens and natives.

Conclusion

Post-reform policy tends to reduce or eliminate welfare eligibility for adults through time limits and work, citizenship, and residency requirements even though doing so might risk the well-being of children who live with such adults. To evaluate this new policy approach, it is important to weigh its benefits (reductions in welfare dependency among adults) with its costs (hardship to children). We focused here on the costs for children and set aside for the moment the question related to welfare dependency. In particular, we evaluated the costs for children of

immigrants, as indicated by measures of food insecurity, of policies that reduce Food Stamps benefits to mixed-status households (i.e., households containing both citizens and non-citizens). Our findings suggest that even though the federal and state governments generally sought to protect children of immigrants by granting them eligibility for food assistance following welfare reform, children may have nevertheless been harmed by the fact that the working-aged non-citizens in their households were not offered similar protection.

Five specific findings emerge from the analysis. First, household-level Food Stamps recipiency declined steadily between 1993 and 2000 without recovery among all nativity/citizenship groups independent of changes and variation in social, demographic, and economic characteristics. In contrast, Food Stamps allotments appear to have declined temporarily and only among children of non-citizens. Second, food insecurity was higher for children of non-citizens who never naturalized immediately following welfare reform, but food insecurity levels declined and evened out across all groups by 2001. Third, reductions in allotments rather than reductions in household-level Food Stamps receipt appear to explain the higher food insecurity levels of children of parents who never naturalized. Fourth, reductions in unmet need for both receipt and allotments between 1997 and 2000 appear to explain, in part, the decline in food insecurity for all groups. Fifth, the results suggest that children of non-citizens would have even lower levels of food insecurity than they do now if they were given access to Food Stamps and allotments equal to that given to children of natives.

Clearly, reductions in Food Stamps receipt and allotments resulted in higher levels of food insecurity among children than would have occurred otherwise. With respect to the specific ways PRWORA affected the recipiency patterns of immigrant households, the results provide evidence for allotment but not chilling effects. Changes in allotments were associated with

nativity and citizenship; Food Stamps allotments declined only among children of non-citizens (particularly children with parents who never naturalized). Furthermore, reductions in allotments to recipient households clearly had negative consequences for household members. In other words, it was not the case that reductions in allotments occurred simply because the household was less in need of food assistance. Reductions in allotments (not reductions in household-level Food Stamp receipt) were associated with food insecurity immediately following Welfare Reform among children of non-citizens. Later on in the 1990-decade, increases in allotments together with reductions in unmet need for Food Stamps receipt reduced levels of food insecurity.

Contrary to the expectations of the "chilling effects" hypothesis, however, children with non-citizen parents did not experience especially steep declines in household-level Food Stamps receipt. In addition, although declines in household-level receipt (purged of endogenous factors with the unmet need measure) appear to be positively related to food insecurity, unmet need for Food Stamps at the household level did not explain the high levels of food insecurity among children of non-citizens immediately following PRWORA. Therefore, at a national level at least, the decline in receipt appears not to be linked to a single change in welfare policy concerning non-citizen's eligibility for welfare, nor did the decline in household-level receipt have especially negative consequences for children of non-citizens.

Why do our results differ from those in previous studies that provide evidence of chilling effects? One possibility is that prior studies, while finding fear and intimidation on the part of immigrants, have not been successful at measuring change because they did not use longitudinal data. Perhaps immigrant families were just as reluctant to approach welfare agencies and underutilized welfare before PRWORA was enacted. Another possibility is that chilling effects

on immigrant welfare participation occurred only in selective states or cities where immigrants may have felt especially intimidated or confused about their rights and the rights of their children. As valuable and unique a data source as is the Survey of Program Dynamics, a limitation is that the SPD does not contain a large enough sample of children of immigrants to adequately assess whether the decline in receipt varied by both citizenship and state-level variation in state policy[4]. If chilling effects occurred in some areas, the effects may have been swamped by other changes that reduced Food Stamps participation for both non-immigrant and immigrant children, including improvements in the economy (Bell 2001) and changes in eligibility requirements and enforcement practices of local welfare agencies (Curtis 2002; Pavetti 2001; Dion and Pavetti 2000).

We further caution that the connections of the observed changes in Food Stamp recipiency, allotments, and food insecurity to specific policy changes are weak. Although the reduction in allotments appears to be linked to citizenship and nativity and coincided with the timing of passage of PRWORA in 1996, we were unable to relate these changes to specific changes in state-level policies. We expect that allotments would decline for those living in states that did not provide substitute benefits to working-aged non-citizens following welfare reform, but because of the limitations in sample size noted above, we are unable to test this with our data.

With respect to policy implications, the results in this study suggest that providing food assistance to needy children alone is probably not enough. Food insecurity among the children in the SPD increased due to reductions in Food Stamps participation despite the fact that most of the children remained eligible. Efforts should be made to remove barriers to Food Stamps

[4] Incidentally, we tested the three-way interactions between nativity/citizenship, year, and state policy, but these turned out to be insignificant. We were unable to tell whether the insignificant results were due to small cell sizes or the lack of a relationship.

participation (such as by providing services in Spanish and by streamlining the application and auditing procedures), and to provide food assistance to *all* members of needy households that contain children rather than just to the household members who are eligible children. The November 2000 Food Stamp regulations allow states the option to base allotments on the income of eligible persons only. Under such a policy, for immigrant households with ineligible parents and eligible children, only the income of the children would be considered with determining the level of benefits (although the benefit would be capped at the level it would be if everyone in the household were eligible). One Oregon study showed that, for a hypothetical immigrant household, monthly Food Stamps benefits would increase from $187 to $238 if the state would take full advantage of this provision (Schwartz 2001). Our study further suggests that food insecurity levels among children of non-citizens would decline as well.

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Figure 1

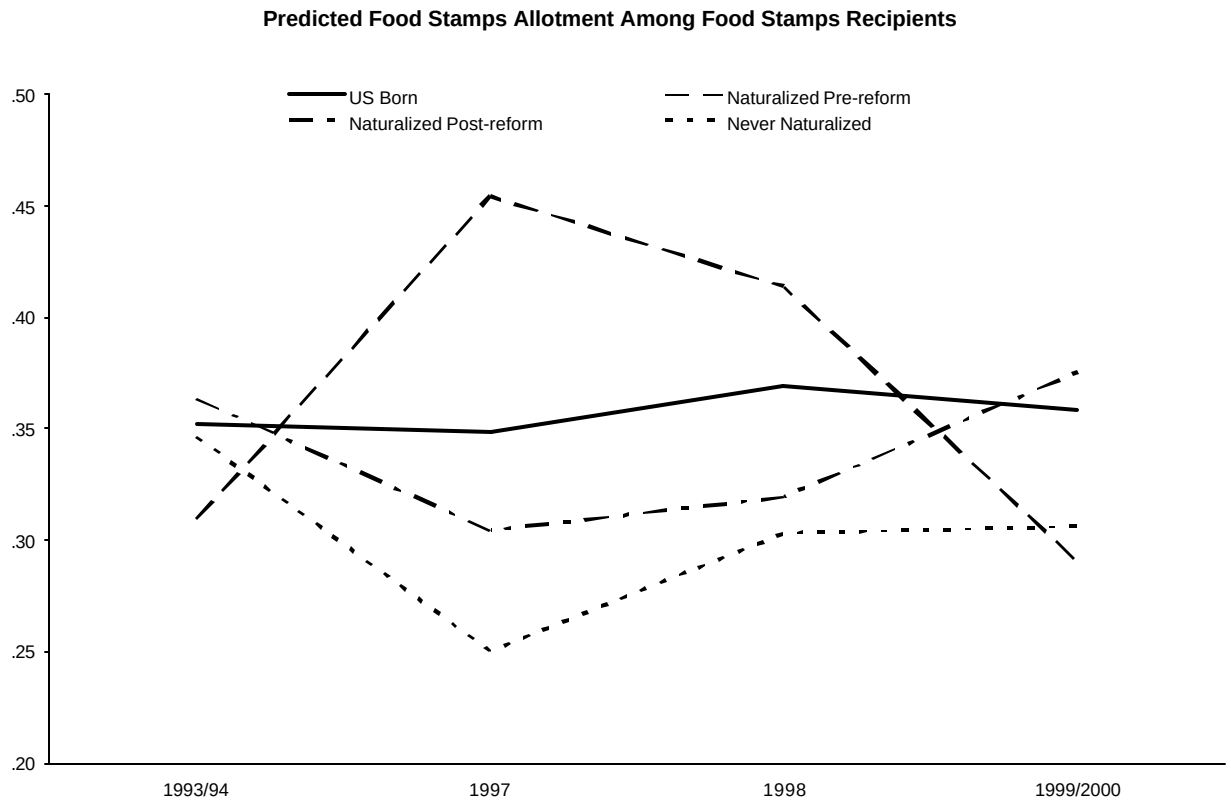
Predicted Food Stamps Allotment Among Food Stamps Recipients
US Born
Naturalized Pre-reform
Naturalized Post-reform
Never Naturalized
.50
.45
.40
.35
.30
.25
.20
1993/94
1997
1998
1999/2000

Table 1 : Food Stamps Receipt, Allotment, and Food Insecurity by Parental Citizenship Status and Year.

	1993	1994	1997	1998	1999	2000	2001
Food Stamps							
Native	0.20	0.19	0.13	0.11	0.09	0.09	
Naturalized Pre-Reform	0.16	0.16	0.10	0.07	0.07	0.11	
Naturalized Post-Reform	0.36	0.33	0.31	0.23	0.18	0.13	
Never Naturalized	0.45	0.44	0.36	0.32	0.27	0.26	
Food Stamps Allotment							
Native	0.15	0.14	0.10	0.09	0.07	0.07	
Naturalized Pre-Reform	0.11	0.13	0.09	0.06	0.05	0.07	
Naturalized Post-Reform	0.28	0.27	0.22	0.17	0.14	0.10	
Never Naturalized	0.34	0.37	0.25	0.24	0.20	0.20	
Food Stamps Allotment (Recipients)							
Native	0.75	0.76	0.76	0.76	0.76	0.76	
Naturalized Pre-Reform	0.71	0.77	0.88	0.85	0.74	0.64	
Naturalized Post-Reform	0.78	0.81	0.73	0.74	0.80	0.75	
Never Naturalized	0.76	0.84	0.70	0.75	0.74	0.77	
Food Sufficiency & Food Insecurity(dichotomous)**							
Native		0.16		0.14			0.09
Naturalized Pre-Reform		0.13		0.16			0.08
Naturalized Post-Reform		0.28		0.26			0.14
Never Naturalized		0.25		0.34			0.24
Food Sufficiency & Food Insecurity (continuous)**							
Native		1.21		1.06			0.66
Naturalized Pre-Reform		1.18		1.16			0.60
Naturalized Post-Reform		1.36		1.82			1.02
Never Naturalized		1.41		2.61			1.52

**Food Sufficiency is measured in 1994, food insecurity is measured in 1998 and 2001.

Table 2: Models of Food Stamps Receipt and Allotment

	Food Stamp Receipt		Food Stamp Allotment	
Intercept	-1.074		0.510	+
Age	- 0.029	*	- 0.001	
Number of Persons in HH	0.009		- 0.067	*
Number of persons under 18 in Hh	0.090	*	0.092	*
Average age of parents	- 0.005		0.000	
Single Parent HH	0.511	*	0.030	+
Extended Family HH	0.209	*	- 0.073	*
Mexican	0.238	*	0.023	
Other Hispanic	0.546	*	0.001	
Black	0.537	*	0.041	*
Asian	0.626	*	0.118	*
Other	0.154		0.024	
Less than High School	0.829	*	0.057	
High School	0.607	*	0.036	
Some College	0.444	*	0.035	
Ratio income to poverty level	- 0.859	*	- 0.143	*
Proportion noncitizens in HH	0.040		0.027	
Food Stamp State Level	0.016	*	0.004	
Unemployment Rate	- 0.016		0.010	
Presence of State Food Program	- 0.197		0.030	
Year 1997	- 0.467	*	- 0.004	
Year 1998	- 0.497	*	0.017	
Year 1999	- 0.654	*		
Year 2000	- 0.650	*		
Year 1999/00			0.006	
Naturalized Pre-reform	- 0.337	*	- 0.043	
Naturalized Post-reform	0.027		0.011	
Never Naturalized	- 0.032		- 0.006	
Year=1997 x Nativity/Citizenship				
Naturalized Pre-reform			0.149	*
Naturalized Post-reform			- 0.055	
Never Naturalized			- 0.092	
Year=1998 x Nativity/Citizenship				
Naturalized Pre-reform			0.088	
Naturalized Post-reform			- 0.061	
Never Naturalized			- 0.060	
Year=1999/2000 x Nativity/Citizenship				
Naturalized Pre-reform			- 0.026	
Naturalized Post-reform			0.006	
Never Naturalized			- 0.047	
lambda			0.014	*

N=75,006 person years

*** p<.001 **p<.01 *p<.05 +p<.01

Note: These models control for selection and include state fixed

Table 3: Unmet Need by Parental Nativity/Citizenship

		Receipt	Allotment
1998			
	Never Naturalized	.117	.032
	Naturalized Post-reform	.054	.020
	Naturalized Pre-reform	.070	.021
	Native	.058	.014
2001			
	Never Naturalized	.081	-.006
	Naturalized Post-reform	.076	.005
	Naturalized Pre-reform	-.022	.014
	Native	.007	.003

Table 4: Models of Food Insecurity 1998 and 2001

	Model 1	Model 2	Model 3
Intercept	-0.108	-0.391	-0.224
Pre-reform Characteristics			
Food Sufficiency (1994)	0.870 ***	0.871 ***	0.836 ***
Income to Poverty Ratio (1994)	-0.072 ***	-0.070 ***	-0.076 ***
Single Parent (1994)	0.324 **	0.317 **	0.270 **
Post-reform Characteristics			
Income to Poverty Ratio	-0.148 ***	-0.093 ***	-0.162 ***
Number Persons in HH	-0.113 *	-0.115 *	-0.093 *
Number Children in HH	0.199 ***	0.202 ***	0.159 **
Single Parent	0.538 ***	0.373 *	0.356 *
Mexican	0.271	0.198	0.225
Other Hispanic	0.061	0.053	0.071
Black	0.372 *	0.232	0.251
Asian	0.194	0.141	0.232
Other	-0.437	-0.498	-0.557 +
Less than HS	0.461 **	0.347 *	0.273
Parental Nativity/Citizenship			
Never Naturalized	0.631 +	0.586 +	0.401
Naturalized Post-reform	0.243	0.339	0.238
Naturalized Pre-reform	0.032	0.000	-0.047
Year=2001	-0.322 ***	-0.190 **	-0.120 *
Year=2001 x Parental Nativity/Citizenship			
Never Naturalized	-0.710 +	-0.737 +	-0.637
Naturalized Post-reform	-0.345	-0.581 *	-0.553 +
Naturalized Pre-reform	-0.147	-0.020	-0.030
Unmet Need: Food Stamps		3.084 *	3.082 *
Unmet Need: Allotment			4.526 ***
R-squared	0.193	0.194	0.204

Source: SPD (N=15,767 person-years) *** p<.001 **p<.01 *p<.05 +p<.01

Note: All models include state fixed effects

Table 5: Predicted Levels of Food Insecurity 1998 and 2001 by Parental Nativity/Citizenship

	Predicted Food Insecurity			Difference from U.S. Born		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
1998						
Never Naturalized	1.25	1.01	.70	.63	.59	.40
Naturalized Post-reform	.86	.76	.53	.24	.34	.24
Naturalized Pre-reform	.65	.42	.25	.03	.00	-.05
Native	.62	.42	.30	.00	.00	.00
2001						
Never Naturalized	.22	.08	-.06	-.08	-.15	-.24
Naturalized Post-reform	.20	-.01	-.14	-.10	-.24	-.32
Naturalized Pre-reform	.18	.21	.10	-.12	-.02	-.08
Native	.30	.23	.18	.00	.00	.00
Difference 2001-1998						
Never Naturalized	-1.03	-.93	-.76			
Naturalized Post-reform	-.67	-.77	-.67			
Naturalized Pre-reform	-.47	-.21	-.15			
Native	-.32	-.19	-.12			

Note: Predicted values are based on models in Table 4

Appendix A: Sample Retention by Year and Parental Citizenship

	1994	1998	2001
Numbers of Cases			
All Children Age 0-15 in 1993	12,593	8,994	5,632
Native	10,849	7,696	4,841
Naturalized Pre-Reform	707	550	358
Never Naturalized	1,037	748	433
Attrition Rate (compared with 1994)			
All Children Age 0-15 in 1993		28.6	55.3
Native		29.1	55.4
Naturalized Pre-Reform		22.2	49.4
Never Naturalized		27.9	58.2
Attrition Rate, Excluding Children who Age Out			
All Children Age 0-15 in 1993		28.6	44.3
Native		29.1	44.5
Naturalized Pre-Reform		22.2	38.3
Never Naturalized		27.9	46.3

Appendix B: Logistic Regression Model of Sample Retention

Intecept	5.650	*
Age	-0.353	*
Number of Persons in HH	-0.213	*
Number of persons under 18 in HH	0.264	*
Average age of parents	0.014	*
Single Parent HH	-0.120	
Extended Family HH	-0.208	
Mexican	-0.019	
Other Hispanic	-0.103	+
Black	0.090	
Asian	0.141	
Other	0.626	
Less than High School	-0.164	
High School	-0.172	
Some College	-0.095	
Ratio income to poverty level	-0.036	
Proportion noncitizens in HH	-0.236	
Child of citizen as of 1992	0.162	
Child of non-citizen	0.161	
Food Insecurity	0.119	
Food Stamp Recipient	-0.126	
Year 2000	-2.011	*

p values * .05 + .1

Appendix C: Sample Means by Parental Citizenship Status

	Native	Naturalized Pre-Reform	Naturalized Post-Reform	Never Naturalized
Dependent Variables				
Food Stamp Receipt	0.139	0.114	0.269	0.359
Food Stamp Allotment	0.097	0.081	0.196	0.245
Food Insecurity	0.121	0.126	0.216	0.296
Demographic Characteristics				
Child Age	10.33	10.52	10.88	10.57
Number of Persons in HH	4.465	4.862	4.913	5.389
Number of persons under 18 in HH	2.366	2.553	2.561	2.907
Average age of parents	38.52	40.28	40.10	39.41
Single Parent HH	0.225	0.152	0.157	0.184
Extended Family HH	0.229	0.260	0.295	0.349
Proportion of NonCitizens in HH	0.002	0.108	0.311	0.617
Race and Ethnicity				
NH White	0.770	0.391	0.218	0.106
Mexican	0.033	0.290	0.409	0.569
Other Hispanic	0.032	0.096	0.160	0.199
Black	0.147	0.036	0.042	0.053
Asian	0.008	0.181	0.168	0.072
Other	0.010	0.005	0.003	0.000
Parental Education and Income				
Less than High School	0.179	0.317	0.484	0.713
High School	0.192	0.223	0.118	0.065
Some College	0.232	0.093	0.157	0.109
College Graduate	0.398	0.367	0.241	0.113
Ratio income to poverty level	3.040	3.144	2.285	1.596
State Characteristics				
Food Stamp State Benefit Level	70.38	73.14	72.17	72.86
Unemployment Rate	5.071	5.586	5.731	6.181
Presence of State Food Program	0.285	0.424	0.512	0.623
Number of Person Years	49,835	3,420	2,794	1,908