
WELFARE REFORM AND INTERSTATE MIGRATION OF POOR FAMILIES*

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The thesis of this study is that as a result of increased inequalities in welfare rules, the 1996 welfare reform act not only enhanced incentives for poor families to move but also (and perhaps more important) created disincentives for them to stay in "race to the bottom" states. In testing this thesis, we evaluated the mediating and moderating roles of state economic development and family structure. We merged data from three main sources: the 1996–1999 panel of the Survey of Income and Program Participation, the Urban Institute's Welfare Rules Database, and state economic data from the Bureau of Labor Statistics. Modeling both destination (pull) and departure (push) effects of welfare policy measures and selected covariates in a nested discrete-time event-history migration analysis, we found robust support for the thesis that stringency in state welfare-eligibility and behavior-related rules stimulated interstate out-migration of poor families in the United States. However, poor families were not drawn to states with relatively more-lenient welfare rules, although stringency in state welfare dollar benefits inhibited in-migration and state unemployment patterns may have conditioned the migration effects of welfare-reform rules on the choice of destination. Single mothers were not more directly affected by welfare-eligibility and behavior-related rules than were poor married couples.

Enactment of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) in 1996 renewed the debate about the migration incentives of the U.S. welfare system (Frey et al. 1996; Long 1974; Schram, Nitz, and Krueger 1998; Schram and Soss 1999). The welfare-migration thesis states that the poor will be attracted to states that offer greater welfare benefits (Schram and Soss 1999), but past studies on welfare migration, which have relied solely on variations in dollar benefits, have yielded equivocal support for this idea (see Moffitt 1992; Schram et al. 1998). However, the new federalism broadened the set of potential motivations for welfare-related migration by increasing inequalities among the states not only in the level of benefits but also in the restrictive nature of eligibility and behavior-related rules (De Jong and Graefe 2002; De Jong, Graefe, and St. Pierre 2001). That is, some states maintained or enhanced the policy guidelines of the former Aid to Families with Dependent Children (AFDC) program, whereas others became more restrictive as they sought to reduce welfare caseloads.

States' concerns about the possibility of attracting poor in-migrants from states with more-stringent rules raised the question of whether a "race to the bottom" in welfare-assistance rules would occur among states that do not want to appear more lenient or generous than other states toward welfare applicants and participants. From a policy

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perspective, research is needed to identify the process of migration decision making among poor families so that states may address the consequences of welfare inequalities on the basis of scientific evidence. From the perspective of migration scholarship, new longitudinal state, family, and individual multilevel analyses are needed that integrate both destination and origin models to provide a valid test of the welfare-migration thesis.

An updated welfare-migration thesis posits that the costs of migration are outweighed by its benefits when higher benefit levels and less-restrictive eligibility rules favor welfare participants at origins compared with those at potential destinations. When benefits and eligibility rules are less favorable, such conditions are expected to “push” migrants from the origin state. On the basis of this logic, variation in state welfare policy should increase the likelihood of migration from states with more-stringent rules and lower benefits to states with more-lenient rules and higher benefits; it should discourage migration to states with more-stringent rules and lower benefits.

Using merged data from the 1996–1999 panel of the Survey of Income and Program Participation (SIPP), the Urban Institute’s Welfare Rules Database (WRD), and states’ economic characteristics from the Bureau of Labor Statistics, we applied multiple measures of welfare eligibility and benefits in a longitudinal research design to evaluate the effect of welfare reform on migration. Multilevel event-history modeling techniques assess whether post-PRWORA welfare differences play a role in the interstate migration decisions of poor families. We used general dimensions of welfare policy (rather than specific single items) to summarize the contextual characteristics that potential migrants may consider in a migration costs-versus-benefits comparison, as is assumed by traditional microeconomic theory to occur in the migration decision-making process. Because more states today permit two-parent families to receive welfare benefits than they did before PRWORA was enacted, we also evaluated whether single-parent poor families are more likely to be affected by these variations among states than are two-parent poor families. Furthermore, we determined whether employment opportunities in origin and potential destination states, as well as individual and family social and economic ties to the community, mediate the relationship between welfare gains and migration.

In sum, because PRWORA created significant state heterogeneity in welfare eligibility and behavior-related rules, welfare-related migration may now be motivated by more than the dollar amounts of benefits that a family may receive in different states. We extended prior welfare-migration research by contributing to the current welfare-migration debate in several ways. First, we examined the migration of poor families *from* and *to* states with stringent welfare-eligibility and behavior-related rules by explicitly modeling both a destination benefit model (pull effects) and a departure disincentive model (push effects). A nested discrete-choice analytical strategy was used to specify the model properly and to avoid erroneous assumptions about the independence of alternative choices. Second, we extended prior research on the welfare-migration thesis by using a longitudinal design that included measures before and after the migration event. Third, our models controlled for alternative explanations by including family-level socioeconomic characteristics and state economic indicators, including state fixed effects to avoid unmeasured-variable bias. Finally, we compared the importance of these effects for single- and two-parent families because welfare benefits are now more widely available to the latter than they were prior to welfare reform.

PRIOR RESEARCH ON WELFARE MIGRATION

Previous studies of welfare migration have presented conflicting and inconclusive results as to whether poor families move primarily to maximize their welfare benefits, partly because of the diverse range of data and methods that have been used across what Schram et al. (1998) categorized as three waves of welfare-migration research. The earliest wave typically used ecological data and showed little evidence of welfare-benefit-motivated

migration during the 1960s (e.g., Beale 1971; Cebula 1979; De Jong and Donnelly 1973; Long 1974; Piven and Cloward 1971; Steiner 1971; Sternlieb and Indik 1973). The second wave of studies indicated that higher-benefit states attracted poor migrants during the 1970s (e.g., Blank 1988; Dye 1990; Gramlich and Lauren 1984), but most used a cross-sectional methodology, with employment status, educational enrollment, marital status, fertility, and other predictors measured after, rather than before, the move. Because these factors not only determine but also result from the migration process and are important criteria for eligibility for welfare, their temporal order relative to migration presents a major analytical problem in interpreting results. A third, more-recent and more methodologically sophisticated wave found only weak or no evidence for the welfare-migration thesis (e.g., Hanson and Hartman 1994; Levine and Zimmerman 1995; Schram et al. 1998; Walker 1994). Indeed, a prereform review of the econometric literature revealed only "suggestive but inconclusive" evidence of welfare effects on interstate migration, recommending it as among the "good candidates for additional research" (Moffitt 1992:56).

Much of the literature has been based on a rational-choice model of migration, in which individuals engage in a cost-benefit calculation before they decide to move (Schram and Soss 1999). This migration model starts with the basic microeconomic theoretical assumption that individuals and families, including poor families, try to maximize their quality of life (utility) (DaVanzo 1981; Todaro 1989). Applying this perspective to decisions to migrate, rational actors decide to move when cost-benefit calculations lead them to expect positive returns from migration (Massey et al. 1998; Schram and Soss 1999). Potential migrants are thus assumed to assess the advantages and disadvantages of (alternative) destinations and migrate to the destination that maximizes their quality of life (Fischer, Martin, and Straubhaar 1997). Following Speare, Kobrin, and Kingkade (1982), the decision to migrate is triggered by a family's dissatisfaction with their place of residence, jobs, or income. Since PRWORA was implemented, a source of dissatisfaction for some poor families may be a state's stringent welfare-eligibility or behavior-related rules, as well as low payment levels. In this case, the choice of an alternative residential location for poor families may be affected by more-lenient welfare-policy rules and higher payment levels in another state. On the other hand, a state's lenient welfare-policy rules and high payment levels may result in higher residential satisfaction in the origin area, which would reduce the motivation to look elsewhere and would inhibit out-migration.

Several researchers have documented considerable across-state variation in welfare policy since prereform welfare waivers began to permit some states to experiment with strategies to encourage self-sufficiency among welfare recipients. Both Ellwood (2000) and Meyer and Rosenbaum (2000) characterized states along a three-point continuum of program "aggressiveness," finding about half the states to be the most aggressive. These two sets of measures agree for 38% of the states, typically when both find a state to be most aggressive. Meyer and Rosenbaum based their indicator on a range of measures, from aspects of state waivers to dollar benefit levels, whereas in an effort to capture aspects of administrative variation, Ellwood based his measure on the change in the probability that a single mother received welfare benefits between 1991–1992 and 1997–1998.

Another typology of state welfare policy, created by Meyers, Gornick, and Peck (2001), used cluster analysis of the characteristics of 11 social programs that serve low-income families with children to group states according to the generosity of benefits; the extent to which needy families were served; and the availability, accessibility, and extent or quality of public assistance in the state. They also found variation among the states, beginning in 1994, but much less variation in programs that were governed by federal funding or rules, such as Supplemental Security Income (SSI) and the child support pass-through, than in programs over which states had a great deal of administrative control. Although AFDC expenditures were included in their analysis, specific welfare-reform

effects are enmeshed in their summary measures and are indistinguishable from the effects of other social programs, such as food stamps, Medicaid, and state income taxes.

Our investigation of variation in state welfare policy throughout the United States used a factor-analytic strategy to reduce correlated sets of welfare rules to summary measures describing states' general leniency or stringency in various domains of welfare eligibility (De Jong et al. 2001). This strategy and the composition of each summary item that was derived are described fully in the section on methods, but to demonstrate the degree of across-state variations in welfare policy, Figures 1 and 2 present maps that show two of these summary measures for 1999 (i.e., score levels) and the directions of change for each state between 1996–1997 and 1999. Figure 1 graphically displays across-state differences in basic eligibility rules, while Figure 2 displays the behavior-related rules summary measure regarding recipients' responsibilities for personal and work behavior. Darker shading on these maps indicates a more-stringent welfare policy, cross-hatchings indicate that a state became more stringent, and dotted areas show that a state became more lenient between 1996 and 1999. Most states moved toward greater stringency in behavior-related rules during the first years following PRWORA, whereas the transition toward stringency in eligibility rules was not as strong.

Although each of these analyses clearly shows that states now differ on various aspects of welfare reform, none can encompass a comprehensive measure of the context of welfare policy, including the rules, their administration, and their meaning to recipients and caseworkers, and the resulting measurement error can be expected to bias the estimated impacts of welfare reform downward (Ellwood 2000). As Ellwood also pointed out, the interaction of a change in welfare policy with a state's economic circumstances further complicates policy-impact analysis. Considering policy effects that are both net of and conditional on the impact of economic circumstances is a first step toward disentangling the consequences of policy change.

An additional consideration is that most research has neglected noneconomic factors in the migration decision-making process. Research that has been based on the rational-choice assumption has typically not allowed for noneconomic factors to compete with economic ones, although recent studies have supported the salience of noneconomic factors in the welfare-migration process. For example, while weak labor force attachment, or the lack of a stable work history, appears to encourage migration (Enchautegui 1997), social networks and other community ties may mediate the relationship between migration and welfare, such that individuals with strong attachments to their places of origin are less likely to move (Dublin 1998; Schram and Soss 1999). The concentration on monetary welfare benefits alone ignores both the role of social network alternatives to purchased services when families are unable to pay for these services and the importance of postreform changes in welfare eligibility requirements.

Finally, most research on welfare migration has been limited to data collected before welfare reform. To capture the impact of welfare reform policy on the migration process, research must incorporate changing welfare rules that may have fostered or inhibited interstate migration following the policy's enactment. Previous equivocal research findings were based on dollar benefits alone, but *access* to welfare benefits, determined by eligibility criteria and rules regarding behavior while receiving welfare assistance, may be the most salient postreform influence on the migration of welfare recipients. States' rules are now increasingly different, and this variation may be particularly important for poor single mothers.

FAMILY STRUCTURE AND MIGRATION OF THE POOR

Prior research has confirmed that migration among the poor varies with family structure, although the literature has been inconclusive as to why, and the evidence is not strong. Unmarried poor women have been reported to be more geographically mobile than

Figure 1. States' Welfare Policy With Regard to Basic Eligibility Rules in 1999 and the Change From 1996 to 1999

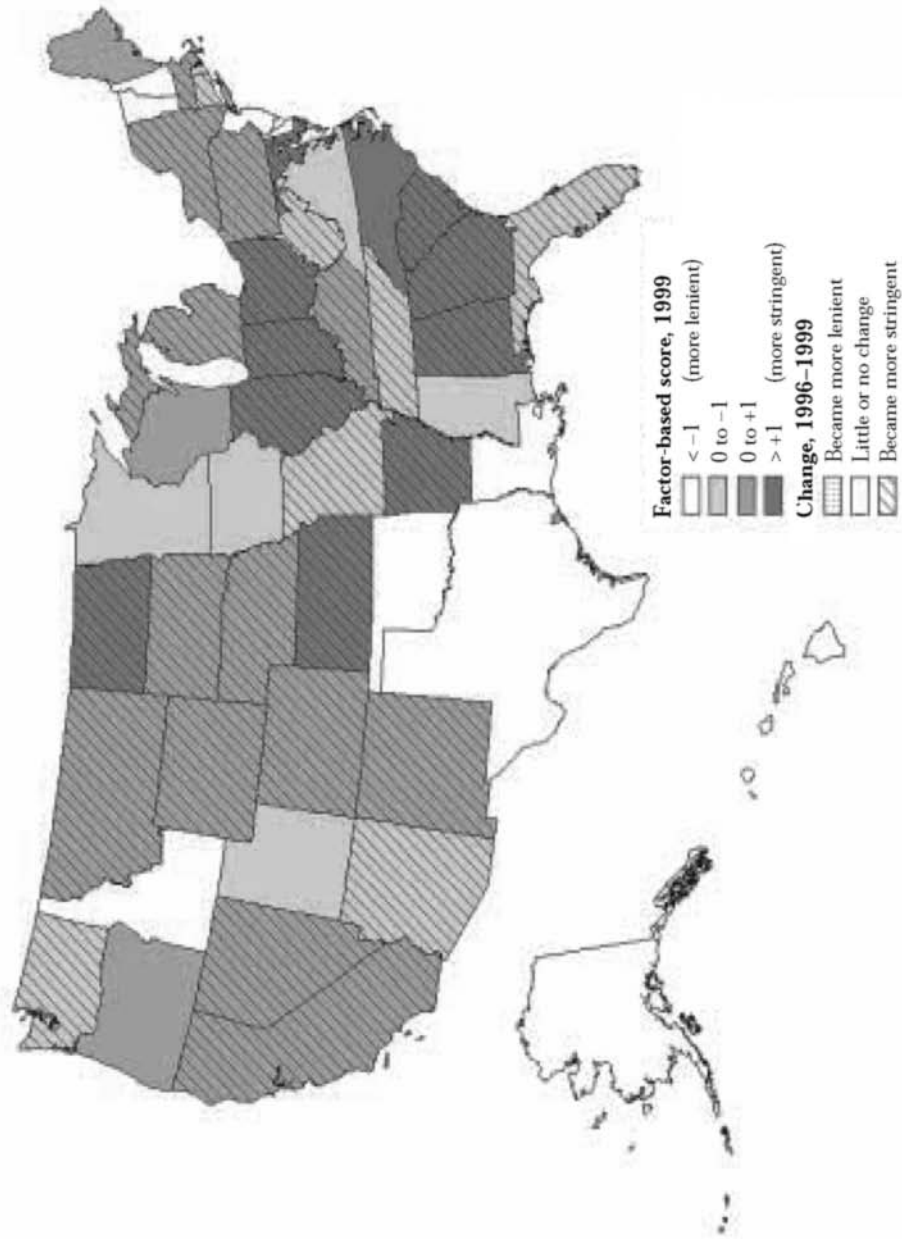
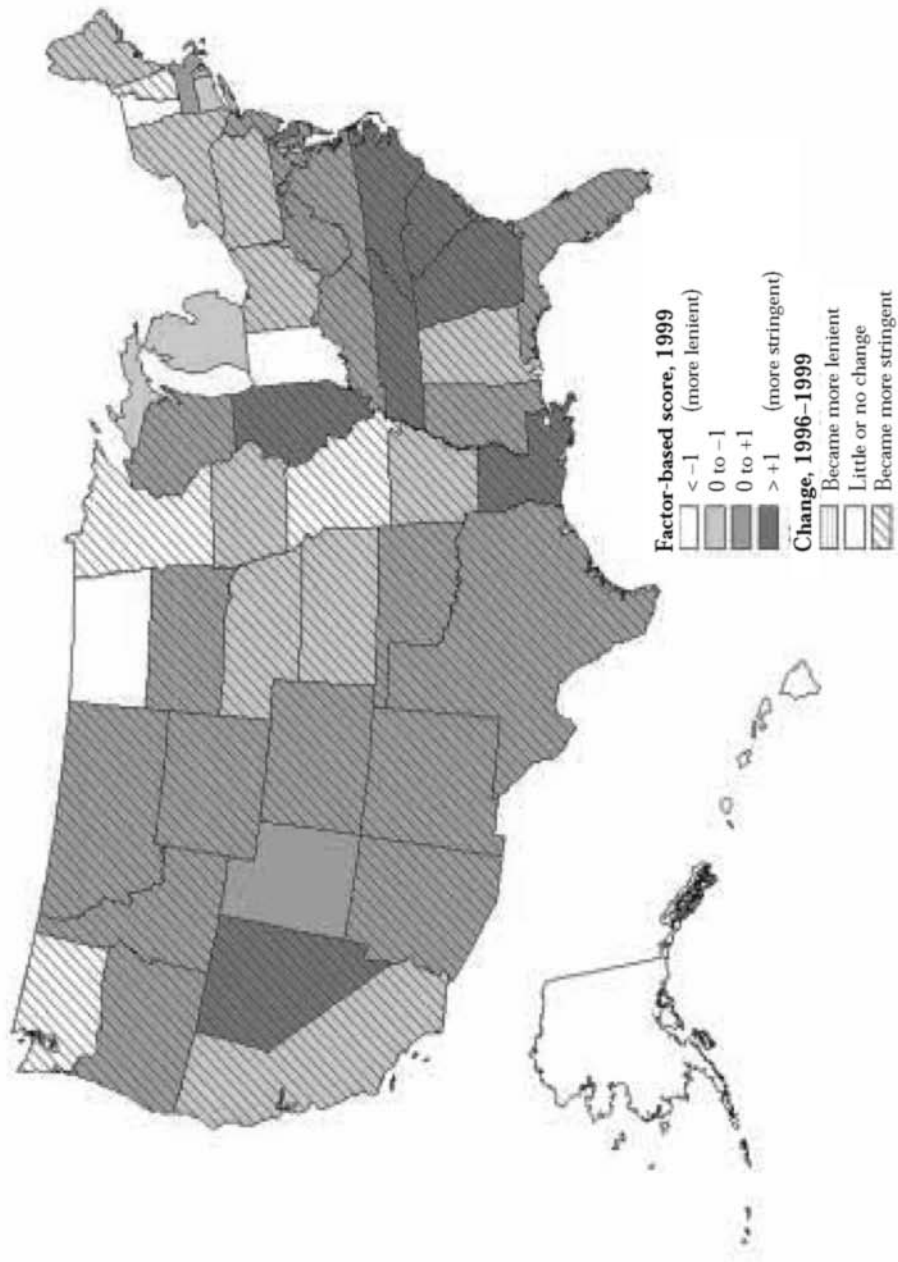


Figure 2. States' Welfare Policy on Behavior-Related Rules in 1999 and the Change From 1996 to 1999



married poor individuals (Kaestner, Kaushal, and Van Ryzin 2001), and welfare gains seem to attract single mothers the most (Cushing 1993; Enchautegui 1997). Cushing (1993), for example, found that welfare benefits are weakly related to the out-migration and moderately related to the in-migration of single mothers. In addition, Clark (1990) found that single mothers, whether they received welfare or not, were significantly less likely to migrate if they lived in states that offered generous AFDC benefits. After PRWORA, however, devolution to the states increased variation in poor two-parent families' eligibility for Temporary Assistance to Needy Families (TANF), and thus may have created new welfare incentives for poor couples with children.

Also, it is not clear whether poor father-headed families respond differently than do poor mother-headed families to welfare constraints and opportunities. Little is known about how poor single fathers respond to these constraints, and we are unaware of any study that has addressed the reaction of poor single fathers to welfare reform. Although some scholars have attributed the migration of single parents primarily to the search for better employment opportunities (Crowder 2001; Dublin 1998; Kaestner et al. 2001), the structural disadvantages that single mothers face in labor force competition and a potentially weaker labor force attachment may affect their interstate-migration decisions differently from those of poor single fathers. If poor single mothers are less likely than poor single fathers or married mothers to have labor force experiences whose length and quality attaches them to a given area, they may be more likely to migrate across state lines in response to a variety of welfare benefits (Enchautegui 1997). Thus, whether single-parent and two-parent families respond differently to variations under today's welfare system remains an empirical question.

HYPOTHESES

On the basis of this welfare- and gender-specific migration literature, we tested the following hypotheses:

1. Post-welfare-reform stringency in states' welfare-eligibility and behavior rules, as well as benefit levels, encourages out-migration (a positive push effect) and discourages in-migration (a negative pull effect) among poor families.
2. States' economic characteristics (i.e., employment and job-growth measures) are viable alternative (mediating) explanations to state welfare reform policy for the migration behavior of poor families.
3. Alternatively, states' economic characteristics may interact with welfare reform measures to condition the impact of welfare policy on the migration behavior of poor families.
4. The impact of stringency in states' welfare-eligibility and behavior rules, as well as benefit levels, on the migration behaviors of poor families is moderated by family structure. Single mothers are expected to be more directly affected by these rules than are poor married couples and single fathers, based on the logic that women's earnings are generally lower, so that single mothers are more likely to rely on welfare at some point.
5. The influence of family structure on the migration departure decision among poor families' decisions to migrate is mediated by the families' community ties.

We tested these hypotheses by using a longitudinal design to calculate individual-level life-history indicators of migration behavior—a strategy that permitted us to measure determinants preceding the decision to migrate. Data collected between 1996 and 1999 allowed us to test our thesis beginning with the final prereform policy year through

the period immediately following welfare reform. Frey et al.'s (1996) statistical concepts, discussed later, provided a formal departure (push) and destination-choice (pull) nested logit migration-choice model for studying this process.

RESEARCH DESIGN AND METHODS

In a longitudinal specification of welfare-benefit "push" and "pull" on individual migration behavior during the 1996–1999 welfare-reform period, we used merged data from three main sources: the 1996 panel of the SIPP, the Urban Institute's WRD, and a file on the economic characteristics of the states, created from 1995–1999 data from the Regional Economic Information System (REIS) and the Bureau of Labor Statistics' state-level unemployment rates for 1995–1999. Our data are left censored at the beginning of 1996, the year in which welfare reform went into effect; thus, we observed the migration behavior of families beginning about the time that welfare reform was initiated. Observations are right censored either with a migration event or at the end of 1999, when the survey ended.

We focused on 7,878 spells during which the SIPP married and single-parent families were at risk of migrating. All the families had family incomes at or below 200% of the federal poverty level at some time during the four-year observation period. This sample encompassed all poor families who migrated from one state to another plus a one-tenth randomly selected subsample of nonmigrating poor families.¹ This sample provided 202,471 person-months of observation, in which 776 interstate moves occurred. Interstate migration is a time-varying indicator that is defined as a move across state lines in any month during the 1996–1999 period of the SIPP panel.

Table 1 provides descriptive statistics for the entire sample, and Table 2 gives information about those who migrated to and from states with particularly lenient or stringent welfare policies. The descriptive data in Table 1 from the initial (premove) interview of the SIPP panel show that 45% of this sample of poor families were headed by single mothers. Nearly 75% of the family heads were of childbearing age, and there was an average of 1.3 school-aged children per family. Family heads were determined according to the current census definition of *family* using a SIPP indicator of marital status, so that the relatively few cohabiting units were considered single-parent-headed families. Months during which individuals were single, without children, were not considered in this analysis. Minority-group members constituted about 35% of the poor families—17% Hispanic and 18% African American. Just over 28% of the sample had less than a high school education, and 42.5% were not working when the panel study was initiated. Eleven percent were families who were living within the households of other, primary-resident families (i.e., they were subfamilies).

As is shown in Table 2, two fifths of the migrant poor families went to states that were either very lenient or very stringent (i.e., both the eligibility and behavior-related rules in

1. The decision to use a one-tenth random subsample of nonmigrant poor families was forced by limitations in computer capacity owing to the extremely large number of person-month observations (approximately 19,547,000) and the large analytic matrix (48 potential choice outcomes, with 23 predictor variables). Although the resulting significance tests are likely to be too conservative, internal validity is preserved by the randomization procedure (Campbell and Stanley 1963). External validity—or the potential for generalizability—is not reduced by randomized subsampling and depends on the representativeness of the original sample. SIPP is a weighted data set, with key weights on poverty status and race. Our study included only poor families (with incomes at or below 200% of the federal poverty level), and two minority control variables are included in the analysis model. We found no evidence that the weights differentially affect migrant versus nonmigrant poor families in the model, and models that we tested using various subsamples did not indicate that the subsampling strategy affects the validity of our results. Given the generalizability of the SIPP sample to the U.S. population with appropriate weighting, we can likewise assume the representativeness of the randomized subsample with control for weighting factors.

Table 1. Descriptive Statistics for Variables That Were Used in the Analyses (*N* = 202,471 Person-Months)

Variable	Percentage or Mean ()
Interstate Migrations (%)	0.4
Destination-State Characteristics	
Behavior-related rules second-order factor score	-0.3 (1.1) Range: -1.4-1.9
Basic eligibility rules first-order factor score	-0.1 (0.9) Range: -2.6-2.1
Maximum benefit stringency	710.7 (196.5) Range: 105.8-1,102.0
Employment-to-population ratio	60.4 (10.4) Range: 47-129
Annual job growth	1.0 (0.01) Range: 0.9-1.0
Unemployment rate	4.6 (1.2) Range: 2.5-8.8
Neighbors an origin state (%)	0.1 (34.1% of interstate moves)
State of previous residence (%)	0.01 (10.0% of interstate moves)
Origin-State Characteristics	
Behavior-related rules second-order factor score	0.01 (0.9) Range: -1.4-2.2
Basic eligibility rules first-order factor score	0.1 (0.9) Range: -2.6-2.1
Maximum benefit stringency	712.1 (206.1) Range: 101.70-1102.05
Employment-to-population ratio	57.5 (5.0) Range: 47-129
Annual job growth	1.0 (0.01) Range: 98-108
Unemployment rate	4.8 (1.0) 2.50-8.80

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the destination state were lenient or stringent, respectively), and more than a third left very lenient or very stringent states. Very lenient states lost and received 12% to 13% of the nation's poor in- and out-migrant families, although these states are populated by about 10% of the nation's residents. Very stringent states, home to almost a quarter of the U.S. population, contributed to interstate migration flows with 26% of all U.S. out-migrants and received 28% of U.S. interstate in-migrants. These figures suggest that poor-family in-migrants to very lenient states may have been somewhat more disadvantaged than poor-family in-migrants to very stringent states and that out-migrants from very stringent states may have been slightly more disadvantaged compared with out-migrant families from very lenient states, but, in general, the differences are small. Even if these simple gross-flow figures indicated that welfare policy motivated the migration of poor families, however, careful analysis must consider other characteristics that influenced a state's in- and out-migration history.

Variable	Percentage or Mean ()
Individual/Family Characteristics	
Family structure (%)	
Married couple	48.4
Single-mother headed	45.3
Single-father headed	6.2
Minority (%)	
Non-Hispanic white	64.8
African American	18.2
Hispanic	16.9
Childbearing aged (%)	74.7
Education (%)	
College	10.0
High school	61.4
Less than high school	28.5
Owns home (%)	43.9
Enrolled in school (%)	14.9
Not working (%)	42.5
Number of school-aged children	1.3 (1.2) Range: 0–8
Subfamily (%)	10.7

MODELING STRATEGY

A Nested Statistical Model of Migration Behavior

Conceptualizing both departure (push) and destination (pull) effects is consistent with the micro-level migration literature, which views migration decision making as a two-part, but interrelated, process: (1) the decision to stay or move controlling for the pull of potential destinations and, for migrants, (2) the decision where to move. On the basis of this logic and following Frey et al.'s (1996) migration-modeling strategy, we estimated a nested discrete-choice logit model that predicts a binomial response among multiple migration outcomes. Dummy indicators control for both departure- and destination-state fixed effects. The nested logit model assumes an integrated decision-making process according to a decision tree in which the independence of choices is assumed only at each step in the decision tree. This model thus avoids the independence-from-irrelevant-alternatives property that occurs when the random components of the utility across choices are erroneously assumed to be independent, as with simple multinomial and conditional logit models. Our decision tree is shown in Figure 3, where Level 1 choices below the interstate-move decision (at Level 2) are 46 alternative destinations, including 45 states and the District of Columbia. (Wyoming, North and South Dakota, Vermont, and Maine were not considered in our models because SIPP identified these states as two combined residence areas, which precluded our estimation of state-level characteristics; only 29 cases that were living in this set of states at some time from 1996 through 1999 met the criteria for our sample, and among them, only 10 moved to or from one of these states.)

Table 2. In- and Out-Migration to States With Lenient and Stringent Eligibility and Behavior-Related Rules, by Characteristics of Migrants

Variable	States Lenient on Both Eligibility and Behavior Rules ^a		States Stringent on Both Eligibility and Behavior Rules ^b	
	In-Migrants	Out-Migrants	In-Migrants	Out-Migrants
Percentage of Total In- and Out-Migration	12.7	12.1	27.8	25.8
Family Characteristics of In- and Out-Migrants				
Childbearing-aged head (%)	79.1	77.4	75.2	78.9
Race of head (%)				
White	90.6	92.5	81.4	83.5
African American	6.3	4.3	11.0	9.5
Hispanic	3.1	3.2	7.6	7.0
Family structure before migration (%)				
Couple headed	50.0	55.9	54.8	51.3
Single-mother headed	38.5	33.3	32.4	35.6
Single-father headed	11.5	10.8	12.8	13.1
Education of head (%)				
Less than high school	13.5	11.8	14.8	13.1
High school	62.6	74.6	62.8	65.3
College	23.9	23.6	22.4	21.6
Head enrolled in school before migration (%)	14.6	13.9	11.4	10.5
Head not working before migration (%)	56.3	61.3	53.3	58.3
Lived in owned home before migration (%)	40.6	41.9	38.6	38.7
Mean number of school-aged children in family ()	1.0 (1.2) Range: 0–5	0.8 (1.0) Range: 0–5	0.9 (1.2) Range: 0–6	0.8 (1.0) Range: 0–4
Subfamily before migration (%)	11.5	9.7	9.5	12.1
Subfamily after migration (%)	7.3	7.5	7.1	7.5

^aStates are New Hampshire, Rhode Island, Connecticut, Missouri, Iowa, Minnesota, Washington, Alaska, and Hawaii.

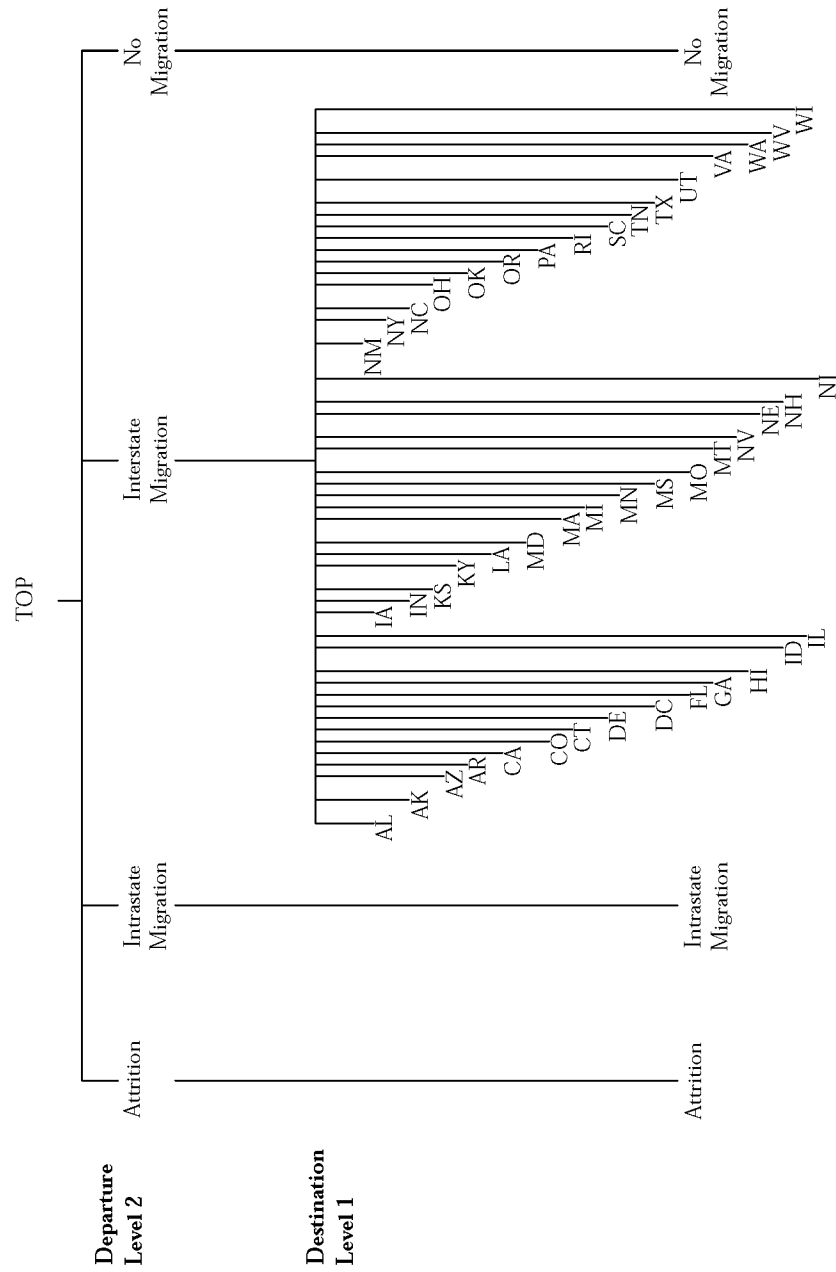
^bStates are Massachusetts, Maryland, North Carolina, South Carolina, Georgia, Kentucky, Illinois, Wisconsin, Montana, Colorado, New Mexico, Oregon, and Nevada.

The model has a closed-form solution at each level (SAS Institute n.d.):

$$P_i(j_h | \pi_h) = \frac{\exp \left[\mathbf{x}_{i,j_h}^{h'} \beta^h + \sum_{k \in C_{j_h} \pi_h} I_{k,j_h} \theta_{k,j_h} \right]}{\sum_{j \in C_{\pi_h}} \exp \left[\mathbf{x}_{i,j}^{h'} \beta^h + \sum_{k \in C_{\pi_h}} I_{k,j} \theta_{k,j} \right]} \quad h = 2, \dots, L,$$

where $P_i(j_h | \pi_h)$ is the probability that an individual at particular time i makes choice j_h (where $j_h = 2$ represents a decision to stay in the state of residence, to move to another state, to move within the state of residence, or to leave the sample), given the set of alternatives made in conjunction with choice j_h . In our models, the choice set

Figure 3. Migration-Departure and Destination-Choice Decision Tree



corresponding to $j_2 =$ interstate migration includes the U.S. states and the District of Columbia (Level 1), shown below “Interstate Migration” (Level 2) in our decision tree (Figure 3). \mathbf{x} is the vector of variables included in the model for the particular choice (as indexed by j and h), which in our models included individual characteristics and characteristics of the individual’s origin state, where $h = 2$ (Level 2), or economic and welfare policy characteristics of each state alternative, where $h = 1$ (Level 1).

Our model of the likelihood of a choice at Level 2 considers an inclusive value that is defined recursively according to the utility of alternative state choices compared with the respondent’s current state of residence. This Level 2 model identifies the push effects of a potential migrant’s origin location. I , representing the inclusive value for state alternatives at Level 1, is defined as

$$I_{\pi_h} = \ln \sum_{j \in C_{\pi_h}} \exp \left[\mathbf{x}_{i,j\pi_h}^{h'} \beta^h + \sum_{k \in C_{j\pi_h}} I_{k,j\pi_h} \theta_{k,j\pi_h} \right]$$

$$0 \leq \theta_{k,\pi_1} \leq \dots \theta_{k,\pi_{L-1}},$$

where θ is a dissimilarity parameter that can be interpreted as the change in the probability that the alternative is chosen that occurs with an improvement in the alternative’s attributes (see Train 2003).

No inclusive term is included in estimation of the conditional probability that an individual chooses state j at Level 1:

$$P_i(j_1 | \pi_1) = \frac{\exp \left[\mathbf{x}_{i,j_1\pi_1}^{1'} \beta^1 \right]}{\sum_{j \in C_{\pi_1}} \exp \left[\mathbf{x}_{i,j\pi_1}^{1'} \beta^1 \right]}.$$

This is the “destination model” for identifying pull effects. The pull of destination-choice characteristics that are not identified by state-level variables is controlled for by the inclusive term included in the Level 2 departure model.

Several measures of model goodness of fit can be calculated for the nested model. We present McFadden’s likelihood ratio index (LRI) for each model’s fit compared with the null model. McFadden (1974) discussed his LRI as analogous to the R^2 for ordinary least-squares linear regression models. The measure ranges from 0 to 1, where 0 indicates no fit and 1 indicates a perfect fit. We also present -2 log-likelihood measures for use in model comparisons.

The Departure Model

Departure models are logit discrete-time event-history models in which spells begin at the start of the SIPP observation period in 1996 (the year PRWORA went into effect) or in the month following a migration event (in the case in which the individual provided multiple observation spells). Right censoring occurs with a migration event, a death, attrition from the survey, or the last survey interview in 1999. Because these models estimate the likelihood of the event occurring in any observed month conditional on its not having occurred in other months of observation considered in the model, each person-month that is contributed to the data by a case is treated as an independent observation. Allison’s (1995) discussion of this strategy clarifies the nondependence among such observations in survival analysis, given that the same individual does not contribute more than a single spell of observation. Based on the definition of conditional probability, the logic is that this method simply factors the likelihood function for the data with no censoring according to discrete divisions of time:

$$\prod_{i=1}^n \Pr(T_i = t_i).$$

In this equation, T_i is the random variable for the event of interest and t_i is the value observed for individual i . The likelihood function is thus factored such that P_{it} is the conditional probability of the event at time t , given that the event did not occur at previous times observed in the data, as

$$\Pr(T_i = x) = P_{ix} \left(1 - P_{i(x-1)}\right) \left(1 - P_{i(x-2)}\right) \dots \left(1 - P_{i1}\right).$$

Although Allison demonstrated that the lack of independence among person-months for any particular observation in discrete-time event-history analysis is not a problem, we are aware that the claim of full independence among observations may not be justified and thus that standard errors may be underestimated. Furthermore, SIPP's clustered sampling design is another potential source of standard-error deflation. Robust standard errors typically can be obtained for the nested logit model by using a statistical package such as STATA. Because the extraordinarily large amount of memory required to compute our models precluded the use of STATA, our results should be considered preliminary. However, controls for state fixed effects and return migration provide confidence that nonindependence among observations does not unduly deflate standard errors in our analysis.

Our models estimate the likelihood of interstate migration when the origin state has the particular characteristics specified by the model—specifically, characteristics defined by state welfare policy and job opportunities. We considered an interstate move to have occurred when the individual's state code differed in a month from the state code in the previous month. Using SIPP variables indicating why an individual left or entered the survey in a particular wave, we further refined the no-interstate-move category by coding intrastate moves and attrition as alternative “choices” to interstate or no migration. These alternatives were coded 0 when they were not chosen and 1 in a month in which they were chosen. Likewise, when no move was observed (the reference category in departure models), the no-move choice was coded 1. Our strategy reduced bias in the estimate of interstate migration versus no migration, our outcome of interest, by reducing measurement error in the nonmover outcome category. In this article, we report coefficients only for the interstate move versus no-move comparison.

The departure model includes characteristics of the state of residence in the previous month (origin-state “push” factors). We begin with a basic departure model that includes lenient-to-stringent measures of levels of welfare rules and the maximum welfare dollar benefit for a family of four (reverse coded so that higher values indicate greater stringency).

State-level economic characteristics that were modeled as alternative explanations of migration included time-varying state unemployment rates, employment-to-population ratios, and annual job growth. We modeled each separately and then added them to the basic departure model, with separate sets of models tested for unemployment rates and employment-to-population ratios because these measures are closely associated. We examined these characteristics for direct, mediating, and interactive effects. Interaction models tested whether the effects of behavior-related rules and of basic eligibility rules are conditional on each of these three state economic indicators.²

We then compared the likelihood of migration for married-couple, single-father-headed, and single-mother-headed families and, using interaction models, whether their

2. Other specifications of job opportunities that we initially considered included annual wage/salary job growth, service-sector job growth, the ratio of service-sector jobs to all jobs, and per capita income. Results for these specifications (not shown) are the same as for the overall annual job growth.

migration behavior differed according to state policy and state economic characteristics. The salient individual-level characteristics that we used as controls in the full model were the family head's racial/ethnic status, age, and educational attainment. Pre-migration home ownership, employment, school enrollment, number of school-aged children, and subfamily status—all indicators of attachment to origin locations—were included in the models as community-tie mediators of family structure. These indicators were lagged, so that they represent conditions in the month prior to the month in which an event may have occurred. In addition, subfamily status at the destination was included in a model to test the pull of network ties on the decision to migrate.

Destination Model

For destination-choice models, we restricted our estimation to those who moved to another state. Here, we were interested in the relationship between the choice of a state as the destination when migration occurred and the leniency versus stringency of the state's welfare policy and whether the relationship varies by family structure. Welfare policy is characterized by the state's time-varying basic eligibility and behavior-related rules summary scores (ranging from lenient to stringent) and the maximum dollar benefit for a family of four (reverse coded so that high values indicate stringency). In addition, the destination model estimates the pull effect of state-specific unemployment rates, employment-to-population ratios, and annual job growth. We expected neighboring states to have greater attraction to migrants, so all models controlled for whether the destination alternative bordered the state of residence in the previous month. In addition, because return migration is a sizable component of interstate migration (Dublin 1998; Schram et al. 1998), it is also important to control for a potentially higher propensity to choose destinations of previous residence. We defined a state as a previous state of residence in all the months following a departure from that state, using a dummy-coded indicator. The effects of these characteristics were estimated for the binomial choice of each alternative state at Level 1 of our nested logistic regression model.

Corresponding to our departure models, our destination models include (1) a state policy-only model; (2) state policy and state economic characteristics models (with separate sets of models for state employment and unemployment measures); (3) state characteristics and family structure, controlling for migration-salient individual and family characteristics; and (4) interaction models testing family structure by policy and state economic characteristics, as well as state policy by state economic characteristics.

THE DATA

Migration

The United States has no national migration survey, so migration scholars have usually relied on the decennial census, Current Population Survey, special-purpose surveys, and other secondary administrative data sources to obtain minimal information on aggregate migration rates or individual migration behavior. Unfortunately, these data lack information on migration histories. The 1996 panel of the SIPP interviewed persons at 4-month intervals, collecting monthly data for the preceding 4 months, resulting in 48 months of observation. Although not a migration survey, the 1996 SIPP provides a 4-year current, as opposed to retrospective, migration history, along with extensive information on individual socioeconomic characteristics and program participation. Thus, the SIPP is arguably the best nationally representative longitudinal data set that is available to study the causes and consequences of migration in the United States (Clark 1990). Moreover, the SIPP was redesigned after the 1993 panel to improve the quality of longitudinal data for informing policy makers regarding participation in governmental programs, which makes the 1996 and subsequent SIPP panels ideal data for conducting these analyses.

The migration events and family and individual-level data that we used are from this 1996–1999 SIPP panel, which includes about 40,000 households and is nationally representative of the resident U.S. civilian, noninstitutionalized population when appropriately weighted. The SIPP contains monthly information on migration behavior and demographic background (see www.sipp.census.gov/sipp for additional information), which we used to construct event-history files that were based on person-months for poor families. Interviews of all household members aged 15 or older every four months recorded monthly changes in these factors, as well as in state of residence, thus permitting a prospective study of migration that includes information at both the origin and destination points. Unfortunately, as we noted earlier, the samples from Maine, Vermont, North Dakota, South Dakota, and Wyoming are so small that the SIPP public-use data group these five states into two categories. Because welfare-policy classifications differ for states within these two groups, we could not include migration to and from them in our analyses.

Family structure, measured as dummy indicators of single-mother, single-father, or married-couple family, is time varying in our analysis. Each family in each household was considered, whether a primary family or a related or unrelated subfamily. One record per family per month per potential outcome choice was included in our event-history file. Generally, for married-couple and single-mother-headed families, the female head provided individual-level information for our models; for single-father-headed families, this information was provided by the male head. An exception is that for married-couple families, the lack of employment was coded yes when both male and female heads were not working for pay, and school enrollment was coded yes if either of them was enrolled in school.

Because individual and family demographic and economic characteristics are known to influence migration behavior, we addressed the research questions with statistical controls for age, racial/ethnic groups, and educational attainment in our models. These dummy indicators, constructed with SIPP data, included minority status (versus non-Hispanic white) and time-varying indicators of being of childbearing age (20–45 versus all others) and having less than a high school education or having more than a high school education (versus having only a high school diploma). We also refined the minority-status variable by using dummy indicators for the racial/ethnic groups African American, Hispanic, and non-Hispanic white to evaluate heterogeneity within the minority groups. Although differentiation among Hispanic subgroups would have been preferable—because the human- and financial-capital assets that may influence migration behavior are expected to vary considerably among these groups—the SIPP sample sizes for all but Mexican-origin Hispanics were too small for our analytical purposes.

We tested the effects of community ties with time-varying indicators reflecting social network and employment circumstances in the month just prior to our observation month of interest, so that they were timed appropriately before a migration event. These variables include the number of school-aged children (aged 6–18), employment status (reference category: has a job), school enrollment (reference category: not in school), home ownership (reference category: does not own a home), and subfamily status (reference category: primary family status). The number of children in each age group was determined by an evaluation of family rosters by age for each month. Subfamily status was determined by the family-type indicator “ESFT” provided by the SIPP. The lack of employment, school enrollment, and home ownership involve both social and economic ties to places of origin. These three indicators were dummy-variable coded 1 when true in the previous month. A second subfamily dummy variable was coded 1 when the status was true in the current month of observation to indicate subfamily status at destinations.

Welfare Policy

Data on state-level welfare-reform rules were derived from the Urban Institute’s WRD, which provides a longitudinal, primarily textual, account of the changes in AFDC/TANF

rules in all 50 states and the District of Columbia for each year from 1996 to 1999. The WRD organizes the detailed textual information on welfare rules across states and time, as well as across different types of assistance units. Caseworkers' manuals and state regulations provided the data for 1997 to 1999, and AFDC state plans and waiver terms and conditions provided the data for 1996.

Our approach to the measurement of welfare rules was based on stated "on-the-books" welfare policies that were developed by state legislatures and welfare agencies, not on the "on-the-ground" implementation of policy by local agencies and individual caseworkers. Although within-state local areas may differ in practice regarding policy implementation, we argue that state welfare policies provide not only the most valid indicator of state policy makers' intentions but also the most reliable basis for constructing time-series measures of welfare-eligibility and behavioral rules, which are fundamental to assessing the basic migration-impact thesis.

Using the basic policy categories provided by the WRD as a point of departure, we coded 78 salient individual welfare-rule items for each state and for the years 1996, 1997, 1998, and 1999. These individual welfare guidelines for multiple years, coded on a lenient-to-stringent continuum, were then subjected to a Varimax factor-analysis solution. Decisions on factor dimensions were based on the standard-practice threshold principal-component eigenvalue criteria of 1.00 or higher, and an individual-item factor loading of .40 or higher in the rotated factor pattern. This methodology extracted 15 first-order and 2 second-order welfare-policy factor dimensions (see <http://www.pop.psu.edu/mswpvc/welfare-policy.htm> for more information on the creation of these constructs describing state policies), and we used 2 of these dimensions in our analysis of policy effects on migration: the second-order policy dimension behavior-related rules, representing a state's expectations regarding work behavior, personal and family responsibilities, and the appropriate length of welfare receipt, and the first-order policy dimension, basic eligibility rules, which represents eligibility rules that apply to all recipients.

The behavior-related-rules dimension consists of six first-order dimensions: illness exemption, work exemption, noncompliance penalties, time limits, family responsibilities, and personal responsibilities. These six items comprise, respectively, exemptions to care for one's own illness or an ill member of the welfare unit, work exemptions for VISTA volunteers or when no acceptable welfare program activities are available in the geographic area, sanctions for not complying with the requirements of welfare activities and for noncompliance with child support requirements, the combinations of time limits and time-limit extensions used by the state, school attendance and immunization requirements for minor children and whether the state requires a signed contract to ensure the parent's fulfillment of the requirements, and whether the state requires drug and alcohol screening and participation in parenting or family-skills classes. The basic eligibility-rules dimension comprises three WRD items: the income eligibility test value, whether the state requires job-search activities for welfare receipt, and whether drug felons are eligible for benefits. These welfare-policy dimensions permitted us to summarize the welfare-policy climate for each year and for each state. Again, these measures represent states' reported rules for a particular year without consideration of within-state variation in the application of rules. In addition, we included the calculated value of the maximum welfare dollar benefit for a family of four with no income (based on formulas provided in the WRD) in our models. These three policy measures were merged with the SIPP data, so that the year of the state policy corresponds with the year of the SIPP interview for the particular person-month for the destination choice and for the state of residence in the prior month for the departure-decision model.³

3. The validity of our welfare-policy measures is confirmed by comparing state leniency-to-stringency scores with alternative welfare stringency indices. Ellwood (2000) derived a measure of "state welfare reform

Our lenient-to-stringent measures of welfare-eligibility and behavior-related rules, displayed in Figures 1 and 2, are better understood by examining specific state welfare-policy rules that constitute the factor-analysis-derived dimensions. Using Texas and California as illustrations, Figure 1 shows a more-lenient eligibility pattern for Texas and a more-stringent eligibility pattern for California. Two key component policy rules in the basic-eligibility-rules dimension include (1) "Are persons convicted of a drug felony eligible for TANF?" and (2) "Is a job search required as a condition for eligibility?" In 1999, drug felons were eligible for TANF in Texas (a lenient rule) but not in California (a stringent rule). Similarly, in that year, there was no job-search requirement in Texas (a lenient rule), but there was one in California (a stringent rule). Although Texas had a lower income cutoff for eligibility, on balance its eligibility rules were lenient compared with California.

With regard to the stringent-to-lenient measures of our behavior-related-rules dimension, the foregoing pattern for Texas and California is reversed. Two key behavior-related rules include (1) "What is the state time limit policy for TANF receipt?" and (2) "Is drug and alcohol screening and/or treatment required?" In 1999, Texas policy imposed both lifetime limits *and* a benefit waiting period on the receipt of TANF (a stringent rule), while California imposed a benefit-reduction period only (a rule that is somewhat more lenient). Similarly, in that year, Texas required drug and alcohol screening and/or treatment for the receipt of TANF (a stringent rule), but California did not (a lenient rule). Although several additional specific behavioral rules make up our second-order behavior-related-rules dimension, the more-stringent pattern for Texas and the more-lenient pattern for California illustrate the differences that are shown in Figure 2.

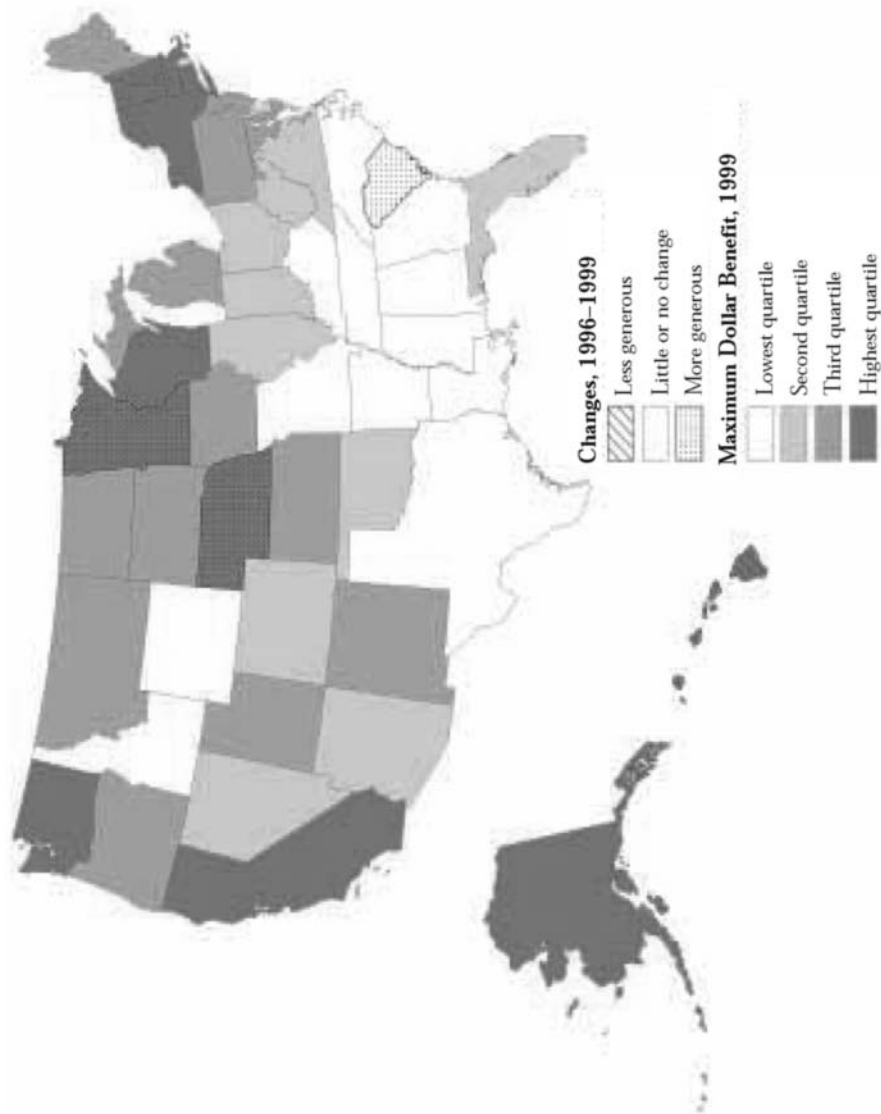
The maximum-benefit dollar values that were calculated for a family of four with no income for each year for each state were adjusted for cost-of-living variations by U.S. region. The distribution of states' 1999 maximum-benefit levels is shown in Figure 4, where darker shading indicates higher benefit levels. For consistency in modeling, we reverse coded this variable so that high values indicate greater stringency.

State-Level Economic Characteristics

Labor market opportunity structures that may be interrelated with state public welfare policy are alternative explanations for the migration behavior of poor families, such that apparent welfare-policy influences on migration may be mitigated by strong economies that encourage in-migration and inhibit out-migration and weak economies that encourage out-migration. Although indicators of the local labor market would provide more-precise measures of the opportunity structures that individuals compare in migration decision making, for confidentiality reasons, the public-use SIPP data do not attach the within-state-location indicators to SIPP case records. Thus, we had to test for effects of state-level economic characteristics. Annual job growth and the employment-to-population ratio were

statistical aggressiveness" for the prereform 1986–1997 period by an index that combined the decline in real benefits, waivers for the imposition of time limits, full welfare sanctions for the lack of compliance with job requirements, and termination for failure to meet a requirement created under an AFDC waiver. Ellwood also derived a measure of "state welfare program aggressiveness" from Meyer and Rosenbaum's (2000) study of 1984–1996 changes in federal and state income taxes, AFDC and food stamp benefits, Medicaid, and data on child care programs. Although notably different in index components from our post-welfare-reform measures of state behavior-related and eligibility rules, a comparison shows that 5 of the 7 states with the most-stringent behavior-related rules and 7 of the 9 states with the most-stringent eligibility rules were also listed as "most aggressive" either by Ellwood or by the Meyer and Rosenbaum-derived measures. Similarly, 5 of the 9 states with the most-lenient behavior-related rules and 5 of the 10 states with the most-lenient eligibility rules were listed as "least aggressive" either by Ellwood or by the Meyer and Rosenbaum-derived measures. Given the dramatic differences in purpose, measurement approach, and period of these alternative welfare-stringency indices, the level of congruence with our state welfare behavior and eligibility indices is striking.

Figure 4. States' Maximum AFDC/TANF Dollar Benefits for a Family of Four With No Income in 1999 and the Change From 1996 to 1999



calculated using data from the 1995–1999 REIS, and 1996–1999 unemployment rates were obtained from the Bureau of Labor Statistics. This information was merged with the SIPP and state-policy data by state and year. Descriptive statistics for these variables are presented in Table 1, based on 202,471 person-months of data.

RESULTS

Although the departure and destination models were estimated as single, integrated, nested statistical computations, we discuss them separately here. They are presented in Table 3.⁴ All the models control for duration in spell of observation and state fixed effects (dummy coded). In addition, we conducted sensitivity analyses, using the basic policy and full, trimmed models, to evaluate the influence of any particular large state with traditionally high rates of internal migration. These analytical results, which are presented in Appendix Table A1, indicate the minor influence of these large states on our findings.

Departure Models

Models predicting an interstate migration versus no migration are presented in Table 3. Simple models, with controls for duration, state fixed effects, and the inclusive term from the Level 1 (destination) portion of the model, indicate that migration from stringent states is significantly more likely than from lenient states—a relationship that holds across all the models. States' both stringent behavior-related expectations and stringent basic eligibility criteria for the receipt of TANF "push" poor families from states, supporting Hypothesis 1. The consistently significant negative effect of stringent dollar benefits is contrary to expectation, although the effect is small, even for its dollar-based metric. A viable explanation for this counterintuitive finding is that poor families who were receiving welfare benefits were unwilling to risk losing their support by moving to another state. Thus, in this early 1996–1999 period of welfare reform, when uncertainty about the new rules was the greatest, the desire to maintain even a relatively low welfare benefit level may have reduced interstate out-migration. Poor families in low-benefit states with lower wage structures may be less likely to have the financial resources that are necessary to migrate than may poor families in states where benefits and wages are higher.

A test of Hypothesis 2 provides some evidence that the economic characteristics of states provide alternative, mediating explanations for the effect of states' welfare-reform policies on the out-migration of poor families. Models 2 and 3 show that both higher employment-to-population ratios and greater unemployment rates are negatively related to the out-migration of poor families and attenuate the effects of welfare policy. In particular, the unemployment rate partially mediates the effect of stringent eligibility rules but not stringent behavior-related rules. This model indicates that we can accept our hypothesis that states' economic characteristics, rather than welfare eligibility policy, motivate families' decisions to migrate, although with the control for individual and family characteristics in Models 4–7, the significant "push" of stringent eligibility rules reemerges.

We found no support for our third hypothesis, of a moderating effect of states' economic characteristics in the departure model. Interactions between each origin-state policy summary measure and each state economic characteristic were tested, and none is statistically significant for the departure decision (results not shown).

Models 4 and 5 show that family structure influences the migration behavior of poor families such that single fathers are more likely to migrate than are married couples and

4. Numerous interaction models were tested, as discussed in the results for the departure and destination models. The tables show only the destination-state unemployment rate by behavior-related rules stringency interaction model because this is the only statistically important interaction term we found. Tables showing nonsignificant interactions are available from us on request.

Table 3. Departure-Decision and Destination-Choice Model Logits

Characteristics	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Departure Decision: Characteristics in Origin States							
State policy and economic characteristics							
Behavior-related rules stringency	0.61**	0.44**	0.32**	0.38**	0.18**	0.22**	0.30**
Basic eligibility-rules stringency	0.40**	0.28**	0.16 [†]	0.34**	0.28**	0.30**	0.28**
Dollar-benefits stringency	-0.01**	-0.00**	-0.00**	-0.00**	-0.00**	-0.00*	-0.00**
Employment-to-population ratio		-0.08 [†]		-0.09 [†]			
Job growth		-0.75	-0.67	-0.78	-1.30	-0.96	
Unemployment rate			-0.60**		-1.15**	-0.79**	-1.30**
Family and individual characteristics							
Family structure (ref. = single-mother-headed family)							
Married-couple family				-0.02	0.04	-0.12 [†]	0.00
Single-father-headed family ^b				1.15**	0.79**	1.12**	1.11**
Childbearing aged				-0.35**	-0.33**	-0.29**	-0.41**
Race/Ethnicity—Minority (ref. = non-Hispanic white)							
African American				-0.63**	-0.59**		-0.62**
Hispanic						-1.04**	
Education (ref. = high school)							
Less than high school				-1.03**	-0.60**	-0.99**	-1.02**
College				1.01**	0.67**	0.86**	0.86**
Not working				0.87**	0.69**	0.78**	0.76**
Enrolled in school				-0.22 [†]	-0.06	-0.18 [†]	
Owns home				-0.39**	-0.23**	-0.42**	-0.37**
Number of school-aged children				-0.22**	-0.27**	-0.21**	-0.24**
Subfamily after migration						0.43**	0.42**

n n

single mothers. However, the impact of state welfare-eligibility and behavior rules, as well as benefit levels, on the migration behavior of poor families is not moderated by family structure. Interaction terms between family structure and each indicator of state welfare policy (not shown) are not statistically significant. Thus, contrary to Hypothesis 4, single mothers are not more directly affected by welfare-eligibility and behavior rules than are poor married couples or poor single fathers. Nor are they differently influenced to migrate by states' economic conditions. Tests of interactions between family structure and each state economic measure (not shown) revealed no significant conditioning effects.

A simpler model without controls for individual characteristics (not shown) indicates that married couples are more likely to migrate than single mothers, but the difference in the direct effects of married-couple and single-mother families is attenuated by other

	<i>n n</i>						
Characteristics	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Destination Choice: Characteristics in Destination States							
Behavior-related rules stringency	0.21**	-0.01	0.05	-0.01	0.08 [†]	0.03	0.69**
Basic eligibility-rules stringency	0.20**	0.26**	0.08	0.28**	0.28**	0.22**	0.22**
Dollar-benefits stringency	-0.00**	-0.00**	-0.00	-0.00*	-0.00**	-0.00 [†]	-0.00**
Employment-to-population ratio		-0.09*		-0.09**			
Job growth		-0.07	0.12	-0.02	0.69	0.39	
Unemployment rate			0.04		0.09	0.12*	-0.02
Neighbors origin state	2.12**	1.76**	2.17**	1.70**	1.83**	1.62**	1.73**
Return migration	3.69**	4.71**	2.74**	4.91**	5.84**	4.34**	4.90**
Policy × Economic Context Interaction							
Behavior-related rules × Unemployment rate							-0.10**
Goodness of Fit							
McFadden's LRI ^a	.87	.87	.87	.88	.88	.88	.87
-2 log-likelihood	204,458	203,230	202,870	199,210	198,108	197,316	198,504

The utility function in each departure-decision model includes statistical controls for duration, state fixed effects, and the inclusive term derived from the destination-choice (Level 1) portion of the nested model. The utility function for each departure model includes statistical controls for state fixed effects.

^aMcFadden's (1974) LRI compares model fit with the null model.

^bSignificantly different from married-couple families at $\leq .01$ in all models.

[†] $\leq .10$; * $\leq .05$; ** $\leq .01$

family-level characteristics. This result is consistent with Hypothesis 5, that the influence of family structure on the migration behavior of poor families is explained by the families' social and economic ties to their communities. Models 4 and 5 in Table 3 are full models that contain all our indicators of social and economic ties. Regardless of the specification of state economic opportunities considered in the model, each of these indicators operates in the expected directions, and all except school enrollment are statistically significant.

We also investigated subfamily status both prior to the month in which a migration might occur (i.e., at the origin) and in the month of the migration (i.e., at the destination) as a social/economic tie influencing the decision to migrate. Subfamily status at the origin is not a statistically significant predictor of interstate migration (model not shown); living in the household of another family has no influence on this decision. Subfamily status at the destination is significantly associated with the decision to migrate to another state, as is shown in Model 6. We do not consider this effect to be causal, but the potential to move in with another family appears to facilitate an interstate move. Model 6 is comparable to Model 5 but, in addition to including the subfamily status at the destination, refines the minority-status indicator using the race/ethnicity variables African American and Hispanic. This model shows that both groups are similarly less likely to migrate to another state in comparison to the non-Hispanic white reference group.

Finally, Model 7 presents a trimmed model that includes the policy × state economics interaction term in the destination-choice portion of the model. The results for this model are consistent with those for the departure model shown in full Models 4, 5, and 6, although the poorer fit of Model 7 indicates a preference for the simpler models.

Destination-Choice Models

The simple model that includes the destination alternative's lenient-to-stringent welfare policy dimensions and controls for duration, state fixed effects, bordering the origin state, and return migration (Model 1 in Table 3) indicates that migration was more likely to states with stringent behavior-related and stringent eligibility rules and less likely to states with stringent welfare-dollar benefits. The unanticipated "pull" of stringent behavior-rules policy is mediated completely, however, by states' economic characteristics (Models 2 and 3). In sum, Hypothesis 1, which states that stringent welfare-policy rules inhibit the in-migration of poor families, is not supported, although stringent welfare-benefit levels do reduce in-migration.

Contrary to our hypothesis, states with higher employment-to-population ratios repel poor in-migrants (Model 2), perhaps because of poor job prospects for in-migrants with low human capital or higher costs for housing in "full-employment" states with high employment-to-population ratios. Also contrary to our expectations, but consistent with the hierarchical linear modeling in Erwin et al.'s (2004) analysis of 1985–1990 county out-migration, a state's unemployment rate is not significantly related to the choice of destination (Model 3). Specifying unemployment rates in the local labor market would provide a better test of this hypothesis; however, confidentiality issues preclude this level of geographic specification with the public-use SIPP data file. Adding states' economic characteristics to our basic policy model mediates the pull of stringent behavior-related rules, consistent with Hypothesis 2. Although stringent states "pull" poor families, on average, in-migration is less likely when both stringent behavior-related rules and unemployment are greater, according to the modest and therefore tentative results of the interaction model (Model 7). Because model fit decreases in this model compared with simpler full models, this effect must be interpreted with caution. Although the positive effect of stringent eligibility rules disappears in the state policy-plus-unemployment model (Model 3), the effect is significant in unemployment models that include indicators of family structure (Model 5). Finally, as expected from prior studies, states that border the origin states of migrants and states in which migrants lived previously exert a strong pull in the choice of destination.

In sum, Hypothesis 1, that a state's stringent welfare policy inhibits the in-migration of poor families, is not supported, and Hypothesis 2, that states' economic characteristics are alternative explanations for migration behavior, can be accepted for both eligibility and behavior-related policy. But the relationship between a state's economic characteristics and welfare policy in the destination-choice model appears to be complex. While both employment and unemployment rates mediate the "pull" of a state's stringent behavior-related policy, a state's unemployment rate may condition the effect of behavior-related rules. Thus, we tentatively accept Hypothesis 3, that the influence of policy is conditional on a state's economic characteristics. An important point is that the models discussed here include state fixed effects. Controlling for these effects in the full models is necessary to show the positive pull of stringent eligibility rules; that is, in a full interactive model equivalent to Model 7 minus destination-state fixed effects (not shown), the influence of eligibility policy is not statistically significant. Additional models that tested for conditional effects of family structure by state policy and family structure by a state's economic characteristics revealed no differential state influences on in-migration by family structure (not shown). Thus, we reject Hypothesis 4 with regard to the destination choice.

DISCUSSION

The objective of this research was to test the thesis that the devolution of welfare policy and programs to states, resulting in greater inequalities in rules related to eligibility and behavior in welfare programs, created incentives for poor families, particularly poor

single-mother-headed families, to migrate to other states and disincentives for them to stay in origin states. We tested this thesis with a set of hypotheses using models of both destination (pull effects) and departure (push effects) on interstate migration behavior in which measures of eligibility and behavior-related welfare rules are key policy-dimension indicators, as well as the traditionally researched measure of the generosity of state welfare dollar benefit levels. Our hypotheses required tests of these effects net of, as well as conditioned on, the effects of measures of states' economic development. We evaluated these effects to determine whether married-couple and single-mother-headed and single-father-headed families responded differently in the context of welfare reform.

Overall, the analyses provided robust support for the general thesis that welfare reform policy created motivations for poor families' decisions to move to other states. However, no evidence emerged that single-mother families responded differently from other families, contrary to the results by Kaestner et al. (2001), Cushing (1993), and Enchautegui (1997), which were based on cross-sectional data. Single-father families were more likely than other families to migrate to other states, but not because they were differently affected by welfare policies. Single fathers may have had job opportunities in other states that counteracted their social ties to their places of origin. For such families, the benefits of migration would have outweighed the costs. Our data do not permit full tests of this mechanism, but suggest that it is an important avenue for further research on differences in migration behavior between single fathers and married couples and unmarried mothers. When these families did migrate, however, their choices of destination did not differ on the basis of welfare policies.

Poor families were more likely to migrate both *from* and *to* states with more-stringent welfare policies. Destination-choice models also show, however, that the welfare-rules-driven propensity to migrate to a state may depend on the state's unemployment rate, with less in-migration in the context of higher unemployment. This finding is consistent with the modern welfare-migration assumption that welfare recipients desire to maximize both their welfare and their job and employment opportunities (Schram and Soss 1999). States with both high unemployment and stringent welfare policies had a weaker attraction for poor families than did states with lower unemployment and stringent welfare policies. Still, the large, positive direct effect of stringent policy and the comparatively small offsetting depressive effect of high unemployment mean that in-migration to stringent-policy states remains more likely.

These destination-choice findings are puzzling, particularly because state fixed effects, which controlled for other factors that attract these families to those states, had to be included to reveal the pull of welfare-eligibility rules. We suggest alternative possible explanations for why stringent eligibility rules and, to a lesser extent, stringent behavior-related rules are positively associated with the choice of a destination state. First, they may be explained, in part, by heavy migration patterns involving the large-migration states of Texas, New York, and California. Second, they may be the result of poor families' imperfect information about the leniency or stringency of welfare rules in possible destination states in the 1996–1999 period immediately following welfare reform. This interpretation is bolstered by the negative effect of stringent welfare-benefit levels on the choice of a destination state. Differences in states' welfare-benefit levels are long standing and have been better known by poor families. Following this imperfect information logic, we would expect to see different results for stringent welfare rules and choices of destination in future tests of this hypothesis using more-recent post-2000 SIPP data. Third, poor families' choices of destination states, notably for single-mother families, may be dictated primarily by the location of social support networks of family members and friends, the effects of which are only partially captured by our statistically significant measure of return migration. Fourth, life-course-transition explanations for interstate migration (e.g., marriage, divorce, and educational upgrading) may be largely independent of states'

welfare rules. The inhibiting effect of a higher employment-to-population ratio is also contrary to expectation, but this measure indicates more workers per capita. If it consequently means fewer welfare participants per capita or stringent requirements for welfare-to-work activities, welfare-driven in-migration may be stymied.

The results for the departure model provide unambiguous support for the conclusion that poor families have engaged in interstate migration as a response to the “race to the bottom” by some states toward more-stringent eligibility and behavior-related rules. Clearly, stringent welfare rules push poor families from a state, regardless of the state’s economic health. Net of the push of stringent welfare policies, the out-migration-inhibiting effect of unemployment suggests that poor families in high-unemployment states may have fewer resources to afford the financial costs of interstate migration. That is, these families may stay in place in response to lower housing costs or because of financial ties to the informal economy in states where high unemployment reflects a weaker economy. Another explanation, suggested by Ellwood (2000) as an example of how unmeasured administrative elements of the policy context may interact with the economy to confound modeling results, is that states with higher unemployment may be less willing to sanction people or to refuse benefits if jobs are believed to be scarce.

The validity of our findings is buttressed, however, by the fact that the coefficients for the impact of welfare policy on the migration of poor families maintain their statistical significance when salient alternative explanatory indicators of states’ economic development plus those of family and individual socioeconomic status are included in the models. Still, this study is not a full test of possible competing explanations for the welfare-and-migration hypothesis. Our ongoing research tests alternative explanations for life-course transitions that are based on event-history modeling of individual-level changes in marital status, fertility, work, and job training. In addition, the use of 2001–2003 SIPP data, as well as the more-detailed Census Bureau “internal” SIPP data file, which has restricted availability to preserve the participants’ privacy, will permit more-precise tests of destination-choice models and of hypotheses of the economic development of local labor markets by providing within-state location indicators for all SIPP respondents.

From a public policy perspective, the evidence affirms the position that the new federalism approach to public benefits has exacerbated inequalities in welfare assistance as they are linked to the migration of poor families. The results support Schram and Soss’s (1999) welfare “incentive assumption” of the impact on welfare recipients’ residential-departure decisions but provide inconclusive support for their “instrumental assumption” that recipients choose destinations on the basis of a means-ends rational choice of welfare benefits and states’ economic conditions. The evidence presented here for the 1996–1999 period suggests that, whether intended or not, the PRWORA of 1996 has created a policy-driven interstate out-migration “push” for poor families in states with stringent rules, but that states’ lenient rules have not drawn, although stringent welfare-benefit levels have inhibited, the in-migration of these families.

APPENDIX: SENSITIVITY ANALYSES

For California, Texas, Florida, and New York—states that are expected to have an individual influence—we tested a model, for each state, in which cases migrating to or originating in that state were excluded from the analysis, and we reestimated both the basic and full models to exclude all four states. These analyses (see Appendix Table A1) indicate that large states have a relatively minor influence on the overall pattern of our findings. Of course, some impact would be expected because of the relatively high volumes of migration to and from these states compared with other states. Yet the results of these analyses expand our understanding of welfare-related migration by indicating that the effects of stringent policies are not simply linked to historical U.S. internal migration patterns involving these four states. For departure models, both stringent eligibility rules and stringent

Appendix Table A1. Policy-Only and Full Models Testing Sensitivity to the Exclusion of High-Migration States

States' Characteristics	Basic Model					Full Model	
	Basic Model (All States)	Basic Model Excluding California	Basic Model Excluding Texas	Basic Model Excluding Florida	Basic Model Excluding New York	Full Model Excluding California, Texas, Florida, and New York	Full Model (All States)
Origin Behavior-Related Rules Stringency	0.61**	0.57**	0.88**	0.61**	0.60**	0.59**	0.18**
Origin Eligibility-Rules Stringency	0.40**	0.48**	0.50**	0.43**	0.37**	0.57**	0.28**
Destination Behavior-Related Rules Stringency	0.21**	0.25**	0.25**	0.22**	0.21**	0.21**	0.08†
Destination Eligibility-Rules Stringency	0.20**	0.14*	0.21**	0.21**	0.22**	0.20*	0.28**
Number of Observations	202,471	173,521	185,184	193,411	192,296	137,025	202,471
							137,025

All models control for duration, state fixed effects, neighbor-state status, return migration, and stringent dollar benefits in the origin and destination states. The full model includes all individual-level covariates except subfamily status.

behavior-related rules maintained strong positive push (origin state) effects in our basic models that excluded these states. Although the inclusion of Texas bolsters the positive push of both stringent behavior-related rules and stringent eligibility rules, our results remain consistent for the basic model. The full interaction model that excluded these states demonstrated, however, that in all states but these four, the push effect of stringent eligibility rules is mediated by the states' economic and individual characteristics. The policy effects that we found with this model are shown in the final column of Appendix Table A1, and those from the full interaction model that includes all the states (Model 7, Table 3) are shown in the next-to-last column of that table.

For destination-choice models, the findings for behavior-related rules are consistent across all comparisons. Stringent behavior-related rules have an effect that is relatively insensitive to sample and model specification. Stringent eligibility rules have a clear net pull effect primarily in California. When we eliminated the historically large pull of this relatively stringent state, the pull of stringent destinations has less influence in our model and is mediated by other state characteristics.

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