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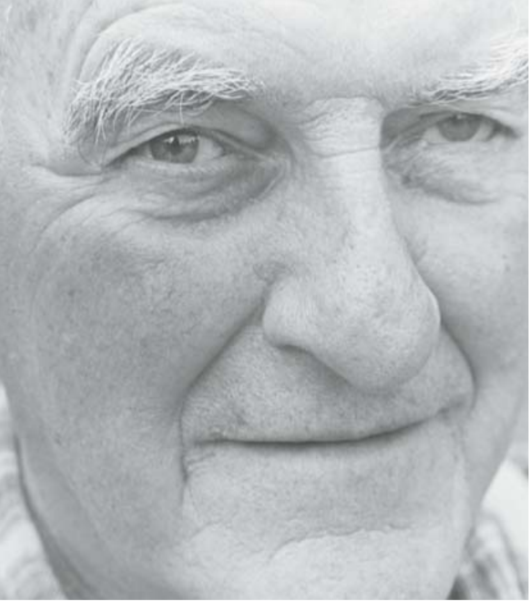  

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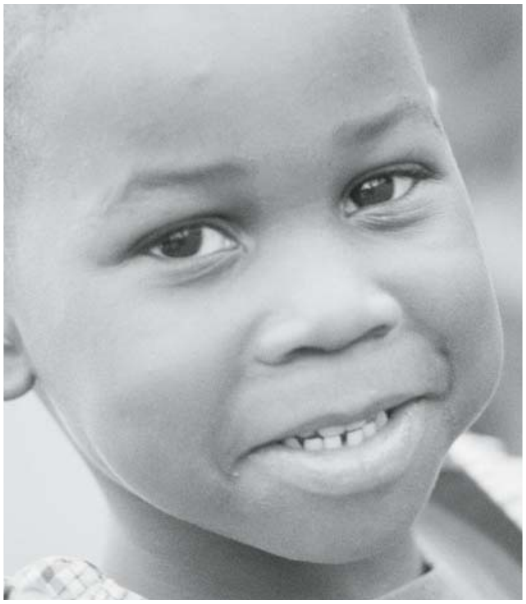
Prepared for the Georgia Department of Community Health

June 30, 2010

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PeachCare for Kids™:
Effect of Premium Changes & Health Status on Duration of Program Enrollment

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Executive Summary

Since 1999, Georgia's PeachCare for Kids™ Program has expanded health insurance coverage for Georgia's low-income children, those at risk of being otherwise uninsured. A common finding in the academic literature on CHIP premiums is that increases in premiums reduce the duration of CHIP enrollment. Over the past several years Georgia has implemented significant increases in the premium levels charged to families participating in its PeachCare program. In response to a request from the Department of Community Health, researchers associated with the Georgia Health Policy Center (GHPC) have completed an analysis of the effect of the level of CHIP premiums on the duration of children's spans of CHIP enrollment and examined whether or not this relationship varies by child health status.

Given policy changes in Georgia, there is significant variation in premiums among PeachCare enrollees over time, by family size, and across incremental levels of income when measured as a percentage of the Federal Poverty Level (FPL). We exploit this policy-induced variation in premiums to create an "effective premium" for each family and estimate the duration of enrollment for each child in that family as a function of the effective premium, controlling for measureable characteristics of each child and their family. We define the "effective premium" as the amount a family has to pay per child per month given the PeachCare premium structure and the number of children in the family that are enrolled in a premium paying category of PeachCare.

We use data obtained from the PeachCare for Kids™ eligibility system and claims database from January 2003 to May 2006 for this study. These data reflect: i) the information submitted by families at the time of their application for PeachCare regarding the child/children for whom coverage is sought and the family of the applicant, ii) enrollment information contained in the Medicaid/PeachCare enrollment database for all enrollees, and iii) health care consumption information contained in the Medicaid/PeachCare claims database for all enrollees. One key characteristic of the application data is the ability to reconstruct family income used to determine eligibility and hence, applicable effective premiums over time.

The data provided to the GHPC cover almost 600,000 spans of coverage for children enrolled at any time during the study period. We focus on spans for children who could face a premium at some point during the study period with no missing or unusual values for our key analysis variables. Our analysis sample consists of 315,415 enrollment spans. These 315,415 spans represent a total of over 2.5 million months of coverage generated by 200,412 unique children in 130,633 families.

We find that a single dollar increase in the effective (per child) premium is associated with an increase in a typical child's monthly probability of exiting PeachCare from 7.70 percent to 7.83 percent. We also find that children considered to be in poor health because they have a chronic health condition (asthma, diabetes, or a mental health condition) are less likely to exit PeachCare than healthy children. Finally, we use these estimates to predict the impact of a $5, $10, or $15 increase in PeachCare premiums. We find that an additional three percent of enrollees are expected to exit during a 12 month period if premiums are increased by $5. This increases to seven percent for a $10 premium increase and ten percent for a $15 premium increase.

Introduction

Since its introduction in 1999, Georgia's PeachCare for Kids™ Program has expanded health insurance coverage for Georgia's low-income children, those at risk of being otherwise uninsured. At any given time, between 8 and 10 percent of Georgia's children are enrolled in the PeachCare program. This program has been an important factor in keeping coverage rates for children significantly higher than rates for adults within our state. It is important to understand the characteristics of Georgia's program that may contribute to stability of coverage. Nationally, empirical evidence suggests that state program characteristics are partially determinative of the relative success of Children's Health Insurance Programs (CHIP) in reducing the number of uninsured children within each state (Wolfe and Scrivner, 2005; Sommers, 2005; Marton, 2007). A key program characteristic is the choice of whether to and at what level to impose CHIP premiums.

A common finding in the literature on CHIP premiums is that increases in premiums reduce the duration of CHIP enrollment (Boylston-Herdon, Vogel, et.al, 2008; Marton, 2007; Shenkman, Vogel, et.al., 2002; Marton, Ketsche, Zhou, 2010). Over the past several years Georgia has implemented significant increases in the premium levels charged to families participating in its PeachCare program. In response to a request from the Department of Community Health (DCH), researchers associated with the Georgia Health Policy Center (GHPC) have completed an analysis of the effect of the level of CHIP premiums on the duration of children's spans of CHIP enrollment and examined whether or not this relationship varies by child health status. This study provides a unique insight into the effect of premium increases because we are able to measure families' responsiveness to a wide variation in premium changes rather than rely on only the observation of a time-dependent implementation of a new premium or change in a premium equally applicable to all families. Thus, the effect we estimate is the "per dollar" effect of a premium increase. We use these findings to simulate enrollment changes if premiums are increased for the same cohort of children by $5 or $10 per member, per month. We are able to link enrollment and claims data in order to control for child health status.

Background

Literature

As of January 2008, over 30 states charged premiums for some or all of the children enrolled in their CHIP programs. Policymakers frequently alter premiums by either changing the income thresholds for the categories of children subject to premiums or by raising or lowering the level of premiums required within these eligibility categories. For example, according to Cohen-Ross, Horn, and Marks (2008), between 2006 and 2008, 10 states implemented new premium requirements for children with incomes just above the federal poverty level (FPL), seven states either imposed new or increased existing premiums, and five states either lowered or eliminated premiums. Among states with CHIP premiums, effective monthly premiums for two children in the lowest income eligibility class ranged from $8 to $30, while monthly premiums for two children in families with incomes above 200 percent of the FPL were in excess of $200 (KFF 2008). The wide variation in premiums both within and across states and the frequency with which premiums are changed suggest a need to better understand both the short run and long run effects on enrollment duration.

Numerous studies have shown that CHIP premiums have a measurable impact on enrollment. For example, Shenkman et al. (2002) demonstrate that even small CHIP premium reductions reduce disenrollment, albeit only slightly, and increase the likelihood that a previously disenrolled child will be reenrolled. Boylston-Herndon et al. (2008) find that increasing premiums in Florida reduces the duration of enrollment spans and that the effect is stronger for lower income (<150 percent FPL) enrollees; children with chronic health conditions are less sensitive to these premium changes. Notably, even after the premium increase in Florida was rescinded, enrollment spans for the lowest income SCHIP children (<150 percent FPL) did not return to prior lengths, suggesting that premium changes can result in an effect that goes beyond the simple price effect on short-run consumer behavior. Marton (2007) studies the effect of the imposition of a new CHIP premium in Kentucky and finds that the duration of enrollment spans is significantly reduced by the new premium. During the first three months after the introduction of a new premium, disenrollment was more than double the baseline rate for children in the premium paying category. Marton and Talbert (2010) also examine CHIP data in Kentucky and show that children with chronic health conditions are less likely to exit than healthy children.

With respect to Georgia's PeachCare for Kids™ program, Ketsche et al (2007a) study the effect of the transition from non-premium to premium eligibility on the enrollment of six-year-olds in PeachCare. The authors find that most of the children enrolled in Medicaid at their 6^{th} birthday who are expected to transition to PeachCare and begin paying premiums either recertify eligibility for Medicaid or disenroll from public coverage altogether. In addition, the authors find that in conjunction with disenrollment, when faced with the premium, there appear to be a significant number of six-year-olds who move from PeachCare for Kids™ to Medicaid. Marton, Ketsche, and Zhou (2010) compare the response to the imposition of a new premium in Kentucky with increases in an existing premium in Georgia; the authors find a larger response to a newly imposed rather than an increased premium, even when the magnitude of the premium change is substantial.

In most states, CHIP premiums do not vary or vary only slightly among enrollees. Therefore, most studies use the imposition of a new, or a change in an existing premium at a point in time to estimate enrollee response to a premium. In contrast, given recent policy changes in Georgia, there is significant variation in premiums among PeachCare enrollees over time, by family size, and across incremental levels of income when measured as a percentage of the FPL. We exploit this policy-induced variation in premiums to create an "effective premium" for each family and estimate the duration of enrollment for each child in that family as a function of the effective premium, controlling for measureable characteristics of each child and their family. We define the "effective premium" as the amount a family has to pay per child per month given the PeachCare premium structure and the number of children in the family that are enrolled in a premium paying category of PeachCare. This study builds upon the report the GHPC submitted to DCH last year by controlling for child health status and contrasting PeachCare exits to Medicaid with PeachCare exits to no public health insurance coverage.

PeachCare Premium Policy

Since the inception of the program, premiums for PeachCare have been in place for children over the age of six. Prior to July 2003, premiums of $7.50 for one and $15 for two or more children in the same family applied to all enrollees. In July of 2003, the premium for one child at all income levels was increased from $7.50 to $10. In addition, family premiums were scaled by two income levels such that a premium of $15 applied for two or more children for families below 150 percent of FPL but a premium of $20 applied for two or more children for families with incomes above 150 percent of FPL. This represented an increase of $5 for families in this higher income category of eligibility. Premiums were increased more significantly for these higher income families in July of 2004 when premiums ranging from $20/$40 to $35/$70 based on a sliding scale were imposed. Table 1 below summarizes these changes in premiums over time.

Table 1: A History of Premiums for PeachCare Enrollees Age Six and Older

	Before July 2003		**July 2003-June 2004**		**After June 2004**	
FPL	One Child	Family Cap	One Child	Family Cap	One Child	Family Cap
100-150%	$7.50	$15	$10	$15	$10	$15
151-160%	$7.50	$15	$10	$20	$20	$40
161-170%	$7.50	$15	$10	$20	$22	$44
171-180%	$7.50	$15	$10	$20	$24	$48
181-190%	$7.50	$15	$10	$20	$26	$52
191-200%	$7.50	$15	$10	$20	$28	$56
201-210%	$7.50	$15	$10	$20	$29	$58
211-220%	$7.50	$15	$10	$20	$31	$62
221-230%	$7.50	$15	$10	$20	$33	$66
231-235%	$7.50	$15	$10	$20	$35	$70

For children in families with two or more children and incomes below 150 percent of FPL, there has been no change in premiums at all, while for children in families with two children and incomes at the upper bounds of eligibility, premiums have increased almost five fold in two years.

This study exploits these policy changes and newly available data that provide actual premiums paid by each family for each child enrolled to estimate the effect of "effective per-child premiums" on span duration, controlling for child health status.

Data

We use data obtained from the PeachCare for Kids™ eligibility system and claims database from January 2003 to May 2006 for this study. This time frame allows us to observe families and children enrolled during periods of time before and after the various premium levels shown in table 1. These data reflect: i) the information submitted by families at the time of their application for PeachCare regarding the child/children for whom coverage is sought and the family of the applicant, ii) enrollment information contained in the Medicaid/PeachCare enrollment database for all enrollees, and iii) health care consumption information contained in the Medicaid/PeachCare claims database for all enrollees. One key characteristic of the application data is the ability to reconstruct family income used to determine eligibility and hence, applicable effective premiums over time. In addition, both the application and enrollment data allow us to control for basic family demographic information for each child (age, sex, race/ethnicity, county of residence, age and sex of primary parent). As mentioned above, the claims data will allow us to control for the health status of each child.

The data provided to the GHPC cover almost 600,000 spans of coverage for children enrolled at any time during the study period. We focus on spans for children [and families] who could face a premium at some point during the study period (starting at age three if enrollment continues to the 6^{th} birthday). We exclude spans for children over the age of 18 or with missing or unusual values for key variables of interest: child race/ethnicity, child age, primary parent age, primary parent gender, family premium level, or family income. We also exclude "left-censored" spans. These are spans that were already underway as of January 2003. If a child was not a new enrollee in January 2003, then we cannot determine how many previous months of coverage such a child had. If we included such spans, we would have to, for example, treat children with two prior years of coverage the same as children with two prior months of coverage. We dropped a significant number spans because the reported family income was below the poverty line. Our understanding is in a prior information system, children referred to Right from the Start Medicaid (RSM) and then deemed to be over income eligibility levels for Medicaid were enrolled in PeachCare without correction of their income information.

Table 2: Number of Spans and Children in Our Sample

	Children	Spans
Total:	200,412	315,415
Children with 1 span	133,679	133,679
Children with 2 spans	39,367	78734
Children with 3 spans	15,182	45546
Children with 4 or more spans	12,184	57,456

After dropping these spans, we are left with 315,415 enrollment spans in our sample. These 315,415 spans represent a total of over 2.5 million months of coverage generated by 200,412 unique children in 130,633 families. Within our sample, about 37 percent of the spans are "right censored" in that the child is either still enrolled at the end of the study period or the child ages out of coverage. Therefore, we cannot observe when the child would have dropped coverage as a function of their effective per-child premium.

We are interested in the extent to which the spans in our sample represent the spectrum of possible premiums within the PeachCare program. Table 3 shows that about 37 percent of the spans are associated with incomes above 150 percent of FPL where exogenous premium changes are significant and affect all children, regardless of family size. Children in families with no enrolled siblings in the 101-150 percent of FPL income eligibility category also experienced an exogenous premium increase during the study period. Therefore, even among this large cohort of lower income enrollees, many experienced changes in the absolute premium during their span of coverage.

Table 3: Distribution of Spans by Initial Income Eligibility Category

FPL	Spans
101-150%	62.53%
151-160%	9.17%
161-170%	7.26%
171-180%	5.84%
181-190%	4.67%
191-200%	3.59%
201-210%	2.98%
211-220%	2.18%
221-230%	1.36%
231-235%	0.42%

Sample Means and Tabular Analysis
Table 4 provides sample means for the entire sample of spans in addition to separate sample means for spans generated by children before age seven and spans generated by children aged seven and over. The purpose of this sample stratification is to test whether the effect of the premium is different in a sample of children where some move from a non-premium to a premium requirement [at age six] compared to the sample of children already in a premium paying eligibility category but experiencing an increase. We can see that the average length of spans generated by younger children is significantly longer than those generated by older children, and that younger children are less likely to exit the program. Average premiums are significantly lower for the younger children, because many start their spans with premiums at zero. Of course, by defining the younger cohort to include children up to and including those starting their spans at age six, there are some spans in this younger cohort that start with positive premiums. All of these sample children face a premium at some point during the study.

In order to assure ourselves that our sample includes children that actually experience a change in their effective premium we compare family premiums and per child effective premiums in the first and last month of each span. We find that premiums and effective premiums are constant throughout the span for about 80 percent of the observed spans. Among children experiencing a change, about 64 percent experienced an increase in effective premiums, while the remaining group of almost 36 percent experienced a decline in their effective premium. This measure may understate the extent to which effective premiums vary, since it is possible for some children to have a premium change within a span even if the first and last month premiums are constant.

Among spans in which the first and last month premiums are not the same, the mean premium increase is more than $9 per member, per month. Among spans in which the first and last month effective premiums are not the same, the mean increase is over $5 per member, per month. Across all spans for all children, the effective premiums measured across all months are 48 percent higher than effective premiums in the first month ($10.56 versus $7.15 in Table 4)

Table 4: Descriptive Statistics for our PeachCare Sample of Spans

Variable	All children	Under 7	7 or older
Number of Children	200,412	46,722	153,690
Number of Spans	315,415	51,276	264,139
Number of Exits	198,198	25,040	173,158
Avg. Span Length (months)	8.17	10.67	7.68
Avg. Exit Probability	7.70%	4.58%	8.54%
Other Span Characteristics			
Avg. Effective premium $ (first month)*	7.15	4.04	7.76
Avg. Effective premium $ (all months)*	10.22	8.12	10.79
Avg. Effective premium $ (last month)*	10.56	8.81	10.90
Avg. Actual Payment (first month)	12.09	5.80	13.31
Avg. Actual Payment (all months)	17.05	11.67	18.50
Avg. Federal Poverty Level (FPL)	146.84	154.80	144.69
% from Medicaid	15.48%	35.87%	11.52%
Demographics			
Avg. Age (first month)	10.73	5.29	11.79
% Female	49.26%	48.86%	49.34%
% White	43.63%	46.35%	43.10%
% Hispanic	7.91%	13.48%	6.83%
% African American	41.28%	30.57%	43.36%
% Other Race	7.18%	9.60%	6.71%
% Citizen	99.18%	99.60%	99.10%
% Born to Teen Mother	0.03%	0.17%	0.00%
% Parent over 40 (first month)	28.53%	12.37%	31.66%
% Mother Primary Parent	75.23%	72.60%	75.75%
% Diabetes	0.29%	0.11%	0.32%
% Asthma	7.96%	11.95%	7.19%
% Mental Health Diagnosis	14.66%	12.03%	15.17%
% High CDPS Score	28.12%	24.98%	28.73%

Note: Effective premiums are adjusted for family size based on the number of children in the family in the premium paying PeachCare eligibility category.

Analytic Methods

We empirically model the duration of a child's enrollment in PeachCare for Kids™ as a function of the premium and family income, allowing those characteristics to vary over time. We assume that in each month families compare the expected utility net of any monetary (i.e. premiums) or non-pecuniary costs (i.e. stigma) of remaining in PeachCare with the net expected utility associated with exiting. Our formal proportional hazards model can be stated as follows:

$$H(t) = \exp(X_{1t}'\beta_1)^* \exp(t\alpha_1 + t^2\alpha_2) \quad (1)$$

As in Marton, Ketsche, and Zhou (2010) we are estimating the impact of the observable characteristics parametrically using the standard proportional hazards functional form ($\exp(X_{1t}'\beta_1)$). Rather than modeling the baseline hazard in the standard way (Weibull distribution), we include a quadratic in time on the right hand side of our model ($\exp(t\alpha_{j1} + t^2\alpha_{j2})$). While our approach to modeling the baseline hazard is still a parametric one, it does provide more flexibility than the Weibull distribution. In addition, we include as controls on the right hand side of our model indicators for spikes in the underlying hazard. These spikes occur in the first three months of enrollment, December of each year and in July 2005.

As mentioned above, we construct an "effective premium" as our key independent variable of interest. The effective premium is the premium from the schedule shown in Table 1 divided by the number of children in a family enrolled in a premium paying category of PeachCare for a given month. We control for observable demographic characteristics measured on the date of enrollment that do not vary with time (child age, gender, race/ethnicity, and citizenship status, primary parent age and gender, and the child's public health district of residence). We also include an indicator for whether or not this span was initiated as a result of a transfer from Medicaid.

By linking the enrollment and application data to the claims database, we are able to create several indicators for the existence of chronic health conditions among children in the sample. The chronic conditions we analyzed are asthma, diabetes, and a variety of mental health conditions, including: mental retardation, schizophrenia, depression, and attention deficit disorder. We follow Shenkman et al. (2002) and Marton and Talbert (2010) and assign a chronic condition to a child if an ICD-9 code associated with the particular condition appears two or more times in their records. The ICD-9 code associated with diabetes is 250, the code associated with asthma is 493, and the codes associated with the set of mental health conditions are 290-319. Table 4 shows that less than one percent of the spans in our sample are generated by a diabetic child, nearly eight percent are generated by an asthmatic child, and 15 percent are generated by a child with a mental health condition. Finally, we also include an indicator if the child's CDPS score is above average for this sample. The CDPS is a risk of death score assigned to a child based on their diagnosis and NDC codes.

We estimate the model separately for children less than age seven and age seven or older in order to isolate the effect of turning six from the more general effect of the premium on duration of enrollment. For children starting their span under age six we include both a dummy for the month in which they turn six and a control for the magnitude of the premium in that month.

Results

For each set of hazard regression results Table 5 gives the hazard coefficient for each variable, the standard error, the p-value associated with the hypothesis test that the hazard is equal to one (i.e. the variable in question has no impact on the duration of enrollment), and the absolute value associated with each variable. Hazard ratios are relative probabilities, which is why we also report the absolute values. For example, the hazard ratio associated with the African-American indicator in the full sample regression says that African-American children are 29 percent more likely to exit in a given month than white children. In order to know whether or not this is a big effect, we need a reference. We use as a reference the average monthly exit probability for the entire sample, 7.70 percent. This is what the absolute effect captures. For African-American children, the absolute effect says that the monthly probability of an exit is 9.96 percent. This can be compared directly with the average monthly exit probability of 7.70 percent.

Our key variable of interest is the effective premium associated with each child's coverage. Since the premium is in dollar increments, the coefficient on the effective premium variable represents the incremental increase in the probability of disenrolling associated with a one dollar change in the effective premium. For all children together, a single dollar increase in the effective (per child) premium is associated with an increase in their probability of exiting from 7.70 percent to 7.83 percent each month. For younger children, the average exit probability is lower than for the older cohort (4.58 versus 8.54 percent—see Table 4), but the effect of a dollar increase in premiums on their exit rate is slightly greater as it increases with each dollar from 4.58 to 4.72 percent versus an increase of 8.54 to 8.65 percent for the older children. Simulation results presented in Table 6 also help with the interpretation of these findings.

With respect to our other covariates, we note that the probability that a child will exit from PeachCare during the month he or she turns six is very high, consistent with prior findings with respect to this group (Ketsche et al, 2007a). A very small number of qualified non-citizens are enrolled in PeachCare and being a citizen increases the probability of exiting significantly compared to non-citizen children. The probability of exiting also varies by race/ethnicity as it is lower than average for Hispanic children and higher than average for African-American children. The probability of exiting increases in families with a mother as the primary parent and decreases in families with older parents. Children beginning a PeachCare span by transferring from Medicaid coverage in the previous month are less likely to exit PeachCare than children who had no public health insurance coverage in the previous month. The FPL indicators should be compared to the 101-150 percent of FPL eligibility category. Their coefficients suggest that as family income increases, children are less likely to exit PeachCare, everything else (including effective premium levels) being equal.

One unique feature of this analysis is that we are controlling for child health status. Children considered to be in poor health because they have a chronic health condition (asthma, diabetes, or a mental health condition) are less likely to exit PeachCare than children without chronic health conditions. In addition, children with an above average CDPS score are less likely to exit PeachCare coverage. These findings are similar to findings with respect to child health status and the duration of CHIP coverage in Florida (Shenkman et al, 2002) and Kentucky (Marton and Talbert, 2010).

Table 5: Hazard Model Results

	All Kids				**Under 7**				**7 or Older**			
Variable	*Hazard*	*S.E.*	*P-value*	*Abs. Value*	*Hazard*	*S.E.*	*P-value*	*Abs. Value*	*Hazard*	*S.E.*	*P-value*	*Abs. Value*
Effective Premium	1.018	0.000	0.000	7.83%	1.031	0.001	0.000	4.72%	1.013	0.000	0.000	8.65%
Premium Age 6	0.930	0.003	0.000	7.15%	0.918	0.003	0.000	4.20%	N/A			
FPL_151_160	0.883	0.007	0.000	6.79%	0.686	0.015	0.000	3.14%	0.943	0.009	0.000	8.05%
FPL_161_170	0.867	0.008	0.000	6.68%	0.672	0.016	0.000	3.08%	0.930	0.009	0.000	7.94%
FPL_171_180	0.850	0.009	0.000	6.54%	0.654	0.017	0.000	2.99%	0.916	0.010	0.000	7.82%
FPL_181_190	0.792	0.009	0.000	6.10%	0.638	0.019	0.000	2.92%	0.851	0.011	0.000	7.26%
FPL_191_200	0.755	0.010	0.000	5.81%	0.574	0.019	0.000	2.63%	0.822	0.012	0.000	7.02%
FPL_201_210	0.752	0.011	0.000	5.78%	0.622	0.022	0.000	2.85%	0.808	0.013	0.000	6.90%
FPL_211_220	0.743	0.012	0.000	5.72%	0.593	0.024	0.000	2.71%	0.809	0.015	0.000	6.91%
FPL_221_230	0.751	0.016	0.000	5.78%	0.592	0.032	0.000	2.71%	0.822	0.019	0.000	7.02%
FPL_231_235	0.684	0.032	0.000	5.27%	0.585	0.068	0.000	2.68%	0.739	0.038	0.000	6.31%
From Medicaid	0.869	0.006	0.000	6.69%	0.963	0.013	0.005	4.41%	0.831	0.007	0.000	7.10%
Female	1.002	0.005	0.588	7.71%	1.013	0.013	0.304	4.64%	1.001	0.005	0.778	8.55%
Hispanic	0.781	0.008	0.000	6.01%	0.754	0.018	0.000	3.45%	0.787	0.009	0.000	6.72%
African American	1.294	0.008	0.000	9.96%	1.283	0.021	0.000	5.87%	1.295	0.008	0.000	11.05%
Other Race	0.908	0.009	0.000	6.99%	0.860	0.021	0.000	3.93%	0.918	0.010	0.000	7.84%
Age 4-6	0.551	0.005	0.000	4.24%	N/A				N/A			
Age 7-12	0.916	0.005	0.000	7.05%	N/A				0.919	0.005	0.000	7.85%
Sixth Birthday	8.374	0.175	0.000	64.44%	9.328	0.206	0.000	42.69%	N/A			
Citizen	1.951	0.064	0.000	15.01%	2.054	0.258	0.000	9.40%	1.948	0.066	0.000	16.63%
High CDPS	0.907	0.005	0.000	6.98%	0.925	0.015	0.000	4.24%	0.908	0.006	0.000	7.75%
Diabetic	0.865	0.037	0.001	6.66%	0.610	0.140	0.032	2.79%	0.881	0.039	0.004	7.52%
Asthmatic	0.860	0.008	0.000	6.62%	0.830	0.017	0.000	3.80%	0.867	0.008	0.000	7.40%
Mental Health	0.965	0.007	0.000	7.42%	1.024	0.022	0.269	4.69%	0.957	0.008	0.000	8.17%
Teen Mother	0.958	0.150	0.785	7.37%	0.988	0.155	0.939	4.52%	N/A			
Parent over 40	0.785	0.004	0.000	6.04%	0.782	0.016	0.000	3.58%	0.787	0.004	0.000	6.72%
Mom Primary	1.119	0.006	0.000	8.61%	1.147	0.018	0.000	5.25%	1.119	0.007	0.000	9.55%
Number of Spans	*315,415*				*51,276*				*264,139*			
Number of Exits	*198,198*				*25,040*				*173,158*			
Avg. Span Length	*8.17*				*10.67*				*7.68*			
Avg. Exit Prob	*7.70%*				*4.58%*				*8.54%*			

Note: We are also controlling for the child's public health district of residence as of the first month of their enrollment span; linear and quadratic time trends; and spikes in the exit rate during the first three months of each span, during the end of each calendar year, and in July 2005, but these coefficients are not reported above.

Alternate Specifications

As mentioned above, the results from Table 5 suggest that in general children with health problems are less likely to exit PeachCare than healthy children. In a separate specification not reported in Table 5, we test whether or not children with health problems are differentially impacted by premium changes. First, we combine our four health variables into one indicator equal to one if a child is has asthma, diabetes, a mental health condition, or an above average CDPS score. Next, we re-estimate our hazard model on all children in our sample with the combined poor health indicator and an interaction between this combined poor health indicator and the child's effective premium. If the hazard coefficient on this interaction is larger than one, that suggests that children with poor health are more likely to exit as a result of a change in premiums than healthy children. The estimated hazard coefficient is .99586, or essentially 1.00. This suggests that children in poor health do not respond differently than healthy children to premium changes. In other words, if premiums are set at a certain level our results predict that sick children are less likely to exit than healthy children. If these premiums are then raised by $1, we don't expect to see sick children respond differently than healthy children, so the difference in their exit rates should remain. Marton and Talbert (2010) find similar results when analyzing a premium increase in Kentucky.

In Table 5, a child exiting PeachCare by transferring to Medicaid is treated the same as a child exiting public health insurance coverage completely. Of the 198 PeachCare exits in our main sample, 24,462 (12 percent) represent transfers to Medicaid and 173,736 (88 percent) represent children leaving public coverage completely. In another separate specification not reported in Table 5, we estimate a competing risk model (as in Marton, Ketsche, Zhou, 2010) in order to separate the impact of a premium increase on the probability of exiting PeachCare via Medicaid from the impact on the probability of leaving public coverage completely. Our competing risk model suggests that the hazard coefficient on the effective premium variable of 1.018 estimated from our full sample is the combination of a slightly higher hazard coefficient associated with leaving public coverage completely (1.021) and a slightly lower hazard coefficient associated with moving to Medicaid (0.989). Therefore, the competing risk model suggests that a premium increase will reduce the probability that a PeachCare enrollee will exit via Medicaid and increase the probability that a child will exit to no public health insurance coverage.

Premium Increase Simulation

We use our model to simulate the effect of increasing premiums by $5, $10, and $15 on the enrollment of a cohort of children over a year. This helps translate the dollar per child per month odds generated in the hazard model into a more easily interpretable effect that reflects a range of real, or potentially real, premium policy changes.

This simulation quantifies the effect of a premium increase on total enrollment for a given cohort of children assuming all other characteristics of the population remain unchanged. We model enrollment for a single calendar year under the baseline risk of disenrollment and then predict how disenrollment would change with a $5, $10, and $15 increase in absolute premiums. Such changes in premiums would translate into changes in the "effective premium" based on current family sizes and enrollment of between $2.80 and $8.50.

Table 6: Simulation Results for Premium Increases

	All children	Less than 7	7 or older
Enrollment loss after one year	61,748	43,004	65,728
Loss based on a premium INCREASE of:			
$5 PMPM (31% increase)	63,762	46,597	67,166
%	*3%*	*8%*	*2%*
$10 PMPM (62% increase)	65,780	50,350	68,600
%	*7%*	*17%*	*4%*
$15 PMPM (93% increase)	67,795	54,241	70,029
%	*10%*	*26%*	*7%*

The simulations show more clearly the implications of a premium increase on changes in total enrollment in CHIP. The baseline estimates show the level of attrition in a cohort of 100,000 children in one year under assumptions that reflect the mean effective premiums and demographics for children enrolled between 2003 and 2006. The baseline probability of exiting results in a decline in a single cohort of PeachCare enrollment of over 60 percent of the children (61,748) within a single year. In contrast, if premiums were further increased by $5 per member per month, disenrollment would increase to over 63,000 from the original cohort, or an increase of about three percent in the disenrollment. If premiums increased by $15 per member per month, disenrollment would go up to over 67,000 children. That is, over 6,000 additional children would disenroll by year's end.

Discussion

Our simulation results from Table 6 suggest a small but significant response to the premium level that is consistent with relatively inelastic demand. Inelastic demand implies that increasing the premium still results in lower enrollments but the percentage decrease in enrollment is smaller than the percentage increase in premiums. Because these findings are similar to our previous premium elasticity work in which we did not control for child health status, we now hold that our previous results were not biased by our inability to control for child health status.

Estimates of the elasticity of take-up (or percent increase in families buying private coverage with the percent decrease in premium) of employer-sponsored coverage from the academic literature are also inelastic. These estimates vary from quite low (-0.02 to -0.10: Gruber and Washington, 2005; Cutler, 2002) to slightly higher estimates for choosing between plans among those with coverage (-0.3 to -0.76: Cutler and Reber, 1998; Royalty and Solomon, 1999). Our disenrollment as a function of premiums estimate provides some evidence that the price response for children in PeachCare is not inconsistent with the elasticities estimated from the private health insurance market.

Obviously, the most direct policy implication from this work is that coverage for some low-income children may be interrupted by premium increases, even after controlling for child health status. Estimates of potential revenue from public insurance premiums should take into account the offsetting loss of revenues from disenrollment. While the state faces a trade off in terms of revenue generation versus potential disruptions of coverage, our estimates indicate an inelastic response to premiums which means that the decline in enrollment is small compared to the increase in premiums charged.

The potential value of introducing an element of personal responsibility into the program via premiums must be weighed against the potential financial and health implications associated with interruptions of coverage. These breaks in coverage for children who exit as a result of increases in premiums are important for their access to healthcare, as previous research shows that most will become uninsured (GHPC, 2005). Lack of access, especially to the periodic preventive care needed by young children, could have longer-term effects on both child health and the state budget. Given that these children are likely to be uninsured and/or return to public insurance when in need of healthcare, policies that lead to increased levels of disenrollment should be reviewed for their effects on the costs of care received through all sources of public subsidy (such as through the emergency room) in both the short and long run.

It is also important to determine the extent to which the effects of higher premiums apply primarily to families in income ranges more likely to have access to offers of private insurance, perhaps through an employer. If families with such access are not sufficiently discouraged by higher PeachCare premiums to take-up private coverage, then our low elasticity estimate could be an indicator of "crowd-out" of private insurance.

The reauthorization of CHIP under CHIPRA and the more general health care reform embodied in the Affordable Care Act (ACA) bring significantly increased attention to performance indicators. Under CHIPRA, bonus payments are available to states when they significantly increase their enrollment of the lowest-income uninsured children in Medicaid and adopt specified measures to streamline enrollment and retention in both Medicaid and CHIP. Our results imply incomplete take-up for public coverage in the face of premiums, even premiums set at a modest level. This suggests the need for a full financial analysis of the impact of premium changes on the state's overall CHIP budget given the cost tradeoffs involved in enrollment fluctuations, policy administration, and federal incentive programs.

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