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The Impact of the Introduction of Premiums into a SCHIP Program

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Abstract

This paper examines the introduction of premiums into the SCHIP program in Kentucky. Kentucky introduced a $20 monthly premium for SCHIP coverage for children with family incomes between 151% and 200% of the federal poverty level in December 2003. Administrative data between 2001 and 2004 is used to estimate a Cox proportional hazard model that predicts enrollment duration in this premium-paying category. The results suggest that a premium reduces the length of enrollment and that the effect is much stronger in the first two months after the introduction of the premium. Similar results are not found for the non-premium category.

JEL classification: I18; I38; J13

Keywords: SCHIP; Cost Sharing; Public Policy

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I. Introduction

The State Children's Health Insurance Program (SCHIP) was created by the Balanced Budget Act of 1997 under Title XXI of the Social Security Act. Its purpose was to initiate and expand health insurance coverage for uninsured, low-income children. The statute set a broad outline for the program's structure and gave states flexibility in creating programs to meet their own needs. States could create or expand their own separate insurance programs, expand their Medicaid program, or some combination of the two. The federal government would reimburse states for SCHIP expenses according to a matching rate based on state income. The 1998 federal budget allocated $24 billion dollars to the states for SCHIP.

The flexibility provided by the federal government included giving states the ability to vary the amount of cost sharing imposed in a separate (non-Medicaid) SCHIP program, subject to certain limits. Premiums and co-payments may not exceed 5% of family income for children whose family incomes exceed 150% of the federal poverty level (FPL). There is a much lower limit on cost sharing for children in families with income below 150% FPL. According to a report published by the Kaiser Commission (Ross and Cox (2005)), as of July 2004, 33 states imposed premiums or annual enrollment fees for SCHIP coverage, with 11 states charging premiums for children in families with incomes of 101% FPL and above.

Because average state public insurance spending growth has exceeded the growth in state tax revenue in past several years, some states have introduced or increased premiums in their SCHIP programs.[1] According to Ross and Cox (2005), during their

[1] See the November 2005 Kaiser Commission fact sheet "State Fiscal Conditions and Medicaid" Figure 2. The URL is: http://www.kff.org/medicaid/upload/4087-04.pdf

survey period, 16 states imposed premiums for the first time, increased premiums, or lowered the income level at which premiums are charged.

Although most of the empirical literature on SCHIP to date has examined the introduction and implementation of this program across states, there is a new and growing strand of literature that analyzes the impact of cost sharing on enrollment in SCHIP programs. Shenkman et al. (2002) and Shenkman and Vogel (2005) examine premium changes in Florida's SCHIP program in 1998 and 2003, respectively. Kenney et al. (2005) provides a comparative study of three states that either introduced (Kentucky) or raised (New Hampshire and Kansas) premiums in 2003. The general approach these papers take is to predict the duration of enrollment in the premium-paying category of SCHIP using a Cox proportional hazard model with a time varying covariate to model the change in premiums. The common result is that the duration of enrollment depends on premiums, in addition to other dimensions of the program, such as the yearly recertification process to maintain coverage.

In this paper, the impact of the introduction of a premium on the duration of premium-paying SCHIP enrollment spells in Kentucky is examined using a Cox proportional hazard model. This paper contributes to the literature on the impact of premiums in a number of ways. First, data on child enrollment in all public insurance is used to observe whether or not children move into other categories of public insurance after leaving the premium-paying category of SCHIP. In some states, administrative data is stored in such a way so that movements between SCHIP and Medicaid cannot be tracked. Second, unlike the previous studies, different specifications are used to assess whether the short run impact of the policy change differed in magnitude from the longer

run impact. Third, because Kentucky has a premium-paying and a non-premium-paying category in its SCHIP program, enrollment spells from the non-premium-paying category can by used to help determine if the relationship observed between premiums and enrollment in the premium-paying category is causal.

The results suggest that the introduction of a premium has a negative impact on the length of enrollment in the premium-paying SCHIP category and that the effect is much stronger in the first two months following the policy change than in the subsequent months. The estimated probability that an average child ends their enrollment spell in the first two months following the introduction of the premium is 21%. The estimated probability of leaving in the subsequent seven months is 5.43%. These estimates should be compared to the average monthly exit probability in the data, which is 5.02%. Similar results are not found for the non-premium-paying SCHIP category. These findings are potentially useful to other states considering imposing or increasing premiums in their own SCHIP programs.

In the next section, the literature described above is discussed in more detail, as is the relationship between the literature and this paper. In section three, programmatic features of the SCHIP program in Kentucky are described as well as the data used in the analysis. Section four discusses the Cox proportional hazard model estimated in this paper and section five presents the results. The final section offers conclusions, extensions, and policy implications.

II. Literature Review

As mentioned above, Shenkman et al. (2002) and Shenkman and Vogel (2005) examine premium changes in Florida's SCHIP program in 1998 and 2003, respectively.

Florida's SCHIP program (Healthy Kids) covers children with family incomes between 101% and 200% FPL. Children with family income at or below 100% FPL are eligible for Florida Medicaid. Because these two studies use data from the Healthy Kids program and not Florida Medicaid, it is possible that some of the children they observe exiting Healthy Kids may be moving to Medicaid. If this movement is not taken into account, the length of the child's spell of public health insurance coverage may be underestimated. A similar issue arises in the Kenney et al. (2005) three state study. In their analysis, the length of an enrollment spell is measured as the number of consecutive months enrolled in the premium-paying category of the particular state's SCHIP program.

From a policy perspective, a natural question is whether movements from premium-paying SCHIP to other public coverage (non-premium-paying SCHIP or Medicaid) should be considered an "exit" since the child is continuing to receive public coverage. In this paper, I follow Allison (2003) and treat continued enrollment in other public coverage as a part of a child's premium-paying SCHIP enrollment spell. For example, in the previous literature, if a child was enrolled in premium-paying SCHIP for 6 months and then transferred to Medicaid for 5 months before leaving public coverage entirely, their enrollment spell would be assigned a length of 6 months. In this paper, I assign the spell a length of 11 months.

The Florida studies as well as the Kenney et al. (2005) study model a state's change in premium policy as a time varying covariate that equals zero prior to the policy change and one afterwards. Such a specification does not allow for any difference between the immediate impact of the policy change on enrollment duration and the longer run impact. Another natural policy question is whether recipient responses differ

over time. In order to address this question, I estimate models using different pairs of short run and long run indicators and compare to see which specification best fits the data.

In many of the states previously studied, such as Florida and New Hampshire, premiums are required for all participants in the state's SCHIP program (other than some exceptions based on age). Kentucky and Kansas only require SCHIP premiums for families in the upper half of the eligible income distribution (151% to 200% FPL). Families with income between 101% and 150% FPL are not required to pay SCHIP premiums in either Kansas or Kentucky. This non-premium-paying category of SCHIP provides a natural control group to compare against the premium-paying category in order to help determine if the relationship observed between premiums and enrollment in the premium-paying category is causal. To date, it does not appear that the literature has taken advantage of this treatment versus control relationship between the two categories of SCHIP enrollment. In this paper, I apply the same model to the non-premium-paying SCHIP enrollment spells in the data and compare the results to those pertaining to the premium-paying SCHIP enrollment spells.

III. Background on SCHIP in Kentucky and Data

In order to initiate their SCHIP program, the commonwealth of Kentucky was allocated federal funds of $50 million per year for five years to be matched by $13 million per year in state funds. This money was used to establish the Kentucky Children's Health Insurance Program (KCHIP). The first phase of the program began on July 1, 1998 by extending Medicaid coverage to children 14 through 18 years old who are in families at or below 100% FPL. Today children under the age of 19 with family

income at or below 100% FPL are eligible for Medicaid. Children under the age of 19 with family income between 101% and 150% FPL are eligible for KCHIP II, which was set up as a further expansion of Medicaid. Children under the age of 19 with family income between 151% and 200% FPL are eligible for KCHIP III, which was set up as a stand alone program.

Initially KCHIP did not charge any premium for this insurance coverage and only modest out of pocket expenses, such as a $2 co-payment for office visits. Falling tax revenue and increasing expenses made this financing approach more difficult for the commonwealth to maintain. For these reasons, Kentucky began in December 2003 charging a $20 monthly premium for families with children covered by KCHIP III. This change was possible without a federal wavier because KCHIP III is a stand alone program.[2]

Table 1 provides the total monthly public coverage enrollment count by eligibility category for children in Kentucky. Figures 1 – 3 provide graphs for KCHIP III enrollment, KCHIP II enrollment, and Medicaid enrollment, respectively. The figures illustrate that there was a noticeable reduction in KCHIP III enrollment following the policy change that was not evident at the same time in previous years. At the same time, enrollment in KCHIP II increased slightly and enrollment in Medicaid by children continued to grow. This descriptive evidence suggests that the premium may have had some impact on enrollment in public health insurance programs in Kentucky.

In order to formally evaluate the impact of the introduction of a premium on the duration of enrollment spells in the premium-paying SCHIP category (KCHIP III),

[2] Since it was created through an expansion of Medicaid, a waiver would be required in order to introduce similar premiums into KCHIP II.

administrative data on enrollment between December 2001 and August 2004 (33 months) was provided by the Kentucky Cabinet for Health and Family Services.[3] The administrative database provides information on monthly enrollment and program status, as well as demographic variables including age, gender, race, and region of residence.

This paper focuses on the 46,068 first new KCHIP III enrollment spells initiated during the 33 month period for children aged 1-18 with no missing demographic information.[4] A new KCHIP III enrollment spell is defined to start in the month that a child moves into KCHIP III, whether they had no public coverage in the previous month or were covered under KCHIP II or Medicaid.[5] The spell ends when the child exits public coverage completely. For example, suppose a child moves from Medicaid into KCHIP III in December 2001, remains enrolled in KCHIP III for 12 months, and then transfers to KCHIP II for 11 months before leaving public coverage. This child's enrollment spell would be counted as part of the December 2001 cohort and the length of their spell would be measured as 23 months.[6] As mentioned, the approach used in the Florida studies, as well as Kenney et al. (2005), had been to measure the spell as lasting 12 months.

Table 2 illustrates the total number of first new KCHIP III spells that start in each of the 33 months analyzed and then breaks the monthly total down by spell origin (a move from no public coverage, from Medicaid, or from KCHIP II). Notice that the first 24 cohorts start their enrollment spells prior to the introduction of the premium and that

[3] This implies there are 24 months of data prior to the policy change (December 2001 – November 2003) and 9 months of data after the policy change (December 2003 – August 2004).
[4] There are a total of 47,301 new KCHIP III enrollment spells initiated during this period. This implies that 1,233 children were dropped from the analysis due to the age criteria or due to missing information.
[5] Focusing on new KCHIP III enrollment spells ensures that the KCHIP III spells analyzed are not left-censored.
[6] Because enrollment is measured in months, a child enrolled for any part of a month is considered enrolled for the entire month.

the last 9 cohorts start their enrollment spells after the premium was introduced. The table shows that 29% of all spells considered result from a move from no public coverage into KCHIP III, 41% result from a move from Medicaid, and 30% result from a move from KCHIP II. The origin of the spell is used as a control variable in the hazard model presented in the next section.

Table 3 illustrates the number of exits by month. Since a movement from KCHIP III to other public coverage is not considered an exit, a child's spell ends if they turn 19 (such a spell is treated as right-censored), if their family does not pay the premium (starting in December 2003), or if they exit for an "other" reason. Other reasons include, but are not limited to, obtaining private coverage, increases in family income, or leaving the state. Exits due to aging out or nonpayment of the premium are identifiable in the administrative database. If a child exits for any other reason, they are included in the "other" category. According to the table, 20,829 of the KCHIP III spells analyzed end in an exit (including children who age out). This represents 45% of all KCHIP III spells analyzed. Of these exits, 6% were due to the child turning 19, 19% were due to nonpayment of the premium, and 75% were due to some "other" reason. This implies that 25,239 children, or 55% of all children in the sample, were still enrolled on August 31, 2004. These spells are treated as right censored.

Descriptive statistics for all children and by exit route are presented in Table 4. There are more children aged 1-5 or 6-12 than aged 13-18 in the data. There are almost as many female children as males. Non-whites make up 12% of all spells, but notice that 16% of the spells that end in non-payment represent non-white children. The average number of siblings also covered under public coverage is 1.15 children and the average

spell length in the data is 8.51 months. Although 24% of all spells are covered under a managed care program within KCHIP, 29% of spells that end in non-payment come from managed care. Finally note that relative to all new KCHIP III spells, spells that start as a result of a move from no previous public coverage are more likely to end in non-payment (29% versus 37%). KCHIP III spells that start as a result of a move from Medicaid or KCHIP II are less likely to end in non-payment.

IV. Model

The decision being modeled is whether a family with a child enrolled in KCHIP III chooses to exit public coverage. I assume that the family compares the expected utility from leaving public coverage to that from remaining. A family chooses to leave if the expected pay-off from leaving is higher than from staying. This depends on the net income associated with each alternative. By assumption, families face this decision on a monthly basis.

To be more specific, the duration of the KCHIP III enrollment spells described above is estimated using a Cox proportional hazard model with time varying covariates to model the yearly recertification process and the introduction of the premium.[7] The model used here is essentially the same as the model estimated in the Meyer (1990) study of the duration of unemployment benefits. The notation used in the Meyer (1990) study is adopted here. Let T_i be the length of child i's KCHIP III enrollment spell. Using this notation, the hazard for child i at time t, $\lambda_i(t)$, is defined as follows:

$$\lim_{h \to 0^+} \frac{prob\left[t + h > T_i \geq t \mid Ti \geq t\right]}{h} = \lambda_i(t) . \qquad (1)$$

The hazard is parameterized using a proportional hazards format:

[7] See Cox (1972) for further discussion.

$$\lambda_i(t) = \lambda_0(t) \exp\{X_i(t)'\beta\}. \quad (2)$$

Here $\lambda_0(t)$ is the baseline hazard at time t, which is unknown. $X_i(t)$ is a vector of time dependent explanatory variables for child i that include dummies for yearly recertification, dummies to capture the short run and the long run impact of the policy change, the demographic variables described in table 4, and a series of regional controls. Finally, β is a vector of coefficients associated with the explanatory variables and is unknown. Because controls for the recertification process are included in $X_i(t)$, no formal attempt will be made to estimate the baseline hazard $\lambda_0(t)$. Instead, I will use the average monthly exit probability in the KCHIP III sample, 5.02%, as an estimate of the average hazard when interpreting the estimated coefficients of the model.

The probability that a KCHIP III enrollment spell lasts until t can be written as a function of the hazard:

$$P[T_i \geq t+1 \mid T_i \geq t] = \exp[-\exp(X_i(t)'\beta + \gamma(t))] \quad (3)$$

where

$$\gamma(t) = \ln\left\{\int_t^{t+1} \lambda_0(u)du\right\} \quad (4)$$

and it is assumed that $X_i(t)$ is constant between time periods. The log-likelihood function for a sample of N children can be written as:

$$L(\gamma,\beta) = \sum_{i=1}^{N}\left[\delta_i \log\{1-\exp(-\exp[\gamma(k_i) + X_i(k_i)'\beta])\} - \sum_{i=1}^{k_i-1}\exp(\gamma(t) + X_i(t)'\beta)\right] \quad (5)$$

where $\gamma = [\gamma(0)\ \gamma(1)\ \ldots\ \gamma(T-1)]'$, C_i is the censoring time, $\delta_i = 1$ if $T_i \leq C_i$ and 0 otherwise, and $k_i = \min(\text{int}(T_i), C_i)$. Spells lasting longer than 33 months are censored at T = 33. Thus the log likelihood function is a function of β and the 32 elements of γ. The likelihood can be maximized by standard methods.

Unlike Meyer (1990), I will not, in addition, control for unobserved heterogeneity at the individual level. Instead, in the estimation of the standard errors, I will take into account family level correlation between observations. This is essentially the same as controlling for unobserved heterogeneity (or shared frailty) at the family level. One could argue that for decisions regarding enrollment and eligibility for public health insurance that heterogeneity at the family level is what really matters. Eligibility is determined at the family level and the premiums are assessed at the family level in Kentucky. Controlling for heterogeneity at the level of an individual child level may cause one to ignore characteristics of siblings that influence that child's insurance status.

V. Results

Table 5 presents the results of the Cox proportional hazard model explaining the duration of enrollment spans in KCHIP III. Each variable except the number of siblings and the monthly unemployment rate is a dummy variable. First the program structure variables that measure the effect of recertification and the premium are discussed. Recert 1 is a time varying dummy variable that equals one during the months of an enrollment spell in which children are typically required to complete their first recertification (months 12, 13, and 14).[8] Recert 2 is a time varying dummy variable that equals one during the months associated with the second recertification (months 24, 25, and 26). The short run premium indicator equals one in December 2003 and January 2004. The long run premium indicator is equal to one from February 2004 onward. Notice that the short run premium indicator is interacted with a series of the other explanatory variables

[8] In Kentucky, recipients are required to report changes in eligibility status when they occur. In practice, much of this reporting comes during the yearly recertification process. During this process the family must mail in a renewal form, complete a telephone interview, and provide proof of earned and unearned income in order to maintain eligibility for the program.

in order to assess whether the short run impact of the premium was felt differently by different sub-groups. These interactions imply that some care needs to be taken when interpreting the coefficients. The main effect of each variable must be considered along with the effect of its interaction with any others when describing the complete effect of the variable on enrollment duration.

The last column gives the "absolute" effect for each explanatory variable, evaluated at the sample means. This column may be the most appropriate to discuss since it combines the main effects and the interaction effects for each variable. In order to understand how to interpret these numbers, consider Recert 1. The table says that when an average child's spell lasts until the first recertification period the probability of exiting at that point is 17%, holding everything else constant. It is natural to ask whether or not that seems like a high number. The question is, compared to what? As mentioned previously, I am using the average monthly exit probability in the KCHIP III sample (5.02%) as a proxy for the average hazard including the baseline hazard, so the numbers in the column describing the absolute effects should be compared to 5.02%. Thus the absolute effects for both the first recertification (17%) and the second recertification (11%) are much larger than the baseline hazard. Despite this, the magnitude of the recertification impact on enrollment may be lower here than in other studies because transfers to other public coverage are not treated as exits. Presumably a large portion of these transfers occur during the recertification period when the state assesses the family's eligibility status. If these transfers were treated as exits, then the magnitude of the effects of the recertification variables would be higher.

The most striking result is the large exit probability associated with the first two months after the premium is introduced. If the average child is enrolled when the premium is introduced, then the probability they exit public coverage in the next two months is 21%, holding everything else constant. The long run premium dummy suggests that if they remain enrolled during the first two months after the premium is introduced, then they have a 5.43% chance of exiting in the subsequent seven months, holding everything else constant. Notice that this is slightly higher than the baseline hazard of 5.02%. This suggests that the impact of premiums on enrollment is different in the short run and in the long run.

In order to determine which short run / long run combination best fits the data, I estimated separate specifications for a 1 month short run, 8 month long run division all the way to a 7 month short run, 2 month long run division. A summary of the results is presented in table 6. The model presented in table 5 dominates the other specifications because it has the maximum log likelihood value. As one moves down the table the short run effect falls as more of months 3-9 after the policy change are averaged together with the first two months.

One way to interpret these results is to assume that families with children in KCHIP III decide right away whether or not they are willing to pay the premium. Those that choose not to pay exit quickly. That would account for the large short run impact of the policy change. Along those same lines, families that do not want to pay the premium may be less likely to sign up after the premium is introduced. This would explain why the long run exit probability does not look very different from the average hazard.

The estimated effects of many of the interaction terms are statistically significant. The interaction terms on the non-white indicator and the managed care indicator are larger than one, but the absolute effects of these variables are below the average hazard. The Kenney et al. (2005) study finds evidence that premiums have a differential impact on non-whites and children covered by managed care. The difference here may be due to the fact that these sub-populations could be more likely to move from KCHIP III into other public coverage, so that the increased chances of exiting observed in the Kenney study may have actually been an increased chance of moving into other public coverage.

Although the introduction of the premium was an exogenous change to the price of KCHIP III coverage, there is still the question of whether the relationship between the introduction of the premium and the subsequent exits from the public coverage causal.[9] One way of addressing the issue of causality is to find a group similar to the KCHIP III enrollees that did not experience the increase in price and use them as a control group. One possible control group is the set of children enrolled in KCHIP II during the same time. Children enrolled in KCHIP II were not subject to the premium, though they were subject to similar conditions as KCHIP III children otherwise. The main difference between the two groups is that, by definition, children in KCHIP II have lower income than children in KCHIP III. In order to compare KCHIP II enrollment spells with KCHIP III, data on all new KCHIP II enrollment spells initiated during the same 33 months are analyzed.

[9] In order to control for changing economic conditions during that time, the state average monthly unemployment rate is included in the regression. This data was obtained from the Bureau of Labor Statistics website. The average monthly unemployment rate in Kentucky during the timeframe analyzed is 5.56%.

Descriptive statistics for the 82,839 first new KCHIP II enrollment spells for children aged 1-18 with complete demographic data are provided in Table 7.[10] KCHIP II children are more likely to be age 6-12 and to be non-white. On average, KCHIP II children have more siblings and shorter enrollment spells. They are also much more likely to have transferred from Medicaid than the KCHIP III children.

The same Cox proportional hazard model estimated for KCHIP III enrollment spells is estimated using KCHIP II enrollment spells in Table 8. The coefficient on the short run post-policy indicator is not individually significant and a joint test of this coefficient with all of the interaction coefficients yields an insignificant result. Though not statistically significant, the absolute effect of the premium in the short run, 4.43%, is slightly greater than the average monthly exit rate for the KCHIP II sample, which is 4.01%. This suggests that if KCHIP III children are similar to KCHIP II children, other than the fact that one group was required to pay premiums, one can safely attribute the change in the behavior of the KCHIP III children after the premium was introduced to the policy change itself.

VI. Conclusion

The purpose of this paper is to estimate the impact of the introduction of a premium on enrollment in a state's SCHIP program. Administrative data from Kentucky is ideally suited to answer this question, since Kentucky recently introduced a premium into its SCHIP program. Unlike the previous literature on premiums, this paper does not treat transfers into other public coverage as an exit from the premium-paying category of

[10] There were a total of 83,205 first new KCHIP II enrollment spells during the timeframe analyzed. Of those, 366 spells were dropped because of the age criteria or due to missing information.

SCHIP. This helps to ensure that the length of the enrollment spell is measured accurately.

A second innovation of this paper is to model the impact of the premium as having a different effect in the first two months immediately following the policy change relative to the subsequent months. The results suggest that the impact of the premium on enrollment was much stronger in the first two months than in the subsequent months, so modeling the policy change as having a uniform effect would not be appropriate for Kentucky. The split between short and long run was determined by estimating different specifications and choosing the one with the highest log likelihood value.

An additional innovation of this paper is that the non-premium-paying SCHIP population in the state is used as a control group in order to assess whether the relationship between the premium and the enrollment changes in the premium-paying SCHIP category is causal. Because a joint test on the short run policy change indicator and all of its interactions was not statistically significant in the control group, it can be inferred that there is a causal relationship between premiums and enrollment changes in the premium-paying category of SCHIP.

These results suggest that perhaps recipients and potential recipients adjust quickly to the introduction of more cost sharing. As mentioned, one way to interpret the results is that families decide right away whether they are going to pay the premium and exit the program immediately if they choose not to pay. In addition, because much higher exit probabilities are not found after the initial adjustment, perhaps potential recipients not willing to pay the premium are not signing up for the program after the premium is in place. States considering changes in their own SCHIP premiums may find

these results useful as they attempt to predict the likely impact of any policy changes on the enrollment in their programs. This is especially true for states that are considering the introduction of premiums for the first time.

There are several extensions of interest that would shed further light on the impact of premiums. With more months of data one could observe the recertification process for children that entered after the premiums were introduced. Merging this administrative data with claims data would allow for comparisons of the impact of the premium across health types for children to estimate how the policy change impacts the sickest children in the program. Finally, if the state decides to increase premiums in the future, one could compare that response to the response generated by the initial introduction of a premium.

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Table 1: Number of Children Enrolled in Public Health Insurance in Kentucky by Category

Month	Total Public Coverage	Medicaid	KCHIP III	KCHIP II
Dec-01	349,088	301,007	17,664	30,417
Jan-02	349,886	301,127	18,150	30,609
Feb-02	351,782	302,350	18,497	30,935
Mar-02	354,701	304,664	18,859	31,178
Apr-02	357,175	307,175	18,956	31,044
May-02	359,438	308,990	19,092	31,356
Jun-02	360,774	309,901	19,359	31,514
Jul-02	364,458	313,390	19,418	31,650
Aug-02	368,842	317,421	19,662	31,759
Sep-02	369,768	318,459	19,591	31,718
Oct-02	372,680	320,931	19,692	32,057
Nov-02	372,036	320,412	19,487	32,137
Dec-02	371,500	320,449	19,258	31,793
Jan-03	373,975	322,711	19,349	31,915
Feb-03	374,809	323,849	19,229	31,731
Mar-03	378,658	327,363	19,354	31,941
Apr-03	380,174	329,020	19,343	31,811
May-03	381,541	330,367	19,385	31,789
Jun-03	383,054	331,703	19,481	31,870
Jul-03	385,958	334,400	19,625	31,933
Aug-03	388,306	336,591	19,707	32,008
Sep-03	389,836	337,819	19,784	32,233
Oct-03	392,517	339,916	19,903	32,698
Nov-03	390,677	338,320	19,447	32,910
Dec-03	392,463	340,346	18,904	33,213
Jan-04	391,689	341,315	16,695	33,679
Feb-04	392,393	342,830	16,253	33,310
Mar-04	395,909	346,284	16,252	33,373
Apr-04	396,597	347,599	16,055	32,943
May-04	396,494	347,761	15,899	32,834
Jun-04	397,679	348,927	15,837	32,915
Jul-04	398,241	349,739	15,636	32,866
Aug-04	396,742	348,626	15,310	32,806

Table 2: The Number of First New KCHIP III Enrollment Spells Per Month, Total and by Spell Origin

Cohort	Start Month	Total Number of New Spells	From No Public Coverage	From Medicaid	From KCHIP II
1	Dec-01	1,883	398	794	691
2	Jan-02	2,473	670	938	865
3	Feb-02	1,544	564	612	368
4	Mar-02	1,357	458	572	327
5	Apr-02	1,355	473	551	331
6	May-02	1,255	437	540	278
7	Jun-02	1,348	457	558	333
8	Jul-02	1,478	481	615	382
9	Aug-02	1,721	565	686	470
10	Sep-02	1,808	492	702	614
11	Oct-02	1,826	553	705	568
12	Nov-02	1,660	416	664	580
13	Dec-02	1,376	328	581	467
14	Jan-03	1,665	528	596	541
15	Feb-03	1,380	408	542	430
16	Mar-03	1,285	442	481	362
17	Apr-03	1,239	405	514	320
18	May-03	1,231	400	523	308
19	Jun-03	1,128	382	478	268
20	Jul-03	1,438	476	585	377
21	Aug-03	1,447	449	622	376
22	Sep-03	1,500	439	585	476
23	Oct-03	1,469	411	614	444
24	Nov-03	1,339	242	630	467
25	Dec-03	1,076	264	467	345
26	Jan-04	1,403	337	572	494
27	Feb-04	1,221	334	438	449
28	Mar-04	1,137	335	460	342
29	Apr-04	1,069	312	486	271
30	May-04	965	234	405	326
31	Jun-04	953	261	455	237
32	Jul-04	984	252	405	327
33	Aug-04	1,055	166	534	355
	TOTALS:	46,068	13,369	18,910	13,789
	PERCENT:	100%	29%	41%	30%

Table 3: Number of Exits and Right Censored Spells by Month

Date	Right Censored	Did Not Pay Premium	Exited for Other Reason	Total
31-Dec-01	2	0	44	46
31-Jan-02	1	0	47	48
28-Feb-02	8	0	69	77
31-Mar-02	6	0	110	116
30-Apr-02	16	0	133	149
31-May-02	21	0	145	166
30-Jun-02	16	0	196	212
31-Jul-02	11	0	227	238
31-Aug-02	16	0	330	346
30-Sep-02	36	0	288	324
31-Oct-02	39	0	429	468
30-Nov-02	27	0	492	519
31-Dec-02	39	0	607	646
31-Jan-03	47	0	557	604
28-Feb-03	29	0	532	561
31-Mar-03	29	0	632	661
30-Apr-03	49	0	544	593
31-May-03	43	0	530	573
30-Jun-03	29	0	567	596
31-Jul-03	55	0	685	740
31-Aug-03	47	0	718	765
30-Sep-03	63	0	674	737
31-Oct-03	62	0	843	905
30-Nov-03	57	0	842	899
31-Dec-03	53	1,896	842	2,791
31-Jan-04	43	394	949	1,386
29-Feb-04	30	261	569	860
31-Mar-04	58	309	544	911
30-Apr-04	53	216	593	862
31-May-04	54	304	551	909
30-Jun-04	55	330	620	1,005
31-Jul-04	56	330	730	1,116
TOTALS:	1,150	4,040	15,639	20,829
PERCENT:	6%	19%	75%	100%

- Note that one cannot directly compare each month, because as one moves down the table the number of new spells per month are higher than the number of exits. This implies there are more children "eligible" to exit during the later dates.

Table 4: Descriptive Statistics for KCHIP III Sample

KCHIP III Demographic:	All Children / Spells	Spells Ending in Nonpayment	Spells Ending for Other Reason	Right Censored Spells
# spells / children	46,068	4,045 (9%)	15,634 (34%)	26,389 (57%)
% Aged 1-5	36%	35%	39%	35%
% Aged 6-12	37%	38%	34%	39%
% Aged 13-18	27%	27%	27%	27%
% Female	48%	48%	48%	49%
% Non-white	12%	16%	13%	12%
Avg. # of Siblings	1.15	1.13	1.11	1.18
% in Managed Care	24%	29%	24%	23%
Avg. Spell Length	8.51	8.13	8.1	8.82
% From No Public Coverage	29%	37%	33%	26%
% From Medicaid	41%	37%	42%	41%
% From KCHIP II	30%	26%	26%	33%

- Note that all differences across the three groups are statistically significant except for % female and % aged 13-18.

Table 5: Cox Proportional Hazards Model for KCHIP III

Dependent Variable: Length of KCHIP III Enrollment Spell (average hazard: 5.02%)

Variables	Hazard Rates	Standard Errors	P - values	Absolute Effect
Program Structure Variables				
Recert 1 ***	3.72	0.18	< .01	17.26%
Recert 2 ***	2.37	0.22	< .01	11.47%
Short Run Premium Dummy (2 months) ***	189.35	69.21	< .01	20.96%
Long Run Premium Dummy (7 months) ***	1.08	0.03	< .01	5.43%
Other Demographics				
# of siblings ***	0.95	0.01	< .01	4.80%
Female	1.00	0.02	.995	5.01%
Non-white *	0.94	0.03	0.07	4.85%
Age 1 to 5 ***	0.93	0.02	< .01	4.66%
Age 6 to 12 ***	0.79	0.02	< .01	4.01%
Managed Care	0.80	0.15	0.22	4.02%
From KCHIP II ***	0.89	0.02	< .01	4.36%
From Medicaid	0.97	0.02	0.25	4.77%
Monthly Unemployment Rate *** (multiplied by 1,000)	0.99	0.001	< .01	4.94%
Interactions of Short Run Indicator with Certain Independent Variables				
SR * Recert 1 ***	0.39	0.02	< .01	.
SR * Recert 2 ***	0.63	0.08	< .01	.
SR * # siblings	1.01	0.03	0.61	.
SR * Female	0.97	0.03	0.41	.
SR * Non-white ***	1.34	0.08	< .01	.
SR * Age 1 to 5	0.93	0.05	0.13	.
SR * Age 6 to 12 *	1.09	0.05	0.06	.
SR * Managed Care	1.05	0.06	0.35	.
SR * From KCHIP II ***	0.64	0.04	< .01	.
SR * From Medicaid ***	0.71	0.04	< .01	.
SR * Monthly Unemployment Rate ***	1.03	0.01	< .01	.

Number of exits = 19,679 Number of spells = 46,068 Log Likelihood = -196,307.35

Controls for region of residence are included but not presented and the standard errors are adjusted for family level correlation.

Note that the large estimated coefficient on the short run premium dummy may be misleading. One should not consider this coefficient without the coefficients on the associated interaction terms. For this reason, the last column provides the absolute effect of each variable. The absolute effect combines the main effect of each variable with any effects working through interactions with other variables. The estimated absolute effect of the policy change in the short run appears more reasonable.

* = individual coefficient significant at 10%, ** = significant at 5%, *** = significant at 1%

Table 6 Different Specifications for the Short Run v. Long Run Impact of Premiums

Short Run vs. Long Run Breakdown	SR impact	LR impact	Log Likelihood
1 month, 8 months	Dropped due to multicolinearity		-196,482.73
2 months, 7 months	21%	5%	-196,307.35
3 months, 6 months	18%	6%	-196,311.52
4 months, 5 months	15%	6%	-196,542.06
5 months, 4 months	14%	6%	-196,584.96
6 months, 3 months	13%	6%	-196,678.66
7 months, 2 months	12%	4%	-196,500.90

Table 7 Comparing KCHIP III Spells with KCHIP II Spells

Demographic:	KCHIP III Spells	KCHIP II Spells
# spells / children	46,068	82,839
% Aged 1-5	36%	17%
% Aged 6-12	37%	52%
% Aged 13-18	27%	31%
% Female	48.44%	48.83%
% Non-white	12%	15%
Avg. # of Siblings	1.15	1.31
% in Managed Care	23.56%	24.21%
Avg. Spell Length	8.51	8.00
% From No Public Coverage	29%	28%
% From Medicaid	41%	60%
% From "Other" KCHIP	30%	12%

- Note that the all differences are statistically significant at 1% except for % female.

Table 8: Cox Proportional Hazards Model for KCHIP II

Dependent Variable: Length of KCHIP II Enrollment Spell (average hazard: 4.01%)

Variables	Hazard Rates	Standard Errors	P - values	Absolute Effect
Program Structure Variables				
Recert 1 ***	3.70	0.15	< .01	14.65%
Recert 2 ***	2.00	0.15	< .01	8.03%
Short Run Premium Dummy (2 months)	0.63	0.26	0.26	4.43%
Long Run Premium Dummy (7 months) ***	0.76	0.02	< .01	3.05%
Other Demographics				
# of siblings **	0.98	0.01	0.02	3.92%
Female	1.00	0.01	0.80	4.02%
Non-white	0.97	0.02	0.31	3.91%
Age 1 to 5	0.97	0.02	0.22	3.92%
Age 6 to 12 ***	0.81	0.01	< .01	3.24%
Managed Care	1.15	0.15	0.30	4.61%
From KCHIP III	1.01	0.03	0.76	4.09%
From Medicaid ***	0.85	0.02	< .01	3.39%
Monthly Unemployment Rate *** (multiplied by 1,000)	0.99	0.001	< .01	1.47%
Interactions of Short Run Indicator with Certain Independent Variables				
SR * Recert 1 **	0.85	0.05	0.01	.
SR * Recert 2	1.02	0.11	0.88	.
SR * # siblings	0.99	0.03	0.71	.
SR * Female	0.98	0.04	0.57	.
SR * Non-white	1.00	0.07	0.96	.
SR * Age 1 to 5	1.04	0.07	0.49	.
SR * Age 6 to 12	1.01	0.05	0.84	.
SR * Managed Care	1.00	0.06	0.97	.
SR * From KCHIP III	1.12	0.09	0.16	.
SR * From Medicaid **	0.89	0.05	0.03	.
SR * Monthly Unemployment Rate	1.01	0.01	0.14	.

Number of exits = 26,608 Number of spells = 82,839 Log Likelihood = -282,249.46

Controls for region of residence are included but not presented and the standard errors are adjusted for family level correlation.

* = individual coefficient significant at 10%, ** = significant at 5%, *** = significant at 1%

Figure 1: KCHIP III Enrollment in Kentucky

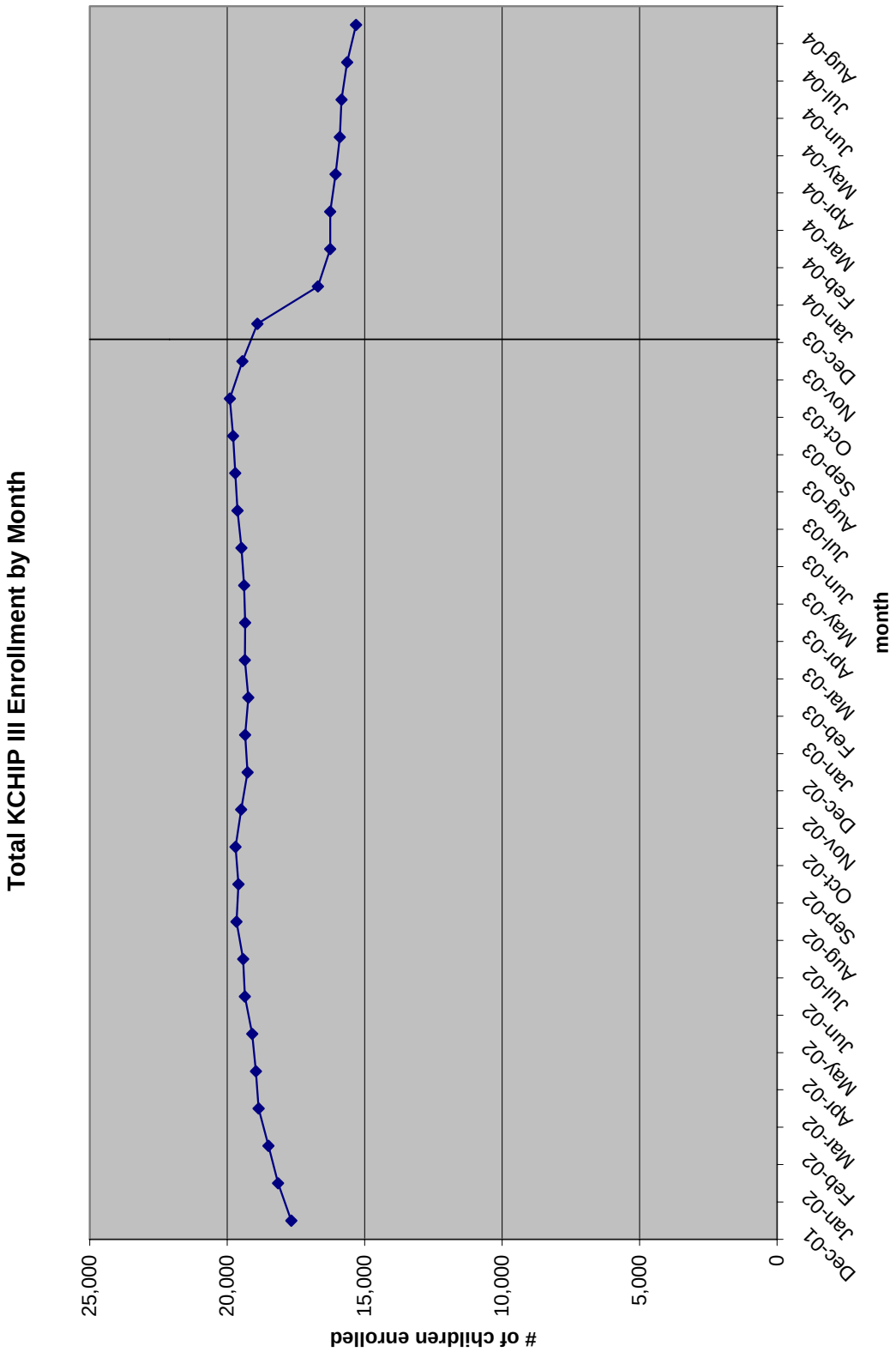

Figure 2: KCHIP II Enrollment in Kentucky

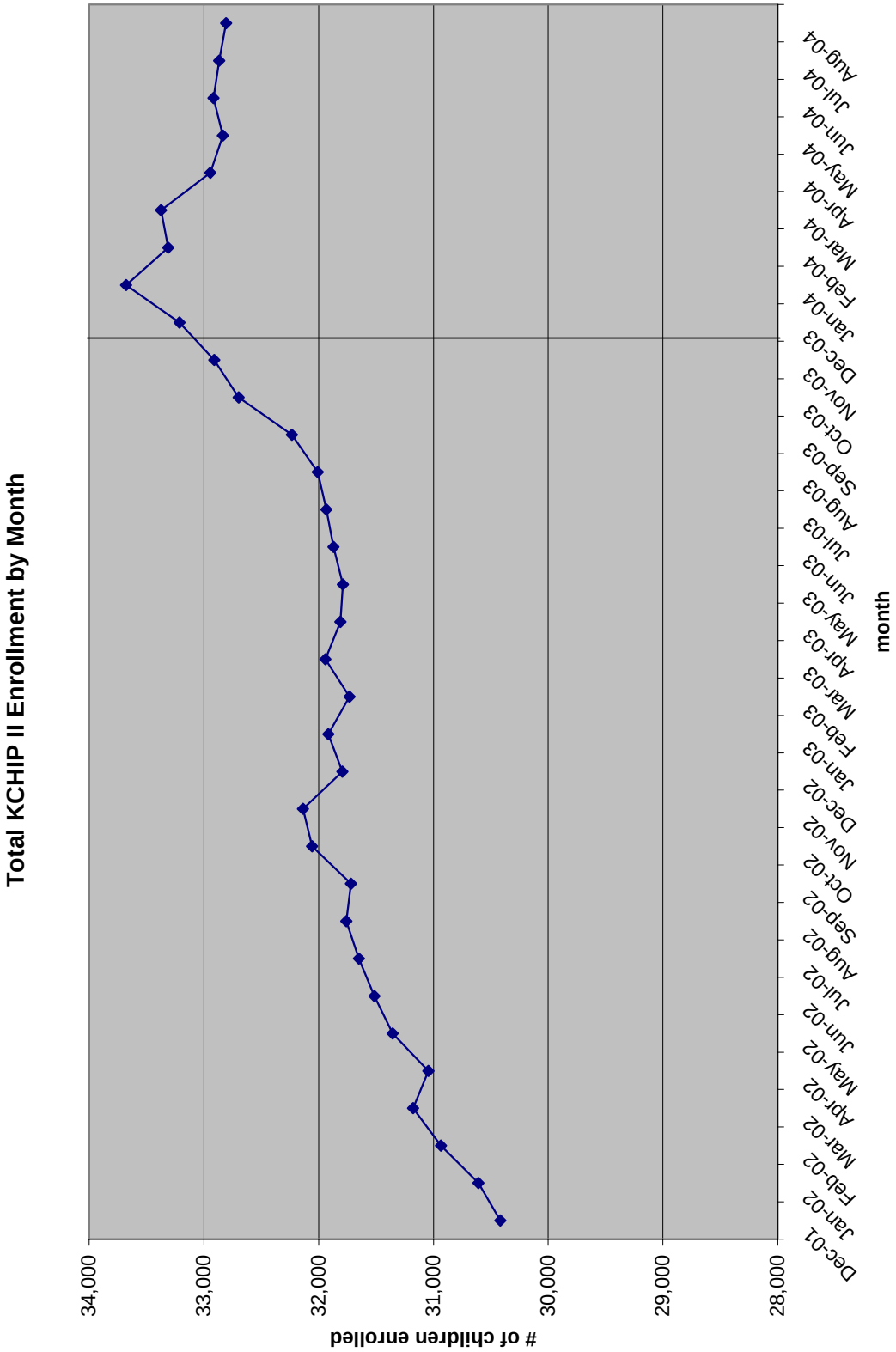

Figure 3: Medicaid Enrollment in Kentucky