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MANAGEMENT | RESEARCH ARTICLE

Factors that influence the selection and utilization of children's medical insurance

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Abstract: The researchers analyzed how different regions in the USA, family structure, ethnicity, and family income levels influenced the selection and utilization of medical care programs and services by American children. To prevent any possible bias in the analysis and to produce reliable results, an endogenous switching model was utilized in the study. The researchers found no statistically significant differences in the number of doctor visits and hospital stays between children with insurance and children without insurance. However, significant differences were determined regarding family structure, family income, geographic regions, and ethnicity. Children from single-parent families with insurance coverage (private, Medicaid, or SCHIP) had statistically higher rates of doctor visits and hospital stays than children from two-parent families with insurance coverage. Family income, region, and ethnicity variables all had significant impacts on the type of health insurance coverage that was reported for children.

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PUBLIC INTEREST STATEMENT

With the implementation of the Patient Protection and Affordable Care Act (PPACA), more commonly known as Obamacare, factors that influence how Americans utilize medical insurance for their families is of great interest. This study explored how different regional, ethnic, socioeconomic and family structures, and different types of medical insurance programs influenced the utilization of health and medical benefits. The researchers found that children from single-parent families with insurance coverage (private, Medicaid, or SCHIP) had statistically higher rates of doctor visits and hospital stays than children from two-parent families with insurance coverage. Family income, region, and ethnicity variables all had significant impacts on the type of health insurance coverage that was reported for children. Future research is suggested to determine if the implementation of the PPACA helps to eliminate significant differences among groups.

1. Introduction

Health coverage is provided by several different public and private sources. Public sources include Medicare, Medicaid, federal, state, military employee health plans, and the Veterans Administration. Private health coverage is provided primarily through benefit plans sponsored by employers and about 162 million working people are insured through employer-sponsored health insurance programs (Atkins, Fink, & Slutsky, 2005). People without access to employer-sponsored insurance may obtain individual health insurance on their own. About 12 million working people directly purchase health insurance for their families (Faltermayer & Berlin, 1994). The main types of organizations that deliver private health insurance programs include state-licensed health insuring organizations and self-funded employee health benefit plans.

Medicaid was started in 1975 to provide free health insurance to low-income families. Medicaid participants include low-income senior citizens, disabled individuals, and “medically needy” people who have incurred large medical expenses (Thorpe & Florence, 1998; Weisbrod, 1991). There is a large body of literature concerning the eligibility for and utilization of Medicaid by low-income seniors and the disabled (Atkins et al., 2005; Chen & Weir, 2009; Hudman & O’Malley, 2003; Thorpe & Florence, 1998); however, this study concentrates on the use of public insurance by children from low-income families. Over the last 20 years, Medicaid has greatly expanded (Grott, 2006), and older children in relatively high-income families are now eligible (Iglehart, 2006). Currently, Medicaid is an important source of health and long-term care coverage for 39 million low-income children and their families (Gabel et al., 2001; Iglehart, 2006).

The State Children’s Health Insurance Program (SCHIP) provides insurance to children in low-income populations who are not eligible for Medicaid (Manning et al., 1987; Robinson, 2008). Currently, 18 states operate their own separate SCHIP programs, 11 states (plus the District of Columbia) have expanded Medicaid programs, and 20 states rely on a combination of SCHIP and Medicaid programs (Robinson, 2008). Almost 30% of children enrolled in SCHIP are also enrolled in Medicaid expansion programs (Robinson, 2008).

2. Literature review

2.1. Children’s insurance coverage choice

Children are covered by private, Medicaid, or SCHIP according to state policies that interact with family demographics. According to Dafny (2010), around 70% of children obtained insurance through the private sector in 2005. However, children covered by Medicaid and SCHIP have increased over the years after the expansion of public health insurance (Cutler & Gruber, 1996). Despite the expansion of public health insurance programs, 9.4% of children under age 18 are without health insurance (US Census Bureau, 2013). There is also a crowd out effect between private and public health insurance. Cutler and Gruber (1996) estimate that approximately 50% of the increase in Medicaid coverage is associated with a reduction in private insurance coverage.

2.2. Demographics and access to health care services

Children’s demographic characteristics and their access to health care services are of major concern in the health care literature. Compared with white children, black and Hispanic children are more likely to be uninsured to experience inadequate access to health care, and have poorer health (Weigers, Weinick, & Cohen, 1998). Children from poorer households have less utilization of health services due to lack of coverage, they enter adulthood in poorer general health, with more serious chronic conditions, miss more days of school, and have a compromised future earning potential (Case, Lubotsky, & Paxson, 2002; Freed, Bordley, & DeFriese, 1993; Gavin, Herz, Sredl, & Schroeder, 1995; Wood, Hayward, Corey, Freeman, & Shapiro, 1990).

DeNavas-Walt, Proctor, and Smith (2012) report uninsured rates for children in the Midwest at 12.7%; the West 18.0%; the Northeast 11.0%; and the South at 18.3%. Arkansas has the highest Medicaid coverage of any state with 49% of its children covered by Medicaid and Texas has the

highest percentage of uninsured children with 17% having no insurance (Case et al., 2002). Medicaid-covered children tend to be younger and include more black children than children covered by SCHIP (Case et al., 2002; Dick, Klein et al., 2003; Lawlor, 2002).

SCHIP enrollees may be a relatively homogeneous group, because family incomes must fall within a narrow range in order for children to be eligible. According to Brach et al. (2003), most SCHIP enrollees in Florida and in New York reside in families with incomes less than or equal to 150% of the federal poverty level and almost half of SCHIP enrollees live in single-parent households and a substantial proportion of SCHIP enrollees are black non-Hispanic or Hispanic children. Shone et al. (2003) find that racial and ethnic composition varies between SCHIP programs in Alabama, Florida, Kansas, and New York. Black and Hispanic children are more likely to reside in single-parent and low-income families.

2.3. Utilization and health outcomes

Much of this research concludes that children's utilization of medical services increases if children have insurance (Kaestner, Joyce, & Racine, 1999; Lykens & Jargowsky, 2002; Millett, Chattopadhyay, & Bindman, 2010; Palfrey, 2009). Dafny and Gruber (2000) report that hospitalizations are responsible for 4.5% of hospital charges and over 40% of total expenditures on child health care services. They also suggest that health insurance coverage is associated with more, rather than fewer, hospital visits of children and that an increase in Medicaid eligibility of 10% is associated with an increase in the child hospitalization rate of 8.4%. They also report that children of families with public insurance have shorter hospital stays on average but more intensive treatment per day when hospitalized.

Health insurance is shown to increase the children's health status. Howell and Decker (2010) provide evidence that public insurance expansions reduce child mortality. Palfrey (2009) states that medical and scientific advances reduce rates of acute childhood illness and childhood mortality, and increase the positive outcomes of a wide variety of serious childhood illnesses. Other researchers suggest that children with access to health insurance programs have significantly lower rates of childhood illnesses and mortality and significantly better rates of health and functional status (Folbre, 1994; Howell & Decker, 2010; Kaiser Family Foundation, 2012; Selden, Banthin, & Cohen, 1998; Yelowitz, 2000). As for policy implication, Hisnanick and Coddington (2000) suggest that future endeavors should focus on enhancing access to care for poor children and providing information on the benefits of health care to their parents.

3. Methods

3.1. Research aim

The researchers examine whether certain demographic variables affect the children of American families and their number of doctor visits, how these demographic variables influence their choice of insurance, and whether there is a significant difference in doctor visits and/or hospital stays between families that have private insurance, Medicaid, SCHIP, and no insurance coverage. An endogenous switching regression model is used to analyze the data and to control for any possible selection bias.

3.2. Endogeneous switching technique

For binary, count, and ordinal responses, the estimation is complicated by the fact that a non-linear model is used to fit the data. A two-stage method analysis could produce incorrect results related to the data (Heckman, 1979; van de Ven & Praag, 1981; Wooldridge, 2002). Maximum likelihood (ML) techniques or a two-stage method of moment analysis are therefore needed to produce accurate and reliable results from the data.

This study uses the ML algorithm to compare individuals from different medical service groups while also estimating binary and continuous parts of the model in order to reduce standard error and produce more reliable results. The estimation equations are summarized as the following:

$$I_i = 1 \quad \text{if} \quad \gamma Z_i + \mu_i > 0 \tag{1}$$

$$I_i = 0 \quad \text{if} \quad \gamma Z_i + \mu_i \leq 0 \tag{2}$$

$$\text{Condition 1: } y_{1i} = \beta_1 X_{1i} + \varepsilon_{1i} \quad \text{if} \quad I_i = 1 \tag{3}$$

$$\text{Condition 2: } y_{2i} = \beta_2 X_{2i} + \varepsilon_{2i} \quad \text{if} \quad I_i = 0 \tag{4}$$

where Z_i is demographic variables determining people's enrollment in different health insurance programs and X_i is demographic variables determining people's health care service utilization (number of doctor visits/hospital stays overnight).

The above equations are fitted into a generalized linear model that contains an endogenous dummy variable among its observed covariates and an unobserved or latent random term. The switching model is a binary probit model that contains an unobserved random term that is correlated with the unobserved random term in the outcome model.

Equation 1 represents individuals that are enrolled in different types of insurance programs (private, Medicaid, and SCHIP) depending on different observable and unobservable demographic conditions. Equation 2 represents individuals with certain demographic characteristics that have no insurance. Equation 3 calculates the number of doctor visits and/or hospital stays for individuals who have either private or public insurance. Equation 4 estimates the number of doctor visits and hospital stays for individuals that have no insurance. The unconditional expectations for the following two equations are calculated as:

$$E(y_{1i}|x_{1i}) = \beta_1 x_{1i} \tag{5}$$

$$E(y_{2i}|x_{2i}) = \beta_2 x_{2i} \tag{6}$$

Using the two previous equations, it creates a selection bias in the analysis. The major challenge of estimating the causal effect of insurance status on the utilization of medical services is that the insurance status could be endogenous. Unobserved variables that could determine the insurance status of subjects may be correlated with unobserved variables that can determine health care service utilization. Ignoring the unobservable variables that impact the insurance status of children could result in a biased and unreliable analysis; and in extreme cases, the bias could be large enough to reverse the sign of one or more of the coefficients.

An endogenous switching model is used to eliminate any selection bias among subjects in the data-set. For example, children with poorer health may be more likely to be in Medicaid or SCHIP programs. If this is the case, they would be more likely to have significantly higher rates of doctor visits and overnight hospital stays than children whose families had private insurance. This would not be because Medicaid and SCHIP do not function to improve children's health but because children that enroll in these programs originally have poorer health rates than children who are not insured. To eliminate this bias, the following equations are used for analysis:

$$E(y_{1i}|I_i = 1, x_{1i}) = \beta_1 x_{1i} + \sigma_1 \rho_1 f(\gamma Z_i)/F(\gamma Z_i) \tag{7}$$

$$E(y_{1i}|I_i = 0, x_{1i}) = \beta_1 x_{1i} - \sigma_1 \rho_1 f(\gamma Z_i)/(1 - F(\gamma Z_i)) \tag{8}$$

$$E(y_{2i}|I_i = 0, x_{2i}) = \beta_2 x_{2i} - \sigma_2 \rho_2 f(\gamma Z_i)/(1 - F(\gamma Z_i)) \tag{9}$$

$$E(y_{2i}|I_i = 1, x_{2i}) = \beta_2 x_{2i} + \sigma_2 \rho_2 f(\gamma Z_i)/F(\gamma Z_i) \tag{10}$$

Equations 7 and 8 compare the number of doctor visits and overnight hospital stays of children in the data-set. Equation 7 analyzes children from families with insurance coverage and specific observable demographic variables. Equation 8 matches children from families with no insurance coverage but with similar demographic variables as the children in Equation 7. Equation 9 matches children with specific observable demographic variables without any insurance coverage with children in Equation 10 that have insurance with similar simulated demographic backgrounds. Therefore, the analysis of Equations 7 and 8 and Equations 9 and 10 resolves any problems related to any possible selection bias.

3.3. Empirical approach

The following five equations are used to determine significant relationships between variables:

$$DV_{it} = f(PRI_{it}, MED_{it}, SCHIP_{it}, X_{it}, \varepsilon_{it1}) \quad (11)$$

$$HP_{it} = f(PRI_{it}, MED_{it}, SCHIP_{it} + X_{it}, \varepsilon_{it2}) \quad (12)$$

$$PRI_{it} = f(X_{it}, \varepsilon_{it1}) \quad (13)$$

$$MED_{it} = f(X_{it}, \varepsilon_{it1}) \quad (14)$$

$$SCHIP_{it} = f(X_{it}, \varepsilon_{it1}) \quad (15)$$

where DV_{it} is number of doctor visits; HP_{it} is number of hospital stays overnight; PRI_{it} is dummy variable indicating whether or not the child had private insurance; MED_{it} is dummy variable indicating whether or not the child had Medicaid; $SCHIP_{it}$ is dummy variable indicating whether or not the child has SCHIP; ε_{it} is other random variables; and X_{it} is a vector of independent variables.

X_{it} includes ethnicity, gender, region, Hispanic (whether the child was of Hispanic origin or not), and the socioeconomic level of the family.

In Equation 11, the researchers compare how different demographic variables impact the number of doctor visits for individuals with private insurance, Medicaid, SCHIP, and no insurance and how insurance status affects the average number of doctor visits. Equation 12 compares how different demographic variables impact the average number of overnight hospital stays of individuals with different insurance statuses and how the insurance status impacts the number of overnight hospital stays. Equations 13, 14, and 15 estimate the impact that these demographic variables have on an individual's choice of private insurance, Medicaid, SCHIP, and/or no insurance coverage.

3.4. Data

Data from the National Health Interview Survey (Centers for Disease Control and Prevention, 2009) are analyzed for the study. Data related to "household," "family," "personal," and "child" are analyzed. The researchers combine the "household" and "personal" variables to create a more accurate picture of each household.

Data are limited to children from 5 to 19 and the number of observations analyzed for the study is 10,488. The sample size of over 10,000 is sufficient to represent the US population regarding how different demographic groups utilize various health insurance programs since our data are randomly selected from the population (Hsieh, 1989; Shih & Zhao, 1997). Table 1 summarizes the statistics related to the reported number of doctor visits for each child. The average number of doctor visits is 2.01 and the average number of overnight hospital stays is 4.8. In the study, 61% of the children have private insurance, 16% Medicaid, 8% SCHIP, and 15% have no insurance coverage. There are approximately the same number of females and males in the sample. Geographically 35% of subjects live in the South, 28% in the West, 21% in the Midwest, and 16% in the Northeast.

Table 1. Doctor visits for children with and without private health insurance

	Co-efficient	Standard error	p
<i>Doctor visits—children with private health insurance</i>			
South	.006	.017	.729
West	-.003	.017	.881
Northeast	.022	.018	.239
Health status	.027	.009	.002
Single mother	.294	.042	.000
Single father	.172	.057	.003
<i>Doctor visits—children with no health insurance</i>			
South	-.022	.033	.504
West	-.037	.035	.293
Northeast	-.001	.048	.978
Health status	.035	.014	.013
Single mother	.291	.051	.000
Single father	.117	.066	.077
<i>Determinants of private health insurance coverage</i>			
South	-.271	.051	.000
West	-.149	.055	.007
Northeast	.208	.068	.002
Health status	-.070	.024	.003
Single mother	-.041	.096	.669
Single father	-.012	.125	.926
Ethnicity	-.538	.042	.000
African-American	.083	.082	.311
White	.171	.067	.010
Income less than \$11,904 per year	-1.736	.060	.000
Income \$11,904–\$25,000 per year	-1.072	.058	.000
Income \$50,000–\$74,000 per year	-.492	.053	.000
Income more than \$74,000 per year	-.209	.059	.000
<i>Differences in doctor visits with individuals with private insurance and no health insurance</i>			
Ancillary parameter 1	-.7611397	.0093689	.000
Ancillary parameter 2	-.7822199	.0173202	.000
Insured private individuals versus random sample	-.1270131	.0838587	.130
Non-insured private individuals versus random sample	-.0092992	.0471643	.844

Source: NHIS (2009).

Number of observations = 7960; Wald $\chi^2(6) = 103.22$; Prob > $\chi^2 = .0000$; $\chi^2(1) = 3.10$; Prob > $\chi^2 = .0785$.

4. Results

Table 1 illustrates the relationships that exist between children with private health insurance, without private health insurance, and different individual demographic variables on doctor visits per year. No significant differences are determined between children from different regions in the USA regarding the number of doctor visits with and without private health insurance. Significant differences do exist regarding family structure. Children from single-parent households have significantly higher rates of doctor visits than children from two-parent homes with and without private health insurance coverage. Uninsured single mother and father families average significantly higher rates of doctor visits per year. Children in the northeast have the highest rates of private health insurance coverage and southerners have the lowest rates. White Americans have the highest rates of private

health insurance coverage and African-Americans the lowest rates. Wealthier individuals also have significantly higher rates of private health insurance coverage than middle-class and low-income American children. No significant differences exist between children with and without private health care coverage and the number of doctor visits per year.

Table 2 illustrates differences in the number of doctor visits between individuals with Medicaid and individuals without insurance. Individuals from single-mother families with Medicaid and individuals from single-mother families without insurance have significantly more doctor visits per year than individuals from two-parent families. There are no significant differences between regions. There are also no statistically significant differences regarding the number of doctor visits between individuals with Medicaid and without insurance.

Table 2. Doctor visits for children with and without Medicaid coverage

	Co-efficient	Standard error	p
<i>Doctor visits for individuals with Medicaid</i>			
South	.007	.028	.795
West	-.032	.029	.278
Northeast	-.025	.036	.492
Health status	.030	.011	.007
Single mother	.229	.042	.000
Single father	.049	.070	.486
<i>Doctor visits for individuals with no health insurance</i>			
South	-.024	.034	.481
West	-.038	.035	.278
Northeast	-.000	.048	.993
Health status	.035	.015	.022
Single mother	.290	.051	.000
Single father	.116	.067	.084
<i>Determinants of Medicaid coverage</i>			
South	-.287	.064	.000
West	-.131	.070	.060
Northeast	.161	.088	.068
Health status	.147	.025	.000
Single mother	-.194	.098	.048
Single father	-.421	.142	.003
Ethnicity	-.065	.052	.213
African-American	.553	.102	.000
White	.206	.088	.019
Income less than \$11,904 per year	1.175	.104	.000
Income \$11,904-\$25,000 per year	.734	.110	.000
Income \$50,000-\$74,000 per year	.561	.114	.000
Income more than \$74,000 per year	.046	.142	.747
<i>Differences in doctor visits for individuals with Medicaid and no health insurance</i>			
Ancillary parameter 1	-.877	.018	.000
Ancillary parameter 2	-.782	.017	.000
Insured private individuals versus random sample	.139	.084	.099
Non-insured private individuals versus random sample	.008	.105	.936

Source: NHIS (2009).

Number of observations = 3371; Wald $\chi^2(6) = 56.23$; Prob > $\chi^2 = .0000$; $\chi^2(1) = 2.29$; Prob > $\chi^2 = .1298$.

Table 3 presents the results of doctor visits for children with SCHIP and without insurance. Youth in the Western United States with SCHIP coverage have a statistically higher rate of doctor visits than children with SCHIP coverage from the Midwest. Children without insurance from single-mother families have a statistically higher rate of doctor visits per year than individuals with SCHIP coverage from two-parent families. There are no significant differences in doctor visits for children with SCHIP and without insurance.

Table 4 illustrates overnight hospital stays for children with private insurance and without insurance. Healthier children with private insurance have a significantly higher number of hospital stays per year than other groups. Individuals with an income level of \$50,000–\$74,000 per year have the

Table 3. Doctor visits for children with and without SCHIP

	Co-efficient	Standard error	p
<i>Doctor visits for individuals with SCHIP</i>			
South	.080	.070	.249
West	.154	.079	.050
Northeast	.154	.089	.082
Health status	.154	.089	.028
Single mother	.305	.086	.000
Single father	.037	.201	.853
<i>Doctor visits for individuals with no health insurance</i>			
South	-.019	.035	.588
West	-.026	.049	.596
Northeast	.010	.059	.857
Health status	.036	.015	.014
Single mother	.289	.051	.000
Single father	.105	.075	.163
<i>Determinants of SCHIP coverage</i>			
South	.273	.098	.005
West	.667	.100	.000
Northeast	.732	.122	.000
Health status	.064	.032	.048
Single mother	-.181	.137	.187
Single father	-.874	.235	.000
Ethnicity	.121	.067	.072
African-American	.315	.130	.015
White	.061	.105	.563
Income less than \$11,904 per year	.684	.123	.000
Income \$11,904–\$25,000 per year	.664	.127	.000
Income \$50,000–\$74,000 per year	.697	.129	.000
Income more than \$74,000 per year	.228	.159	.015
<i>Differences in doctor visits for individuals with SCHIP and no health insurance</i>			
Ancillary parameter 1	-.813	.031	.000
Ancillary parameter 2	-.781	.020	.000
Insured private individuals versus random sample	.125	.189	.509
Non-insured private individuals versus random sample	.081	.246	.742

Source: NHIS (2009).

Number of observations = 2397; Wald $\chi^2(6) = 22.93$; Prob > $\chi^2 = .0008$; $\chi^2(1) = .51$; Prob > $\chi^2 = .4751$.

Table 4. Overnight hospital stays for children with and without private insurance

	Co-efficient	Standard error	p
<i>Hospital stays for children with private insurance</i>			
South	-.371	2.025	.855
West	2.110	2.253	.349
Northeast	-1.479	2.228	.507
Health status	2.220	.832	.008
Single mother	-3.430	3.600	.341
Single father	.587	4.860	.904
<i>Hospital stays—children with no health insurance</i>			
South	-.960	1.505	.524
West	-.791	1.842	.668
Northeast	.145	1.190	.903
Health status	.312	.835	.708
Single mother	3.179	1.839	.084
Single father	-2.762	2.419	.253
<i>Determinants of private insurance</i>			
South	-.167	.410	.685
West	-.129	.278	.641
Northeast	-.350	.496	.481
Health status	.084	.143	.558
Single mother	-.681	.555	.220
Single father	.415	.576	.471
Ethnicity	-.077	.242	.750
African-American	.639	.420	.129
White	.313	.309	.311
Income less than \$11,904 per year	-.236	.032	-.129
Income \$11,904–\$25,000 per year	.077	.242	.750
Income \$50,000–\$74,000 per year	.786	.180	.000
Income more than \$74,000 per year	.002	.401	.997
<i>Differences in doctor visits for individuals with SCHIP and no health insurance</i>			
Ancillary parameter 1	2.187	.071	.000
Ancillary parameter 2	1.445	.137	.000
Insured private children versus random sample	17.973	250.312	.943
Non-insured private children versus random sample	-17.157	352.706	.961

Source: NHIS (2009).

Number of observations = 148; Wald $\chi^2(1) = 6069.15$; Prob > $\chi^2 = .0000$; $\chi^2(1) = 6069.15$; Prob > $\chi^2 = .0000$.

highest rates of private insurance coverage. There is no significant difference in the number of hospital stays for children with private insurance and without insurance.

The impact that family structure has on hospital stays for children with Medicaid and without insurance is presented in Table 5. Children with Medicaid coverage from single-mother families have a significantly higher rate of overnight hospital stays per year than children from two-parent families with Medicaid coverage. Regional analysis determines that uninsured children in the Southern United States have the lowest number of hospital stays per year. The uninsured southern children averaged significantly fewer days per year in the hospital than uninsured children from the Midwest. There is no significant difference of overnight hospital stays for children with Medicaid and children without insurance.

Table 5. Overnight hospital stays for children with/without Medicaid

	Co-efficient	Standard error	p
<i>Hospital stays for children with Medicaid</i>			
South	2.897	2.794	.300
West	.195	3.392	.954
Northeast	.615	3.394	.856
Health status	.970	.929	.296
Single mother	6.236	3.062	.042
Single father	-2.221	4.158	.593
<i>Hospital stays for children with no health insurance</i>			
South	-3.491	1.685	.038
West	-.197	1.640	.905
Northeast	.554	1.850	.765
Health status	.325	.548	.554
Single mother	.587	1.735	.735
Single father	-1.711	2.369	.470
<i>Determinants of Medicaid</i>			
South	.491	.382	.199
West	-.410	.372	.270
Northeast	-.164	.422	.698
Health status	.078	.125	.534
Single mother	-.400	.389	.305
Single father	.465	.538	.387
Ethnicity	.152	.024	.000
African-American	.568	.088	.000
White	.000	.000	1.00
Income less than \$11,904 per year	.265	.041	.000
Income \$11,904-\$25,000 per year	.720	.112	.000
Income \$50,000-\$74,000 per year	1.326	.206	.000
Income more than \$74,000 per year	.303	.047	.000
<i>Differences in hospital stays for children with Medicaid and no health insurance</i>			
Ancillary parameter 1	2.048	.112	.000
Ancillary parameter 2	1.481	.155	.000
Insured private individuals versus random sample	-.370	.348	.287
Non-insured private individuals versus random sample	-16.529	133.401	.901

Source: NHIS (2009).

Number of observations = 85; Wald $\chi^2(6) = 8.68$; Prob > $\chi^2 = .1926$; $\chi^2(1) = 4172.60$; Prob > $\chi^2 = .0000$.

5. Discussion

The researchers find no statistically significant differences in the number of doctor visits and hospital stays between children with insurance and without insurance. These results were a reflection of the 10,488 observations and were the largest possible data-set for the researchers. Larger data-sets were not available for the researchers; however, the sample size was large enough to provide statistical inferences regarding doctor visits and hospital stays between children with and without insurance. In order to check the consistency of the results, we also drew a random sample of half of our original sample, randomly select 5,224 from your sample of 10,448, and the results of significance does not change. A possible explanation for the lack of significant differences between the groups may be that the average number of doctor visits and hospital stays is not large enough to detect any significant difference.

Children from single-parent families with insurance coverage have statistically higher rates of doctor visits and hospital stays than children from two-parent families with insurance coverage. These results are similar to others in the literature (Dafny, 2010; Selden et al., 1998). Family income, region, and ethnicity variables all have significant impacts on the type of health insurance coverage that is reported for children. Black and Hispanic children are found to be less likely to be covered by Medicaid and other public insurance. Similar results have been reported by (Case et al., 2002; Gavin et al., 1995; Weigers et al., 1998). Further studies with larger samples involving multiple time periods will help better establish the effect of different insurance statuses and different demographic variables on the utilization of medical services for Children in the USA.

6. Conclusion and policy implications

The results indicate that single-mother, Southern and Midwestern Americans, and African-American families warrant special attention in regard to their access and utilization of health care. Single-mother parent families have the highest rates of doctor visits and overnight hospital stays when compared to all other types of family groups. This suggests that more social support and preventative medical programs be made available to single mothers to help improve the health of their children.

Southerners have the lowest rates of health care coverage and the lowest number of hospital stays per year of any region. Children in the Midwestern United States have the lowest rates of Medicaid and SCHIP coverage, fewest doctor visits, and the highest rates of overnight hospital stays. Federal and state governments need to better identify families that qualify for Medicaid and SCHIP coverage and services in the South and the Midwest. African-American families have the lowest rates of health care coverage of any ethnic group (Atkins et al., 2005; Hisnanick & Coddington, 2000).

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