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WELFARE REFORM, LABOR SUPPLY, AND HEALTH INSURANCE IN THE IMMIGRANT POPULATION

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Abstract

Although the 1996 welfare reform legislation limited the eligibility of immigrant households to receive assistance, many states chose to protect their immigrant populations by offering state-funded aid to these groups. I exploit these changes in eligibility rules to examine the link between the welfare cutbacks and health insurance coverage in the immigrant population. The data reveal that the cutbacks in the Medicaid program did not reduce health insurance coverage rates among targeted immigrants. The immigrants responded by increasing their labor supply, thereby raising the probability of being covered by employer-sponsored health insurance.

Welfare Reform, Labor Supply, and Health Insurance in the Immigrant Population

George J. Borjas*

I. Introduction

The number of immigrants entering the United States grew rapidly in recent decades. During the 1950s, only 250,000 legal immigrants entered the country annually. By the 1990s, nearly 1 million persons entered the country legally each year and another 300,000 entered—and stayed in—the country illegally.[1] An increasing number of the new immigrants fall in the lower range of the skill and income distributions. In 1960, the typical immigrant earned 4 percent more than the average native worker. By 1998, the typical immigrant earned 23 percent less (Borjas, 1999, p. 21).

The trends in the size and skill composition of the immigrant population sparked a contentious debate over the economic and demographic impact of immigration.[2] For instance, there has been a great deal of concern over the possibility that immigrants do not "pay their way" in the welfare state (Smith and Edmonston, 1998, Chapters 6 and 7). And, in fact, the evidence suggests that immigrant households are now much more likely to receive public assistance than in the past.[3]

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[1] U.S. Immigration and Naturalization Service, 2000, pp. 18, 271.

[2] The voluminous literature on the economic impacts of immigration is surveyed in Borjas (1994), LaLonde and Topel (1996), and Friedberg and Hunt (1995).

[3] Blau (1984) and Borjas and Hilton (1996) examine the trends and determinants of immigrant welfare use.

Concurrent with the resurgence of large-scale immigration, there has been an increase in the number of persons who lack health insurance coverage.[4] Recent research suggests there may be an important link between these two trends. Despite the relatively high participation rate of immigrants in the Medicaid program, Camarota and Edwards (2000) report that immigrants are also disproportionately more likely to be in the population of uninsured persons: although persons in immigrant households make up only 13 percent of the population, they make up 26 percent of the uninsured. Camarota and Edwards conclude that "immigrants who arrived between 1994 and 1998 accounted for 59 percent of the growth in the size of the uninsured population" during that period (p. 5).

The 1994-1998 period coincided with the enactment of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA). The 1996 welfare reform legislation specified a new set of rules for determining the eligibility of foreign-born persons to receive practically all types of federal aid. In rough terms, PRWORA denies most means-tested assistance to non-citizens who arrived after the legislation was signed in 1996, and limited the eligibility of many non-citizens already living in the United States. The available evidence indicates that the rate of welfare participation in immigrant households declined sharply—relative to the decline in native households—in the aftermath of PRWORA (Borjas, 2001, Fix and Passel, 1999).

This paper uses data drawn from the 1995-2001 Current Population Surveys to examine the impact of PRWORA on health insurance coverage among immigrants. Because PRWORA reduced immigrant participation in welfare programs (including Medicaid), it seems reasonable to suspect that the welfare cutbacks should have increased the size of the foreign-born uninsured

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[4] See Fronstin (1998) and Lewis, Ellwood, and Czajka (1998).

population. Remarkably, this expected increase did *not* occur. In fact, the fraction of immigrants who were not covered by health insurance remained roughly stable (or fell) during the period.

The immigrant provisions in PRWORA could potentially affect only a subset of the immigrant population, depending on the immigrant's state of residence, on the type of visa used to enter the United States, and on the immigrant's naturalization status. This variation in eligibility rules can be exploited to examine how immigrants responded to the cutbacks in public assistance. It turns out that the immigrants most adversely affected by PRWORA significantly increased their labor supply, thereby raising the probability that they were covered by employer-sponsored health insurance. In fact, the evidence indicates that the increase in the number of immigrants covered by employer-sponsored health insurance was large enough to completely offset the impact of the Medicaid cutbacks. The study, therefore, provides evidence of a strong crowdout effect of publicly provided health insurance among immigrants.[5]

It is important to note, however, that my results differ in an important way from the evidence typically reported in the crowdout literature. The welfare reform legislation affected immigrant participation in a vast array of public assistance programs, not just Medicaid. For example, PRWORA also restricted immigrant receipt of cash benefits and food stamps. The crowdout effects documented in this paper, therefore, measure the *total* immigrant response to a generalized cutback in public assistance, rather than the immigrant response to eligibility changes in the Medicaid program.

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[5] Cutler and Gruber (1996) present the first empirical evidence of how publicly provided health insurance can crowd out private insurance. Although some studies in the subsequent literature confirm the Cutler-Gruber findings, there is also a lot of dissenting evidence. Currie (2000), Rask and Rask (2000), and Shore-Sheppard (1999) document large crowdout effects, while Blumberg et al (2000), Dubay and Kenney (1997), Ham and Shore-Sheppard (2001), and Yazici and Kaestner (1998) find much smaller effects. It is worth noting that the existing evidence is drawn entirely from the behavioral response to *expansions* in the Medicaid program. Gruber (in press) surveys the literature.

II. Welfare Reform and Health Insurance: Aggregate Trends

The welfare reform legislation enacted in 1996 made fundamental changes in the federal system of public assistance. The overriding objective of the legislation was to move welfare recipients into work. In addition to granting state governments a great deal of authority to set their own eligibility rules and benefit levels, the legislation mandates that most welfare recipients go to work after two years and imposes a five-year lifetime limit for receiving assistance. In addition to these universal changes in coverage and eligibility, PRWORA includes a number of provisions that specifically limit the extent to which immigrant households can receive public assistance. As signed by President Clinton, PRWORA contained three key provisions applying to legal immigrants who did not enter the country as refugees:

1. Most non-citizens who arrived in the country *before* August 22, 1996, the "pre-enactment" immigrants, were to be kicked off from the SSI, food stamp, and Medicaid rolls within a year. This provision of the legislation, however, was never fully enforced.
2. Non-citizens who entered the United States *after* August 22, 1996, the "post-enactment" immigrants, are prohibited from receiving most types of public assistance, including Medicaid, during the first five years after arrival.
3. Post-enactment immigrants are subject to stricter "deeming" regulations: The income and assets of the immigrant's sponsor will be deemed to be part of the immigrant's application for most types of public assistance for up to ten years.[6]

In contrast to these restrictions on the (legal) non-refugee, non-citizen population, the legislation did not restrict refugee participation in the various public assistance programs. In addition, the legislation continued to prohibit illegal immigrants from receiving most types of aid.

As noted above, the restrictions on welfare use by pre-enactment immigrants were never fully enforced. In particular, the balanced budget agreement reached in 1997 between President Clinton and the Republican-controlled Congress (combined with state actions discussed below) effectively repealed some of the most draconian aspects of the legislation.[7] As a result, few of the pre-enactment immigrants were actually kicked off the welfare rolls. Moreover, only a relatively small fraction of the immigrant population in the United States arrived after 1996, so that few immigrants are actually barred from receiving assistance. It would seem, therefore, that PRWORA could *not* have had a large impact on welfare participation rates in the immigrant population—after all, relatively few immigrants could have been directly affected by the legislation.

A number of studies, however, report that the welfare reform legislation seems to have had an important influence on immigrant participation in welfare programs (Fix and Passel, 1999; Borjas, 2001). In particular, welfare participation rates declined after 1996 for both immigrant and native households, but the decline was much steeper among immigrants. This finding led an Urban Institute study to conclude that "because comparatively few legal immigrants were ineligible for public benefits as of December 1997, it appears that the steeper declines in non-citizens' than citizens' use of welfare…owe more to the '*chilling effect*' of welfare reform and other policy changes than they do to actual eligibility changes" (Fix and Passel, 1999, p. 8; emphasis added).

It is instructive to illustrate the nature of these trends. The Annual Demographic Files of the Current Population Surveys (CPS) provide detailed information on participation in various

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[6] Primus (1996) presents a more detailed discussion of the immigrant provisions in PROWRA.

[7] See U.S. General Accounting Office (1998) for a discussion of the various policy changes that occurred after the enactment of PRWORA at both the federal and state levels.

social assistance programs and on health insurance coverage during the calendar year prior to the survey. I use the 1995-2001 March Supplements, which provide program participation data for the 1994-2000 calendar years, in the empirical analysis reported below.[8] Throughout the paper, the person is the unit of analysis. I restrict the study to persons who do not reside in group quarters and who are under 65 years of age.

The first step in the analysis is to define the sample of foreign-born persons. A simple (though obviously incorrect) solution in the current context would be to classify the person based solely on his or her birthplace. This approach has the serious problem that children born in the United States to foreign-born parents would be classified as native-born, even though their immigrant parents are making the employment and welfare participation decisions that inevitably determine their health insurance coverage. To simplify the presentation of the evidence, I classify *all* persons in the household as foreign-born or native-born based solely on the birthplace of the household head. Similarly, all foreign-born persons in the household will be classified as citizen or non-citizen based on the naturalization status of the household head.[9] Throughout the paper, I will use this algorithm to assign all persons into one of three mutually exclusive groups: native-born, naturalized citizen, and non-citizen.

Table 1 summarizes some of the key trends in health insurance coverage for the 1994-2000 period. As shown in earlier research, the decline in welfare use during this period was steeper among immigrants. For example, the fraction of natives enrolled in the Medicaid program fell from 11.8 to 9.9 percent between 1994 and 2000. In contrast, the fraction of

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[8] There seem to be some data problems with the foreign-born sample in the 1995 survey. In particular, the "official" person weights provided in this survey do not yield an accurate enumeration of the immigrant population in the United States. Passel (1996) gives a detailed discussion of this problem, and uses a complex algorithm to calculate revised weights for each person in the survey. I use the "Passel weights" in all calculations that involve the 1995 survey.

immigrants enrolled in Medicaid declined by 3.6 percentage points over the same period (from 17.0 to 13.4 percent). Moreover, the decline was limited to non-citizens—precisely the group of foreign-born persons targeted by welfare reform. Their participation rate fell by 5.5 percentage points (from 21.3 to 15.8 percent). The evidence, therefore, suggests that welfare reform—at least at the national level—may have had a sizable chilling effect on immigrant participation in the Medicaid program.[10]

Remarkably, this relative decline in Medicaid use in the immigrant population was *not* accompanied by a concurrent decline in the fraction of immigrants who have some type of health insurance coverage. In fact, the proportion of immigrants who have some type of coverage *rose* slightly over the period, from 67.0 percent in 1994 to 68.8 percent in 2000. This trend is almost identical to the 1.9 percentage point increase in the health insurance coverage rate of natives, where the coverage rate rose from 85.1 to 87.0 percent. Finally, although the trends are noisier, the coverage rate was essentially stable for naturalized citizens, and rose slightly for non-citizens.

The concurrent decline in Medicaid coverage and the relative stability of health insurance coverage in the immigrant population suggests that immigrants must have switched to other sources of coverage. The bottom panel of Table 1 reveals the source of the alternative coverage: employer-sponsored insurance (ESI). The fraction of natives with ESI rose by 4.3 percentage points, from 66.9 to 71.2 percent over the period. In contrast, the fraction of immigrants with ESI

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[9] The results of the study would be very similar if the definition of immigration status used information on the birthplace and citizenship of both the household head and his or her spouse.

[10] It is worth noting that some of the decline occurred prior to the enactment of the welfare reform legislation. In particular, there was a substantial drop in Medicaid coverage among immigrants between 1995 and 1996. Because the welfare reform provisions regarding immigrants went into effect on August 22, 1996, the change between the 1995 and 1996 calendar years confounds both the impact of welfare reform and the impact of improving economic conditions. The regression analysis presented in the next section controls for these cyclical effects.

rose by 5.8 percentage points, from 45.8 to 51.6 percent. Finally, the fraction of non-citizens with ESI rose by 6.3 percentage points, from 37.3 to 43.6 percent. In short, the aggregate time series suggests that immigrant displacement from the Medicaid rolls seems to have been completely offset by a corresponding increase in the number of immigrants who received health insurance coverage through their employer.

These aggregate trends, though suggestive, do not conclusively prove that Medicaid crowds out privately provided health insurance coverage in the immigrant population. After all, the economy was booming between 1994 and 2000, and the health insurance coverage trends may be capturing this macroeconomic effect rather than any behavioral response on the part of immigrants. I will show below, however, that these nationwide trends confound systematic differences within the immigrant population, mainly because they ignore the fact that different states responded differently to the federal restrictions on immigrant welfare use. The various state responses help to identify the extent to which Medicaid crowds out employer-sponsored insurance.

III. State Responses to Welfare Reform

A key provision of PRWORA allows states to enact state-funded assistance programs specifically targeted to their immigrant populations if they wished to attenuate the presumed adverse impact of welfare reform on the foreign-born. Zimmermann and Tumlin (1999) and Tumlin, Zimmermann and Ost (1999) summarize the various programs that states extended to immigrants in the wake of welfare reform. Although there are many ways of describing the states' choices, one simple approach indicates if the states offered TANF, Medicaid, food assistance, and SSI to pre-enactment and post-enactment immigrants during the initial five-year bar. It turns out that almost every jurisdiction (50 out of 51) offered TANF and Medicaid to pre-

enactment immigrants. A few states went beyond this "minimal" level of generosity and offered other programs to their pre-enactment immigrant populations and to post-enactment immigrants during the five-year bar. The first two columns of Table 2 summarize these "beyond-the-minimum" state actions. It is worth noting that many of the states with large concentrations of immigrants exceeded the minimal level of generosity.

To show how the "chilling effect" of welfare reform on Medicaid participation and health insurance coverage depended on the decisions made by individual states, I pool the 1994-95 calendar years of the March CPS to provide a snapshot of the immigrant and native population prior to welfare reform, and the 1998-2000 calendar years to provide the respective snapshot after welfare reform.[11] To easily summarize the evidence, I group states into two categories that signal their degree of generosity towards immigrants. I initially use a definition of the state's generosity based on the data summarized in the first two columns of Table 2. A state is classified as "more generous" if it offered at least one of the programs listed in these two columns; otherwise, the state is classified as "less generous". By this definition, 29 states are classified as more generous. Finally, I calculate health insurance coverage rates in three mutually exclusive groups: natives, citizens, and non-citizens.[12]

The first four columns of Table 3 summarize the evidence. The table clearly shows that the decisions made by some states to offer a state-funded safety net to their immigrant populations did not greatly alter the trend of Medicaid participation for native households. For example, the probability that natives are enrolled in Medicaid declined by about 2 to 3

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[11] Note that I do not use data from the 1996 and 1997 calendar years in the calculations. This helps to isolate the break in the time series that can presumably be attributed to PRWORA.

[12] The sample sizes for the four groups are as follows. In the 1994-1995 pooled sample, there are 210,994 natives, 11,088 citizens, and 24,107 non-citizens. In the 1998-2000 pooled sample, there are 290,579 natives, 21,411 citizens, and 35,599 non-citizens.

percentage points during the period, regardless of whether the state was generous to its immigrant population. In contrast, the state decisions had a greater impact on Medicaid enrollment rates among immigrants, both for naturalized citizens and non-citizens. For example, the fraction of citizens enrolled in Medicaid declined by 1.5 percentage points in the less-generous states, but rose in the more generous states. Similarly, the fraction of non-citizens enrolled in Medicaid declined by 7.0 percentage points (from 18.1 to 11.1 percent) in the less generous states, but by 4.9 percentage points in the more generous states (from 21.0 to 16.1 percent). It is clear that non-citizen households in the less generous states experienced a much larger relative decline in Medicaid participation than native households.

The differential trends for non-citizen households between the less generous and more generous states are even sharper when the sample is restricted to the non-refugee population. Although the CPS data do not report the type of visa used by a particular immigrant to enter the country, one can approximate the refugee sample by using information on the national origin of the foreign-born households. In particular, most refugees tend to originate in a small set of countries.[13] I classified all persons residing in households where the household head originated in the main refugee-sending countries as refugees, while all other persons were classified as non-refugees. The non-citizen, non-refugees residing in the less generous states experienced a 7.0 percentage point decline in their Medicaid participation rate, as compared to the 3.1 percentage point decline for the non-citizen, non-refugees residing in the more generous states.

The second panel of Table 3 replicates the analysis for health insurance coverage. The probability that natives are covered by health insurance rose slightly in both the more and less generous states. Moreover, the probability that immigrants are covered by health insurance is

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[13] The main refugee-sending countries over the 1970-95 period were: Afghanistan, Bulgaria, Cambodia, Cuba, Czechoslovakia, Ethiopia, Hungary, Laos, Poland, Romania, Thailand, the former U.S.S.R., and Vietnam.

also relatively stable over time: the probability fell by 0.3 percentage points in the more generous states and by 1.1 percentage points in the less generous states. Most strikingly, the health insurance coverage rate for non-citizens dropped by 1.7 percentage points in the more generous states, but *rose* by 2.1 percentage points in the less generous states. In short, the descriptive data reported in Table 3 do not reveal that the Medicaid cutbacks experienced by non-citizens in the less generous states adversely affected their overall rate of health insurance coverage.

The differential trends in non-citizen Medicaid participation and health insurance coverage can be explained by a substantial increase in the probability that these immigrants were covered by ESI. The bottom panel of Table 3 reports the trends in the rate of employer-provided insurance for the various groups. The generosity of the state's welfare program towards immigrants does not affect the likelihood that natives are covered by ESI. The rate of employer-sponsored insurance among natives rose by 2.6 percentage points in the more generous states, and by 3.0 percentage points in the less generous states. In contrast, the rate of ESI coverage for non-citizens rose by 2.7 percentage points in the more generous states, and by an astounding 11.4 percentage points in the less generous states. The descriptive evidence reported in Table 3, therefore, suggests a causal relationship between the Medicaid cutbacks and the use of ESI coverage in the targeted population.

The last four columns of the table report the trends in health insurance coverage in a population that is of particular concern in the current context, namely children under the age of 15.[14] The differences in the trends among the various types of health insurance coverage tend to be much sharper among children than in the general population. For example, the fraction of non-citizen children covered by Medicaid fell by 4.5 percentage points in the more generous

[14] The children sample also includes persons aged 15-17 who reside with their parents.

states (from 35.4 to 30.9 percent), but it dropped by almost 9 percentage points in the less generous states (from 31.1 to 22.2 percent).

Interestingly, the substantial decline in government-sponsored health insurance among non-citizen children living in the less generous states did not materially affect the fraction of those children who had some type of health insurance coverage. In particular, the rate of health insurance coverage for non-citizen children in the more generous states fell by 1.3 percentage points (from 70.1 to 68.8 percent), but rose by 2.4 percentage points (from 63.3 to 65.7 percent) in the less generous states. The underlying reason for this differential trend was again a sizable increase in the number of non-citizen children covered by employer-sponsored insurance. The rate of ESI coverage for non-citizen children living in the more generous states rose from 35.5 to 37.1 percent during the period, as contrasted with a rise from 32.6 percent to 44.9 percent for the children living in the less generous states. In short, the labor supply responses by the parents of non-citizen children helped to completely offset the impact of the government cutbacks in Medicaid assistance.

It is instructive to use a simple regression model to formalize and extend these descriptive results. By controlling for various socioeconomic characteristics, the regression approach helps us determine if the differential trends in health insurance coverage observed between the more and less generous states arise because different types of immigrants tend to live in different states, or if the variation can be attributed to state-specific trends in economic activity or social conditions. To illustrate the basic methodology, pool the CPS data available for the calendar years 1994, 1995, 1998, 1999, and 2000 and consider the triple-difference linear probability specification:

(1) $$y_{ij} = X_{ij}\,\beta + \alpha_0\, t_{ij} + \alpha_1\, I_{ij} + \alpha_2\, G_j$$

$$+ \gamma_0 (I_{ij} \times t_{ij}) + \gamma_1 (I_{ij} \times G_j) + \gamma_2 (G_j \times t_{ij}) + \theta (I_{ij} \times G_j \times t_{ij}) + \varepsilon_{ij} ,$$

where y_{ij} is a dummy variable indicating a particular type of health insurance outcome for person i in state j (such as enrollment in Medicaid); X_{ij} is a vector of socioeconomic characteristics defined below; t_{ij} is a dummy variable set to unity if the observation refers to the post-PRWORA period (i.e., calendar years 1998 through 2000); I_{ij} is a vector of two dummy variables indicating if the person is a naturalized citizen or a non-citizen (the left-out variable indicates if the person is native-born); and G_j is the dummy variable indicating the state's generosity towards immigrants, set to unity if the state did *not* go beyond the minimum level of assistance offered to pre-enactment or post-enactment immigrants during the five-year bar. Specifically, G_j is set to unity if the state did not offer any of the programs listed in the first two columns of Table 2. Finally, the standard errors are clustered by state-immigration cells to adjust for possible serial correlation in insurance outcomes at the state level for each of the three immigration status groups.

For simplicity, the regression specification in (1) uses a three-way classification of the immigration status of the population (i.e., natives, naturalized citizens, and non-citizens). I account for the immigrant's refugee status as well as year of entry into the United States by including these characteristics as regressors in the vector X. The other socioeconomic characteristics in this vector include: the person's age, gender, race, and educational attainment, the number of persons in the household, and the number of children, elderly persons, and disabled persons in the household.[15] The regression also includes the state's unemployment rate

[15] Throughout the analysis, the variable indicating the person's age is defined as a vector of dummy variables indicating if the person is 0-14, 15-24, 25-34, 35-44, 45-54, or 55-64 years old. Similarly, the variable measuring educational attainment is a vector of dummy variables indicating if the person is a high school dropout (less than 12 years), a high school graduate (12 years), has some college (13-15 years), or is a college graduate (at least 16 years). The educational attainment variable takes on the value of the education of the head of the household

at time t, as well as the unemployment rate interacted with the dummy variables in the immigration vector I. These interactions control for the possibility that immigrant outcomes are more sensitive to the business cycle than those of natives (as well as net out any potential correlation between the generosity variable, G, and the state unemployment rate).[16] Because the generosity dummy variable is set to one for states that *did not* replace the lost federal benefits, the coefficient vector θ in equation (1) measures the impact of the federal cutbacks on the *relative* trend in immigrant health coverage. In particular, it measures the extent to which the pre- and post-PRWORA change in coverage differs between states that were less generous and states that were more generous.

Table 4 reports the triple-difference coefficient vector θ estimated from a number of alternative specifications of the model. The specification reported in the first column of the table includes only the variables in the vector X, while the specification reported in the second column adds a vector of state fixed effects, and these fixed effects are interacted with both the time dummy variable (t_i), as well as with the immigrant status vector (I). The state-time interactions capture not only state-specific differences in the level of health insurance, but also state-specific changes in health insurance coverage rates (induced perhaps by varying economic and political conditions). Similarly, the state-immigration status interactions net out the possibility that there may be state differences in health insurance coverage (and in the trends) across the various immigration status groups. Finally, the last two columns of Table 4 replicate the regression analysis in the sample of children.

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for all persons who are less than 15 years old. The year of arrival dummy variables indicate if the household arrived after 1995, 1990-94, 1985-89, 1980-84, 1975-79, 1970-74, 1965-69, 1960-64, 1950-59, or before 1950.

[16] I also include all the possible interactions between the state's unemployment rate, the period fixed effect, and the variables in the immigration vector I. These interactions allow for the impact of aggregate economic during the economic boom of the late 1990s to differ over time and across the various immigrant groups.

The top panel of the table estimates the impact of the state policies on the relative change in Medicaid enrollment. In the full-interaction specification, the triple-difference coefficient for non-citizens is -.049 (with a standard error of .025) in the sample of all persons, and -.105 (.048) in the children's sample. The state policies, therefore, had a significant impact on Medicaid participation in the non-citizen population. In other words, non-citizens residing in states that did not offer state-funded assistance programs to their immigrant populations experienced a significant decline in their Medicaid participation rates, and the decline was particularly steep for non-citizen children. In contrast, these programs did not affect the relative Medicaid participation rate of citizens or of the children of citizens.

The middle panel of the table estimates the regression using a different dependent variable, namely an indicator of whether the person has any type of health insurance coverage. To the extent that the Medicaid cutbacks generate a larger pool of uninsured non-citizens, one would expect the relevant coefficient in the vector θ to be negative and significant. However, this coefficient is positive. In particular, it takes on a value of .024 (.021) in the sample of all persons, and .022 (.031) in the sample of children. In other words, there is no evidence that the welfare cutbacks significantly reduced the aggregate health insurance coverage rate in the targeted group of non-citizens. In contrast, the health insurance coverage rate actually *increased* in the states that were the least generous and did not attempt to attenuate the presumed adverse impacts of PRWORA.

Finally, the bottom panel helps to resolve the puzzle of declining Medicaid participation and stable (or increasing) health insurance coverage by showing how the state-funded assistance programs influenced the probability that immigrants were covered by employer-sponsored insurance. The coefficient for non-citizens in this regression is .101 (.026) in the sample of all

persons, and .147 (.049) in the sample of children.[17] In other words, immigrants who lived in states that did not provide generous assistance programs to their immigrant populations after 1996 became substantially more likely to be covered by employer-sponsored insurance. This increase in ESI helped to greatly attenuate the potential adverse impact of the welfare cutbacks on the number of non-citizens who lack health insurance. In contrast, the probability that citizens are covered by ESI does not strongly depend on the provision of state-funded assistance (the coefficient is negative, but insignificant).[18]

Sensitivity Tests

An important step in the construction of the empirical framework is the classification of a state into the "more" and "less" generous categories. As noted above, states made many different decisions regarding their offers of state-funded assistance to immigrants in the post-welfare reform period. I have chosen a very simple classification to summarize all of these activities: did the state provide any "beyond-the-minimum" state-funded assistance to either its pre-enrollment or the post-enrollment immigrants during the five-year bar?

It is important to examine if the results are sensitive to the definition of the variable describing the state's generosity. Zimmermann and Tumlin (1999) construct an index of generosity for each state that uses much of the available information on the various state

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[17] For simplicity, I use the linear probability model to estimate equation (1). A probit specification yields similar results. For example, the marginal impact (at the mean) implied by the probit triple-difference coefficient for non-citizens is -.024 (.010) in the Medicaid regression; .016 (.013) in the health insurance coverage regression; and .099 (.022) in the ESI regression. The respective coefficients in the children's sample are -.079 (.027), .012 (.018), and .150 (.042).

[18] More detailed estimates of the regression model (not shown) suggest that the various impacts of welfare reform (and state actions) capture a chilling effect rather than programmatic changes. In particular, I estimated the full-interaction regression model on the pooled sample of natives and immigrants who arrived before 1996. Since relatively few pre-enactment immigrants were affected by the cutbacks, any resulting effects are likely due to chilling effects. The coefficient is -.049 (.032) in the Medicaid regression; .030 (.018) in the health insurance

programs, including restrictions for various types of immigrants, immigrant eligibility for General Assistance programs, and the extent of deeming requirements. They classified states into four categories, ranking state-funded assistance from "most available" to "least available". The third column of Table 2 reports the Zimmermann-Tumlin ranking. I construct an alternative dummy variable indicating the state's generosity by setting the variable G_j to unity if the state was not generous in the Zimmermann-Tumlin sense; specifically, the state's assistance was either "less available" or "least available." By this definition, 32 states are classified as less generous.[19]

The first two columns of Table 5 report the triple-difference coefficients from this specification of the model. As before, the evidence clearly indicates that non-citizens living in states that were not generous experienced a significant decline in Medicaid participation rates (the coefficient in the full-interaction model is -.043, with a standard error of .013), with the decline being particularly steep for children in non-citizen households. At the same time, neither the immigrants nor the children living in the less generous states experienced much of a drop in their health insurance coverage rate. The conflict between these two facts is resolved by the fact that non-citizens living in the less generous states experienced a substantial rise in the rate of ESI coverage.

To further assess the sensitivity of the results to definitions of the state's generosity, I also constructed an index based solely on the state's provision of health insurance to immigrants, since this type of public assistance should presumably have the most direct impact on aggregate health insurance coverage rates. As noted earlier, practically all states (50 out of 51) extended

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coverage regression; and .113 (.034) in the ESI regression. These coefficients are almost identical to those reported in Table 4.

Medicaid coverage to pre-enactment immigrants. Tumlin, Zimmermann and Ost (1999) report two particular types of programs that only some states made available to their immigrant populations. In particular, some states offered state-funded Medicaid to post-enactment immigrants during the five-year bar or to other "unqualified" immigrants.[20] The last column of Table 2 reports whether the state provided either of these programs. I define a new generosity index by creating a dummy variable set to unity if the state did not offer Medicaid either to its post-enactment immigrants during the five-year bar or to other unqualified immigrants. By this definition, 13 states are classified as less generous.[21]

The right panel of Table 5 summarizes the evidence. As before, non-citizens who live in the less generous states experienced a decline in Medicaid participation, with the decline being particularly steep for children. Despite the decline in Medicaid coverage, however, the non-citizens most affected by these cutbacks did not experience a sizable drop in health insurance coverage, partly because of an increase in their rate of ESI coverage. The thrust of the evidence on health insurance coverage rates, therefore, is not sensitive to the definition of the generosity index. As a result, the remainder of the analysis will use my initial definition of the generosity index, which is based on the programmatic information summarized in the first two columns of Table 2.

Regardless of the definition of the state's generosity index, any comparison between naturalized citizens and non-citizens may be contaminated by the potential endogeneity of the naturalization decision. After all, the non-citizens most affected by welfare reform could

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[19] The weighted correlation coefficient between the generosity index derived from the Zimmermann-Tumlin classification and the generosity index used in Table 4 is .67, where the weights are the number of observations in the state.

[20] "Unqualified immigrants" include illegal immigrants, asylum applicants, and temporary immigrants.

neutralize many of the restrictions in the legislation by becoming naturalized.[22] In fact, there was a rapid rise in the number of naturalization applications during the period (Wasem, 1998). This increase in the number of naturalization applications generated a huge backlog at the INS, further delaying the time it takes to become a naturalized citizen.

One solution to the endogeneity problem would be to compare persons who differ in terms of how long they have resided in the United States, rather than in terms of their citizenship status. Immigrants have to live in the United States for five years before they can apply for naturalization, but the lags in the application process imply that it may take 8 years or more before an immigrant can become a naturalized citizen. I estimated the triple-difference regression model using an immigrant vector defined in terms of whether the person was native-born, was an immigrant who had been in the United States for fewer than 10 years, or was an immigrant who had been in the United States for more than 10 years. These regressions (not shown) indicated that although the most recent immigrants suffered the greatest declines in Medicaid participation rates, their health insurance coverage rates remained relatively constant because of a concurrent increase in the rate of ESI coverage. Alternatively, the endogeneity of the naturalization decision can be avoided by simply comparing the immigrant and native populations, so that the vector *I* in equation (1) would contain a single variable indicating if the household is headed by a foreign-born person. The evidence (not shown) suggested that Medicaid participation fell for immigrants, while health insurance coverage rates remained constant because of a corresponding increase in the probability of being covered by employer-sponsored insurance.

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[21] The weighted correlation coefficient between this generosity index and the index used in Table 4 is .33, where the weights are the number of observations in the state.

[22] If the non-citizens most likely to be adversely affected by the Medicaid cutbacks choose to naturalize, the non-citizen coefficients reported in Tables 4 and 5 would tend to understate the impact of the federal welfare cutbacks on Medicaid coverage rates.

In sum, the results presented in this section strongly suggest that the state-funded assistance programs helped to attenuate the decline in Medicaid participation in the immigrant population. At the same time, however, these state-funded programs (or their absence) had important "unintended" consequences. Non-citizens who did not have access to the state-funded programs found ways of replacing the cutbacks in publicly provided health insurance by increasing their probability of coverage with employer-sponsored insurance. In the end, the state-funded programs did not seem to substantially alter the probability that the immigrants had some type of health insurance coverage.

The evidence, therefore, implies the existence of a strong crowdout effect of publicly provided health insurance. The results effectively offer a "mirror-image" perspective to the crowdout findings first reported in Cutler and Gruber's (1996) influential study. Cutler and Gruber document that an expansion of Medicaid eligibility substantially reduced the number of persons covered by private health insurance. My study reveals that a cutback in public assistance induces many immigrants to replace the lost benefits with employer-sponsored insurance.

As noted earlier, however, the evidence presented in this paper differs in an important way from the results in the crowdout literature. The welfare reform legislation affected immigrant eligibility and participation in *all* public assistance programs. As a result, the crowdout effects estimated in this section capture the behavioral response to the changing value of the entire package of public benefits, rather than the behavioral response to a shift in the parameters of the Medicaid program.

IV. Welfare Reform and Labor Supply

One key implication of the findings reported in the previous section is that the welfare reform legislation must have influenced the labor supply decisions of the targeted immigrants. I

now examine if such a labor supply effect can indeed be documented in the immigrant population.

I restrict my study of the labor supply decision to the sample of persons aged 18-64. I focus on three alternative measures of labor supply. The first indicates if the person is in the labor force during the survey week. The second gives the log of annual hours worked in the past calendar year (calculated only in the sample of workers). The third indicates if a person is working full-time, which is defined as working at least 35 hours per week (again, this variable is only calculated in the sample of workers). It is well known that relatively few part-time workers have access to ESI and other employee benefits.[23] The study of full-time status can then provide an understanding of how workers respond to policy changes on a labor supply margin that has important implications for health insurance coverage. Finally, the analysis will be carried out separately for men and women.

The top panel of Table 6 summarizes some of the key trends in labor supply before and after PRWORA, again classified according to the generosity of the state's welfare offer to immigrants. Consider initially the trends in labor supply experienced by native men. The labor force participation rate of native men was stable over the 1994-2000 period in both the less and more generous states. In contrast, the labor force participation rate of immigrants increased slightly from 84.2 to 85.8 percent in the more generous states, but increased much faster (from 83.1 to 86.9 percent) in the less generous states. Put differently, the labor supply of immigrant men seemed to be extremely responsive to the welfare cutbacks; immigrants living in states that did not provide state-funded assistance to replace the federal cutbacks were the ones who experienced the largest increase in labor force participation rates. Moreover, this increase in

[23] In 2000, 65.3 percent of full-time workers were covered by ESI, as compared to only 19.1 percent of part-time workers.

labor supply occurred almost entirely among non-citizens. The labor force participation rate of naturalized citizens, for example, rose slightly from 83.7 to 84.3 percent in the more generous states, and was stable at 84.0 percent in the less generous states. In contrast, the labor force participation rate of non-citizens rose from 84.4 to 86.9 percent in the more generous states, but increased by 6 percentage points (from 82.5 to 88.5 percent) in the less generous states. The descriptive evidence, therefore, clearly indicates that the immigrant men who could have been most adversely affected by welfare reform substantially increased their labor supply.

The other measures of male labor supply reported in Table 6 reinforce this pattern. For example, the annual hours of work of working native men changed by only 3 or 4 percent, regardless of where they lived. In contrast, the annual hours of work of non-citizen men rose by about 9 percent if they lived in the more generous states and by 13 percent if they lived in the less generous states. Interestingly, the behavioral labor supply response in the affected immigrant population included a sizable increase in the fraction of immigrant men who worked full-time. The fraction of native men who worked in full-time jobs was relatively stable over the period, increasing by only about 1 percentage point in both the more and less generous states. In contrast, the fraction of non-citizens who worked full-time jobs rose by 3.5 percentage points (from 88.0 to 91.5 percent) in the more generous states, but by 6.2 percentage points (from 84.8 to 91.0 percent) in the less generous states.

The trends in female labor supply are not as striking as those documented in the male sample. The data generally suggest that female immigrants living in the less generous states increased their labor supply relatively more, but the results are not very consistent. For example, the labor force participation rate of non-citizen women rose by about 3 percentage points regardless of the state where they lived. In contrast, annual hours of work of non-citizen women rose by 10 percent if they lived in the more generous states and by 14 percent if they lived in the

less generous states. The discrepancy between the labor supply trends of immigrant men and women may indicate the existence of spillover labor supply effects within families (since typically only one family member needs to be covered by ESI), as well as suggest the possibility that female labor force participation plays a different role in native and immigrant families, a proposition that has not been sufficiently analyzed in the existing literature.[24]

To investigate the extent to which these labor supply trends can be explained by differences in socioeconomic characteristics among the groups or by state-specific trends in economic or social conditions, consider again the triple-difference regression model:

$$(2) \qquad h_{ij} = X_{ij}\,\beta + \alpha_0\, t_{ij} + \alpha_1\, I_{ij} + \alpha_2\, G_j + \gamma_0\,(I_{ij} \times t_{ij}) + \gamma_1\,(I_{ij} \times G_j) + \gamma_2\,(G_j \times t_{ij}) + \theta\,(I_{ij} \times G_j \times t_{ij}) + \varepsilon_{ij}\,,$$

where h_{ij} is a variable measuring some aspect of labor supply for person i in state j. Note that the regression specification in (2) is identical to the one used in the previous section to quantify the impact of welfare reform on health insurance coverage rates. The coefficient θ, however, now measures the impact of the welfare cutbacks on the relative trend in immigrant labor supply.

Table 7 reports the relevant regression coefficients from various specifications of the model in equation (2). The estimated coefficients consistently show that the labor supply of non-citizen men declined substantially in those states that were most generous with their immigrant populations in the aftermath of PRWORA, even after controlling for differences in a vast array of socioeconomic characteristics and state-specific factors. For example, the triple-difference coefficient measuring the impact of the welfare cutbacks on non-citizen male labor force

[24] Baker and Benjamin (1997) and Duleep and Sanders (1993) provide some empirical evidence on the determinants of the labor supply decisions of immigrant women.

participation is .060 (with a standard error of .016); the coefficient measuring the impact on log annual hours worked is .041 (.058); and the coefficient measuring the impact on the probability that the worker works a full-time week is .040 (.022). In contrast, the triple-difference coefficient measuring the relative impact of the state programs on the labor supply of citizen men is numerically closer to zero and statistically insignificant. Finally, although the labor supply effects are (statistically) weaker for women, the estimated coefficients suggest that hours of work for non-citizen women increased more if they lived in states that were not generous to their immigrant populations in the aftermath of PRWORA.

In sum, the reduced-form results reported in Table 8 strongly imply that the state-funded assistance programs that were designed to attenuate the impact of welfare reform on immigrants played an important influence in the labor supply decisions of immigrants.

V. The Crowdout Effect

The descriptive evidence summarized in the previous sections presents a strong circumstantial case supporting the hypothesis that public assistance alters the terms of trade between private health insurance and publicly provided health insurance. More precisely, I have shown that health insurance coverage rates did not decline among immigrants who potentially suffered the largest welfare cutbacks in the post-1996 period (i.e., non-citizens living in less generous states). Instead, this group experienced an offsetting increase in employer-sponsored insurance. I now examine the nature of this tradeoff. Consider the regression model:

$$p_{ij} = W_{ij}\,\beta + \delta\, m_{ij} + \omega_{ij}, \tag{3}$$

where p_{ij} is the probability that person i living in state j is covered by employer-sponsored insurance; W_{ij} is a vector of socioeconomic characteristics defined below; and m_{ij} gives the probability that the person is covered by Medicaid.

Two related obstacles prevent a straightforward estimation of the structural model in equation (3). The first is that we do not observe the probability that a particular person receives Medicaid or is covered by ESI. Instead, we simply observe the outcome of these probability processes for a particular person. For example, the person is either covered by Medicaid or is not. This measurement problem can be easily addressed by changing the unit of analysis from a particular person to a particular group, defined as persons who share a particular immigration status, live in the same state, and are observed at the same point in time. I can then calculate the probability of receiving Medicaid and of being covered by employer-sponsored insurance for the "representative person" in each group, as well as calculate the mean of the various socioeconomic characteristics.

Of course, the OLS estimate of the parameter δ would be biased even if the regression were estimated in these aggregate data. There is, after all, a spurious correlation between the receipt of Medicaid and ESI coverage. Medicaid eligibility depends on many characteristics, some of which are unobserved. Persons with favorable values of these characteristics (such as higher assets) will not qualify and participate in the Medicaid program. Many of these factors, however, are correlated with the probability that the person works and is covered by ESI. An observed negative correlation between p and m, therefore, does not capture the behavioral tradeoff between publicly and privately provided insurance, but is instead contaminated by the correlation between the probability of receiving Medicaid and the error term in equation (3).

The structural parameter δ can be correctly estimated by using instrumental variables, where the instruments are provided by the exogenous variation in eligibility rules introduced by

the immigrant provisions in the welfare reform legislation, as well as by the responses of individual states to the changes in the federal safety net. In particular, consider a first-stage regression model given by:

$$(4) \qquad m_k = X_k \beta + \lambda Z_k + v_k ,$$

where the subscript k denotes a particular cell defined by year of observation (i.e., before or after 1996), state of residence, immigration status (i.e., native, citizen, refugee and non-citizen, and non-refugee and non-citizen), and gender; and the vector $Z_k = (t, I, G, I \times t, G \times t, I \times G, I \times G \times t)$. Note that Z_k contains the same set of variables used in the reduced-form triple difference regression models estimated in the previous sections.

The aggregate version of the second stage regression is obtained by aggregating equation (3) within each cell k. It can be written as:

$$(3') \qquad p_k = W_k \beta + \delta m_k + \omega_k,$$

The vector W_k in the second stage regression in equation (3′) is given by $W_k = [X_k, \widetilde{Z}_k]$, where $\widetilde{Z}_k = (t, I, G, I \times t, G \times t, I \times G)$. The identification of the structural coefficient δ depends entirely on the exclusion of the triple-difference interaction terms from the second-stage regression. The vector X contains the within-cell mean of the set of socioeconomic characteristics used in the regressions in the previous sections. In addition, the regression includes a vector of state fixed effects, and interacts this vector with both the immigration status variables and with the dummy variable indicating if the observation refers to the post-1996 period. Finally, the standard errors are clustered by state-immigration status cells to adjust for possible serial correlation.

The first column of Table 8 reports the estimated structural coefficient when the dependent variable in the second-stage equation is the probability that the typical person in cell *k* is covered by employer-sponsored insurance. As the first row shows, there is a sizable negative correlation between the probability of receiving Medicaid and the probability of being covered by ESI. The coefficient is numerically large and marginally significant from zero (-1.79, with a standard error of .94). Moreover, this coefficient is not significantly different from one. The IV estimate of δ, therefore, confirms the key insight from the descriptive statistics presented in the previous sections: the availability of Medicaid seems to completely crowd out the presence of employer-sponsored insurance in the sample of disadvantaged immigrants most affected by welfare reform.

The second column of the table estimates the second-stage regression using an alternative dependent variable, the probability that the typical person in cell *k* has some type of health insurance coverage. This coefficient is numerically close to zero and statistically insignificant (the coefficient is -.25, with a standard error of .60). The results, therefore, indicate that a cutback in the probability of receiving Medicaid generates a completely offsetting increase in the probability that a person is covered by employer-sponsored insurance, thereby leaving unchanged the probability that the person has some type of health insurance coverage.

The remaining rows of Table 8 re-estimate the regression models using alternative definitions for the vector *I*. As noted earlier, the citizenship status of a person may be partly endogenous, as many immigrants become naturalized citizens to escape the impact of the PRWORA cutbacks. One simple solution to this problem is to use the immigrant's year of arrival in the United State to define the various groups. In the second row, the dummy variables in the vector *I* indicate if a person is native, has lived in the United States for more than 10 years, has lived in the United States for fewer than 10 years, or is a refugee. The coefficient δ reported in

the first column is -1.01 (.87). Moreover, note that the coefficient is .28 (.74) in the second column, where the dependent variable is the probability of being covered by some type of health insurance. Therefore, there seems to be a negative structural relation between the probability of receiving Medicaid and the probability of having some type of health insurance coverage, again suggesting a strong crowdout effect.

Finally, row 3 of Table 8 estimates the regression model using only the information on whether a person is native-born, refugee, or non-refugee to define the variables in the vector *I*. Although the coefficients now have larger standard errors, the point estimates are consistent with the overall story. The impact of the probability of receiving Medicaid on the probability of being covered by employer-sponsored insurance is -1.35 (1.33), while the impact of Medicaid on the probability of being covered by some type of health insurance coverage is .11 (.87).

The bottom panel of the table reports the IV coefficients from the regressions estimated in the sample of children.[25] These coefficients tend to be quite similar to those reported in the sample of all persons. For example, the two coefficients in the specification presented in row 1, where the vector *I* uses information on the citizenship status of the head of the household to classify the children in the household, are -.98 (.98) in the ESI coverage regression and .12 (.73) in the health insurance coverage regression. The evidence, therefore, suggests a crowdout effect of Medicaid on privately provided insurance among the children of the targeted immigrants.

Before concluding, it is worth emphasizing that there is an important conceptual difference between the estimates of the crowdout effect reported in this paper and those reported in the existing literature. The welfare reform legislation changed the eligibility rules for

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[25] To avoid having many cells in the children sample that have a small number of observations, the construction of the cells does not differentiate between the two gender groups. A cell is then defined by immigration status, state of residence, and time period. I control for gender by including a variable indicating the fraction of the observations in the cell that are boys as a regressor in the first- and second-stage models.

immigrants in many public assistance programs. As a result, this study addresses a question that is related to, but different from, the question usually addressed in the crowdout literature. In particular, existing studies attempt to determine if increased availability of publicly provided health insurance encourages persons to leave the private insurance system and enroll in Medicaid. In contrast, my analysis examines if generalized cutbacks in public assistance encourage individuals to alter their behavior along many margins, particularly labor supply. My evidence indicates that the net outcome of all of these responses is a substantial increase in the probability that individuals are covered by employer-sponsored health insurance. It should not then be surprising that my estimates of the crowdout effect are larger than the estimates found in the existing literature.

Although it would be of great interest to isolate the contribution of the cutbacks in the various public assistance programs to the estimated crowdout effect, such an analysis is empirically difficult because there is a great deal of "jointness" in program participation: 94.0 percent of persons who receive cash benefits and 67.1 percent of those who receive food stamps are also enrolled in Medicaid. As a result, it is unlikely that the immigrant restrictions in PRWORA can help identify the separate effects.

VI. Summary

The 1996 welfare reform legislation contained a number of provisions that greatly limited the eligibility of many immigrants (particularly non-citizens and non-refugees) to receive many types of public assistance. In response to the federal legislation, many states chose to protect their immigrant populations from the presumed adverse impact of PRWORA by offering state-funded assistance to these groups.

I use data drawn from the 1995-2001 Annual Demographic Supplements of the Current Population Surveys to examine the relation between the immigrant-related provisions in PRWORA—as modified by the subsequent state responses—and health insurance coverage in the immigrant population. In the absence of any behavioral response, one would have expected that health insurance coverage rates would have been sharply curtailed in the population most adversely affected by the restrictions, the non-citizens living in states that did not offer state-funded assistance to their immigrant populations. In other words, as the Medicaid cutbacks took effect, the proportion of those immigrants covered by some type of health insurance should have declined.

The empirical analysis indeed indicates that the targeted immigrant population experienced a decline in Medicaid coverage as the PRWORA provisions took effect. However, the analysis also reveals that the expected decline in health insurance coverage rates did not materialize. If anything, health insurance coverage rates actually rose slightly in this group.

The resolution to this conflicting evidence lies in the fact that the affected immigrants responded to the welfare cutbacks. The immigrants most likely to be adversely affected by the new restrictions significantly increased their labor supply, thereby raising their probability of being covered by employer-sponsored insurance. In fact, this increase in the probability of coverage through employer-sponsored insurance was large enough to completely offset the Medicaid cutbacks. The empirical analysis, therefore, provides strong evidence of a sizable crowdout effect of publicly provided health insurance among immigrants. In an important sense, the state programs were unnecessary. In the absence of these programs, the targeted immigrants themselves would have taken actions to reduce the probability that they would be left without health insurance coverage.

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Table 1. Trends in Welfare Participation and Health Insurance Coverage, 1994-2000

	Calendar Year						
Percent of persons:	1994	1995	1996	1997	1998	1999	2000
Receiving Medicaid							
Natives	11.8	11.9	11.6	10.6	10.0	9.9	9.9
Immigrants	17.0	16.5	14.7	13.4	13.1	13.0	13.4
Naturalized citizens	7.8	9.3	9.7	9.6	9.8	9.1	9.9
Non-citizens	21.3	20.3	17.8	15.9	15.2	15.6	15.8
With health insurance							
Natives	85.1	85.0	84.9	84.4	84.3	85.3	87.0
Immigrants	67.0	67.4	66.4	65.6	65.2	66.3	68.8
Naturalized citizens	79.4	78.8	76.7	76.5	75.1	75.8	79.2
Non-citizens	61.1	61.7	60.1	58.5	58.8	59.8	61.5
With employer-sponsored insurance							
Natives	66.9	67.2	67.6	67.7	68.6	69.6	71.2
Immigrants	45.8	47.3	47.5	48.3	47.7	48.8	51.6
Naturalized citizens	63.6	63.9	61.1	61.1	59.7	59.6	63.0
Non-citizens	37.3	38.8	39.3	39.9	39.9	41.4	43.6

Source: All statistics are calculated from the 1995-2001 March Current Population Surveys.

Table 2. State-Funded Assistance to Immigrants After 1996

State	Food assistance or SSI to pre-enactment immigrants	TANF, Medicaid, food assistance, or SSI to post-enactment immigrants during five-year bar	Zimmermann-Tumlin classification of state assistance	Medicaid to unqualified or post-enactment immigrants during five-year bar
Alabama	No	No	Least available	No
Alaska	No	No	Less available	Yes
Arizona	No	No	Less available	No
Arkansas	No	No	Least available	Yes
California	Yes	Yes	Most available	Yes
Colorado	No	Yes	Less available	Yes
Connecticut	Yes	Yes	Somewhat available	Yes
Delaware	No	Yes	Less available	Yes
District of Columbia	No	No	Less available	No
Florida	Yes	No	Somewhat available	Yes
Georgia	No	Yes	Less available	Yes
Hawaii	No	Yes	Somewhat available	Yes
Idaho	No	No	Least available	No
Illinois	Yes	Yes	Most available	Yes
Indiana	No	No	Least available	No
Iowa	No	No	Less available	Yes
Kansas	No	No	Less available	Yes
Kentucky	No	No	Less available	Yes
Louisiana	No	No	Least available	Yes
Maine	Yes	Yes	Most available	Yes
Maryland	Yes	Yes	Most available	Yes
Massachusetts	Yes	Yes	Most available	Yes
Michigan	No	No	Less available	Yes
Minnesota	Yes	Yes	Somewhat available	Yes
Mississippi	No	No	Least available	Yes
Missouri	Yes	Yes	Most available	Yes
Montana	No	No	Less available	Yes
Nebraska	Yes	Yes	Most available	Yes
Nevada	No	No	Less available	Yes
New Hampshire	Yes	No	Less available	Yes
New Jersey	Yes	No	Somewhat available	Yes
New Mexico	No	No	Less available	No
New York	Yes	No	Somewhat available	Yes
North Carolina	No	No	Less available	Yes
North Dakota	No	No	Less available	Yes
Ohio	Yes	No	Least available	Yes
Oklahoma	No	No	Least available	No
Oregon	Yes	Yes	Somewhat available	No
Pennsylvania	No	Yes	Somewhat available	Yes
Rhode Island	Yes	Yes	Most available	Yes
South Carolina	No	No	Least available	No
South Dakota	No	No	Least available	No
Tennessee	No	Yes	Less available	Yes
Texas	Yes	No	Least available	No
Utah	No	Yes	Less available	Yes
Vermont	No	Yes	Somewhat available	Yes
Virginia	No	Yes	Less available	Yes
Washington	Yes	Yes	Most available	Yes
West Virginia	No	No	Least available	No
Wisconsin	Yes	Yes	Somewhat available	Yes
Wyoming	No	Yes	Less available	No

Source: Tumlin, Zimmermann and Ost (1999) and Zimmermann and Tumlin (1999).

Table 3. Trends in Health Insurance Coverage

	All persons				Children			
	More generous states		Less generous states		More generous states		Less generous states	
Program/Group:	Pre-1996	Post-1996	Pre-1996	Post-1996	Pre-1996	Post-1996	Pre-1996	Post-1996
Covered by Medicaid								
Natives	11.6	9.9	12.6	9.9	21.0	18.2	22.8	19.5
Immigrants	16.9	13.5	15.3	10.4	29.5	25.7	27.0	20.9
Naturalized citizens	8.4	9.7	10.6	9.1	14.9	17.5	18.7	18.4
Non-citizens	21.0	16.1	18.1	11.1	35.4	30.9	31.1	22.2
Non-citizen, non-refugee	18.9	15.8	17.3	10.3	33.0	30.5	29.9	20.3
Covered by health insurance								
Natives	85.5	86.1	83.8	83.9	88.6	89.3	86.4	87.3
Immigrants	67.2	66.9	67.2	66.1	73.5	73.4	69.6	70.2
Naturalized citizens	78.9	77.0	80.4	75.0	81.8	80.7	82.5	79.5
Non-citizens	61.6	59.9	59.0	61.1	70.1	68.8	63.3	65.7
Non-citizen, non-refugee	59.7	58.7	57.5	59.5	68.5	67.8	62.1	63.8
Covered by employer-sponsored insurance								
Natives	68.0	70.6	64.8	67.8	65.3	69.0	61.4	65.8
Immigrants	46.5	49.2	47.0	51.7	43.6	46.2	42.0	49.7
Naturalized citizens	63.8	61.1	63.8	58.7	63.3	60.5	61.3	59.7
Non-citizens	38.2	40.9	36.5	47.9	35.5	37.1	32.6	44.9
Non-citizen, non-refugee	38.4	40.2	35.1	46.4	36.0	36.4	31.9	43.4

Notes: The pre-1996 statistics are calculated from the pooled 1995 and 1996 March Current Population Surveys; the post-1996 statistics are calculated from the pooled 1999, 2000, and 2001 March Current Population Surveys.

Table 4. Impact of Welfare Reform on Health Insurance Coverage, Triple Difference Estimates

	All persons		Children	
Dependent variable:	(1)	(2)	(1)	(2)
Covered by Medicaid				
1. Naturalized citizens relative to natives	-.006	.004	.004	.020
	(.015)	(.014)	(.030)	(.028)
2. Non-citizens relative to natives	-.049	-.043	-.105	-.100
	(.025)	(.025)	(.048)	(.049)
Covered by health insurance				
1. Naturalized citizens relative to natives	-.035	-.030	-.034	-.038
	(.028)	(.024)	(.044)	(.038)
2. Non-citizens relative to natives	.038	.024	.026	.022
	(.024)	(.021)	(.034)	(.031)
Covered by employer-sponsored insurance				
1. Naturalized citizens relative to natives	-.055	-.056	-.039	-.064
	(.056)	(.049)	(.081)	(.063)
2. Non-citizens relative to natives	.109	.101	.150	.147
	(.035)	(.026)	(.057)	(.049)
Controls for state fixed effects, with interactions	No	Yes	No	Yes

Notes: Standard errors are reported in parentheses and are clustered by state-immigration status groups. The "All persons" sample has 593,763 observations; the "children" sample has 194,422 observations. All regressions control for the age, race, gender, and educational attainment of the household head; the total number of persons, children, elderly persons, and disabled persons in the household; a vector of dummy variables indicating the household's year of arrival in the United States (if immigrant); a dummy variable indicating if the household head is a refugee; the state's unemployment rate in the particular survey year; and all interactions between the unemployment rate, the period fixed effect, and the vector of dummy variables indicating the person's immigration status (i.e., native, citizen, or non-citizen). The "state fixed effects, with interactions" include a vector of state fixed effects interacted with the dummy variable indicating if the observation was drawn from the post-1996 period. The state fixed effects are also interacted with the dummy variables that indicate the person's immigration status.

Table 5. Sensitivity of Results to Definition of State Generosity, Triple Difference Estimates in Full Interaction Model

	Zimmerman-Tumlin index		Medicaid assistance index	
Dependent variable:	All	Children	All	Children
Covered by Medicaid				
1. Naturalized citizens relative to natives	-.016	-.031	-.004	-.029
	(.010)	(.019)	(.008)	(.015)
2. Non-citizens relative to natives	-.043	-.097	-.026	-.052
	(.013)	(.025)	(.013)	(.023)
Covered by health insurance				
1. Naturalized citizens relative to natives	-.002	.018	.044	.070
	(.021)	(.034)	(.015)	(.017)
2. Non-citizens relative to natives	.006	-.029	.007	-.022
	(.014)	(.025)	(.013)	(.026)
Covered by employer-sponsored insurance				
1. Naturalized citizens relative to natives	.007	.043	.036	.061
	(.032)	(.045)	(.023)	(.032)
2. Non-citizens relative to natives	.058	.077	.047	.045
	(.020)	(.034)	(.018)	(.026)

Notes: Standard errors are reported in parentheses and are clustered by state-immigration status groups. The "all persons" sample has 593,763 observations; the "children" sample has 194,422 observations. All regressions control for the age, race, gender, and educational attainment of the household head; the total number of persons, children, elderly persons, and disabled persons in the household; a vector of dummy variables indicating the household's year of arrival in the United States (if immigrant); a dummy variable indicating if the household head is a refugee; the state's unemployment rate in the particular survey year; and all interactions between the unemployment rate, the period fixed effect, and the vector of dummy variables indicating the person's immigration status (i.e., native, citizen, or non-citizen). The "state fixed effects, with interactions" include a vector of state fixed effects interacted with the dummy variable indicating if the observation was drawn from the post-1996 period. The state fixed effects are also interacted with the dummy variables that indicate the person's immigration status.

Table 6. Trends in Labor Supply
(Percent of households receiving assistance)

	Men				Women			
	More generous states		Less generous states		More generous states		Less generous states	
Program/Group:	Pre-1996	Post-1996	Pre-1996	Post-1996	Pre-1996	Post-1996	Pre-1996	Post-1996
Labor force participation rate								
Natives	85.2	84.9	83.6	83.5	72.6	74.6	71.1	72.3
Immigrants	84.2	85.8	83.1	86.9	60.4	63.0	58.5	61.5
Naturalized citizens	83.7	84.3	84.0	84.0	67.7	67.2	62.8	66.3
Non-citizens	84.4	86.9	82.5	88.5	56.2	59.6	55.1	58.2
Non-citizen, non-refugee	85.9	87.2	85.1	88.5	57.2	59.7	54.6	57.5
Log of annual hours worked								
Natives	7.489	7.536	7.501	7.531	7.211	7.269	7.192	7.271
Immigrants	7.429	7.504	7.415	7.503	7.170	7.262	7.072	7.186
Naturalized citizens	7.468	7.517	7.494	7.518	7.217	7.295	7.140	7.231
Non-citizens	7.408	7.496	7.362	7.496	7.137	7.232	7.009	7.149
Non-citizen, non-refugee	7.412	7.499	7.363	7.489	7.135	7.227	7.005	7.135
Percent working full time								
Natives	89.1	90.5	90.0	90.8	71.9	74.5	72.8	75.9
Immigrants	88.3	91.2	85.8	91.0	73.9	77.5	70.7	76.4
Naturalized citizens	89.1	90.6	87.3	91.0	72.5	77.7	69.2	75.7
Non-citizens	88.0	91.5	84.8	91.0	74.9	77.4	72.0	76.9
Non-citizen, non-refugee	88.1	91.8	84.8	90.7	74.7	77.7	71.1	76.3

Notes: The pre-1996 statistics are calculated from the pooled 1995 and 1996 March Current Population Surveys; the post-1996 statistics are calculated from the pooled 1999, 2000, and 2001 March Current Population Surveys.

Table 7. Impact of Welfare Reform on Labor Supply, Triple Difference Estimates

	Men		Women	
Sample:	(1)	(2)	(1)	(2)
Labor force participation				
1. Naturalized citizens relative to natives	-.030	-.024	.016	.007
	(.029)	(.026)	(.031)	(.032)
2. Non-citizens relative to natives	.048	.060	.004	.006
	(.018)	(.016)	(.026)	(.023)
Log annual hours worked				
1. Naturalized citizens relative to natives	.003	-.007	.048	.068
	(.059)	(.058)	(.071)	(.071)
2. Non-citizens relative to natives	.062	.041	.070	.092
	(.066)	(.058)	(.092)	(.103)
Worked full time				
1. Naturalized citizens relative to natives	.033	.028	.037	.035
	(.019)	(.015)	(.048)	(.048)
2. Non-citizens relative to natives	.042	.040	.036	.034
	(.028)	(.022)	(.026)	(.032)
Controls for state fixed effects, with interactions	No	Yes	No	Yes

Notes: Standard errors are reported in parentheses and are clustered by state-immigration status groups. There are 196,859 observations in the male regressions estimated in the top two panels; and 174,431 observations in the male regressions estimated in the bottom two panels. There are 210,684 observations in the female regressions estimated in the top two panels; and 159,163 observations in the female regressions estimated in the bottom two panels. All regressions control for the age, race, gender, and educational attainment of the household head; the total number of persons, children, elderly persons, and disabled persons in the household; a vector of dummy variables indicating the household's year of arrival in the United States (if immigrant); a dummy variable indicating if the household head is a refugee; the state's unemployment rate in the particular survey year; and all interactions between the unemployment rate, the period fixed effect, and the vector of dummy variables indicating the person's immigration status (i.e., native, citizen, or non-citizen). The "state fixed effects, with interactions" include a vector of state fixed effects interacted with the dummy variable indicating if the observation was drawn from the post-1996 period. The state fixed effects are also interacted with the dummy variables that indicate the person's immigration status.

Table 8. Instrumental Variable Estimates of the Crowdout Effect, Full Interaction Model (Impact of probability of receiving Medicaid)

	Dependent variable	
	Probability that person has employer-sponsored insurance	Probability that person has some type of health insurance
All persons		
Using citizenship status	-1.791	-.246
	(.939)	(.597)
Using year of arrival	-1.014	.279
	(.868)	(.737)
Using only immigration status	-1.353	.109
	(1.332)	(.869)
Children		
Using citizenship status	-.977	.124
	(.984)	(.727)
Using year of arrival	-.768	-.071
	(.897)	(.649)
Using only immigration status	-1.003	.136
	(1.283)	(.971)

Notes: Standard errors are reported in parentheses and are clustered by state-immigration status groups. In the "all persons" sample, the regressions reported in rows 1 and 2 have 784 observations, while the regressions reported in row 3 have 600 observations. In the children sample, the regressions reported in rows 1 and 2 have 377 observations, while the regressions reported in row 3 have 289 observations. All regressions control for the age, race, gender, and educational attainment of the household head; the total number of persons, children, elderly persons, and disabled persons in the household; a vector of dummy variables indicating the household's year of arrival in the United States (if immigrant); a dummy variable indicating if the household head is a refugee; the state's unemployment rate in the particular survey year; and all interactions between the unemployment rate, the period fixed effect, and the vector of dummy variables indicating the person's immigration status (i.e., native, citizen, or non-citizen). The regressions also include a vector of state fixed effects interacted with the dummy variable indicating if the observation was drawn from the post-1996 period. The state fixed effects are also interacted with the dummy variables that indicate the person's immigration status classification. All regressions are weighted by the sample size of the cell.