THE IMPACT OF INCREASED PATIENT COST-SHARING ON PEDIATRIC AVOIDABLE HOSPITALIZATIONS FOR SCHIP BENEFICIARIES IN THE STATE OF FLORIDA

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ABSTRACT

This study uses difference-in-difference econometric techniques to examine whether beneficiaries in one of the state of Florida’s State Children’s Health Insurance Programs (SCHIP) have a higher probability of experiencing an pediatric avoidable hospitalization after a cost-sharing increase on July 1, 2003 than prior to the increase. The health care literature suggests that a cost-sharing increase may lead to an increase in pediatric avoidable hospitalizations as patients reduce their consumption of necessary and preventive care, and obtain care only once a condition has become unmanageable. It is predicted that the probability of experiencing an avoidable hospitalization will significantly increase; however, the regression results suggest that there is no statistically significant increase in avoidable hospitalizations. Future research that compares data across states with different levels of cost-sharing for the same SCHIP programs (rather than SCHIP versus Medicaid) might yield more fruitful results than have been obtained here.
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Introduction

Cost-sharing refers to out-of-pocket expenses paid by patients for health services. The health care literature suggests that cost-sharing reduces the amount of health care utilization, and some literature further suggests that cost-sharing leads consumers to become more efficient with their health care consumption, reducing wasteful health care spending. Other health care literature suggests that while cost-sharing leads to reduced consumption of health care services, it actually increases the costs to the insurer and/or society because consumers are less likely to seek regular, preventive care and care at the time that an illness is manageable; rather, they are more likely to seek emergency and/or hospital care when an illness has become unmanageable. The result of obtaining emergency and/or hospital care for an illness or condition that could have been avoided with prior or preventive care is called a preventable or avoidable hospitalization. The conditions are also referred to as ambulatory care sensitive conditions (ACSC), which is the term used in this study. Treatment for an ACSC cost more than they would have otherwise cost with prior care.

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1 More specifically, cost-sharing refers to out-of-pocket expenses paid by consumers either at the time of service or after services have been obtained. Consumers may pay cost-sharing in the form of premiums, co-payments, deductibles, and/or coinsurance. Co-payments are charged and paid at the time a patient receives certain types of services, such as office visits, prescription drugs, and emergency room services. A deductible is the amount a patient is responsible for under the health plan before the insurance begins to pay. Coinsurance is the percentage of each claim above the deductible that a patient pays.
This study examines whether increased cost-sharing for Florida’s State Children’s Health Insurance Program (SCHIP) significantly increases ACSCs for pediatric patients. In doing so, the study focuses specifically on Florida’s Healthy Kids SCHIP program.
Literature Review

Introduction

Though health care premium costs growth rates stabilized at 9.2 percent during 2004 and 2005, costs prior to these years grew at an accelerated rate (Kaiser Family Foundation, 2005). Even with stabilized premium growth rates, health care costs continue to grow at a rate that outpaces general price increases in the rest of the economy. These cost increases, combined with a slow economy, have had serious repercussions for government-sponsored health coverage programs and forced budget cuts and adjustments for these programs.

The SCHIP program is one such public health program that has been the subject of government budget pressures. Discussions concerning the program have mostly to do with the large health and administrative expenses associated with serving its patient population (low-income children and in some cases their families), and these expenses have become more burdensome since the expansion of the program in almost all states during the late 1990s. The financial circumstances associated with this public health program ring especially true for states since unlike Medicare, which is fully federally financed, states must contribute large sums of their own money. Indeed, in many states, SCHIP programs have gone through budgetary adjustments, including but not limited to cuts in provider payments, reduced enrollments or enrollment freezes, and increased patient cost-sharing. Despite the best intentions of policymakers, these
adjustments often have unintended negative health and financial consequences for patient populations and the states supporting them.

This review presents information concerning the budgetary pressures faced by states, and the consequences these pressures have had for SCHIP programs. When appropriate and for the purposes of comparison to the SCHIP program, this review also presents information about the impact of these budgetary pressures on Medicaid programs, and the measures taken to address these circumstances for both programs as summarized in the health care literature.\(^2\) The review then discusses the potential health consequences associated with increased cost-sharing, and looks at these consequences specifically in terms of avoidable hospitalizations. Finally, this review focuses on these matters in the context of one state, Florida, and with regard to one patient population, children, that is served by Florida’s SCHIP program.

**Background: State Budgetary Woes and Public Health Programs**

According to Hoadley, Cunningham, and McHugh (2004), from the late 1990’s up to about 2000, most states were able to make major expansions in their public health programs due to a strong economy, rising revenues, and greater availability of matching federal dollars. However, by the end of 2001, a

\(^2\) SCHIP was created in 1997 as a way to provide health coverage to low-income children. According to Dubay and Kenney (2006), SCHIP gave states the option of using Medicaid programs, separate state programs, or some combination of the two to cover low-income children and families whose incomes were too high for qualification for Medicaid.
combination of a slow economy, declining revenues, and laws requiring balanced budgets ultimately compromised the financial circumstance for all states and forced many states to consider budget cuts. Because of the large financial responsibility associated with public health programs such as SCHIP, particularly as health care costs continue to rise, many states focused their budget cuts and adjustments on this and other similar programs as a way to address (at least in part) their financial woes. For example, according to Hoadley et al. (2004) Medicaid, which serves low-income children either in combination with, in addition to or instead of SCHIP, represents approximately 20 percent of state budgets. Dubay and Kenney (2006) echo these findings concerning the expansions of Medicaid (and SCHIP) programs. These authors found that between 1999 and 2002, the proportion of children with health coverage increased by 2.6 percent (a reduction of 1.8 million uninsured children), and these gains were concentrated among low-income children, meaning that states had to take on more financial responsibility for their children-focused public health programs. In their examination of the budget cycles for twelve Community Tracking Study (CTS) site states, including the state of Florida, Hoadley et al. (2004) found that ten of the twelve states reported budget shortfalls for fiscal year 2003, ranging from 1.2 percent to 11 percent of the general fund budget.

States efforts to address rising SCHIP, Medicaid and other public health program expenses included but were not limited to: “cutting or restricting some
benefits, reducing provider fees, and slowing enrollment growth through higher premiums for some beneficiaries and reintroducing some administrative barriers” (Hoadley et al., 2004, p. 147). However, Medicaid experienced fewer budget cuts than other programs because in May 2003, the Jobs and Growth Tax Relief Reconciliation Act gave states $20 billion in temporary federal fiscal relief, $10 billion of which was to be used for a 2.95 percent increase in federal matching for Medicaid expending. In order to receive the additional federal assistance, states had to maintain their prior Medicaid eligibility levels, and according to Smith, Ramesh, Gifford, and Ellis (2004) in 27 states the additional matching was used specifically to help avoid, minimize or postpone proposed Medicaid program cuts and freezes. The authors further report that in six states, Medicaid officials reported that federal matching increases actually helped restore benefits and increases to provider payments.

**Cost-Sharing and Its Consequences**

Despite these positive circumstances for Medicaid, SCHIP and other public health programs continue to consume state budgets, and Ross and Cox (2003) found that states were increasingly turning to cost-sharing as a way to contain costs in these programs. According to these authors, as of 2003:

31 states imposed premiums or annual enrollment fees for children’s health coverage, and 22 states required co-payments for non-preventative physician visits, emergency room care, inpatient
hospital care, and/or prescription drugs for children in [low-income families. Additionally,] in states with premiums, the monthly cost for two children in a family with income of 151 percent of the federal poverty line ranges from $8 to $70 per month. In states with co-payments, non-preventative physician visits range from $3 to $15, emergency room care from $5 to $50, inpatient hospital care from $5 to $100, and prescription drugs from $1 to $20 (Ross and Cox, 2003, p. 8).

Ross and Cox (2003) report that such measures can depress participation rates in public health programs and reduce the use of needed services. Davis, Doty, and Ho (2003) confirmed these observations with their finding that 38 percent of adults with deductibles of $1,000 or more reported at least one of four cost-related access problems: not filling a prescription; not getting needed specialist care; skipping a recommended test or follow-up; and having a medical problem but not visiting a doctor or clinic. These authors predicted that 44 percent of adults with incomes below $35,000 are predicted to experience cost-related access problems with a deductible of over $500.

Cost-sharing has an especially negative impact on low-income beneficiaries. According to Ku (2003) of the Center on Budget and Policy Priorities, cost-sharing policies that cause only minimal reductions in utilization among the middle-class cause more substantial reductions in utilization and leads to significant adverse health consequences among the poor. This author goes on to note that in the RAND health insurance experiment, low-income adults and children reduced their use of necessary and effective medical care services by up to 44 percent when forced to make copayments. For example, low-income patients
may forego a doctor visit for chest pains, which may be a signal of heart disease. Ku (2003) also reports that the health outcomes associated with cost-sharing are worse for low-income adults and children. For example, low-income children in families that were subjected to cost-sharing in their public health program were more likely to be anemic and to have more untreated dental problems than children who received free care. Wright et al. (2005) found the same depressed participation rates as a result of cost-sharing for Medicaid patients in Oregon. In *The Impact of Increased Cost Sharing on Medicaid Enrollees*, these authors report that when Oregon increased cost-sharing requirements for members of its Medicaid program nearly half of a sample of 1,378 left the plan within six months after the changes were implemented, and of those who left, 44 percent identified cost-sharing reasons as the main reason they left. Furthermore, beneficiaries who left Oregon’s Medicaid plan because of cost sharing were far more likely than those who left for other reasons not to have received needed care in the previous six months. They were also more likely to have skipped buying prescription medicines because of cost. Of those who left the plan, 81 percent said they did not get needed care because of cost.

Increased cost-sharing is also associated with ACSCs. According to Ku (2003), a study in Quebec found that a cost-sharing increase for prescription drugs resulted in 88 percent more emergency room visits for poor adults in addition to similar other findings. The Quebec study concluded that when cost-sharing was
imposed on or increased for poor patient populations “some of the reduced expenditures for prescription drugs were offset by increased use of costly services received in emergency rooms, inpatient hospital care, or institutionalization” (Ku, 2003, p. 10) and the toll of avoidable illnesses could increase.

With regard to the impact of increases in cost-sharing on children in low-income families that depend on public health programs, Ku (2003) notes that a University of Maryland study found that cost-sharing could create barriers to the use of preventative and primary healthcare by children, which could have longer-term health consequences. Ku (2003) also notes several studies, including one completed in Florida that found decreases in enrollment for children in children-targeted public health programs as a result of cost-sharing increases. In simulation study, Johnson, Rimsza, and Johnson (2006) found that a $10 increase in monthly premium payments for Arizona’s SCHIP program would induce disenrollment of children, which would result in a greater number of uninsured children and, ultimately, an increase in public expenditures partly because of a four-fold increase in the use of emergency rooms for nontraumatic medical care and a ten-fold increase in the use of inpatient hospital care. Finally in this vein, Gruber and Dafny (2003) report that approximately one-quarter of pediatric hospitalizations are avoidable, compared with one in ten for adults, and their research focuses on this phenomenon among low-income children. The authors found that expansions in public health insurance for low-income children was associated with a large,
significant increase in unavoidable pediatric hospitalizations and a small, insignificant increase in avoidable ones, suggesting that better access leads to an increase in the efficient use of health care services.

**Florida’s SCHIP Program: Background and Recent Changes**

Despite these known negative consequences associated with cost-sharing and the positive benefits of improved access, Hill, Stockdale, and Courtot (2004) of the Urban Institute found that in 2003 half of thirteen states they studied either raised SCHIP cost-sharing amounts for enrollees or imposed new SCHIP cost-sharing for families that previously did not have to pay. Florida is among the states studied by Hill et al. (2004) that increased SCHIP cost-sharing for its enrollees.

Florida has four public health programs for children, three of which fall under the SCHIP program: MediKids, Healthy Kids, and the Children’s Medical Services Network. The fourth public health program is Medicaid. Children whose family-incomes are above the Medicaid eligibility threshold but at or below 200 percent of the federal poverty level are eligible for one of Florida’s three SCHIP programs. MediKids serves children younger than five years-old, and Healthy Kids serves children from five to nineteen years of age. Children’s Medical Services Network serves children from birth to nineteen years of age who have special healthcare needs, and Medicaid serves children up to nineteen years of age whose family
incomes fall below the lower-income threshold for SCHIP (Florida Agency for Health Care Administration, 2006).

According to Hill et al. (2004), the Centers for Medicare and Medicaid Services report that Florida is among the four largest SCHIP programs that account for nearly two-thirds of total SCHIP enrollment. Additionally, the authors note that, according to the Kaiser Commission on Medicaid and the Uninsured, Florida’s SCHIP enrollment in June 2003 was 330,886 enrollees, up 34 percent from 246,432 enrollees in June 2002. Florida (as well as the other twelve states studied by these authors) is different from one-third of all states in that it has a separate SCHIP program, which allows the state more flexibility to impose enrollment caps, benefit reductions, and cost-sharing increase. Additionally, the state has a long history of state-funded child health coverage and of extending health coverage to children that are not eligible for Medicaid. This commitment may make the state more likely to try to limit the negative impact of increased cost-sharing. Indeed, according to Hill et al. (2004), Florida attempted to reduce the number of families disenrolling in their SCHIP program due to nonpayment of premiums by expanding the payment options for families. The authors report that “Florida raised its monthly premium by $5, from $15 to $20 per family, for those earning between 133 and 200 percent of [the federal poverty level]” (Hill et al., 2004, p. 13), and the state increased copayments for pharmacy and medical office visits from $3 to $5 for all Healthy Kids enrollees earning between 133 and 200 percent of the federal poverty level.
The healthcare literature surveyed in this review suggests that although the state of Florida has made efforts to minimize the impact of their SCHIP cost-sharing increases on the patient population, there may still be unintended negative consequences in terms of pediatric ACSC rates.
Hypothesis

This study examines whether increased cost-sharing for Florida’s SCHIP program significantly increases pediatric ACSCs for the beneficiary population. Effective July 1, 2003, the state of Florida increased its premium cost-sharing and co-payments for three of its four SCHIP programs. The three programs that experienced increased cost-sharing, Healthy Kids, MediKids and Children's Medical Services Network, are all part of Florida’s SCHIP program; however, MediKids and Children's Medical Services Network serve a very limited age group and a special needs patient population respectively. Therefore, this study focuses only on those patients in Healthy Kids program.

It is predicted that the probability of experiencing an ACSC will be significantly higher during the time period after the cost-sharing increase, the post-period, than during the time period prior to the increase, the pre-period. To test whether ACSCs increased, I compare the predicted probabilities of experiencing ACSCs for the treatment group, Healthy Kids, to the predicted probabilities of a control group. Because there is no available Healthy Kids control group, this study uses beneficiaries in Florida’s Medicaid program as a control group. The Medicaid program did not increase cost-sharing, and its patient population’s demographic characteristics parallel those of the Healthy Kids patient population.
Research Design

Data and Sample Construction

Data for this project comes from Florida’s Agency for Health Care Administration (AHCA) hospital inpatient data. AHCA was created by Chapter 20, Florida Statutes, and is the chief health policy and planning entity for the state. AHCA is responsible for, among other things, the operation of the Florida Center for Health Statistics and Policy analysis. AHCA has collected data on hospital inpatients stays since 1997, and the most recently available data is valid through December 2005. The data includes information from thirty-two different variables that are pertinent to the health status, procedures used, health insurance, and cost of the visit based on discharge information collected from the hospitals themselves.

The sample is limited to inpatient hospital visits during the first and second quarters of 2003 (i.e., January through June), which represents the time pre-period or time period prior to the cost-sharing increase, and the first and second quarters of 2005, the post-period exactly two years after the pre-period. Florida’s Medicaid program serves children in low-income families up to nineteen years of age, and the Healthy Kids program serves children from five to nineteen years of age. Furthermore, pediatric ACSCs apply to youth up through eighteen-years-old. Therefore, the sample for this study is limited to children ages five through eighteen years-old. Because this study is only concerned with the difference
between the occurrences of ACSCs for children in the Healthy Kids SCHIP program and the Medicaid program, the sample for this study only includes children who were noted as using one of these insurers to pay for their hospital stay. Children who did not identify Florida as their home state (e.g., traveled in from another state and used Medicaid as their insurer) were dropped from the sample.

Pediatric ACSCs conditions are defined according to the ICD-9-CM diagnosis and procedure codes listed in the ACSC tables in both Gadomski et al. (1998) and Gavin et al. (1998). Each of the ACSC conditions is coded as a dummy variable that equals one if the condition exists, and then all of the ACSCs are collapsed into one binary dependent variable (ACSC) that equals one of any of the conditions exist. The race variable is collapsed from eight categories into four (white, black, Hispanic, other), and white is used as the baseline category. The gender variable is constructed as a dummy variable that equals one if the patient’s gender is male and zero if female; unknown genders were dropped from the sample. Only those patients whose type of admission is listed as emergency,

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3 AHCA notes separately those patients who use Medicaid as their payer but does not note separately those patients who use one of the different four SCHIP programs that the state offers. Instead, all patients using any variation of Florida’s SCHIP insurance is listed simply as SCHIP. Children using SCHIP’s Medikids insurance automatically dropped from the sample because of the age limitations. However, children in the Children’s Medical Services Network could not be excluded because of privacy limitations associated with the data. This issue is further discussed in the Limitations section of this report.

4 These tables were cross-referenced for this study. All conditions that are applicable to pediatric patients from five through eighteen years old listed in either table were included in this study. If a condition listed in one table included an ICD-9-CM code that did not exist in the other table, then only the codes for the condition that appeared in both tables were used.
urgent, elective or other are included in the sample (those listed as a newborn procedure were dropped). Type of admission is coded as a dummy variable that equals one if the patient’s admission type is either emergency or urgent and zero if otherwise. Finally, only those patients whose source of admission is either from a hospital clinical physician, a personal physician, or the hospital emergency room are included in the sample. Admission source is coded into a dummy variable that equals one if the patient’s admission source is either a hospital or personal physician and zero if the admission source is the emergency room.

Conceptual Model

In order to determine whether there is an increased probability of experiencing an ACSC for Healthy Kids beneficiaries during the post-period, a difference-in-difference (DD) econometric model is applied to this data. The DD econometric approach exploits naturally occurring variations between control groups and treatments groups across time and space that result from real world policy changes. This model is used in place of randomized experiments because such true experiments are ethically, politically, and financially challenging to conduct with public health programs.5

The DD approach works because it allows analyses to be conducted on subjects who were forced to experience the treatment, in this case a cost-sharing

5 The RAND experiment is the only true experiment that randomly assigns beneficiaries to different levels of non-government health insurance coverage and cost-sharing.
increase for Healthy Kids beneficiaries, and the control, in this case no cost-sharing increase for Medicaid beneficiaries, because of a policy change. The model allows this comparison by comparing the difference in means for the outcome variable for the control group and the treatment group over time. There are two primary assumptions with the DD model. The first is that any differences between the treatment and control groups are fixed over time. The second is that any macro time shocks are the same for both the treatment and control groups.

The DD estimator can be found using non-regression techniques. The non-regression method is conducted by subtracting the treatment group’s pre-period mean outcome from its post-period mean outcome, and from this quantity subtracting the quantity obtained by subtracting the control group’s pre-period mean outcome from its post-period mean outcome: \( DD = [Y_{i, \text{Treatment, Postperiod}} - Y_{i, \text{Treatment, Preperiod}}] - [Y_{i, \text{Control, Postperiod}} - Y_{i, \text{Control, Preperiod}}] \). For this study, the DD estimator obtained represents the difference between the mean outcome Healthy Kids post-period and pre-period that actually occurred, and the difference between the mean outcome for Healthy Kids in the post-period and the pre-period that would have occurred had there not been a cost-sharing increase, \( Y_{\text{counterfactual}} \). Because there was, in fact, a cost-sharing increase (i.e., \( Y_{\text{counterfactual}} \) does not exist for the Healthy Kids group), the difference in mean outcomes for the Medicaid control group in the pre- and post-periods is used in its place.
The DD estimator can also be obtained using linear probability model. The DD linear probability model estimates the coefficient of an interaction variable (treatment group*post-period) to represent the likelihood that an individual is both in the treatment group and in the post-period when the outcome variable is true. In this case, the interaction variable is HealthyKids*Post-Period, which represents the likelihood that a child who is both in the Healthy Kids program and in the post-period (compared to the counterfactual) experiences an ACSC. The DD coefficient obtained using the linear probability model and the DD estimator obtained using the non-regression technique yield the same number.

**Analytic Technique**

This study calculates the DD estimator by estimating three linear probability models that are corrected for heteroskedasticity. The study employs this technique because difference of means approach has the wrong standard errors. Model 1 estimates the most basic regression model with only the treatment effect, the time trend effect and the interaction variable in order to determine the coefficient on the DD estimator without demographic control variables: \[ \text{ACSC} = \alpha + \beta \text{HealthyKids}_i + \gamma \text{Postperiod}_i + \delta (\text{Postperiod}_i \times \text{HealthyKids}_i) + \epsilon. \] The DD coefficient in this model is the same estimator that would be obtained using the non-regression technique. Model 2 estimates the basic regression model with demographic control variables added to the model, but does not include the
Admission Source and Admission Type control variables because they are irrelevant to answering the hypothesis: ACSC = α + βHealthyKidsi + γPostperiod5i + δ(Postperiod5i*HealthyKidsi) + bRace + bGender + bAge + ε. Model 3 adds the Admission Source and Admission Type Control Variables to Model 2: ACSC = α + βHealthyKidsi + γPostperiod5i + δ(Postperiod5i*HealthyKidsi) + bRace + bGender + bAge + bnewadmttype + bnewadmsource + ε. This model is estimated because at the foundation of this research is the assumption that patients with increased cost-sharing have reduced access to regular and preventive care, which implies that a patient who does not have access to regular or preventive care is more likely to be admitted for an avoidable hospitalization condition through the emergency room rather than a physician. Likewise, a patient who does not have access to regular or preventive care is more likely to have a type of admission that is listed as urgent or emergency rather than elective or some other alternative. If children who are in the Healthy Kids program are significantly more likely to have the emergency room as the admission source or emergency or urgent care as the admission type, and those who are in these respective categories are significantly more likely to experience an avoidable hospitalization, then there could be serious implications for the fiscal impact associated with increased cost-sharing.6

6 For each of the linear probability regression models, when pertinent, ACSC represents the probability that an avoidable hospitalization occurred; α is a constant term; β represents the treatment group specific effect, which accounts for average permanent differences between the Healthy Kids and Medicaid (HealthyKids is equal to one if the patient is insured by the Healthy
Results

As Table 1 shows, children are demographically similar in the Healthy Kids and Medicaid programs. The mean ages for the children in 2003 are just under two years apart, with a mean age of 11.64 years for Healthy Kids and a mean age of 13.58 for Medicaid Kids. In 2005, the mean age gap closes to just over a one-year age difference. The percentage of males differs by six percentage points in 2003, with Healthy Kids having a higher proportion of males in its program at 51.48%. The differences between the distribution of males increases about four percentage points in 2005, with Healthy Kids having 46.79% males in its program and Medicaid with 36.59% males in its program. Overall the programs appear to have similar rates of white beneficiaries in both years. However, the number of minorities differs greatly for the programs in each time period. In 2003, 15.23% of Healthy Kids beneficiaries were black while there was exactly double that amount (30.47%) in Medicaid in the same year. In 2005, this gap decreased by about six percentage points, with 20.23% of Healthy Kids beneficiaries being black and 29.46% of Medicaid beneficiaries being black. A similar trend exists for Hispanic beneficiaries in terms of the gap between the number of racial minorities in each of

Kids program and zero if the patient is insured by Medicaid); \( \gamma \) represents the time trend common to the both Healthy Kids and Medicaid (Postperiod is equal to one if the time period is the first or second quarter of 2005 and zero if the time period is the first or second quarter of 2003); \( \delta \) is an interaction variable that represents the true effect of being both a Healthy Kids beneficiary and being in the program after the cost-sharing increase (equal to one if the condition is true and zero if the condition is not); and \( b \) represents demographic characteristics that may predispose a patient to health status, health care consumption and health coverage program choice (Black, Hispanic and Other are each included in the regression separately).
the programs; however, the proportions are reversed compared to the number of black participants. In 2003, 20.96% of Healthy Kids and 24.41% of Medicaid beneficiaries were Hispanic. In 2005, this gap shrank by about five percentage points, with 38.91% of Healthy Kids and 27.19% of Hispanic beneficiaries being Hispanic.

With regard to cost-sharing, patients who have higher cost-sharing requirements (i.e., those in the Healthy Kids program in both time periods) have higher rates of avoidable hospitalizations. Avoidable hospitalization admissions have longer average stays and average costs that are $9,402.00 higher than non-avoidable hospitalization admissions (p<.0001). In 2003, Healthy Kids beneficiaries had an avoidable hospitalization rate that was ten percentage points higher (31.5%) than Medicaid beneficiaries (21.31%). The same trend exists in 2005, with 29.86 percent of Healthy Kids beneficiaries experiencing an avoidable hospitalization compared with 20.37% of Medicaid beneficiaries. Nonetheless, the rate of avoidable hospitalizations does not appear to differ much for beneficiaries in the Healthy Kids program prior to the cost-sharing increase and after the cost-sharing increase.

Almost the exact same trends exist for beneficiaries in the Healthy Kids program and the Medicaid program who were admitted on an emergency/urgent basis in 2003 and 2005. Finally along these lines, children in the Healthy Kids program were less likely to have access to primary or preventive care through a
physician, with 43.9% of this group having accessed the system through a personal
or hospital clinic physician compared to 57.26% of children in the Medicaid
program in 2003. Similarly in 2005, children in the Medicaid program are more
likely to have accessed the system through a physician rather than through the
emergency room. Pediatric patients whose source of admission was the emergency
room had total charges that were, on average, $1,163.10 higher than patients whose
primary source of admission was at the discretion of a primary care physician
(p<.0018). Additionally, patients whose primary source of admission was the
emergency room or whose admission type was urgent or emergency care had
significantly longer stays than their counterparts (p<.0001)

As is shown in Table 2, the DD estimator is non-significant in all three
regression models, and the coefficients on the variable are very small, suggesting
that having experienced a cost-sharing increase in the Healthy Kids program does
not significantly increase the probability of experiencing an avoidable
hospitalization. As one would expect, given the literature on the health statuses of
ethnic minorities compared to whites, being black, Hispanic, or some other non-
white race is associated with an increase in the likelihood of experiencing an
avoidable hospitalization in both models 2 and 3, and the same is true for being
male. Age is negatively correlated with experiencing an avoidable hospitalization.
As expected, children who are admitted via urgent or emergency care are more
likely to have an avoidable hospitalization condition, and those with access to a
primary care physician, either personal or clinic, are less likely to experience an avoidable hospitalization. The overall regression model for all three regressions is statistically significant.
Discussion

Summary of Findings and Policy Implications

The difference-in-difference results of this study suggest that contrary to the hypothesis, a cost-sharing increase did not significantly increase the probability of experiencing an avoidable hospitalization for beneficiaries in the Healthy Kids program. Nonetheless, the descriptive statistics appear to suggest that pediatric patients in low-income families that experience any cost-sharing are more likely to experience an avoidable hospitalization compared with similar patients in programs with no cost-sharing. Moreover, children who have access to a primary care physician are less likely to experience an avoidable hospitalization than children whose primary source of health care is via the emergency room.

These results corroborate the findings of Ross and Cox (2003), Davis et al. (2003), Wright et al. (2005), and the studies discussed by Ku (2003). Such findings concerning cost-sharing for low-income beneficiaries could have serious implications for government-sponsored health coverage programs that impose cost-sharing on beneficiaries as a money-saving strategy. Pediatric patients whose source of admission was the emergency room had total charges that were higher on average than patients whose primary source of admission was at the discretion of a primary care physician, and they were more likely to have longer hospital stays.

Underscoring this point is the fact that patients admitted for preventable conditions have large and significantly greater costs associated with their stays than
patients whose condition was not preventable. This suggests that states that impose or significantly increase cost-sharing for low-income beneficiaries public health programs may end up with less than expected cost-savings if patients who do not obtain primary and preventive care cost more because they experience an avoidable hospitalization.

**Caveats and Limitations**

The results of this study should be interpreted with some caution for three primary reasons. The first and most important matter is that AHCA data did not distinguish children with Florida SCHIP coverage from children with Medicaid coverage in their data until January 2003. Prior to the July 1, 2003 cost-sharing increase, the state of Florida made its intentions public; therefore, observing data only two quarters prior to this increase is not likely to capture the true pre-period rate of ACSCs for children in the Healthy Kids program that is not effected by this information campaign and the dropping of coverage by beneficiaries who could not afford the increase. This date limitation also limits the power of the regression as the sample is substantially smaller with only two quarters of data versus using an extended time period for the pre-period.

A second limitation of this research also relates to the way AHCA coded patients whose insurer was Florida SCHIP. As mentioned, there are three SCHIP programs that serve very different populations of SCHP beneficiaries. The
Medikids beneficiaries, who are ages four-years-old and younger, were automatically excluded from the sample because of the age parameters imposed on the sample. However, special needs beneficiaries who are insured by the Children’s Medical Services Network Florida SCHIP program could not be excluded from the sample because the author did not have access to the System Record ID number. Having this primary key would have allowed the author to track patients who entered the system multiple times within either the pre-period or the post-period, and exclude children who were likely to be identified as special needs because they surpassed a certain threshold of treatment episodes. Having these children in the sample increases the likelihood of having a significant increase in the rate of ACSCs because they also experienced a cost-sharing increase and have higher rates of utilization.

A third limitation of this study is that the AHCA data does not include information on a pediatric patient’s family income level. Controlling for income is important in this study, given that the treatment and control groups, while similar on many demographics, have significantly different income levels such that their income is what allowed them to have a given type of insurance. Income is correlated with the likelihood of experiencing an ACSC and, therefore, not controlling for this variable is likely to bias the DD estimator such that it is larger than it would be if income were controlled for.
In addition to these main three limitations of this study, it is important to note that the state of Florida has been at the forefront of policy in terms of providing access to health care coverage for low-income children, and the state had an SCHIP-like program prior to 1997 when SCHIP came into existence. Therefore, the results of this study may not be generalizable to other states whose populations are less accustomed to having regular access to regular primary and preventive care through state-sponsored health insurance programs. If beneficiaries in these states were formerly uninsured, then an increase in cost-sharing may have created more of a shock than is suggested by the Florida data. Additionally, Florida’s SCHIP program has always had some cost-sharing, and because the beneficiaries have higher incomes than those in the Medicaid program, this cost-sharing increase may not have been as devastating as it would have been for lower-income populations.

Directions for Future Research and Conclusions

Future research that compares data across states with different levels of cost-sharing for the same SCHIP programs (rather than SCHIP versus Medicaid) might yield more fruitful results than have been obtained here. Moreover, such results would add more to the policy debate about the impact of cost-sharing on different levels of low-income public health beneficiaries in the sense that the treatment and control groups would have nearly identical demographics. Additionally, future research may further pursue topics that were touched upon but
not fully addressed in this study. These potential areas of research include but are not limited to: considering the impact of cost-sharing on minorities in public health programs compared with their white counterparts or looking at the actual cost of preventable hospitalizations and comparing these costs to the cost-savings associated with the cost-sharing increase. The literature on cost-sharing for low-income health insurance beneficiaries is clear that such populations are likely to experience an increase in ACSCs with cost-sharing increases. This study obtained results that corroborate these findings to a limited degree, but ultimately the failure to confirm the hypothesis suggests that more research needs to be done.
<table>
<thead>
<tr>
<th></th>
<th>Healthy Kids</th>
<th>Medicaid</th>
<th>Healthy Kids</th>
<th>Medicaid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sample size (N)</strong></td>
<td>1,057</td>
<td>13,054</td>
<td>1,028</td>
<td>14,494</td>
</tr>
<tr>
<td><strong>Age (mean years)</strong></td>
<td>11.64</td>
<td>13.58</td>
<td>12.21</td>
<td>13.58</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>51.48%</td>
<td>35.54%</td>
<td>46.79%</td>
<td>36.59%</td>
</tr>
<tr>
<td><strong>White, non-Hispanic</strong></td>
<td>39.36%</td>
<td>41.43%</td>
<td>36.87%</td>
<td>38.91%</td>
</tr>
<tr>
<td><strong>Black, non-Hispanic</strong></td>
<td>15.23%</td>
<td>30.47%</td>
<td>20.23%</td>
<td>29.46%</td>
</tr>
<tr>
<td><strong>Hispanic</strong></td>
<td>40.96%</td>
<td>24.41%</td>
<td>38.91%</td>
<td>27.19%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>13.25%</td>
<td>9.75%</td>
<td>12.65%</td>
<td>8.88%</td>
</tr>
<tr>
<td><strong>ACSC Admission</strong></td>
<td>31.5%</td>
<td>21.31%</td>
<td>29.86%</td>
<td>20.37%</td>
</tr>
<tr>
<td><strong>Emergency/Urgent</strong></td>
<td>79.09%</td>
<td>70.98%</td>
<td>78.89%</td>
<td>73.97%</td>
</tr>
<tr>
<td><strong>Admission Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clinic/Personal Physician</strong></td>
<td>43.9%</td>
<td>57.26%</td>
<td>41.83%</td>
<td>53.50%</td>
</tr>
<tr>
<td><strong>Admission Source</strong></td>
<td></td>
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</table>
Table 2  
Coefficient Estimates on ACSC

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Model 1***</th>
<th>Model 2***</th>
<th>Model 3***</th>
</tr>
</thead>
<tbody>
<tr>
<td>HealthyKids</td>
<td>0.102***</td>
<td>0.036***</td>
<td>0.029***</td>
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<tr>
<td></td>
<td>(0.014)</td>
<td>(0.012)</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Postperiod5</td>
<td>-0.009*</td>
<td>-0.003</td>
<td>-0.007*</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.003)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>ddVar</td>
<td>-0.007</td>
<td>0.002</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.208)</td>
<td>(0.017)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>0.046***</td>
<td>0.036***</td>
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<tr>
<td></td>
<td>(0.004)</td>
<td>(0.004)</td>
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</tr>
<tr>
<td>Hispanic, non-White</td>
<td>0.017***</td>
<td>0.010**</td>
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</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.004)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0.823***</td>
<td>0.804***</td>
<td></td>
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<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.038***</td>
<td>0.020***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.005)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.018***</td>
<td>-0.017***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
<td></td>
</tr>
<tr>
<td>Emergency/Urgent Admission Type</td>
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<td>0.018***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.004)</td>
<td></td>
</tr>
<tr>
<td>Clinic/Personal Physician</td>
<td></td>
<td>-0.088***</td>
<td></td>
</tr>
<tr>
<td>Admission Source</td>
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<td>(0.004)</td>
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<tr>
<td>Intercept</td>
<td>0.213</td>
<td>0.348</td>
<td>0.038</td>
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<tr>
<td></td>
<td>(0.004)</td>
<td>(0.10)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Observations</td>
<td>29,633</td>
<td>29,633</td>
<td>29,633</td>
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<tr>
<td>R-Squared</td>
<td>0.0039</td>
<td>0.4301</td>
<td>0.4428</td>
</tr>
</tbody>
</table>

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


