The Effects of Premium Increases on Enrollment in SCHIP Programs: Findings from Three States

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ABSTRACT

This study examines the effects of higher premiums on SCHIP enrollment in Kansas, Kentucky, and New Hampshire: three states that implemented premium changes in 2003. We used state administrative enrollment records from 2001 to 2004-05 to track changes in total caseloads, new enrollments, and disenrollment timing in premium-paying categories of SCHIP before and after the premium changes were implemented. Premium increases were associated with lower caseloads in all three states and with earlier disenrollment in Kentucky and New Hampshire. Premium increases appeared to have greater disenrollment effects for lower-income children in New Hampshire and for non-white children in Kentucky.
INTRODUCTION

The State Children’s Health Insurance Program (SCHIP) was created under the Balanced Budget Act of 1997 to provide health insurance coverage to uninsured low-income children whose family incomes were too high to qualify for Medicaid. Under SCHIP, states have latitude over numerous design aspects of their SCHIP programs, including whether to expand their existing Medicaid program, use a non-Medicaid program, or some combination of the two approaches. Over two-thirds of the states (35 in all) expanded coverage with a separate non-Medicaid program or a combination program. Under the cost-sharing provisions governing separate SCHIP programs, out-of-pocket spending for premiums and co-payments may not be more than 5 percent of family income for children whose family incomes are above 150 percent of the federal poverty level. Such spending is limited to substantially lower proportions of family income for children whose family incomes are below 150 percent of the federal poverty level. In addition, cost-sharing amounts (either absolute dollar amounts or proportions of household income) may not be higher for lower-income families than for higher-income families. Premiums are still rare in Medicaid programs for children, limited to states that have waivers from the Center for Medicare and Medicaid Services (CMS).

In response to budget pressures brought on by decreases in state tax revenue and increasing enrollment levels in the early 2000s, a growing number of states introduced or increased premiums for public coverage, primarily under SCHIP. Between 2002 and 2004, 16 states raised premium levels on children’s coverage. As of 2004, over three-quarters of the 35 states with separate SCHIP programs charged premiums and five states charged premiums under Medicaid waivers for some eligibility groups. While some
premium increases in SCHIP have been driven by the rising costs of providing care, other states have looked to premiums as a tool for constraining public outlays (Hill, Courtot, and Sullivan 2005; Fox and Limb 2004).

There is a growing empirical literature that aims to document the extent to which premiums affect enrollment in public programs. A recent report provides a synthesis of findings with respect to the effects of cost sharing in public programs (Artiga and O’Malley 2005). The study concludes that new or increased premiums in public insurance coverage can be barriers to enrollment and that they may increase disenrollment substantially in the months after implementation.

Most of the studies done to date have found decreases in caseloads and increases in disenrollment rates following premium increases and some evidence attributing higher disenrollment to premium non-payment. However, no prior study controls for other state-specific factors that could have confounded the estimated effects of the premium increase. For example, other research indicates that changes in the unemployment rate affect enrollment in public programs (Cawley and Simon 2004). Thus, changes in the underlying economy may affect access to employer-sponsored coverage and enrollment in public programs.

In this paper, we examine the effects of premium changes in Kansas, Kentucky, and New Hampshire, three states that implemented higher premiums in 2003 for some or all of the children enrolled in their separate SCHIP programs. Premium levels were increased in Kansas and New Hampshire, while premiums were imposed for the first time in Kentucky. We chose to study these three states to take advantage of differences with their program structures (such as eligibility limits) and with their premium changes (such
as the magnitude of the changes). In addition, these three states represent different regions of the country and have different racial and ethnic enrollee mixes.

Gaining a better understanding of the impacts of public premiums is important in light of a recent National Governors Association (NGA) proposal to give states more latitude over cost sharing in public programs (National Governors Association 2005). Moreover, this information could help states guide their SCHIP programs as they search for ways to maintain program enrollment in the face of financing strains.

Because changes in premiums could affect both the number of children who enter the program and how long they remain enrolled, we examine the extent to which premium increases affect enrollment in and disenrollment from premium-paying SCHIP coverage. We first examine caseload changes following the premium change in the premium-paying categories, both descriptively and in a multivariate context. We also examine the impact of premium changes on new enrollments using multivariate methods. We then use duration analysis to assess the extent to which disenrollment timing seems to have been affected by the imposition of higher premiums. The following sections of the paper provide background information on the premium policies in the three states, a discussion of data and methods, findings, and policy implications.

BACKGROUND

Figure 1 provides background information on the three states in the study. Premiums were charged as part of the SCHIP programs in Kansas and New Hampshire from the outset, and while they were also included in Kentucky’s enabling legislation, they were not implemented until December 2003. The number of children enrolled in the
premium-paying category is small relative to the total number of children enrolled in either Medicaid or SCHIP in each state. As of July 2003, the caseloads in the premium-paying categories in Kansas and New Hampshire were 10,524 and 5,818, respectively. In Kentucky, the caseload was 19,625 in July 2003 in the 151 to 200 percent of the federal poverty level (FPL) group (which was charged a premium beginning in December 2003). The premium-paying enrollment constituted 5.8, 5.1, and 9.0 percent of total enrollment in public programs among children in Kansas, Kentucky, and New Hampshire, respectively.

In Kansas, the separate SCHIP program has two premium-paying categories: one covers children with family incomes between 151 to 175 percent of the FPL and the other covers children with family incomes between 176 and 200 percent of the FPL (some children with family incomes between 100 and 150 percent of the FPL are also covered under SCHIP, with no premiums). The federal SCHIP match rate for Kansas was 73 percent. Monthly premiums had been $10 per family for children with incomes between 151 and 175 percent of the FPL and $15 per family for children with incomes between 176 and 200 percent of the FPL. They were increased to $30 and $45 per family per month, respectively in February 2003. Premiums were subsequently decreased to $20 and $30, respectively, per family per month in July 2003. The decision to increase premiums in the fall of 2002 came at the fiscal low point of a recession and was part of a multi-agency package of budget reductions. The premium increases were partially reversed just five months later by a new governor after the state fiscal situation began to improve. There was little publicity about either of the changes to the premiums and premium-paying families were notified of both changes only through their normal
monthly bill. Premium non-payment does not result in termination of enrollment in Kansas until recertification, which occurs at twelve-month intervals after initial enrollment. Children whose enrollment is terminated due to premium non-payment must pay all past due premiums to be recertified and re-enroll, but there is no enrollment blackout period. Because premium non-payment does not lead to disenrollment until recertification and because premiums were tripled for just a five-month period, the higher premium may have had a more diffuse disenrollment effect in Kansas than in the other two states.

Like Kansas, Kentucky covers SCHIP-eligible children between 101 and 150 percent of the federal poverty level without any premiums through a Medicaid expansion. The federal SCHIP Match rate for Kentucky was 79 percent during the study period. In December 2003, Kentucky introduced a premium of $20 per month per family for children covered by a separate SCHIP program with family incomes between 151 and 200 percent of the FPL. The premium option was part of the SCHIP implementing legislation but had been interpreted as optional rather than mandatory until a combination of legislative pressure and unexpectedly high enrollment prompted reconsideration of the issue. In Kentucky, enrollees have an eligibility period of twelve months, but children are terminated from the program if premiums are more than two months past due and re-enrollment requires payment of at least one past due premium. There is no blackout period before a child is eligible to re-enroll.

In New Hampshire, the Medicaid program has higher eligibility levels than in Kansas or Kentucky, covering children ages 0 to 18 whose family incomes go up to 185 percent of the FPL. An SCHIP Medicaid expansion covers infants between 185 and 300
percent of the FPL with no premium, and a separate SCHIP program charges premiums for children ages 1 through 18 whose family incomes are between 185 and 300 percent of the FPL. The federal SCHIP match rate in New Hampshire was 65 percent. Premiums were increased by $5 per month per child in these two eligibility categories in January 2003, from $20 to $25 (for the 185 to 250 percent of the FPL group) and $40 to $45 per month per child per month (for the 251 to 300 percent of the FPL group). The premium increases in New Hampshire, the first since the inception of SCHIP, were implemented due to rising program costs and the fact that premiums had been declining in real terms over the years.

New Hampshire imposes premiums at the child level, in contrast with the family-level premiums in Kansas and Kentucky. New Hampshire’s monthly premiums are capped at $100 and $135 per family per month for the lower and the higher income group, respectively. Children have a 12 month eligibility period, but enrollment is terminated if premiums are more than two months past due. There is no requirement to pay past-due premiums to re-enroll in New Hampshire, but there is a three-month lockout period. If a recipient’s family has a legitimate reason for not paying premiums, a charity program can cover most of the cost of the premiums for up to 3 months. However, this assistance program is small because charitable funds for this purpose are limited and relatively few families ask for help.⁵

All three states had recertification points at 12-month intervals, but the definition of the starting point varied across the three states. In Kansas and Kentucky, recertification occurs approximately 12 months after the initial enrollment date, whereas
in New Hampshire, it occurs 12 months after the application date (which can be as much as two months before the enrollment date).

In 2004, Kentucky collected a total of $2.26 million in premiums and spent an estimated $446,000 on administrative costs collecting premiums; Kansas collected a total of $1.36 million in premiums in 2004 and spent approximately $270,000 on administrative costs, and New Hampshire collected a total of $2.31 million in premiums in 2004 and spent an estimated $140,000 to $150,000 for premium collection. The premiums collected and the administrative costs reported here include both the state and federal shares. Taking the total premiums collected net of the administrative costs associated with collecting premiums, this suggests that premiums accounted for 2.5 percent of total state and federal SCHIP outlays in Kansas, 2.8 percent in Kentucky, and 19.8 percent in New Hampshire.

DATA AND METHODS

The analysis draws primarily on state administrative individual enrollment records from 2001 to 2004-05 for the premium-paying categories of the separate SCHIP programs in Kansas, Kentucky, and New Hampshire. We do not include data from the start-up years of each SCHIP program since they may not be indicative of enrollment and disenrollment patterns at a more mature point in the program’s history. The study population is defined as enrollees ages 1 through 18 with family incomes between 151 and 200 percent of poverty in Kansas and Kentucky, enrollees under 1 with family incomes between 151 and 200 percent of poverty in Kansas and family incomes between

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186 and 200 percent of poverty in Kentucky, and enrollees ages 1 through 18 in New Hampshire with family incomes between 185 and 300 percent of poverty.

Individual monthly enrollment files were combined to create a single data set for each state covering the entire study period. Since changes in caseloads are determined by changes in new enrollments and by changes in disenrollments, we analyze total caseloads and its component parts separately. We use time-series methods to examine changes in caseloads and new enrollments and duration analysis to examine changes in disenrollment rates.

Where possible, comparable measures were defined in each state. A child who was enrolled at any point in a given month was considered a current enrollee (which in almost all instances meant that they were enrolled as of the first day of the month); new enrollees were defined as those who were in a premium-paying category in a given month, but who had not been enrolled in a premium-paying category the prior month; and disenrollees were defined as children enrolled in premium-paying SCHIP for at least one month, but not enrolled in premium-paying SCHIP the subsequent month.\(^7\)

Over the study period, a small percentage of disenrollees from the premium-paying category were subsequently re-enrolled in a premium-paying category after a one-month gap in coverage: 0.8 percent of disenrollees in Kansas, 1.8 percent of disenrollees in New Hampshire, and 3.1 percent in Kentucky. The implications of brief enrollments for children, families, and SCHIP programs vary significantly by state and by the length of the disenrollment. For the broadest indication of the potential impact of the premium changes, we included one-month gaps in our analysis as disenrollments. While using a one-month gap may increase the counts of disenrollees and new enrollees on a monthly
basis, it is unlikely that the estimated effects of the premium changes will be affected
given the small share of disenrollees who re-enroll after one month.

The administrative files contain limited demographic information on the children
enrolled in the premium-paying categories. In all three states, information is provided on
the age, gender, and the county of residence. Kansas and Kentucky data also include
information on the child’s race/ethnicity. In New Hampshire, the file contains
information on household size whereas in Kentucky and Kansas we estimated the number
of siblings each child has by using their family identification number to match enrolled
siblings. In Kentucky, the file contains information on managed care enrollment and
enrollment status (i.e., previously enrolled in Medicaid, previously enrolled in the non-
premium-paying category of SCHIP, or not enrolled previously in any type of public
coverage) of children prior to enrollment in the premium-paying category. Kansas’s data
also includes information on enrollment status and monthly records of a family’s income
relative to the federal poverty level, which was used to estimate premium payment status.
This method of estimating premium payment status was validated through comparisons
with official caseload counts and with the portion of premium payment records that could
be matched at the family level. New Hampshire provides monthly family income from
the initial application or latest recertification, along with the number of people in the
child’s household, which we used to calculate income as a proportion of the federal
poverty level. Monthly data on state-level unemployment rates for all three states were
obtained from the Bureau of Labor Statistics.

Multivariate time-series analyses of changes in monthly caseload were performed
using the following specification:
(1) \( C(t) = a + b \cdot T + c \cdot T \text{ squared} + d \cdot \text{Premium}(t) + f \cdot \text{UE}(t) + g \cdot M(t) + u(t); \)

where \( C(t) \) is the total caseload in the premium-paying category in month \( t \); \( T \) is a time trend that takes the value 1 in the first month of the analysis, 2 in the second month of the analysis, etc.; \( T \) squared is the time trend squared (to allow for a non-linear time trend); \( \text{Premium}(t) \) is a dummy variable that takes the value 1 in the months following the premium increase; \( \text{UE}(t) \) is the unemployment rate reported for month \( t \); \( M \) is a set of monthly dummy variables; and \( u(t) \) is an error term. Monthly dummy variables were included to control for possible seasonal variation in caseloads and because of annual redefinitions in federal poverty levels that lead to some children transferring from premium-paying into non-premium-paying categories.\(^9\) We tested for auto-correlation in the error term and when indicated, we adjusted the estimates for auto-correlation using a Cochrane-Orcutt transformation. We also estimated multivariate models on new enrollments using the same structure as specified in (1) to assess the extent to which new enrollment in premium-paying categories appeared to be affected by higher premiums.

Analyses of individual-level disenrollment patterns were conducted using a Cox proportional hazards model based on cohorts of children entering the key program enrollment categories between 2001 and 2004. Other research has used a Cox proportional hazards model to measure the effects of premium changes on disenrollment patterns (Shenkman et al. 2002; Herndon et al. forthcoming). Our Cox proportional hazards model uses time-varying covariates, with the following specification:

\[
(2) \ h(t) = h_0(t) e^{\beta_{\text{Recert}_1}} + \beta_{\text{Recert}_2} + \beta_{\text{Recert}_3} + \beta_{\text{Post_Premium}} + \beta X \]

where $h(t)$ is the hazard rate for disenrolling from the premium-paying category, $h_0(t)$ is the baseline hazard function, and $\beta_1$, $\beta_2$, and $\beta_3$ are the hazard rates associated with recertification at 12, 24, and 36 months, respectively; $\beta_4$ is the hazard rate associated with the premium increase (i.e., the premium variable is a time-varying variable that takes the value zero before the premium increase and the value one after the premium increase) and $\beta X_i$ is a vector of hazards associated with covariates such as the age of the child, the child’s gender, and family size. As with the time-series analysis, separate models were estimated for each state.

We examine the disenrollment experience of the cohorts of children in each of the three states who enrolled in a premium-paying SCHIP category at some point between 2001 and 2004. By relying on cohort data for our hazard model, we avoid the problem of having left-censored enrollment spells in the premium-paying category. All children in these cohorts who were still enrolled at the end of the study period for each state and those who turned 19 (i.e., who aged out of the program) were treated as right-censored in the analysis.

Disenrollments in states with active recertification are typically concentrated in or around the expected time of recertification. Observation of monthly exit hazards (not shown) suggests that the period of time between children’s enrollment in a premium-paying category and their first recertification varied across the study states. These variations appear to be caused by differences in the process of establishing an administrative marker for the date of first recertification. As noted earlier, New Hampshire sets an administrative marker 12 months after the date an application is received; therefore, most children reach their first recertification after 10 to 11 months of
being enrolled in the program. In Kansas, most children in the study cohorts have their first recertification after 12 months while in Kentucky, most children appear to reach their first recertification at around 13 or 14 months, which is driven by the experience of children who had public coverage prior to enrolling in the premium-paying category.

FINDINGS

Caseload changes. Figures 2 through 4 show changes in premium-paying caseloads over the study period. In all three states, caseload growth rates in the six months prior to the premium increase are consistently higher than those in the six months after the premium increase. The most dramatic change in caseload occurred in Kentucky, where the premium-paying caseload decreased by 16.4 percent (3,194 children) in the three months following the introduction of the premium. The caseload stabilized in February 2004, but had not returned to pre-premium levels nine months after the premium was introduced. In both Kansas and New Hampshire, small declines in the caseload occurred immediately following the premium hike, but the caseload resumed growing three to five months following the premium increase, though at lower rates than observed before the premium increase.

The caseload changes in the premium-paying category differ substantially from those observed in the other categories of public coverage in the six-month period following the premium increase (Table 1). While caseload changes in premium-paying SCHIP ranged from an increase of 1.0 percent to a decline of 18.2 percent across the three states over that period, Medicaid caseloads for children increased by between 2.8 and 3.3 percent and enrollment in non-premium-paying SCHIP coverage in Kansas grew
by 4.9 percent and stayed flat in Kentucky (no trend data is presented for the very small non-premium-paying SCHIP category of infants in New Hampshire). It appears that while caseloads declined or stayed flat in the premium-paying categories following the premium increases, caseloads for other categories of public coverage were increasing.

**Time-Series Analyses.** Table 2 shows findings from time-series models on premium-paying caseloads. In all three states, a negative premium effect was found (p < 0.10, one tailed test [Kansas]; p < 0.05, one tailed test [Kentucky and New Hampshire]). The implied average effect of the premium was to reduce monthly caseloads by 421 children (4.1 percent) as of December 2004 in Kansas; 3262 children (18.1 percent) as of April 2005 in Kentucky; and 201 children (3.7 percent) as of November 2004 in New Hampshire. Other specifications were also estimated, modeling the policy effect and the time trends in different ways. While the magnitude and precision of the policy effects vary under alternative specifications, the pattern of findings consistently points to premium increases having a negative effect on caseloads in premium-paying categories. We find that including the unemployment rate affected the estimated premium effects in New Hampshire, but not in the other two states.

For new enrollment in premium-paying SCHIP, a negative premium effect was found (p < 0.10, one tailed test) for Kansas and New Hampshire, but no significant effect of the introduction of a premium was found in Kentucky. The implied average effect of the premium was to reduce new enrollment by 180 and 71 children per month or by 10.1 and 17.7 percent in Kansas and New Hampshire, respectively.

**Hazard Analyses.** Table 3 provides descriptive information for the hazard analyses in each state. Table 4 provides estimates from the hazard models, which
indicate how the higher premium levels and other factors affect disenrollment from the premium-paying category of SCHIP. All results presented in this section are significant at a 0.05 level unless specified otherwise. Our findings suggest that the higher premium levels led children to disenroll earlier than they would have otherwise in both Kentucky and New Hampshire. The strongest positive effect on the disenrollment hazard was found in Kentucky, where the hazard rate was 1.3 times higher following the introduction of the premium. A positive, but smaller effect, that was more sensitive to model specification, was found in New Hampshire, indicating that the disenrollment hazard rate was 1.1 times higher following the premium increase. We may be observing a smaller disenrollment effect in New Hampshire than in Kentucky because the premium increase in New Hampshire was smaller or because the premium was applied to a higher income group than in Kentucky.

In contrast, the results for Kansas indicate that disenrollment rates did not increase in the months following the premium increase that took place in February 2003—if anything, the hazard rate for disenrollment appeared to be lower over that period. The contrary findings for Kansas may be due to a number of factors, including the lack of sanctions for premium non-payment until the recertification point, the fact that the premium was increased and then decreased within a relatively short period of time, or unmeasured differences in the population of SCHIP eligibles or enrollees over time.

Some groups of children in Kentucky and New Hampshire appeared to be affected more by the premium change. In Kentucky, a model specification that included interaction terms between the policy change variable and all the other explanatory variables found a hazard rate of 1.20 on the interaction term for non-white children (data
not shown). This result implies that disenrollment rates increased more for non-white children after the introduction of the premium than for white children,\textsuperscript{15} which suggests that non-white children were affected more than other children by the introduction of the premium. This finding may be due to differences in the characteristics of the children in the different racial subgroups, such as family income, that are not observed.

In New Hampshire, the effect of the premium increase on the disenrollment hazard appeared to differ for children in the two different premium-paying categories (data not shown). Children in the 185 to 250 percent of the FPL had a disenrollment hazard rate that was 1.1 times higher than the baseline hazard measured before the premium increase, while children in the 251 to 300 percent of the FPL had a disenrollment hazard rate that was 0.9 times (p < 0.10) the rate before the premium increase. It appears that the increased hazard rate for disenrollment occurring following the premium increase in New Hampshire was limited to children in the 185 to 250 percent of the FPL group.

Factors other than the premium increase also affected the disenrollment hazard rate. In all three states, both the first and second recertification points are associated with a higher disenrollment hazard rate. For example, in New Hampshire, at first recertification, the disenrollment hazard rate was 1.6 times greater than the baseline hazard, and after the second recertification the disenrollment hazard rate is 4.6 times greater. For the relatively few children who reached their third recertification, the disenrollment hazard rate was much lower (0.2 times of the disenrollment hazard rate). Similarly, results indicate that transferring into the premium-paying category of SCHIP from Medicaid or from the non-premium-paying category of SCHIP is associated with
larger disenrollment hazards. In Kentucky, for example, children transferring from Medicaid into premium-paying SCHIP had a disenrollment hazard rate 1.6 times greater than for those without public coverage prior to enrolling in premium-paying SCHIP.

In terms of the demographic characteristics of the child, gender does not seem to have a differential impact on disenrolling in any of the three states. Other demographic characteristics had inconsistent impacts in the three study states. Being covered under managed care (hazard rate 1.22) increased the odds of disenrolling in Kentucky. Enrollment spans of younger children, aged 1 to 5, ended earlier than the enrollments of teenagers in Kentucky (hazard rate 1.09) and New Hampshire (hazard rate 1.14), but last longer in Kansas (hazard rate 0.93). Income also had a negative association with the disenrollment hazard rate—in New Hampshire, it appears that children with incomes between 251 and 300 percent of the FPL had a substantially lower hazard rate relative to children with incomes between 185 and 250 percent of the FPL.

POLICY IMPLICATIONS

Despite differences in SCHIP premium and eligibility policies in Kansas, Kentucky, and New Hampshire, the premium increases had negative effects on premium-paying caseloads in all three states based on changes in actual caseloads, caseload growth rates and time-series analyses of caseload changes. Our analysis also suggests that increases in premiums led to reductions in new enrollment in Kansas and New Hampshire and to faster disenrollment in both Kentucky and New Hampshire. Effects on disenrollment were larger in Kentucky than in New Hampshire and no disenrollment effects were observed in Kansas. In Kentucky, larger disenrollment effects were found for non-white relative to white children while in New Hampshire, disenrollment effects
were concentrated among children in the lower-income eligibility group (185 to 250 percent of the FPL).

Our findings suggest that states that raise premium levels will experience lower caseloads in premium-paying categories in the months following a premium increase. The findings from Kentucky indicate that states introducing premiums for the first time may experience substantial disenrollment effects compared to states making small changes to their premium levels. Our research also suggests that premium increases may have greater disenrollment effects when they are applied to lower-income families. This finding is consistent with new research from Florida (Herndon et al. forthcoming), which found that disenrollment rates increased more following a premium increase in Florida for children between 100 percent and 149 percent of the FPL than for those for children between 150 percent and 200 percent of the FPL. It is also consistent with findings from a national analysis of premium impacts, which indicated that public premiums had more pronounced effects on families with incomes between 100 and 200 percent of the FPL than on higher income families (Kenney et al. forthcoming.)

The results from Kansas indicate that other state policies related to premium non-payment may affect the observed impacts of premium increases. In particular, to the extent that premium non-payment results in termination only at recertification points, premium increases may have delayed impacts on program disenrollment. The mode of premium payment may also determine responses to premium increases. Findings from focus group studies and separate findings from Rhode Island indicate that families value having multiple options for premium payment, and that more payment options, including
a payroll deduction, may minimize disenrollment due to premium non-payment (Kannel and Pernice 2005).¹⁶

There are a number of limitations to this analysis. While we used local unemployment rates to control for changes in the underlying economy, which could affect enrollment in public programs, we were not able to include all the factors that could affect demand for public coverage. In particular, we could not control for changes in health care premiums for employer-sponsored coverage, which were rising at high rates over the study period. In addition, we do not have accurate measures of the number of children who are eligible for coverage in the premium-paying categories and how that number was changing over the time period for analysis. Thus, there may be other changes occurring in these states at the time the premium changes were made that confound our ability to isolate the effects of premium increases on enrollment and disenrollment. Finally, the length of the post-premium periods vary from state to state, ranging from 9 months for the disenrollment analysis and 17 months for the time-series analysis in Kentucky to 23 months in Kansas and New Hampshire for both analyses. Using a shorter time period after the policy change in Kentucky may have affected the impact estimates, although our policy estimates from the other states were not affected when we included fewer months following the policy change in our analysis.

With the exception of New Hampshire, which has higher SCHIP eligibility thresholds and higher premium levels, it appears that SCHIP premiums account for a relatively small fraction of total (i.e., federal and state) SCHIP spending in these states. The extent to which premiums generate savings for states depends on the state’s SCHIP matching rate—premium collections will generate relatively more savings in state outlays
for states that have lower federal SCHIP matching rates. In addition to the state’s matching rate and the administrative costs associated with collecting premiums, the effect of a premium increase on state outlays will depend on the magnitude of the premium change and the effect of the premium change on caseloads. The time-series models estimated here suggest that states will experience some reductions in premium-paying caseloads in the short run, which should lower state outlays under SCHIP.

However, estimating the savings to states resulting from premium increases also requires factoring in other potential costs. For example, premium increases or the introduction of new premiums may lead to positive spillover enrollment effects for non-premium-paying categories of SCHIP or for Medicaid (Kenney et. al under review). For example, if a premium change or new premium increases the likelihood that families will notify the state of changes in family circumstances that make them eligible for non-premium-paying SCHIP or for Medicaid, it could end up costing the state more, especially if there is a shift from SCHIP to Medicaid (with the accompanying decline in the federal matching rate). It is also possible that new or higher SCHIP premiums could dissuade families with incomes in the Medicaid or SCHIP eligibility range from applying for coverage, which would reduce state outlays for Medicaid and SCHIP but could increase costs for uncompensated care. To the extent that higher premiums lead to greater cycling on and off public coverage, administrative costs may be higher, which would increase state costs. At the same time however, charging premiums may make it easier for states to implement a passive redetermination process for the families that continue paying premiums, which in turn, appears to raise re-enrollment levels (Dick et al. 2001). There may be non-financial impacts as well. It is possible that new or higher
premiums could change voter and provider perceptions of the SCHIP program, making it appear more like private coverage and potentially enhancing long-term support for the program.

A number of changes to public health insurance programs for children are being contemplated, including providing states with greater latitude to use cost sharing in Medicaid. A National Governors Association plan would allow states to charge premiums as high as 5 percent of family income for children between 100 and 150 percent of the FPL (National Governors Association 2005). Currently, only nominal premiums are permitted in that income group and other research suggests that even these very low nominal premium levels can lead to reductions in enrollment levels (Herndon et al. forthcoming, Kenney et. al. under review, Marton forthcoming). Moreover, this analysis suggests that among children with family incomes above 200 percent of the FPL, premiums that are well below the levels that are permissible under current law, can reduce enrollment levels. It will be critical for states that impose significantly higher premiums to understand how they affect rates of coverage for children and to assess the subsequent impacts on children’s coverage status and their access to health care.
References


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Table 1: Caseload Growth Rates Six Months Prior to and Six Months after the Premium Change in Kansas, Kentucky, and New Hampshire

<table>
<thead>
<tr>
<th>State</th>
<th>Medicaid 6 months prior to premium change</th>
<th>SCHIP No Premium 6 months prior to premium change</th>
<th>SCHIP Premium-Paying 6 months prior to premium change</th>
<th>Medicaid 6 months after premium change</th>
<th>SCHIP No Premium 6 months after premium change</th>
<th>SCHIP Premium-Paying 6 months after premium change</th>
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<td>Kansas</td>
<td>5.74%</td>
<td>7.01%</td>
<td>16.55%</td>
<td>3.06%</td>
<td>4.94%</td>
<td>-4.88%</td>
</tr>
<tr>
<td>Kentucky</td>
<td>2.41%</td>
<td>3.53%</td>
<td>0.32%</td>
<td>2.79%</td>
<td>-0.23%</td>
<td>-18.24%</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>5.26%</td>
<td>N/A</td>
<td>19.33%</td>
<td>3.32%</td>
<td>N/A</td>
<td>0.98%</td>
</tr>
</tbody>
</table>

1 Caseload growth rates are measured from the first premium change in Kansas.

Source: Monthly administrative enrollment data from Kansas, Kentucky, and New Hampshire 2001 to 2004-05.
Table 2: Time Series Estimates of Caseload Changes for Premium Paying Enrollment Categories in Kansas, Kentucky, and New Hampshire, 2001 to 2004-05

<table>
<thead>
<tr>
<th></th>
<th>Kansas</th>
<th>Kentucky</th>
<th>New Hampshire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>185 **</td>
<td>170 **</td>
<td>160 **</td>
</tr>
<tr>
<td>Time squared</td>
<td>-2 *</td>
<td>-3.7 **</td>
<td>-1.8 **</td>
</tr>
<tr>
<td>After Premium Change¹</td>
<td>-421 *</td>
<td>-3262 **</td>
<td>-201 **</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>-151</td>
<td>-37</td>
<td>7</td>
</tr>
<tr>
<td>Average Monthly Premium Effect</td>
<td>-421</td>
<td>-3262</td>
<td>-201</td>
</tr>
<tr>
<td>Premium Effect as a Percent of Premium-Paying Caseload</td>
<td>-4.06%</td>
<td>-18.12%</td>
<td>-3.69%</td>
</tr>
</tbody>
</table>

* indicates significant at 0.10 level
** indicates significance at 0.05 level

Note: ¹ Premium variable takes the value "1" after premium was increased and is "0" otherwise. The premium effect is interpreted as the average monthly change in caseload due to the premium increase.

Source: Monthly administrative enrollment data from Kansas, Kentucky, and New Hampshire 2001 to 2004-05.
### Table 3: Descriptive Statistics for Hazard Analyses

<table>
<thead>
<tr>
<th>Number of New Enrollment Spans¹</th>
<th>Kansas</th>
<th>Kentucky</th>
<th>New Hampshire</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>35,939</td>
<td>51,649</td>
<td>16,422</td>
</tr>
</tbody>
</table>

#### Premium Category

<table>
<thead>
<tr>
<th></th>
<th>Kansas HealthWave High Premium</th>
<th>Kansas HealthWave Low Premium</th>
<th>Kentucky KCHIP III</th>
<th>New Hampshire 185 to 250 percent FPL</th>
<th>New Hampshire 251 to 300 percent FPL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>34%</td>
<td></td>
<td>100%</td>
<td>80%</td>
<td>20%</td>
</tr>
</tbody>
</table>

#### Age

<table>
<thead>
<tr>
<th></th>
<th>1 to 5</th>
<th>6 to 12</th>
<th>13 to 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kansas</td>
<td>41%</td>
<td>37%</td>
<td>22%</td>
</tr>
<tr>
<td>Kentucky</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Hampshire</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Gender

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kansas</td>
<td>51%</td>
<td>49%</td>
</tr>
<tr>
<td>Kentucky</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Hampshire</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Number of Siblings

<table>
<thead>
<tr>
<th></th>
<th>1.31</th>
<th>1.16</th>
<th>-----</th>
</tr>
</thead>
</table>

#### Household Size

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>3.79</th>
</tr>
</thead>
</table>

Note: ¹An Enrollment Span is the period of time a child is continuously enrolled in premium-paying SCHIP. A span starts when a child enrolls in premium-paying SCHIP and ends when the child disenrolls from premium-paying SCHIP.

Table 4: Estimated Coefficients from Hazard Analyses in Kansas, Kentucky, and New Hampshire

<table>
<thead>
<tr>
<th>Variable</th>
<th>Kansas(^1)</th>
<th>Kentucky(^2)</th>
<th>New Hampshire(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hazard Ratio</td>
<td>p-value</td>
<td>Hazard Ratio</td>
</tr>
<tr>
<td>Premium Change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After</td>
<td>0.95</td>
<td>0.007</td>
<td>1.28</td>
</tr>
<tr>
<td>Before</td>
<td>1.00</td>
<td>--------</td>
<td>1.00</td>
</tr>
<tr>
<td>Premium Category</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kansas HealthWave High Premium</td>
<td>1.36</td>
<td>0.000</td>
<td>N/A</td>
</tr>
<tr>
<td>Kansas HealthWave Low Premium</td>
<td>1.00</td>
<td>--------</td>
<td>N/A</td>
</tr>
<tr>
<td>Kentucky KCHIP III</td>
<td>N/A</td>
<td>N/A</td>
<td>1.00</td>
</tr>
<tr>
<td>New Hampshire 251 to 300 percent FPL</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>New Hampshire 185 to 250 percent FPL</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>First Recertification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3.05</td>
<td>0.000</td>
<td>2.77</td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td>--------</td>
<td>1.00</td>
</tr>
<tr>
<td>Second Recertification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4.17</td>
<td>0.000</td>
<td>2.25</td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td>--------</td>
<td>1.00</td>
</tr>
<tr>
<td>Third Recertification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Child's Characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.00</td>
<td>0.788</td>
<td>1.00</td>
</tr>
<tr>
<td>Male</td>
<td>1.00</td>
<td>--------</td>
<td>1.00</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-white</td>
<td>1.00</td>
<td>0.932</td>
<td>1.14</td>
</tr>
<tr>
<td>White</td>
<td>1.00</td>
<td>--------</td>
<td>1.00</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 5</td>
<td>0.93</td>
<td>0.001</td>
<td>1.09</td>
</tr>
<tr>
<td>6 to 12</td>
<td>0.87</td>
<td>0.000</td>
<td>0.95</td>
</tr>
<tr>
<td>13 to 18</td>
<td>1.00</td>
<td>--------</td>
<td>1.00</td>
</tr>
<tr>
<td>Household Size</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Number of Siblings</td>
<td>0.97</td>
<td>0.000</td>
<td>1.07</td>
</tr>
</tbody>
</table>

Notes:

1 Model also includes controls for household’s most recent reported income as a percent of the FPL, region, and whether the child was enrolled in Medicaid or non-premium-paying SCHIP prior to enrollment.

2 Model also includes controls for region, managed care enrollment, and whether the child was enrolled in Medicaid or non-premium-paying SCHIP prior to enrollment.

3 Model also includes controls for household’s most recent reported income as a percent of the FPL and region.

Figure 1: Premium Policies in Three States, 2003

<table>
<thead>
<tr>
<th>Kansas</th>
<th>Kentucky</th>
<th>New Hampshire</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 151-175% FPL: Premium increased from $10 to $30 per family per month in February 2003, then decreased to $20 in July 2003.</td>
<td>For 151-200% FPL: $20 premium per family per month introduced in December 2003 (no premium charged prior to that time)</td>
<td>For 185-249% FPL: Premium increased from $20 to $25 per child per month in January 2003. Family maximum is $100 per month</td>
</tr>
<tr>
<td>For 176-200% FPL: Premium increased from $15 to $45 per family per month in February 2003, then decreased to $30 in July 2003.</td>
<td>Termination if premium more than 2 months past due; Must pay 1 month of premiums to re-enroll</td>
<td>For 250-300% FPL: Premium increased from $40 to $45 per child per month in January 2003. Family maximum is $135 per month</td>
</tr>
<tr>
<td>No sanction until 12-month recertification; Must pay past premiums to re-enroll</td>
<td>No blackout period to re-enroll</td>
<td>Termination if premium more than 2 months past due; 3 month blackout period before re-enrollment; No requirement to pay past premiums to re-enroll</td>
</tr>
</tbody>
</table>

This information is drawn from multiple sources:

**Kansas:** Smith and Rousseau, 2003, Kansas Family Medical Assistance Manual
**Kentucky:** Kentucky Children’s Health Insurance Program Website
In February 2003, premiums were tripled to $30/month/family for children 150 to 175% FPL and $45/month/family for children 175 to 200% FPL.

In July 2003, premiums were reduced to $20/month/family for children 150 to 175% FPL and $30/month/family for children 175 to 200% FPL.

Note: In February 2003, premiums were tripled to $30/month/family for children 150 to 175% FPL and $45/month/family for children 175 to 200% FPL. In July 2003, premiums were reduced to $20/month/family for children 150 to 175% FPL and $30/month/family for children 175 to 200% FPL.

Source: Linked monthly administrative enrollment data for Kansas from July 2001 to December 2004.
Figure 3. Changes in Total Caseloads in the Premium-Paying Category of Kentucky’s KCHIP Program

Note: In December 2003 a new premium of $20/family/month was implemented for children 151 to 200% FPL.
Source: Linked monthly administrative enrollment data for Kentucky from November 2001 to August 2004.
Note: In January 2003, the premium was increased to $25/month/child for children 185 to 249 FPL. For children 250 to 300% FPL the premium was increased to $45/month/child.

Three national studies (Kenney et al. forthcoming; Hadley et al forthcoming, and Kronebusch and Elbel 2004) find a negative relationship between public premiums and enrollment in public health insurance programs for children. Two state-specific studies examined premium changes in Florida using a Cox Proportional Hazards model. The first study indicated that the likelihood of disenrollment increased for enrollees who experienced premium increases while the reverse was observed for those experiencing premium decreases (Shenkman et al. 2002). The more recent study (Herndon et al. forthcoming) found that premium increases were associated with an increased likelihood of disenrollment, with larger effects observed among children whose family incomes were between 100 and 150 percent of the federal poverty level than among more affluent families.

The Maryland Department of Health and Mental Hygiene (2004) reported that among parents of children disenrolled for non-payment of a $37 premium for children with family incomes between 185 and 200 percent of the federal poverty level, 63 percent felt the premium was affordable and 35 percent did not. One-fifth of all families that were disenrolled indicated that the new premium was a factor leading to their child’s disenrollment. The Vermont Department of Prevention, Assistance, Transition, and Health Access (2004) found ambiguous impact on enrollment following an increase in premiums from $20 to $25 per family per month for children with family incomes between 185 and 225 percent of the federal poverty level and from $50 to $70 per family per month for children with family incomes between 225 and 300 percent of the federal poverty level.

1 Premiums were tripled in Kansas for a period of five months and then reduced to double the original amount.

3 Kansas children are eligible for Medicaid with household incomes at or under 150 percent of the FPL under age 1, 133 percent of the FPL for ages 1-5, and 100 percent of the FPL at ages 6 and older.

4 Kentucky children are eligible for Medicaid with household incomes at or under 185 percent of the FPL under age 1, 133 percent of the FPL for ages 1-5, and 100 percent of the FPL at ages 6 and older.

5 Tricia Brooks, New Hampshire Healthy Kids President and CEO. Personal Communication February 2005.
For Kansas, the time period of the data used for both the time series and hazard models was July 2001 to December 2004. For Kentucky, the time frame for the time series model was November 2001 to April 2005 while the time frame for the Cox proportional hazard model is December 2001 to August 2004. For New Hampshire, the time period of the data used for both the time series and hazard models was July 2001 to November 2004.

This implies that a transfer into Medicaid or non-premium-paying SCHIP is considered an exit from premium-paying SCHIP.

The income data were highly correlated with the premium-paying category of the child and, on average, children in the 251 to 300 percent of the FPL enrollment category had higher incomes than those in the 185 to 250 percent of the FPL category.

This adjustment occurs in May in Kansas and in April for Kentucky and New Hampshire. The total caseload models were estimated with 42 monthly observations for KY and KS and with 41 monthly observations for New Hampshire.

The hazard rates associated with the 36-month recertification point are estimated for both Kansas and New Hampshire.

The following describes the covariates included in the hazard analyses in each state– In Kansas, the model included a premium change variable, recertification variables (first, second, or third), SCHIP program category (151 to 175 percent of the FPL vs. 176 to 200 percent of the FPL), age, gender, race/ethnicity, and the number of siblings. In Kentucky, the model includes a premium change variable, recertification variables (first or second), enrollment in public coverage prior to enrolling in the premium-paying category, participation in managed care, age, gender, race, number of siblings, and region of residence. In New Hampshire, the model includes a premium change variable, recertification variables (first, second, or third), SCHIP program category (185 to 250 percent FPL and 251 to 300 percent FPL), income, age, gender, and household size.

In alternative specifications, we modeled the policy effect as: 1) an interaction with the time trend without the time trend squared variable; 2) interactions with both the time trend and the time trend squared without a dummy variable for the period after the premium increase was in effect; and 3) a dummy variable for the period after the premium increase was in effect without the time trend squared variable.
The unemployment rate did not have an effect on caseloads that was statistically significant at conventional levels in any of the three states. However, the effect of the premium change in New Hampshire was affected by the inclusion of the unemployment rate, due to the fact that changes in the unemployment rate were correlated with the increase in the premium.

The premium effects estimated in the hazard models are sensitive to the inclusion of income information in New Hampshire and to the inclusion of unemployment data in both Kentucky and New Hampshire. While the direction of the premium effects was consistent across most alternative specifications, the magnitude of the effect did vary across models. In addition, the estimated effects of the unemployment rate varied across states—it was found to have a positive effect on the disenrollment hazard in New Hampshire while it was found to have a negative effect on the disenrollment hazard in Kentucky.

Similarly, the coefficient on the managed care indicator in the Kentucky model was 1.19 (significant at a 0.10 level) and the interaction term between the policy change and managed care was 1.07 and significant at a 0.01 level, implying that an enrollment spell for a child in managed care was more likely to result in a disenrollment after the introduction of the premium relative to children not enrolled in managed care.

Since managed care is concentrated in just a few areas of the state, this finding may reflect other differences between the children enrolled in managed care and those in a fee-for-service setting.