UKCPR
University of Kentucky
Center for
Poverty Research

Discussion Paper Series
DP 2008-02

ISSN: 1936-9379

Distributional effects of programmatic features of Medicaid/SCHIP on transitions from private insurance coverage among US low-income children: A dynamic approach

Adetokunbo B. Oluwole
University of Kentucky
Martin School of Public Policy and Administration

October 2008

Preferred citation
Oluwole, A. (2008, October). Distributional effects of programmatic features of Medicaid/SCHIP on transitions from private insurance coverage among US low-income children: A dynamic approach. *University of Kentucky Center for Poverty Research Discussion Paper Series,* DP2008-02. Retrieved [Date] from http://www.ukcpr.org/Publications/DP2008-02.pdf.

Address correspondence to Adetokunbo Oluwole, University of Kentucky, Martin School of Public Policy and Administration; E-mail: aoluw2@uky.edu; Phone: 859-257-8608.

DISTRIBUTIONAL EFFECTS OF PROGRAMMATIC FEATURES OF MEDICAID/SCHIP ON TRANSITIONS FROM PRIVATE INSURANCE COVERAGE AMONG U.S. LOW-INCOME CHILDREN: A DYNAMIC APPROACH

Adetokunbo B. Oluwole, PhD
Martin School of Public Policy and Administration
University of Kentucky
Lexington, KY 40506-0027
E-mail: aoluw2@uky.edu

Abstract

The goal of this study is to evaluate the effects of Medicaid/SCHIP eligibility and programmatic features on transitions from private insurance coverage among samples of American low-income children using monthly data from the 2001 panel of the Survey of Income and Program Participation (SIPP), a nationally representative data set. The estimation approach combines multilevel modeling and event history analysis, including a robust array of variables measuring programmatic features, individual child, family, and state attributes. Logistic regression results do not indicate an adverse effect of expanded Medicaid/SCHIP eligibility on private insurance coverage. Results also suggest that states which established stand-alone SCHIP programs can potentially limit crowd-out better than states which simply expanded their existing Medicaid programs and that waiting periods of less than six months might have a negative impact on private insurance coverage. Future studies should examine, in greater detail, how program features and other social policies can reduce crowd-out, while increasing public insurance take-up rates among the neediest populations.

This project was supported with a grant from the UK Center for Poverty Research through the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, grant number 2 U01 PE000002-06. The opinions and conclusions expressed herein are solely those of the author and should not be construed as representing the opinions or policy of the UKCPR or any agency of the Federal government.

1. INTRODUCTION

The decline in private insurance coverage has been worsened by the economic slowdown being experienced in the country. Consequently, un-insurance rates have continued to rise. However, insurance coverage among children is generally higher than that of adults. This somewhat favorable coverage among children can be linked to expansions to public insurance programs for children, the latest of which is the State Children's Health Insurance Program (SCHIP).

As part of governmental efforts to further expand public insurance for children, in August 1997, the U.S. Congress created the State Children's Health Insurance Program (SCHIP), as Title XXI of the Social Security Act. Title XXI makes provision for children living in families with income up to 200 percent of the FPL to be eligible for subsidized health insurance coverage. The legislation further gives states the option to expand income eligibility limits for subsidized health insurance coverage beyond 200 percent of poverty (Ku, Ullman, & Almeida, 1999). Some states have even extended such programs to entire families (The Centers for Medicare and Medicaid Services, 2004).

Prior studies have shown that earlier Medicaid expansions and the more recent implementation of SCHIP appeared to achieve significant successes as the proportion of children with Medicaid coverage increased (Centers for Disease Control & Prevention, National Center for Health Statistics, 2003; and Bansak & Raphael 2006) and the proportion of uninsured children living in families whose incomes were between 100 and 200 percent of the FPL declined (Dubay, Hill, & Kenney, 2002).

However, increases in public insurance coverage were accompanied by decreases in private insurance coverage (Centers for Disease Control and Prevention, National

Center for Health Statistics 2003; General Accounting Office, 1997 – now General Accountability Office; Cunningham, Hadley, & Reschovsky, 2002; Bansak & Raphael 2006; and Sommers *et al.* 2007). The substitution of public insurance for private coverage, a phenomenon known as crowd-out, represents a potential unintended effect of Medicaid/SCHIP eligibility expansion. Crowd-out can occur in several different ways including when (1) individuals move from private to public coverage as a result of gaining eligibility through expansions; or (2) privately insured individuals may choose to become temporarily uninsured with the expectation of gaining access to public insurance coverage in the near future. The different pathways though which crowd-out occurs makes it a complex phenomenon, making it difficult to measure empirically.

Other studies have examined relationships between public program design features and take-up rates of public insurance, especially among low-income individuals. One such public program design feature that may affect the type of coverage an individual has is the form (or administrative model) of Medicaid/SCHIP expansion chosen by a state. Under the legislation that established SCHIP, states have three options of implementing the program: (1) using SCHIP funds to expand their existing Medicaid programs, (2) designing a new stand-alone SCHIP program; or (3) combining (1) and (2). It is important to note that states which created new stand-alone SCHIP programs were given greater latitude to regulate participation in those stand-alone SCHIP programs. For example, if a state chooses to expand its Medicaid program, then existing Medicaid rules apply. States that have new stand-alone SCHIP programs can impose additional rules, which include enforcing enrollment caps, waiting periods before being enrolled, and other monitoring mechanisms aimed at curbing the displacement of private insurance.

These and other differences in programmatic features can potentially affect Medicaid/SCHIP take-up rates and, by extension, its possible substitution for private insurance. For example, if a state opts to establish a separate SCHIP program, it may be more attractive to families because of the stigma associated with traditional Medicaid. This situation is more likely if the separate SCHIP program has a semblance of some private insurance plan. In this case, one would expect having a separate SCHIP program to have a positive effect on the likelihood of participation in public programs, compared to the stigmatized expanded Medicaid. This *a priori* expectation will, however, depend on individual family's valuation of private insurance, relative to its public options. Therefore, the effects of new stand-alone SCHIP, relative to expanding existing Medicaid programs, on participation rates and on private coverage are, *a priori,* ambiguous.

LoSasso and Buchmueller (2002) included in their regression models a variable that measured whether a state expanded its existing Medicaid or established a new stand-alone SCHIP program. The author noted that the inclusion of this program-specific variable, coupled with additional information, reduced estimates of public insurance program take-up rates and crowd-out tendencies. Kronebusch and Elbel (2004) also reported that expansions of existing Medicaid programs have been more successful in increasing children's enrollment than stand-alone SCHIP programs. However, the imposition of certain lengths of waiting periods is said to reduce take-up rates of public insurance among low-income children (Kronebusch and Elbel 2004; and Bansak and Raphael 2006).

Given the nature of the private insurance market, one can then posit that any public insurance program administrative model that tends to increase take-up of public

insurance is likely to have some negative impact on private insurance coverage by increasing the odds of transitions from private insurance, if adequate precaution to protect the latter is not taken. Very few studies have examined the effects of the form (or administrative model) of Medicaid/SCHIP expansions and mandatory waiting periods on private insurance coverage. Also, prior studies rarely explicitly analyzed the impact of these program design features, on a month-to-month basis, to examine transition patterns of insurance coverage. Since the length of time spent in a given insurance coverage affects the chances of making transition from one insurance coverage type to another, it is necessary to employ an analytical framework that incorporates the timing of transition patterns, one of the contributions being made by this study.

This study takes advantage of the longitudinal nature of the 2001 panel of the Survey of Income and Program Participation (SIPP), combining both event history and multilevel modeling techniques to examine the effects of public insurance design features on transitions from private health insurance among low-income U.S. children. The combined estimation techniques account for the timing of insurance coverage as well as clustering of children within states both of which are crucial for the study of health insurance dynamics.

The objectives of this paper are to (a) examine the effects of the form (that is, administrative models) of Medicaid/SCHIP expansion and waiting periods on transitions from private insurance coverage; and (b) to investigate whether the post-1996 Medicaid/SCHIP eligibility expansion crowds out private insurance coverage among sampled low-income children. Econometric models and results are discussed in sections 3

and 4, respectively, while section 5 discusses and summarizes study findings as well as presents conclusions.

2. DATA AND METHODS

I used the 2001 panel of the Survey of Income and Program Participation (SIPP). The SIPP, conducted by the United States Census Bureau, is a nationally representative longitudinal survey of civilian, non-institutionalized population of the United States.

The 2001 SIPP panel is part of a longitudinal survey designed for the provision of detailed information on the economic situation of households and persons in the United States. The data contain information on the distribution of income, wealth, and poverty in the U.S. and assess the effects of federal and state programs on the well-being of families and individuals (U.S. Bureau of the Census, 2004). The survey was designed using a multistage stratified as well as clustered sampling technique.

The interviewed population consists of individuals 15 years or older at the time of the first interview, excluding persons living in institutions or military barracks. Information on younger individuals who live with eligible interviewees is also included in the survey. One-fourth of the sampled households were interviewed each month and households were re-interviewed at four-month intervals. The 2001 panel consists of 9 interview periods, referred to as waves of data, with the first wave starting in February 2001 and the last in January 2004, which produced thirty-six months of data. Finally, topical modules, a series of supplemental questions on history of employment and program participation, health and disability, and utilization of health services were appended to the core data files.

The Bureau makes available the person-level records with state identifiers for all fifty states. However, small states such as Maine, Vermont, North Dakota, South Dakota, and Wyoming do not have unique identifiers. This lack of unique state codes makes it difficult to measure state-level factors for these small states. Hence these states were not included in the analyses for this paper. SIPP provides a well-defined sample of low-income individuals, especially because of the availability of information on monthly income over the three-year panel life.

Health insurance and other questions covering the preceding four months were asked at each interview. However, the SIPP data set has what is known as "seam bias" concerning transitions between insurance coverage. "Seam bias" is said to occur when there are a disproportionate number of transitions every fourth month because of the tendency for SIPP respondents to report changes in their insurance status between interviews instead of between months covered by the interview (Short & Freedman 1998; Ham & Shore- Sheppard 2000; Doyle, Martin, & Moore 2000; and Card, Hildreth, & Shore- Sheppard 2001). A commonly used approach to handle the "seam bias" issue is to analyze inter-wave, that is, every fourth month transitions. However, analyses that examine inter-wave transitions might lose information on the timing of transitions that reportedly occurs between months other than the "seam" months (Ham & Shore-Sheppard 2000). This study addresses the "seam bias" by making use of monthly information and also controlling for the "seam" months. Data on the form of program expansion and waiting periods were retrieved from reports of the Centers for Medicare and Medicaid Services. Finally, state employment data, from the Bureau of Labor Statistics, were appended to the SIPP.

Analytic Samples

The sample for the study consisted of children aged 19 years and younger living in low-income families. Low-income children are defined as those with family monthly incomes below 350 percent of the federal poverty line (FPL). Following Short and Graefe (2003), a long-term measure of family income as a percentage of the FPL was adopted. This measure sums monthly family income for each individual over the thirty six months of the survey. The monthly poverty thresholds that were assigned to each person were also summed up over the thirty six months. Finally, the summed income was divided by the summed poverty thresholds to obtain a percentage of the FPL for each person. Limiting samples to children in families with incomes at or below 350 percent of the FPL ensured that the analyses made use of samples of children who had at least some probability of being eligible for Medicaid/SCHIP coverage under the Title XXI legislation that established SCHIP.

Children included in the sample had at least a male or female family head present. Using the selection criteria of children's age and family income, in addition to excluding children who were identified as married, who reported to have no other insurance but Medicare, and those who lived in states with no unique identifiers (as described earlier) produced an analytic sample of 7,994 low-income, unmarried children who were nineteen years old and younger.

A sub-sample of children having private insurance was then created based on insurance status in month 9 of the SIPP survey. A child's insurance coverage in the ninth month of the survey was considered his/her initial coverage type.

It should be noted that the information available in the SIPP does not say categorically whether a person is covered by Medicaid or a separate SCHIP program. It is possible for respondents who were covered by SCHIP to report it as private coverage. In order to minimize this likely misclassification of persons into insurance categories, I assigned Medicaid/SCHIP coverage status to individuals who were reported to be covered by both private and Medicaid. Nonetheless, there may still be some measurement error in the insurance variable.

Based on insurance coverage type in month 9, the sample has 4,396 observations (person-level file) for children who had private. In order to use event history analysis, I converted the person-level data files into person-months file to analyze transition patterns. When transformed to person-month files, the private-to-Medicaid/SCHIP data file has a total of 108,113 person months, while the private-to-uninsured one has 108,584 person months[1]. Also, the full samples were also stratified based on family income of less than 200 and 200-350 percent of the FPL to examine distributional effects.

Estimation Techniques

I used event history (or duration) analysis and multilevel modeling. The events of interest for this study are two types of transition in insurance coverage as follows: (1) private coverage to Medicaid/SCHIP; and (2) private coverage to becoming uninsured. Since the window of observation in the SIPP data set is not sufficiently wide to identify the actual starting months of each individual's health insurance history, it is therefore

[1]It should be noted that there are differences in the number of observations (person months) for each pair of transition models. The different sample sizes represent differences in the number of person months that made transitions in each data file.

necessary to define an appropriate starting point of analysis, which is the initial time of an episode (or spell) being observed, for each event and for each individual.

For this study, based on results of preliminary duration regression analyses, month 9 of the SIPP was selected to define the initial insurance status of sampled low-income children. This was done by first identifying the observed beginning of private health insurance spells, that is, new spells. Then the probability of ending each spell was modeled as a function of a set of dummy variables that represented the length of spells and all other covariates in the regression models to be discussed in the next section. The time-in-spell dummies were measured in four-month intervals, for example, 1-4, 5-8… 33-36, which gave a total of nine dummy variables. The appropriate choice of starting cross-section would be that interval where the effect of two adjacent dummy variables on the probability of ending a spell flattens out. That is, the point at which the two adjacent dichotomous variables are no longer different from each other.

The person-level SIPP data files were then transformed into person-month files, where spells of private insurance coverage were represented by rows of observations. Therefore, the unit of analysis is the person month.[2] The transition probabilities from private insurance coverage to either Medicaid/SCHIP (public) or becoming uninsured were then estimated using discrete-time *logit* models, which specified random effects for the intercepts, the imputed Medicaid/SCHIP eligibility, and the form of program expansion variables. The two *logit* models included both time- varying and time-invariant covariates.

[2] Multiple transitions were accounted for in these analyses, because repeated events ensured that maximum information from every observation was used. Compared with models that allow only a single transition per person-month, models of repeated events had greater probabilities of an event occurring, and also had better statistical fit.

Further, since children in each state of residence might have state-specific transition rates, I employed multilevel modeling approach, which corrects for clustering of children within states and non-constant variance in the error term. In this approach, children were considered as the level-1 unit of analysis, while states (where they lived), within which samples of children are clustered, made up the level-2 unit of analysis.

3. ECONOMETRIC MODELS

For each type of insurance spell, empirical models were specified to estimate the effects of explanatory variables on health insurance transition decisions. Generally, the discrete-time hazard rate is defined as

$$P_{it} = \Pr[T_i = t \mid T_i \geq t, X_{it}] \qquad (1)$$

where T is the discrete random variable that gives the uncensored time of event occurrence. Equation (1) is the conditional probability that an event occurs at time t, for individual i, given that the event has not already occurred.

Following Hox (1998), Miller (1998), and Barber, et al. (2000) to illustrate the estimation of the multilevel regression model, consider some data in which there are two levels of information: at the individual (or children level) and at the state of residence level. Let J be the number of states of residence and N_j the number of children (level 1) in each state (level 2). The dependent variable, which is a level 1 variable, is Y_{ij} and the independent variable $X_{ij,}$ and on level 2, there is the independent variable Z_j. Then we have a separate regression equation in each state of residence, which expresses a child's outcome (transitions from private insurance coverage) as the sum of an intercept for the

child's state of residence β_{0j}, and a random error $e_{ij,}$ associated with the i[th] child in the j[th] state as follows:

$$Y_{ij} = \beta_{0j} + \beta_{1j} X_{ij} + e_{ij} \qquad \text{where } e_{ij} \sim N(0, \sigma^2) \tag{2}$$

At level 2 (the state level), the B_j are modeled by explanatory variables at the state level:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} Z_j + U_{0j,} \tag{3}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} Z_j + U_{1j}. \tag{4}$$

Substituting (3) and (4) into (2) yields the multilevel (mixed) model:

$$Y_{ij} = \gamma_{00} + \gamma_{10} X_{ij} + \gamma_{01} Z_j + \gamma_{11} Z_j X_{ij} + U_{1j} X_{ij} + U_{0j} + e_{ij}$$

where γ_{00} is the overall (grand) mean (5)

Specifically, the estimated six discrete-time logistic regressions, which is the individual-level equation, defined identically for each state, were of the form:

$$\begin{aligned} &Ln[P_{t(is)}/(1-P_{t(is)})] = \alpha_{is} + \beta_{is} MedSCHIPElig_{t(is)} + \beta_{is} OldMedElig_{t(is)} \\ &+ B_{is} X_{t(is)} + \beta_{ks} X_{kt(is)} + \varepsilon_{t(is)} \end{aligned} \tag{6}$$

The dependent variable in equation (6) represents the *logit* of the probability of transitions from private insurance to either Medicaid/SCHIP or becoming uninsured in time interval *t* for child *i* living in state *s*, given that the child had private coverage at the beginning of time interval *t*; α_{is} (γ_{00} in equation 5) is the estimate of the natural log of the baseline hazard of transition from private coverage during each interval *t*; $MedSCHIPElig_{t(is)}$ is the imputed Medicaid/SCHIP (post-1996) eligibility variable for a child *i* living in state *s*, at time *t*; $OldMedElig_{t(is)}$ is the imputed pre-SCHIP (or pre-1997) Medicaid eligibility expansion variable for a child *i* living in state *s*, at time *t*; $X_{t(is)}$

represents the matrix of individual and parent/family characteristics in state *s* and interval *t*; and $X_{kt(is)}$ represents the matrix of programmatic features such as the form of program expansion, dummies for waiting periods, and other state-specific variables, which vary across both states and/or time. The discrete-time hazards specification above gives an estimate of the baseline hazard of transitions from private health insurance state to either Medicaid/SCHIP or being uninsured.

Variations in odds of transition across states are estimated by the level-2 equation below:

$$\beta_{ks} = \theta_{ko} + \theta_{k1} Z_{1s} + \theta_{k2} Z_{2s} + ... + \theta_{kq} Zqs + \mu_{ks} \quad (7)$$

The individual/family-level parameters, β, are assumed to vary across states as a function of state-level characteristics, Z_s, as well as the random variations μ_s. The level-2 error terms, μ_s represent the random effects that model the correlation between the timing of transitions for children within the same state.

The parameters of the mixed models were estimated by the generalized linear mixed model (GLIMMIX) estimation technique, using the GLIMMIX macro in SAS software, which employs a restricted maximum likelihood (REML) procedure.

Dependent Variables

The first step was to identify types of insurance coverage. Mutually exclusive and exhaustive categories of coverage types are defined as follows: (1) Private, including military-related coverage; (2) Medicaid/SCHIP coverage; and (3) the uninsured. The following two transitions, starting in month 9 of the survey, were estimated: (1) private coverage to Medicaid/SCHIP (public); and (2) private coverage to being uninsured. Each

spell of reported private coverage defines a dependent variable, which is the conditional probability of switching from private insurance coverage to either public insurance or being uninsured when such a transition occurred between months 9 and 36.

Independent variables

All variables are presented and described in **Table 1**. Explanatory variables included in specified models are children's and family demographic characteristics, Medicaid/SCHIP, and other state-level factors.

The Medicaid/SCHIP eligibility variable was approximated by a dichotomous variable representing whether or not a child was eligible for Medicaid/SCHIP. Potential eligibility for the pre-1997 Medicaid eligibility was also imputed by using yearly eligibility criteria in each state. The eligibility variable incorporates the age of children and their state of residence; monthly family income; family size-adjusted FPL; and states' Medicaid/SCHIP upper income thresholds on a month-to-month basis. The approach used to create this variable is similar to those used by Ham (2000) and Rosenbach, *et al*. (2001). The state-specific values of a year's imputed eligibility variable were then assigned to every month in that particular year[3]. A dichotomous variable was created for the third group of sampled children who were not eligible for either pre-SCHIP Medicaid or post-1996 Medicaid/SCHIP because their family income levels were too high to qualify for Medicaid/SCHIP. The eligibility variable for the third group of children is the

[3] According to the Department of Health and Human Services (2004), re-determination of SCHIP eligibility occurs every 12 months (a fiscal year) in most states, with the average period of re-determination being 11.7 months. Additional information to impute the public insurance eligibility variable were collected from the Maternal and Child Health (MCH) updates issued by the National Governors' Association Center for Best Practices (1996-2000), the CMS website, individual state's Medicaid/SCHIP websites, reports from the National Academy for State Health Policy, and other policy document sources.

Table 1: Source, Level, Type, and Description of Variables.

Variable	Source/Level	Type	Description
Explanatory variables			
CONTEXTUAL			
Medicaid/SCHIP* eligibility	SIPP/Individual	Time-varying (monthly).	Imputed Medicaid/SCHIP variable (1,0) with 1 indicating a child is eligible for the expansion.
Old Medicaid* eligibility	SIPP/Individual	Time-varying (monthly).	Imputed pre-SCHIP Medicaid variable (1,0) with 1 indicating a child is eligible for the old Medicaid.
Separate SCHIP program	CMS/Program	Time-invariant.	Binary variable (0,1) with 1 indicating that state expands eligibility by establishing a stand alone SCHIP program versus expanding existing Medicaid program.
Mixed expansion	CMS/Program	Time-invariant.	Binary variable (0,1) with 1 indicating that state increases eligibility by both Medicaid expansion and new SCHIP program versus expanding existing Medicaid program.
5-month waiting time or less	CMS/Program	Time-invariant.	Binary variable (0,1) with 1 indicating that state imposes a waiting period of one to five months versus no waiting period.
Greater than 5-month waiting time	CMS/Program	Time-invariant.	Binary variable (0,1) with 1 indicating that state imposes a waiting period of more than five months versus no waiting period.
Income disregards	CMS/Program	Time-invariant.	Binary variable (0,1) with 1 indicating that state uses income disregards.
Unemployment	BLS/State	Time-varying (yearly).	Continuous variable representing state's un-employment rates.
Retail-service employment ratio	BLS /State	Time-invariant.	Continuous variable representing share of state's total employments in the retail or service sector.
Medicaid/SCHIP effective 1997	CMS/Program	Time-invariant.	Binary variable (0,1) with 1 indicating that state implemented post-1997 expansion in 1997 versus 1998 or later.
PARENT/FAMILY			
Mom works fulltime	SIPP/Parent	Time-varying (monthly).	Dummy variable (0,1) with 1 indicating that parent works full-time.
Mom works part-time	SIPP/Parent	Time-varying (monthly).	Dummy variable (0,1) with 1 indicating that parent works part-time.
Mom works other	SIPP/Parent	Time-varying (monthly).	Dummy variable (0,1) with 1 indicating that parent works full- or part-time.

Continued on next page

Table 1: Continued

Variable	Source/Level	Type	Description
PARENT/FAMILY			
Not a high school graduate	SIPP / Parent	Time-invariant (initial value).	Binary variable (0,1) with 1 indicating attainment of some schooling but less than a high school diploma.
Some college	SIPP / Parent	Time-invariant (initial value).	Binary variable (0,1) with 1 indicating less than 4 years of college education.
College graduate	SIPP / Parent	Time-invariant (initial value).	Binary variable (0,1) with 1 indicating four years of college, i.e., a college graduate.
Graduate education	SIPP / Parent	Time-invariant (initial value).	Binary variable (0,1) with 1indicating post-graduate education.
Family stability	SIPP/Family	-----/----	Continuous variable indicating the number of months, within the window of observation, during which a child lives in a two-parent family. Updated monthly.
Income-poverty ratio	SIPP/Family	Time-varying (monthly).	Continuous variable representing family income as a %age of FPL
AFDC Receipts	SIPP/Family	Time-varying (monthly).	Binary variable (0,1) with 1 indicating AFDC receipt.
Number of children under 18	SIPP/Family	Time-varying (monthly).	Continuous variable for number of children under 18 years old in family.
Resides in Northeast	SIPP/Family	Time-varying (monthly).	A regional, binary variable (1,0) with 1 indicating residence in the Northeast.
Resides in Midwest	SIPP/Family	Time-varying (monthly).	A regional, binary variable (1,0) with 1 indicating residence in the Midwest.
Resides in West	SIPP/Family	Time-varying (monthly).	A regional, binary variable (1,0) with 1 indicating residence in the West.
INDIVIDUAL (CHILD)			
Child older than 5 years	SIPP/Individual	Time-varying (monthly).	Binary variable (0,1) with 1indicating children aged six years or older versus children less than six years old.
Poor health status	SIPP/Individual	Time-varying (monthly).	Binary variable (0,1) with 1 indicating fair or poor health.
Black	SIPP/Individual	Time-invariant (initial value).	Binary variable (0,1) with 1 indicating African American.
Hispanic	SIPP/Individual	Time-invariant (initial value).	Binary variable (0,1) with 1 indicating Hispanic.
Other minority	SIPP/Individual	Time-invariant (initial value).	Binary variable (0,1) with 1 indicating other minority racial groups.
Seam month	SIPP/Individual	Time-varying	Variable to capture "seam effect" in SIPP: equals 1 every fourth month, 0 otherwise.

Continued on next page

Table 1: Continued

Variable	Source/Level	Type	Description
Duration_1-3months	SIPP/Individual	Time-varying	Dummy duration variable (0,1) with 1 indicating between 1-and 3-month long coverage spell.***
Duration_4-6months	SIPP/Individual	Time-varying	Dummy duration variable (0,1) with 1 indicating between 4-and 6-month long coverage spell.***
Duration_7-9months	SIPP/Individual	Time-varying	Dummy duration variable (0,1) with 1 indicating between 7-and 9-month long coverage spell.***
Response variables			
P(t=Ev1|Ev1>=t	SIPP/Individual	Time-varying.	Conditional probability of an event representing transitions from private coverage to Medicaid/SCHIP coverage.
P(t=Ev2|Ev2>=t	SIPP/Individual	Time-varying.	Conditional probability of an event representing transitions from private coverage to being uninsured.

*The reference category is children who are ineligible for public insurance coverage due to too high family income.

reference (omitted) category. Therefore, the "Medicaid/SCHIP" eligibility, as described in **Table 1** represents the difference between Medicaid/SCHIP-eligible children and those ineligible due to too high family income levels (denoted as **A** in **Table 2**). The "Old Medicaid eligibility" (denoted as **B** in **Table 2)** represents the difference between pre-SCHIP Medicaid-eligible children and those ineligible due to too high family income levels. Finally, the differences between **A** and **B**, as shown in **Table 2,** capture the overall (or net) difference, in transition patterns, between Medicaid/SCHIP-eligible and pre-SCHIP eligible low-income children. [4]

[4] Note that groups **A** and **B i**n **Table 2** approximate coefficients of the imputed SCHIP and pre-SCHIP Medicaid eligibility.

Table 2: An Illustration of Difference-in-Differences Hypothesis Tests for Crowd-Out

Model	Medicaid/SCHIP minus Ineligible	Old Medicaid minus Ineligible	Medicaid/SCHIP minus Old Medicaid
	1	2	3
Private-to-Public	A	B	A-B
Private-to-uninsured	A	B	A-B

Evaluating the Presence and the Extent of Crowd-Out of Private Insurance by Medicaid/SCHIP Eligibility Expansion

Crowd-out is defined as the decline in private insurance that is attributable to the public program relative to the increase in public coverage. Generally, crowd-out is measured as the proportion of increase in the people enrolled in Medicaid/SCHIP that would have remained in private coverage in the absence of the Medicaid/SCHIP expansion (Blumberg, Dubay, & Norton 2000 and LoSasso & Buchmueller 2002).

The coefficient of the variable representing the Medicaid/SCHIP eligibility approximates the difference between the newly eligible children for the enhanced Medicaid/SCHIP eligibility, that is, the target group and ineligible children (comparison group) regarding the likelihood of making transitions from private insurance coverage to either public coverage or becoming uninsured. According to Blumberg, Dubay, and Norton (2000), the difference between the newly eligible and ineligible children, while controlling for measurable factors, is therefore due to the public program expansion.

As discussed in **Section 1**, crowd-out of private insurance can occur in several ways, including: (1) individuals move from private to public coverage as a result of gaining eligibility through expansions; and (2) privately insured individuals may choose to become temporarily uninsured with the expectation of gaining access to public insurance

coverage in the near future. Therefore, the following results will be consistent with crowd-out:

(1) For the model predicting the conditional probability of transitions from private to public coverage, a statistically significant and positive sign on the coefficient of both "Medicaid/SCHIP" eligibility and also on the difference between "Medicaid/SCHIP" and "Old Medicaid" as illustrated in columns 1 and 3, respectively (**Table 2**); and

(2) For the model of transitions from private coverage to becoming uninsured, a statistically significant and positive sign on both "Medicaid/SCHIP" and the difference between "Medicaid/SCHIP" and "Old Medicaid".

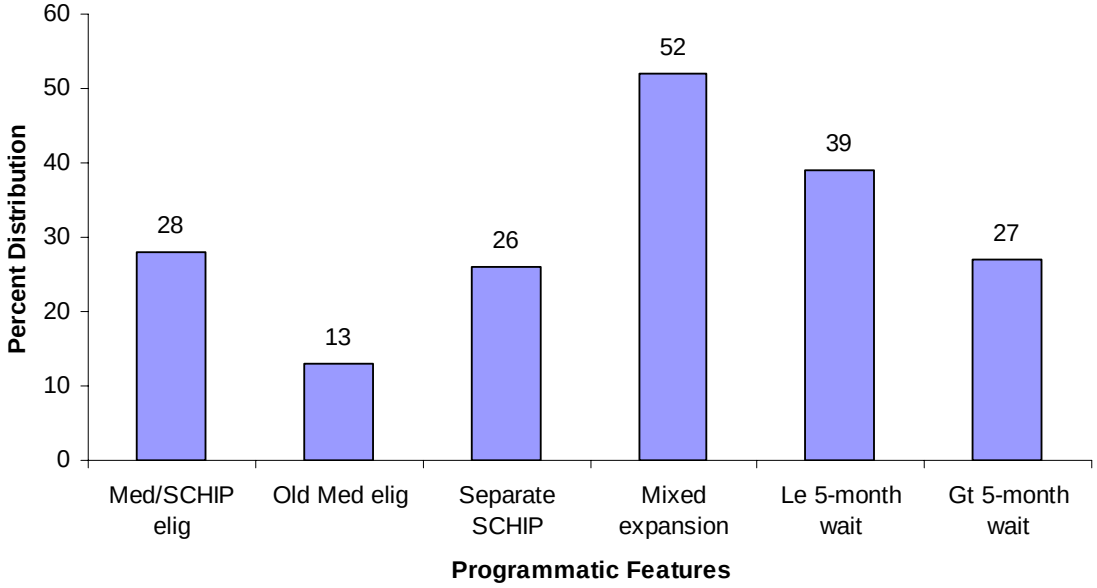
4. RESULTS

Descriptive Analysis of Characteristics of Person-months in Private Insurance Spells

Figure 1 displays the means, in percentage terms, of selected programmatic design features for low-income children in private insurance spells. The descriptive statistics (means and standard deviations) of all explanatory variables are presented in **Tables 3**. As shown in the table (and also in **Figure 1**)**,** approximately 28 percent of the person-months in private coverage spells were months in which the child was Medicaid/SCHIP-eligible as opposed to only roughly 13 percent of the person-months in private coverage spells were eligible for pre-SCHIP Medicaid. These demonstrate some potential for crowd-out in the SCHIP program. Effectively, they indicate that a child experiencing a person-month of private coverage was more likely to be eligible for Medicaid/SCHIP coverage than a child experiencing a person-month of public coverage.

In terms of the administrative models adopted by states' public insurance programs, about 52 percent of the person-months in private coverage were ones in which the child lived in a state that established a new SCHIP program as well as expanded its existing Medicaid program, that is, a mixed approach to expanding public insurance. On the other hand, 26 percents of the person-months were in states that only established new stand-alone SCHIP programs. These statistics might be indicative of some administrative barriers (aimed at curbing crowd-out of private insurance) imposed by stand-alone SCHIP programs, which tend to limit enrollment of children. One of the administrative barriers commonly adopted by states is the imposition of waiting periods, which requires that children have a lapse of coverage prior to enrollment in SCHIP. About 39 percent of the person-months in private coverage were ones in which the child lived in a state that

Figure 1: Distribution of Person-Months, by Programmatic Features



imposed a waiting period of five months or less, while approximately 27 percent of the

Table 3: Characteristics of Person-months in Private Insurance Coverage Spells: Full Analytic Sample

Variable	Mean (N=107,468)	Standard Deviation
Contextual Factors		
Medicaid/SCHIP eligibility	0.2767	0.4474
Old Medicaid eligibility	0.1292	0.3354
Separate SCHIP program	0.2601	0.4387
Mixed Medicaid/ SCHIP expansion	0.5238	0.4994
5-month waiting time or less	0.3907	0.4879
Greater than 5-month waiting time	0.2727	0.4454
Income disregards	0.5616	0.4962
State unemployment rate	5.8739	1.5821
Retail-service employment ratio	0.7413	0.0432
Medicaid/SCHIP effective 1997	0.1733	0.3785
Parent/Family Factors		
Mom works fulltime	0.5070	0.5000
Mom works part-time	0.1789	0.3833
Mom works: other	0.0266	0.1609
Not a high school graduate	0.0856	0.2797
Some college	0.3721	0.4834
College graduate	0.1657	0.3718
Graduate education	0.0473	0.2124
Family stability	29.7328	13.6508

Income-poverty ratio	238.9688	114.0530
AFDC receipts	0.0008	0.0278
Number of children under 18	2.3304	1.2021
Resides in Northeast	0.1635	0.3698
Resides in Midwest	0.2742	0.4461
Resides in West	0.2170	0.4122
Individual/Child Characteristics		
Poor health status	0.0153	0.1228
Black	0.1211	0.3262
Hispanic	0.1069	0.3090
Other minority	0.0417	0.2000
Child older than 5 years	0.7574	0.4287
Duration_1-3 months	0.0400	0.1959
Duration_4-6 months	0.0327	0.1779
Duration_7-9 months	0.0605	0.2384
Seam month	0.2503	0.4332

Source: Survey of Income and Program Participation, 2001 Longitudinal Panel.

person-months were in states having six or more months of waiting period before a child previously covered by private insurance can be enrolled in SCHIP. Again, these indicate an increased opportunity for the displacement of private insurance by SCHIP, especially if parent can afford to have their children experience a short-term uninsured period.

Regressions Results of Transitions from Private Insurance Coverage

Estimated parameters were obtained from the multilevel models using the *logit* link discussed in **Section 3**. The results of insurance transitions of sampled children from private insurance coverage to public insurance and to becoming uninsured are presented in **Table 4**. The positive sign of the coefficient on imputed "Medicaid/SCHIP" eligibility indicates that low-income children who were made eligible for the post-1996 Medicaid/SCHIP expansion were more likely to make transitions from private to public insurance, relative to children ineligible due to high family income. This suggests that the enhanced Medicaid/SCHIP eligibility appears to encourage movements of newly eligible low income children from private to public insurance. The coefficient on this variable is, however, not statistically significant, indicating that the displacement of private insurance, that is, crowd-out may not be present. On the other hand, the coefficients on imputed pre-SCHIP ("Old Medicaid") eligibility for both models of transitions from private insurance are positive and statistically significant. These results imply that privately insured children who are eligible for pre-SCHIP Medicaid coverage, relative to other children, are more likely to make transitions to public programs or to become uninsured.

Table 4: Multilevel *Logit* Models of Transitions from Private Insurance: Full Analytic Sample

Variable	Private-Medicaid/SCHIP Transitions		Private-Uninsured Transitions	
	Estimated Coefficient (.) Std Error	t-Value	Estimated Coefficient (.) Std Error	t-Value
Intercept	-4.9768*** (1.5389)	-3.23	-33.9161 (77.3814)	-0.44
Contextual Factors				
Medicaid/SCHIP eligibility	0.2656 (0.1943)	1.37	0.1260 (0.2105)	0.60
Old Medicaid eligibility	0.6349*** (0.2112)	3.01	0.5862*** (0.2058)	2.85
Separate SCHIP program	-0.7105** (0.3025)	-2.35	-0.7011** (0.3522)	-1.99
Mixed Medicaid/ SCHIP expansion	-0.6020** (0.2649)	-2.27	0.1072 (0.4063)	0.26
5-month waiting time or less	-0.1092 (0.2609)	-0.42	0.6207** (0.2895)	2.14
Greater than 5-month waiting time	0.2587 (0.2738)	0.94	-0.0654 (0.3418)	-0.19
Income disregards	-0.1414 (0.2406)	-0.59	-0.0837 (0.3541)	-0.24
State unemployment rate	0.1228*** (0.0359)	3.42	0.1401*** (0.0142)	9.84
Retail-service employment ratio	-1.1398 (2.0005)	-0.57	14.5664*** (1.5305)	9.52
Medicaid/SCHIP effective 1997	-0.3385 (0.2480)	-1.36	0.7858** (0.3340)	2.35
Parent/Family Factors				
Mom works fulltime	-0.4970*** (0.1011)	-4.92	0.0009 (0.0404)	0.02
Mom works part-time	-0.1933 (0.1244)	-1.55	0.1782*** (0.0490)	3.64
Mom works: other	0.6840*** (0.1915)	3.57	0.3904*** (0.0931)	4.19
Not a high school graduate	0.5374*** (0.1244)	4.32	0.2847*** (0.0549)	5.18
Some college	-0.2934*** (0.1027)	-2.86	0.0039 (0.0377)	0.10
College graduate	-0.2260* (0.1320)	-1.71	-0.4326*** (0.0548)	-7.90
Graduate education	0.1219 (0.1934)	0.63	-0.0096 (0.0815)	-0.12

Continued on next page

Table 4: Continued

Variable	Private-Medicaid/SCHIP Transitions		Private-Uninsured Transitions	
	Estimated Coefficient (.) Std Error	t-Value	Estimated Coefficient (.) Std Error	t-Value
Family stability	-0.0189***	-6.99	-0.0154***	-14.37
	(0.0027)		(0.0011)	
Income-poverty ratio	-0.0033***	-4.64	-0.0007***	-3.18
	(0.0007)		(0.0002)	
AFDC receipts	0.9053**	2.07	2.3389***	9.58
	(0.4384)		(0.2442)	
Number of children under 18	-0.0476	-1.53	-0.0427***	-3.29
	(0.0310)		(0.0130)	
Resides in Northeast	0.0885	0.24	-1.1505*	-1.78
	(0.3682)		(0.6454)	
Resides in Midwest	-0.1563	-0.60	-0.3138	-0.64
	(0.2626)		(0.4876)	
Resides in West	0.1162	0.37	-0.3314	-0.74
	(0.3133)		(0.4504)	
Individual/Child Characteristics				
Poor health status	0.6869***	3.12	-0.2975**	-2.16
	(0.2201)		(0.1377)	
Black	0.3916***	3.24	0.0480	0.95
	(0.1210)		(0.0506)	
Hispanic	0.3401***	2.62	0.2003***	3.95
	(0.1298)		(0.0507)	
Other minority	0.9565***	6.00	0.3265***	4.40
	(0.1594)		(0.0742)	
Child older than 5 years	-0.0734	-0.78	0.0642*	1.66
	(0.0939)		(0.0386)	
Duration_1-3 months	-0.7480***	-3.36	19.3634	0.25
	(0.2226)		(77.3717)	
Duration_4-6 months	2.0728***	21.27	-3.2119***	-12.94
	(0.0975)		(0.2482)	
Duration_7-9 months	0.1010	0.77	1.6205***	38.07
	(0.1320)		(0.0426)	
Seam month	2.6880***	26.16	-0.4342***	-7.55
	(0.1028)		(0.0575)	
LLR	1016970		2033239	
AIC	1016982		2033253	
Person Months (N)	108,113		108,584	

*** Significant at the 1 percent level
**Significant at the 5 percent level
*Significant at the 10 percent level

As expected, the negative signs associated with the "Separate SCHIP Program" variable, for both models of transitions, suggest that children who live in states that established new stand-alone SCHIP programs, relative to states that chose to expand their existing Medicaid programs, on average, are less likely to make transitions from private insurance to Medicaid/SCHIP coverage or to becoming uninsured, all else constant. Converting the *logit* estimates to odds ratio, this result implies that children living in states that established new stand-alone SCHIP programs, on average, are approximately 51 percent ($0.4914 = e^{-0.7105}$; 0.4914-1 = -0.5086) less likely to switch from private coverage to Medicaid/SCHIP, compared to children living in states that chose to expand their existing Medicaid programs.

Similarly, the odds ratio of transitions from private insurance to becoming uninsured is 1.4222 ($e^{-0.7011}$). Therefore, the result implies that living in states that established new stand-alone SCHIP programs, on average, is approximately 42 percent (1.4222-1 = 0.4222) more likely to switch from private coverage to becoming uninsured, relative to children living in states that chose to expand their existing Medicaid programs. The negative sign on the coefficient of the variable measuring the administrative model of mixed approach to public program expansions, relative to expanding existing Medicaid programs, also indicates a similar effect on transitions from private to public insurance: children living in a state that adopted a mixed approach to its public program expansion, on average, is roughly 45 percent ($0.5477 = e^{-0.6020}$; 0.5477-1 = -0.4523) less likely to switch from private coverage to Medicaid/SCHIP, compared to children living in a representative state that chose to expand its existing Medicaid program. These results might be an indication that establishing new stand-alone SCHIP programs or adopting the

mixed strategy to expand public programs, compared with expansion of existing Medicaid programs, are more protective of private insurance, but might be less generous regarding the take-up of public insurance. This implies that either establishing new stand-alone SCHIP programs or adopting a mixed approach to expansions and expanding existing Medicaid programs did differ in their effects on both private coverage and public insurance take-up.

The signs on the variables measuring lengths of waiting period that some states impose on children that were previously privately insured children are mixed and not statistically significant for the model of transitions from private to public insurance. However, the coefficient on the variable representing waiting periods of five months or less is positive and statistically significant for the model of transitions from private insurance to becoming uninsured. In terms of odds ratio, the *logit* estimate indicates that a child that lived in a state that imposed a waiting period of one to five months, on average, is approximately 86 percent ($1.8602 = e^{0.6207}$; 1.8602-1 = 0.8602) more likely to make at least one transition from private coverage to becoming uninsured, relative to a child living in a state that did not have waiting period requirements.

Expectedly, results also show that variables measuring states unemployment, state occupational mix, parent's employment status and educational attainment, family stability, and a child's racial affiliation are likely to affect transitions from private coverage to either public insurance or becoming uninsured. The mostly positive signs on the duration variables that measure the length of time of private insurance coverage before making transitions to either public coverage or being uninsured suggest that the

longer a child remains in private coverage, on average, the less likely the child is to switch to public coverage or to become uninsured.[5]

Estimating Crowd-Out Effect of Medicaid/SCHIP Eligibility on Private Insurance

Table 5 presents the difference-in-differences estimates, which approximate net differences between SCHIP eligible and pre-SCHIP eligible children regarding health insurance transitions as a result of Medicaid/SCHIP eligibility expansion. As previously discussed, the coefficient on the variable that represents imputed Medicaid/SCHIP eligibility, for the two estimated models, approximates the difference in health insurance transitions between the target group of sampled children, that is, those who were potentially eligible for the expanded public insurance program, and the comparison group, that is, ineligible children due to having too high family income levels. In order to capture only transitions in health insurance attributable to the Medicaid/SCHIP eligibility, it is important to net out the effect of other market factors. Following an approach similar to that of Blumberg, Dubay, and Norton (2000) and Dubay and Blumberg (2006), I used a difference-in-differences estimation framework that serves to capture health insurance transitions while isolating relevant external factors. The differences in the coefficients on the "Medicaid/SCHIP" minus "Old Medicaid", for the regression models, therefore give the net changes, which approximate the effect of Medicaid/SCHIP eligibility on the displacement of private insurance. These estimates, as presented in **column 2** of **Table 5,** provide further tests of the effect of the post-1996 Medicaid/SCHIP eligibility expansion on transitions from private insurance.

[5] Tables of descriptive statistics and regression results for samples stratified by family income are presented in the Appendix.

Table 5: Summary Table of Difference-in-Differences Hypothesis Tests for Possible Displacement of Private Insurance Coverage

Model of Transitions	Medicaid/SCHIP minus Ineligible 1		Medicaid/SCHIP Eligible minus Old Medicaid Eligible 2	
	Estimate (.) Std Err	t-value	Estimate (.) Std Err	t-value
Private-to-Public	0.2656 (0.1943)	1.3700	-0.3693* (0.2170)	-1.7017
Private-to-Uninsured	0.126 (0.2105)	0.6000	-0.4602 (0.2845)	-1.6177

*** Significant at the 1 percent level
**Significant at the 5 percent level
* Significant at the 10 percent level

Therefore, if there was crowd-out during the period under analysis, for both models predicting the odds of transitions from private insurance, on **Table 5**, one would expect a statistically significant and positive signs on the variable representing the imputed Medicaid/SCHIP eligibility and also on the differences between "Medicaid/SCHIP" and "Old Medicaid" eligibility.

The sign on the coefficient of the variable representing the imputed Medicaid/SCHIP eligibility is positive. The direction of effect indicates that the post-1996 Medicaid/SCHIP expansion increases the likelihood of eligible low-income children, relative to ineligible ones, to make transitions from private to public insurance. The coefficient on this variable is, however, not statistically significant. However, the coefficient measuring the difference between "Medicaid/SCHIP" and "Old Medicaid" eligibility is negative but is weakly, statistically significant. This indicates that the enhanced Medicaid/SCHIP eligibility is likely to decrease the odds of making transitions from private coverage to public insurance decreases, all else constant.

The results from the models described above, based on the signs on the coefficients measuring the differences between "Medicaid/SCHIP" and "Old Medicaid" eligibility are not indicative of crowd-out. Rather, the results suggest that the post-1996 Medicaid/SCHIP expansions, relative to pre-SCHIP expansions (or "Old Medicaid"), might have resulted in decreased movements of low-income children from private to public insurance. Although, the enhanced SCHIP eligibility expansion might have increased take-up rates of public insurance among eligible low-income children, the effectiveness of anti crowd-out measures could have slowed the rate of displacement of private coverage by public insurance. These findings might be indirectly due to the choice of administrative models that states adopted in expanding their public insurance programs. For example, regression results indicate that establishing new stand-alone SCHIP programs or adopting the mixed strategy to expand public programs, compared with expansion of existing Medicaid programs, are more protective of private insurance, but might be less effective regarding the take-up of public insurance. These findings could be due to the effectiveness of administrative models that tend to curb crowd-out. For example, states that established new stand-alone SCHIP programs have great latitude to incorporate anti crowd-out measures such as imposing waiting periods, enrollment caps, or premiums on participants. For instance, Kenny, *et al.* (2006) concluded the premium increases in SCHIP resulted in lower caseloads and/or earlier disenrollment from the programs in the states of Kansas, Kentucky, and New Hampshire.

5. DISCUSSION AND CONCLUSIONS

In this study, I took advantage of the longitudinal formation of the SIPP data, using a combination of event history and multilevel modeling technique to (a) examine the effects of the form of Medicaid/SCHIP expansion and waiting periods on transitions from private insurance coverage; and (b) to evaluate whether the post-1996 Medicaid/SCHIP expansion crowds out private insurance coverage among low-income children in the United States, while controlling for a robust array of individual, family, and state-level factors.

Findings from this study suggest that the expanded eligibility of SCHIP has not had adverse effects on private insurance coverage: results do not suggest that the expanded SCHIP eligibility has increased the likelihood of transitions from private to public coverage among low income children. There is, therefore, no evidence of crowd-out of private insurance as a result of the Medicaid/SCHIP expansion during the period under study. This result is somewhat similar to that of Dubay and Blumberg (2006). Using the 1996 SIPP panel, they concluded that there was no evidence that SCHIP expansion caused significant movements of low income children from private to public coverage.

The administrative models adopted by states to expand their public programs can have significant impacts on transitions from private insurance or uninsurance and, by extension, on take-up of public insurance. One major decision states faced in the SCHIP program was whether they would create a new, stand-alone program or whether they would simply expand the old Medicaid program. The latter had certain advantages of simplicity, at the cost of retaining the potential social stigma and other negative aspects

of Medicaid. The former gave states the advantage of establishing new rules that could limit crowd-out and reduce stigma, but there exist the problems of putting a new program in place such as startup cost and creating awareness among intended beneficiaries.

Results indicate that children who live in states that established new stand-alone SCHIP programs, relative to states that chose to expand their existing Medicaid programs, on average, are approximately 51 percent less likely to make transitions from private insurance to Medicaid/SCHIP coverage, all else constant. The administrative model of mixed approach to public program expansions, relative to expanding existing Medicaid programs, is also indicated to have a similar effect on transitions from private to public insurance. Results further imply that privately insured children living in states that established new stand-alone SCHIP programs, on average, are approximately 42 percent more likely to become uninsured, relative to similar children living in states that chose to expand their existing Medicaid programs. Put together, these results suggest that establishing new stand-alone SCHIP programs or adopting the mixed strategy to expand public programs, compared with the expansion of existing Medicaid programs, are more protective of private insurance, but might be less generous regarding the take-up of public insurance. This implies that either establishing new stand-alone SCHIP programs or adopting a mixed approach to expansions and expanding existing Medicaid programs did differ in their effects on both private coverage and public insurance take-up.

These findings could be due to the effectiveness of anti crowd-out measures, such as waiting periods, that are aimed at discouraging unnecessary movements of children from private to public insurance. Budgetary constraints facing Medicaid/SCHIP programs could have also played a role in observed results. These anti-crow-out measures can

potentially discourage parents from enrolling their potentially eligible children in such stand-alone SCHIP programs, whether they are moving from either private coverage or uninsured status. These administrative “roadblocks” may offset the effects of reduced stigma enough to decrease enrollment in the new separate SCHIP programs. It should be noted that much of the decreases in private insurance coverage that have been recently observed might be partly due to economic slowdown, which makes private insurance less affordable, especially to the low income population through diminished employment opportunities for parents, which adversely affected opportunities for employer-provided insurance coverage for families.

Findings also indicate that children living in a state that imposed a waiting period of one to five months, on average, are more likely to make transitions from private coverage to becoming uninsured, relative to children living in a state that did not have waiting period requirements. This result suggests that shorter waiting periods might not discourage parents from having their children uninsured for some time before being enrolled in Medicaid/SCHIP. It should be noted that some states required that individuals have a lapse of coverage or waiting period prior to SCHIP enrollment, which might have resulted in parents declining private coverage for a child (especially a seemingly healthy child) and experiencing a short-term uninsured period, in expectation of future SCHIP coverage.

The above result regarding the effect of waiting period requirements on transitions from private coverage is somewhat consistent with those of the effects of forms of public program expansion discussed above. For example, when put together, the combined results might suggest that a child that lived in a state that both established a

new stand-alone SCHIP program and imposed a waiting period, relative to a state that chose to expand its existing Medicaid program with no waiting period requirements, on average, is less likely to switch from private coverage to public insurance. Therefore, if there are states experiencing proven cases of crowd-out, then it might be prudent for such states to adopt the strategy of establishing a new stand-alone SCHIP program or strengthening an already existing SCHIP program that imposes a waiting period longer than five months. If this strategy is to be adopted, precautions should be taken to avoid denying public insurance coverage to SCHIP-eligible children. It is note worthy to add that such an approach would come with some administrative costs.

There are some limitations pertaining to the data and analysis that warrant caution against drawing definitive conclusions from the results as discussed above. A potential caveat to the results is that the imputed eligibility variable used in this study does not incorporate every state rule concerning expanded Medicaid/SCHIP. Some of these stem from a lack of precise variable measurements based on information that is available in the SIPP data set. For example, SCHIP coverage is not clearly identified in the SIPP data, a situation that could potentially lead to some measurement errors. Also, public program eligibility is imputed, which is hypothetical in nature as it is practically impossible to incorporate all exiting state rules used in determining eligibility. For instance, to calculate the amount of income disregards, information is needed on exact income deductions such as amount of child support received, work and child care expenses. However, SIPP does not provide information on the actual amount of child care expense.

In spite of the limitations imposed by a lack of some information in the SIPP data set, this study contributes to literature by addressing gaps in the methodological approach

generally used in examining the dynamics of health insurance by combining both event history and multi-level modeling approaches thereby incorporating the timing of health insurance transitions, as well as adjusting for clustering of children within the states where they resided. Also, this paper enhances our understanding of the impact of different administrative models of states' SCHIP/Medicaid programs on private and public coverage as well as the uninsured. Results from this study could inform health policy debates on how states might modify their Medicaid/SCHIP programs' policy design features to (i) reduce the number of uninsured individuals, especially among the low-income population; and (ii) reduce crowd-out of private insurance if necessary; (iii) more effectively target the neediest populations. The combination of (i) to (iii) can lead to effective and efficient reductions in the number of uninsured individuals as well as increased coverage and retention rates in private insurance. These efforts could potentially result in improved access to health care, especially among low-income populations, without necessarily increasing financial burdens on the taxpayer.

Given the findings emanating from this study, there should be more in-depth study of public insurance program design features that directly affect take-up of public insurance, that is, a more detailed study of outreach efforts by states targeting uninsured low-income individuals. More detailed measures of personal, family, insurance coverage, and programmatic features (or policy interventions) should be developed to assess their effects on retention rates in private insurance as well as take-up rates of public insurance. Results from the estimated models suggest that the mixed public and private markets in insurance coverage for children continues to be a difficult balancing act for policymakers, as they try to improve insurance coverage without spending public dollars unnecessarily.

BIBLIOGRAPHY

Bansak, Cynthia; and S. Raphael. 2006. "The Effects of State Policy Design Features on take-up and Crowd-Out Rates for the State Children's Health Insurance Program" *Journal of Policy Analysis and Management* 26 (1): 149-175.

Barber, J.S., S.A. Murphy., W.G. Axinn., and J. Maples. 2000. "Discrete-Time Multilevel Hazard Analysis." *Sociological Methodology* 30: 201-235.

Blumberg, L.J., L.C. Dubay., and S.A. Norton. 2000. "Did the Medicaid Expansion for Children Displace Private Insurance? An Analysis Using the SIPP." *Journal of Health Economics* 19: 33-60.

Congressional Budget Office. 2007. "The State Children's Health Insurance Program" 17p.

Cunningham, P.J., J.D. Reschovsky, and J. Hadley. 2002. "SCHIP, Medicaid Expansions Lead to Shifts in Children's Coverage." *Issue Brief* No. 59: Health System Change. http://hschange.org

Cunningham, P. J., J. Hadley, and J. Reschovsky. 2002. "The Effect of SCHIP on Children's Health Coverage: Early Evidence from the Community Tracking Study." *Medical Care Research and Review* 59 (4): 359-383.

Cunningham, P. J., and M.H. Park. 2000. "Tracking Recent Changes in Health Coverage for Low-income Children with the Community Tracking Study, 1996-1997 and 1998-1999." *Research Report* No. 04: Health System Change. http://hschange.org

Cutler, D.M., and J. Gruber. 1996. "Does Public Insurance "crowd-out" Private Insurance?" *The Quarterly Journal of Economics* 111 (2): 391-430.

Dubay, L., and L.J. Blumberg. 2006. "The Dynamics of Health Insurance Coverage: 1996 to 2000." *Findings Brief* IX (3): 5p. www.hcfo.org

Dubay, L., and G. Kenney. 1997. "Did Medicaid Expansion for Pregnant Women Crowd-Out Private Insurance?" *Health Affairs* 16 (1): 185-193.

Dubay, L., I. Hill., and G. Kenney. 2002. "Five Things Everyone Should Know about SCHIP." New Federalism, the *Urban Institute*, www.urban.org

Hadley, J., and J.D. Reschovsky. 2002. "Small Firms' Demand for Health Insurance: The Decision to Offer Insurance." *Inquiry* 39: 118-137.

Ham, J.C., and L. Shore-Sheppard. 2000. "The Effect of Medicaid Expansions for Low-Income Children on Medicaid Participation and Insurance Coverage: Evidence

from the SIPP." *Working Paper*. 49p: Joint Center for Poverty Research/University of Chicago, University of Pittsburgh, and NBER.

Institute of Medicine. 2004. "Insuring America's Health: Principles and Recommendations." *Shaping the Future for Health*. www.iom.edu/uinsured: 8p.

Kenny, G.; R.A. Allison; J. F. Costich; J. Marton; and J. McFeeters. 2006. "Effects of Premium Increases on Enrollment in SCHIP: Findings from Three States" *Inquiry* 43: 378-392.

Kronebusch, Karl; and B. Elbel. 2004. "Simplifying Children's Medicaid And SCHIP: What helps? What hurts? What's next for the States?" *Health Affairs* 23 (3): 233-246.

Ku, L., F. Ullman, and R. Almeida. 1999. "What Counts? Determining Medicaid and CHIP Eligibility for Children." *Discussion Papers*: Assessing the New Federalism, www.urban.org: 12p.

Shore-Sheppard, L.D. 2005. "Stemming the Tide? The Effect of Expanding Medicaid Eligibility on Health Insurance Coverage." *Working Paper* No. 11091. 33p: National Bureau of Economic Research.

Short, P.F., and D.R. Graefe. 2003. "Battery-Powered Health Insurance? Stability In Coverage Of The Uninsured." *Health Affairs Data Watch* 244-255.

Singer, J.D., and J.B. Willett. 2003. "A Framework for Investigating Event Occurrence." In Applied Longitudinal Data Analysis: Modeling Change And Event Occurrence: Oxford University Press, New York. 644p.

Sommers, Anna; S. Zuckerman; L. Dubay; and G. Kenney. 2007. "Substitution of SCHIP For Private Coverage: Results from A 2002 Evaluation in Ten States" *Health Affairs* 26 (2): 529-537.

Yazici, E.Y., and R. Kaestner. 2000. "Medicaid Expansions and the Crowding Out of Private Health Insurance Among Children." *Inquiry* 37 (1): 23-32.

U.S. Bureau of the Census (2004). Survey of Income and Program Participation Users' Guide.

APPENDIX

Table 1A: Characteristics of Person-months in Private Insurance Coverage Spells: Family Income between 200 and 350 Percent of the Federal Poverty Level

Variable	Mean (N=75,055)	Standard Deviation
Contextual Factors		
Medicaid/SCHIP eligibility	0.1894	0.3919
Old Medicaid eligibility	0.0562	0.2302
Separate SCHIP program	0.2567	0.4368
Mixed Medicaid/ SCHIP expansion	0.5237	0.4994
5-month waiting time or less	0.3954	0.4889
Greater than 5-month waiting time	0.2714	0.4447
Income disregards	0.5590	0.4965
State unemployment rate	5.8795	1.6019
Retail-service employment ratio	0.7413	0.0422
Medicaid/SCHIP effective 1997	0.1785	0.3829
Parent/Family Factors		
Mom works fulltime	0.5383	0.4985
Mom works part-time	0.1888	0.3913
Mom works: other	0.0287	0.1670
Not a high school graduate	0.0595	0.2366
Some college	0.3908	0.4879
College graduate	0.1848	0.3881
Graduate education	0.0562	0.2303
Family stability	31.0337	12.4147
Income-poverty ratio	276.9072	104.4602
AFDC receipts	0.0001	0.0089
Number of children under 18	2.2177	1.0385
Resides in Northeast	0.1712	0.3767
Resides in Midwest	0.2985	0.4576
Resides in West	0.2231	0.4163
Individual/Child Characteristics		
Poor health status	0.0135	0.1152
Black	0.1050	0.3066
Hispanic	0.0928	0.2901
Other minority	0.0386	0.1927
Child older than 5 years	0.7594	0.4275
Duration_1-3 months	0.0271	0.1624
Duration_4-6 months	0.0238	0.1525
Duration_7-9 months	0.0545	0.2270
Seam month	0.2501	0.4331

Source: Survey of Income and Program Participation, 2001 Longitudinal Panel.

Table 1B: Multilevel Logit Models of Transitions from Private Insurance: Family Income between 200 and 350 Percent of the Federal Poverty Level

Variable	Private-Medicaid/SCHIP Transitions		Private-Uninsured Transitions	
	Estimated Coefficient (.) Std Error	t-Value	Estimated Coefficient (.) Std Error	t-Value
Intercept	-5.7873**	-2.59	-35.2601	-0.38
	(2.2356)		(93.7787)	
Contextual Factors				
Medicaid/SCHIP eligibility	0.4646	1.52	0.2755	0.99
	(0.3055)		(0.2771)	
Old Medicaid eligibility	0.8584***	2.88	0.2685	0.93
	(0.2980)		(0.2900)	
Separate SCHIP program	-0.5054	-1.34	-0.1388	-0.33
	(0.3768)		(0.4146)	
Mixed Medicaid/ SCHIP expansion	-0.2147	-0.53	0.2047	0.44
	(0.4085)		(0.4644)	
5-month waiting time or less	-0.3893	-1.13	0.7835**	2.44
	(0.3436)		(0.3206)	
Greater than 5-month waiting time	0.2162	0.59	-0.0912	-0.24
	(0.3672)		(0.3867)	
Income disregards	-0.5276*	-1.67	-0.5321	-1.45
	(0.3157)		(0.3663)	
State unemployment rate	0.0444	0.75	0.0875***	4.34
	(0.0591)		(0.0201)	
Retail-service employment ratio	-0.1768	-0.06	16.4448***	8.38
	(2.8451)		(1.9620)	
Medicaid/SCHIP effective 1997	-0.5553*	-1.77	1.0439***	2.82
	(0.3131)		(0.3704)	
Parent/Family Factors				
Mom works fulltime	-0.5523***	-3.13	0.0533	0.93
	(0.1764)		(0.0571)	
Mom works part-time	0.0011	0.01	0.3464***	5.15
	(0.2068)		(0.0673)	
Mom works: other	0.5622*	1.76	-0.1897	-1.28
	(0.3200)		(0.1487)	
Not a high school graduate	0.6980***	3.09	0.2727***	3.17
	(0.2255)		(0.0859)	
Some college	-0.2400	-1.42	0.0069	0.13
	(0.1685)		(0.0522)	
College graduate	-0.3587	-1.60	-0.3356***	-4.75
	(0.2244)		(0.0706)	
Graduate education	0.0301	0.10	-0.0312	-0.32
	(0.2904)		(0.0984)	

Continued on next page

Table 1B: Continued

Variable	Private-Medicaid/SCHIP Transitions		Private-Uninsured Transitions	
	Estimated Coefficient (.) Std Error	t-Value	Estimated Coefficient (.) Std Error	t-Value
Family stability	-0.0301***	-6.67	-0.0185	-12.13
	(0.0045)		(0.0015)	
Income-poverty ratio	-0.0004	-0.46	0.0002	0.76
	(0.0008)		(0.0002)	
AFDC receipts	-17.4131	0.00	-18.5972	0.00
	(17034.0000)		(8337.3800)	
Number of children under 18	-0.1999***	-2.99	0.0098	0.46
	(0.0669)		(0.0213)	
Resides in Northeast	-0.1848	-0.43	-1.3574**	-2.18
	(0.4281)		(0.6224)	
Resides in Midwest	-0.1125	-0.32	-0.1258	-0.27
	(0.3498)		(0.4724)	
Resides in West	0.0356	0.09	-0.5616	-1.26
	(0.3806)		(0.4474)	
Individual/Child Characteristics				
Poor health status	1.0925***	3.39	0.3529**	2.21
	(0.3222)		(0.1598)	
Black	0.5907***	2.77	-0.2069**	-2.66
	(0.2132)		(0.0778)	
Hispanic	0.6793***	3.35	0.1341*	1.88
	(0.2030)		(0.0712)	
Other minority	0.8042***	2.72	0.1631	1.46
	(0.2954)		(0.1119)	
Child older than 5 years	0.0052	0.03	0.0888*	1.66
	(0.1638)		(0.0536)	
Duration_1-3 months	-0.2823	-0.79	-3.9931***	-6.27
	(0.3561)		(0.6372)	
Duration_4-6 months	1.6714***	8.72	1.7377***	28.39
	(0.1916)		(0.0612)	
Duration_7-9 months	-0.0741	-0.33	-0.7078***	-8.10
	(0.2256)		(0.0874)	
Seam month	2.7333***	15.53	19.1041	0.20
	(0.1760)		(93.7659)	
LLR	750848		1425817	
AIC	750860		1425831	
Person Months (N)	32,462		75,653	

*** Significant at the 1 percent level
**Significant at the 5 percent level
*Significant at the 10 percent level

Table 2A: Characteristics of Person-months in Private Insurance Coverage Spells: Family Income Less than 200 Percent of the Federal Poverty Level

Variable	Mean (N=31,949)	Standard Deviation
Contextual Factors		
Medicaid/SCHIP eligibility	0.4790	0.4996
Old Medicaid eligibility	0.3014	0.4589
Separate SCHIP program	0.2685	0.4432
Mixed Medicaid/ SCHIP expansion	0.5222	0.4995
5-month waiting time or less	0.3812	0.4857
Greater than 5-month waiting time	0.2732	0.4456
Income disregards	0.5663	0.4956
State unemployment rate	5.8596	1.5249
Retail-service employment ratio	0.7409	0.0449
Medicaid/SCHIP effective 1997	0.1629	0.3693
Parent/Family Factors		
Mom works fulltime	0.4319	0.4953
Mom works part-time	0.1573	0.3640
Mom works: other	0.0220	0.1467
Not a high school graduate	0.1449	0.3520
Some college	0.3271	0.4692
College graduate	0.1231	0.3286
Graduate education	0.0265	0.1607
Family stability	26.7524	15.7291
Income-poverty ratio	150.3089	79.9633
AFDC receipts	0.0024	0.0490
Number of children under 18	2.5997	1.4879
Resides in Northeast	0.1475	0.3547
Resides in Midwest	0.2177	0.4127
Resides in West	0.2009	0.4007
Individual/Child Characteristics		
Poor health status	0.0194	0.1379
Black	0.1560	0.3629
Hispanic	0.1391	0.3460
Other minority	0.0482	0.2142
Child older than 5 years	0.7504	0.4328
Duration_1-3 months	0.0701	0.2553
Duration_4-6 months	0.0536	0.2253
Duration_7-9 months	0.0747	0.2629
Seam month	0.2508	0.4335

Source: Survey of Income and Program Participation, 2001 Longitudinal Panel.

Table2B: Multilevel Logit Models of Transitions from Private Insurance: Family Income Less than 200 Percent of the Federal Poverty Level

Variable	Private-Medicaid/SCHIP Transitions		Private-Uninsured Transitions	
	Estimated Coefficient (.) Std Error	t-Value	Estimated Coefficient (.) Std Error	t-Value
Intercept	-3.4993	-1.54	-29.4866	-0.23
	(2.2689)		(129.8700)	
Contextual Factors				
Medicaid/SCHIP eligibility	-0.3173	-1.24	-0.2864	-0.74
	(0.2564)		(0.3853)	
Old Medicaid eligibility	0.1594	0.59	-0.2241	-0.57
	(0.2709)		(0.3945)	
Separate SCHIP program	-0.7429*	-1.79	-1.2766*	-1.82
	(0.4152)		(0.7024)	
Mixed Medicaid/ SCHIP expansion	-0.8025**	-2.08	0.7455	1.05
	(0.3855)		(0.7087)	
5-month waiting time or less	0.2638	0.66	0.2303	0.42
	(0.3997)		(0.5465)	
Greater than 5-month waiting time	0.1649	0.41	0.3442	0.56
	(0.4005)		(0.6184)	
Income disregards	0.0716	0.21	0.0434	0.07
	(0.3449)		(0.6256)	
State unemployment rate	0.1499***	3.16	0.1750***	8.97
	(0.0474)		(0.0195)	
Retail-service employment ratio	-3.1955	-1.07	8.8865***	3.91
	(2.9924)		(2.2736)	
Medicaid/SCHIP effective 1997	-0.1695	-0.46	-0.0445	-0.07
	(0.3701)		(0.6430)	
Parent/Family Factors				
Mom works fulltime	-0.3827***	-2.94	0.0838	1.45
	(0.1303)		(0.0579)	
Mom works part-time	-0.2762	-1.64	0.0444	0.59
	(0.1681)		(0.0756)	
Mom works: other	0.9831***	3.87	0.9449***	7.43
	(0.2541)		(0.1272)	
Not a high school graduate	0.5221***	3.28	0.3118***	4.29
	(0.1594)		(0.0727)	
Some college	-0.1568	-1.13	0.0377	0.66
	(0.1386)		(0.0570)	
College graduate	-0.0419	-0.24	-0.6758***	-6.99
	(0.1772)		(0.0967)	
Graduate education	0.3451	1.14	-0.4664**	-2.44
	(0.3026)		(0.1914)	

Continued on next page

Table 2B: Continued

Variable	Private-Medicaid/SCHIP Transitions		Private-Uninsured Transitions	
	Estimated Coefficient (.) Std Error	t-Value	Estimated Coefficient (.) Std Error	t-Value
Family stability	-0.0103***	-2.85	-0.0105***	-6.73
	(0.0036)		(0.0016)	
Income-poverty ratio	-0.0026**	-2.24	-0.0049***	-8.68
	(0.0012)		(0.0006)	
AFDC receipts	1.1055**	2.30	2.3819***	9.78
	(0.4815)		(0.2435)	
Number of children under 18	-0.0511	-1.35	-0.0834***	-4.87
	(0.0378)		(0.0171)	
Resides in Northeast	0.2508	0.47	-0.4735	-0.40
	(0.5325)		(1.1978)	
Resides in Midwest	-0.0464	-0.11	-0.8189	-0.90
	(0.4166)		(0.9076)	
Resides in West	0.2674	0.58	0.6500	0.74
	(0.4636)		(0.8832)	
Individual/Child Characteristics				
Poor health status	0.3423	1.12	-1.4317***	-4.62
	(0.3048)		(0.3101)	
Black	0.2161	1.40	0.3469***	5.03
	(0.1542)		(0.0690)	
Hispanic	0.2090	1.19	0.3457***	4.76
	(0.1752)		(0.0727)	
Other minority	0.9992***	4.66	0.3761***	3.55
	(0.2142)		(0.1059)	
Child older than 5 years	-0.1114	-0.91	-0.0108	-0.19
	(0.1221)		(0.0563)	
Duration_1-3 months	-1.1166***	-3.89	-3.2031***	-12.55
	(0.2868)		(0.2552)	
Duration_4-6 months	2.0470***	16.81	1.3812***	22.98
	(0.1218)		(0.0601)	
Duration_7-9 months	0.1047	0.62	-0.3656***	-4.86
	(0.1678)		(0.0753)	
Seam month	2.6767***	20.68	19.8527	0.15
	(0.1294)		(129.8600)	
LLR	278127		612034	
AIC	278141		612048	
Person Months (N)	32,393		32,462	

*** Significant at the 1 percent level
**Significant at the 5 percent level
*Significant at the 10 percent level