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Trends in Child Health Insurance Coverage: A Local Perspective

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Trends in Child Health Insurance Coverage: A Local Perspective

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Authors

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Introduction

Over the past decade, employer-sponsored insurance (ESI) for children has dropped by 12% due to increasing health care costs and the declining US economy.¹ Concurrently, public health insurance eligibility for children has increased. A large body of literature has demonstrated the protective effect of public insurance for children at the national level during the decline in ESI.²⁻⁴ While the proportion of low and middle-income children with ESI declined between 2000-2009, the percentage of these children who had public insurance increased substantially. As a result, the rate of low and middle-income children without insurance actually decreased (2.4%, 0.8% respectively).² A significant body of literature has also extensively described the relationship between the option of ESI and coverage type for children, with a lack of option for ESI being associated with a higher odds of public insurance.^{2, 5-7}

Use of a geographically focused area may facilitate a more in-depth analysis of trends at the local level of cities and counties that may be more relevant for policy implications and future interventions. As the fourth largest city in the US, Houston is comprised of a diverse population reflecting the evolving demographics of the country. Houston metropolitan area is the most racially/ethnically diverse large metropolitan area in the US.⁸ Therefore studies of child insurance trends in Houston may provide more specific insights into coverage for racial/ethnic minority children, who may be more vulnerable to changes in the economy and ESI availability. Analysis at the level of a city also enables integration of local data not typically found in national databases, such as proximity to public hospitals. Lastly, studies of such micro-environments may reveal insights into policy implications not typically available in large, national databases. Such analysis is especially relevant in a state such as Texas, which carries the highest percentage of uninsured residents in the country.⁹ Texas has also historically ranked below other states in the provision of health care services¹⁰ and specifically quality of Medicaid services.¹¹

Secondly, more data are needed to determine whether availability of free care at the local level may substitute for insurance coverage. Economic models of the demand for health care suggest that choices for services depend on how much an individual values health care and the price of health care relative to other goods.¹² How an individual values health care may be influenced by individual demographics such as race/ethnicity, age, and income level. The price of health care may be practically defined by out-of-pocket expenses such as search costs of finding a provider and transportation costs of getting to a provider. Characteristics of the local safety net are likely to be important

determinants of the costs of obtaining health care. The availability of free or low-cost providers may decrease the time and effort needed to identify a provider, alter the transportation costs associated with obtaining care, and reduce out-of-pocket costs for health care. Consequently the availability of such care may substitute for insurance coverage.¹³ Rigorous and quantitative longitudinal analyses of geographically focused data may provide insights into how local resources impact insurance coverage choices during an economic downturn.

The objectives of this study were to 1) describe trends in children's health insurance coverage, taking into account the heterogeneity across different sub-populations and 2) assess the associations between individual, local (offers of ESI), and supply side (proximity to safety net hospitals) characteristics and children's health insurance.

Methods

Study Design and Source of Data

We conducted a survey based study in the greater Houston metro area of Texas, an area with approximately 594,000 children.¹⁴ For each study year (2003, 2006, 2008, 2011), we conducted 700 phone interviews (701 in 2011) in the 12 counties in the greater Houston metro area. The representative samples were selected using random digit dialing with quotas based on estimates for county population and race/ethnicity from the State Demographer's Office. Eligible respondents (hereafter caregivers) were individuals who met all of the following criteria: 1) had one or more children under the age of 19 years; 2) participated in decisions regarding health care coverage for their children; and 3) had no one in the immediate family involved in the health insurance industry. The survey was administered in two languages – English and Spanish – with responses coded by telephone interviewers. The interviews were conducted in October/November of 2003; March/April/May of 2006; June/July of 2008, and April/May of 2011. Survey development and interviews were conducted by Analytica, Inc. and sponsored by Texas Children's Hospital. The Baylor College of Medicine Institutional Review Board deemed this study exempt from review.

Outcome Measure for Insurance Status

Insurance status was derived from two questions. In reference to their children, caregivers were first asked, "Is their health care coverage covered with a health insurance policy?" For those caregivers who answered "Yes", they were subsequently asked, "Is the coverage through work, through Medicaid, through the Children's Health Insurance Plan (CHIP), or did you purchase it from a private company?" For the purposes

of this study, a dependent variable was constructed to represent public insurance or uninsured relative to private insurance status type.

Independent Variables

Option for ESI. The independent variable (a summary dichotomous measure) representing the option for ESI in the household was derived from several questions. In order to assess employment status, caregivers were asked, "Do you work outside the home?" An affirmative answer prompted the follow-up question, "Do you have the option of purchasing insurance for your children at work?" Caregivers were also asked, "Does your spouse work outside the home?" If they answered "Yes", they were subsequently asked, "Does your spouse have the option of purchasing insurance for your children at work?" In order to qualify as having the option for ESI, at least one caregiver in the household had to have the ability to purchase insurance for their children at work.

Proximity to Public Hospitals. To capture the local supply of free hospital care, we identified all public hospitals in the greater Houston metro area (n=3). We calculated the distance between the zip code of each respondent and all the public hospitals. Distances between each individual respondent and the public hospitals represent the distance in miles between the population centroid of the zip code in which the respondent resides and that of the public hospital's zip code. These distances were calculated using the longitude and latitude coordinates of each location as done in a previous study.¹² We created a proximity variable that represented the distance in miles between the respondent zip code and the zip code of the geographically closest public hospital. In our analyses, the proximity variable was included as an independent variable.

Caregiver and Family Demographics. Caregiver characteristics included age, gender, race/ethnicity, primary language, highest level of education, marital status, household income, proximity to a public hospital, employer workplace size, age of the youngest child in the household, and number of children in household. Respondent age was grouped into the following categories: under 24, 25-29, 30-34, 35-44, 45-54, or 55 and over. For race/ethnicity, caregivers were first asked if they were of Hispanic or Latino origin. They were then asked if they were White, Black or African-American, American Indian, Alaska Native, Asian, or Other. The two categories, ethnicity and race, were combined to create mutually exclusive groups of non-Hispanic White, non-Hispanic Blacks, Hispanics, and non-Hispanic other (hereafter White, Black, Hispanic, other). Primary language, which was only collected in 2011, was categorized as English, Spanish, or other. For education, caregivers were asked to indicate the

highest level of school attended: high school, college, or graduate school. Marital status included single, married, or separated. For household income, respondents were asked to select one of eight categories. For the purpose of this analysis, we grouped household income into the following categories: <\$25,000, \$25,000-\$50,000, >\$50,000-\$75,000, and >\$75,000. Proximity to a public hospital was measured as a continuous variable. This variable was used for 2008 and 2011 data only, since zip code was not available in previous datasets. The size of the caregiver's employer workplace as defined by the number of employees was assessed as a continuous variable. Age of the youngest child and number of children in the household were examined as continuous variables. Caregivers without health insurance for their children were asked about their awareness of Medicaid and CHIP: "Do you know about Medicaid coverage for children?" and "Do you know about CHIP coverage for children?"

Data Analysis

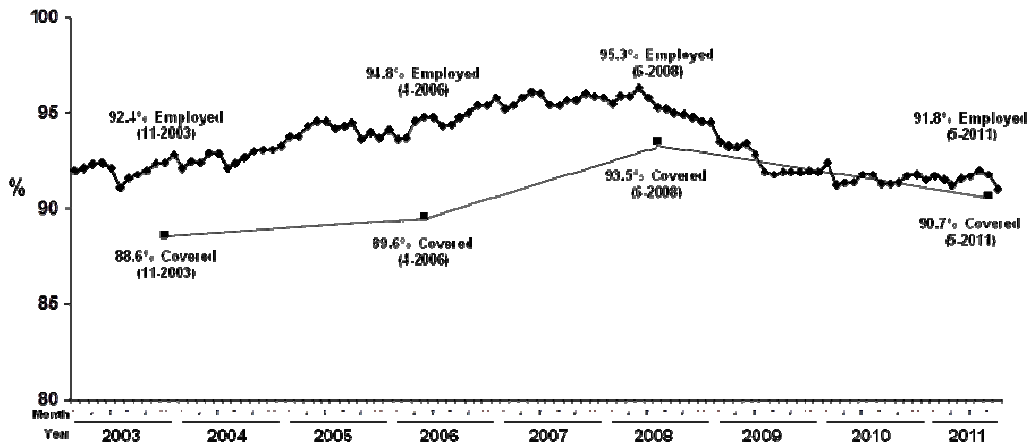
Analyses were performed using SAS® 9.2 (SAS Institute Inc, Cary, NC). Summary statistics were used to determine differences in distribution of sample characteristics. Weights were applied to survey observations to refine previous county population and race/ethnicity estimates based on confirmed distributions from the Texas Office of the State Demographer. Among households with at least one employed caregiver (N=2,508), we performed an adjusted multinomial logistic regression analysis to evaluate the odds of being publicly insured or uninsured, both relative to private insurance coverage. The principal independent variable was the option for ESI. In a second model for which zip code data were available (years 2008 and 2011), both ESI and proximity to a public hospital served as independent variables. Odds ratios (OR) and 95% confidence intervals (95% CI) were calculated for analyses. A P value of less than 0.05 was considered to indicate statistical significance.

Results

Trends in Insurance Coverage for Children

Figure 1 plots the Houston employment rate (monthly) according to the Texas Workforce Commission¹⁵ and coverage rates (any type of insurance) among children in the respondent households according to study years. The percentage of households where children were covered

varied according to study year: 88.6% (2003), 89.6% (2006), 93.5% (2008), and 90.7% (2011); all differences were statistically significant ($p < 0.05$).



Note: Scale truncated at 80 for legibility.

Figure 1. Percent Adults Employed In Houston according to Texas Workforce Commission and Estimates of the Percent of Children Covered by any Insurance according to Study Sample

The study found several trends in insurance coverage type for children. All statistically significant trends occurred between 2008 and 2011. As shown in Figure 2, the percentage of children covered through ESI peaked in 2008 at 74% and then decreased to 57.8% in 2011, representing a 16.2 percentage point change ($p < 0.05$). The percentage of children covered through private purchase insurance also decreased between 2008 and 2011 from 9.5% to 7.1%. Corresponding changes were observed in children covered through public insurance during this time. Children covered through Medicaid increased from 11.5% in 2008 to 24.6% in 2011 ($p < 0.05$). Children covered through CHIP increased from 5% in 2008 to 10.5% in 2011 ($p < 0.0001$).

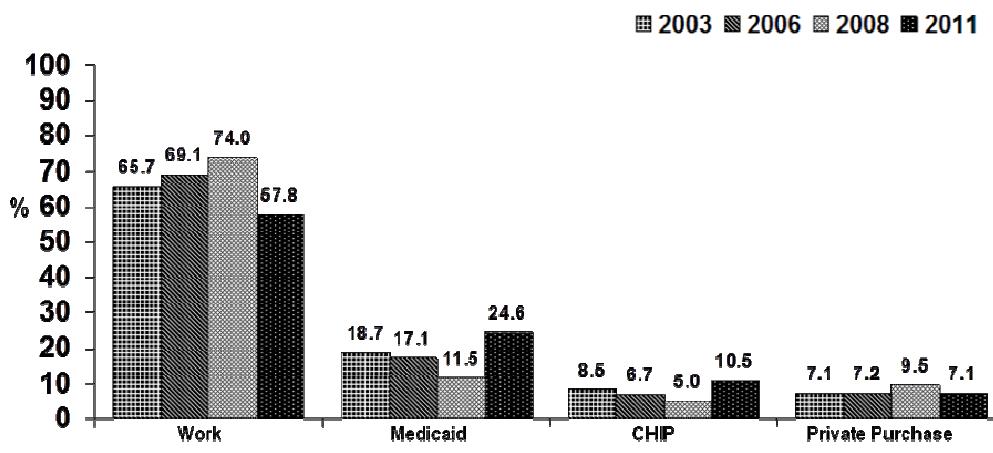


Figure 2. Child Insurance Coverage Type among Covered Households

Trends in coverage were also assessed for different demographic subgroups. According to income status (Figure 3), children in the two lowest categories of family income experienced the largest increases in coverage through Medicaid/CHIP with corresponding decreases in coverage through ESI. In 2003, 65.2% of children with family incomes less than \$25,000 had Medicaid/CHIP, whereas in 2011, 74.1% of these children were on public insurance. In 2003, 28.6% of children with family incomes between \$25,000 and \$50,000 were insured through Medicaid/CHIP. By 2011, 47.9% of children in this income category were covered through public insurance. The sharpest interval increase in public insurance coverage occurred for households with family income between \$25,000 and \$50,000 (2008-2011).

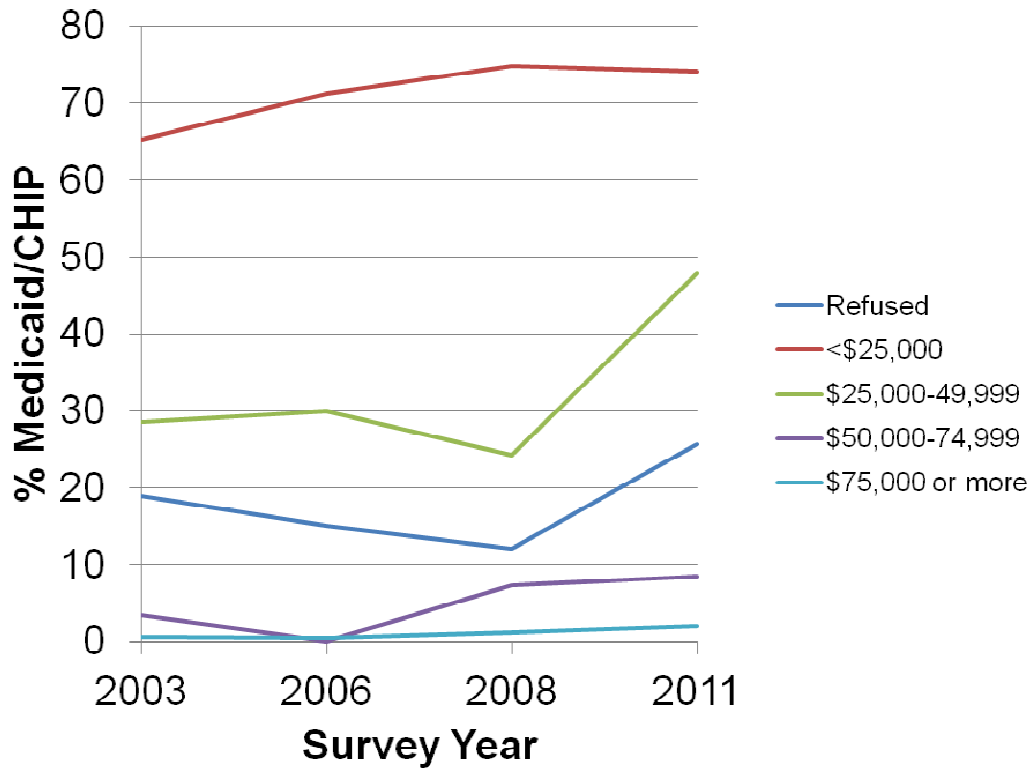


Figure 3. Trends in Medicaid/CHIP Coverage from 2003-2011, Stratified by Household Income

According to race/ethnicity (Figure 4), African-American and Hispanic children experienced increases in coverage through public insurance. For African-American children, public insurance coverage increased from 27.8% in 2003 to 39.5% in 2011. For Hispanic children, coverage through Medicaid/CHIP increased from 38.9% in 2003 to 52.1% in 2011. Between 2008 and 2011, while all groups experienced increases in Medicaid/CHIP coverage, racial/ethnic minorities all demonstrated greater than 10 percentage point increases. The sharpest interval increase in public insurance coverage occurred for Hispanics and Others (2008-2011). According to age (Figure 5), major increases in Medicaid/CHIP were observed for all children between 2008 and 2011. Medicaid/CHIP coverage for children ages six to ten increased from 17.8% to 41.4%. For children ages zero to two years old the percentage covered through Medicaid/CHIP increased from 15.3% to 26.3%.

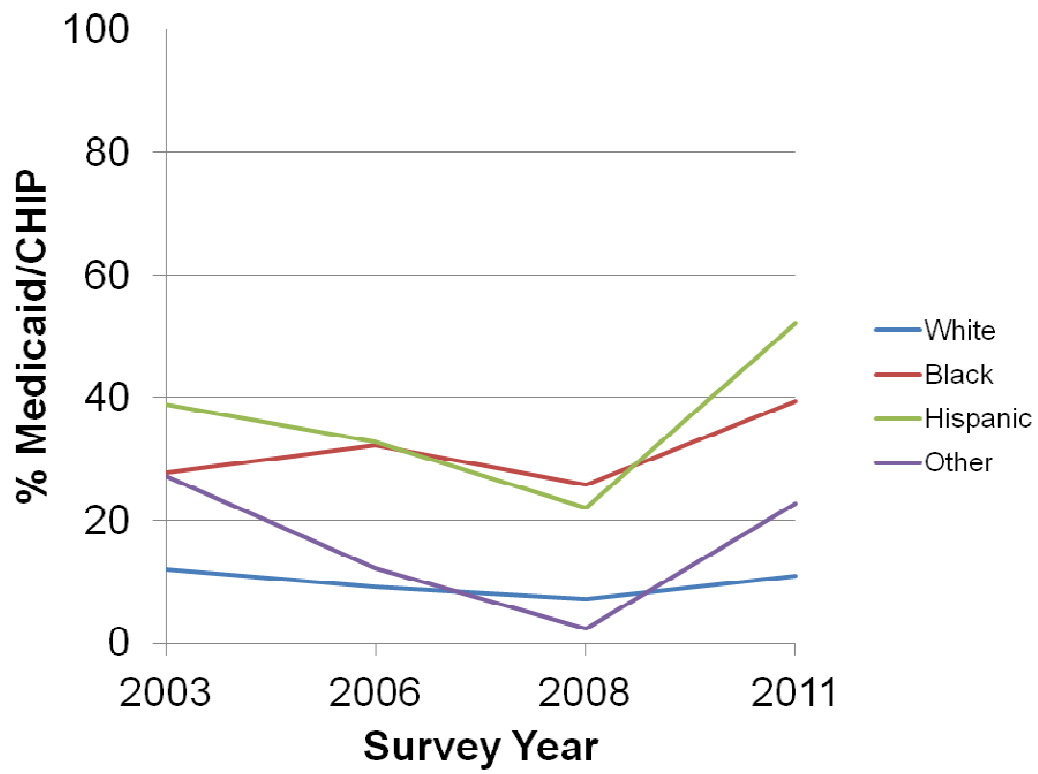


Figure 4. Trends in Medicaid/CHIP Coverage from 2003-2011, Stratified by Race/Ethnicity

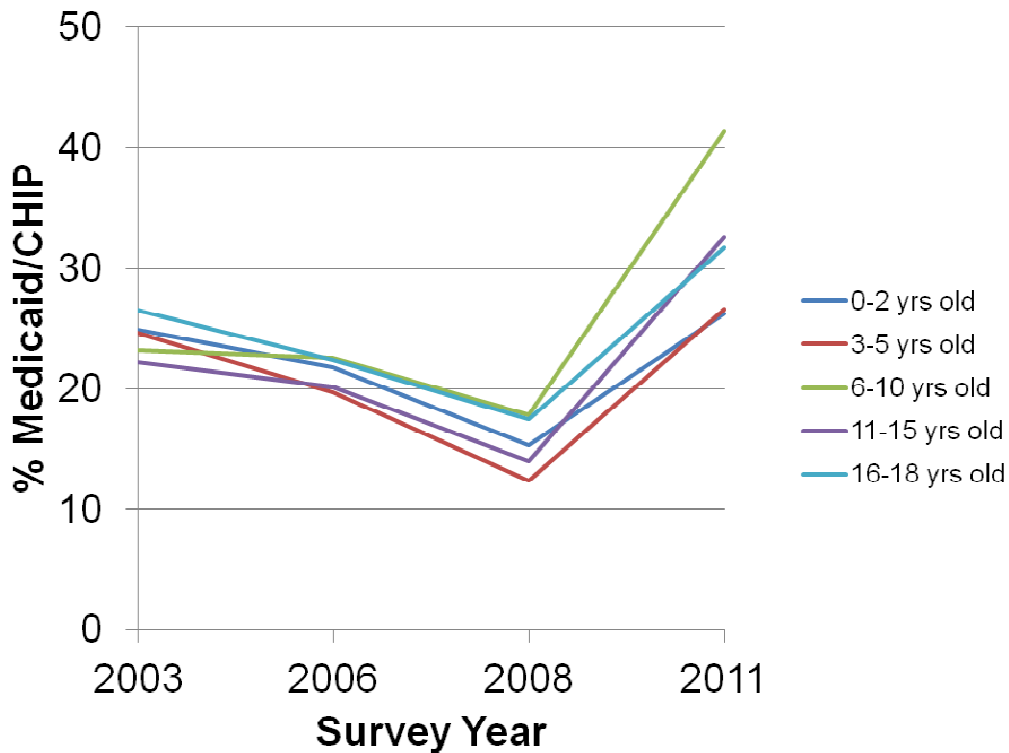


Figure 5. Trends in Medicaid/CHIP Coverage from 2003-2011, Stratified by Age of Youngest Child

According to ESI option, children living in families without the option for ESI coverage (Figure 6), insurance through Medicaid/CHIP increased from 55.4% in 2003 to 72.2% in 2011. For children living in households with the option for ESI coverage, insurance coverage through Medicaid/CHIP showed little variability, ranging between 7.1% and 11.3%. Separately, for families who had the option of ESI, we also assessed take up of ESI according to income group over time (Figure 7). No major trends were observed for the highest and lowest income groups. For households with family income between \$25,000 and \$50,000, ESI take up increased between 2006 and 2008 and then dropped between 2008 and 2011. For households with family income between 50,000 and \$75,000, ESI take up decreased between 2006 and 2008 and then slightly increased between 2008 and 2011.

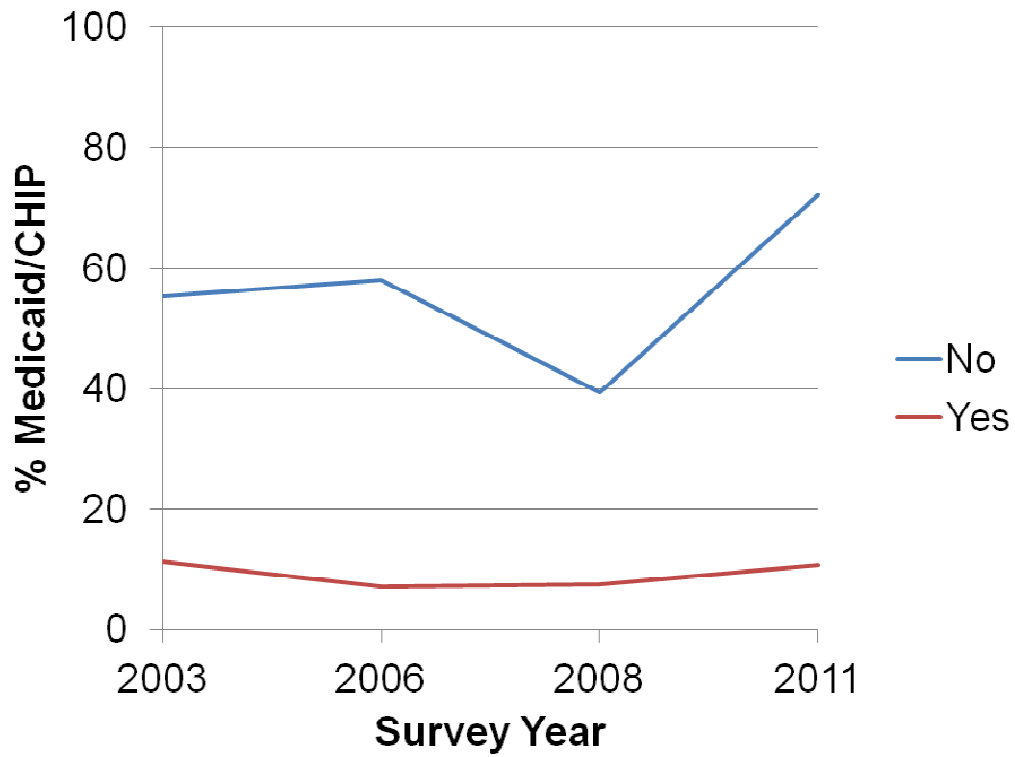


Figure 6. Trends in Medicaid/CHIP Coverage from 2003-2011, Stratified by Employer-Sponsored Insurance Option

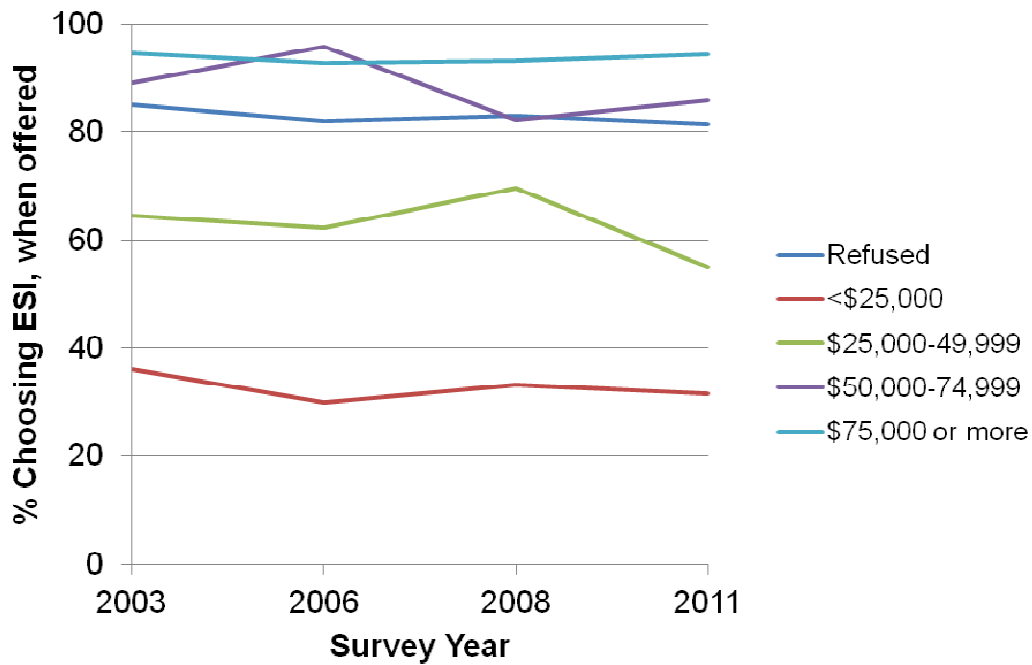


Figure 7. Trends in Employer-Sponsored Insurance Use from 2003-2011, Stratified by Household Income

Among caregivers with uninsured children, awareness of public insurance increased during the individual study years. In 2011, over 90% of such caregivers were aware of Medicaid and 80% were aware of CHIP. In 2003, only 66% of caregivers with uninsured children were familiar with Medicaid and 61% were familiar with CHIP. Differences between years were statistically significant ($p < 0.05$).

Demographics of Subgroup for Analysis

The characteristics of households with one or more employed caregiver ($N=2,508$) are shown in Table 1. Women made up the majority of caregiver respondents for all years. The racial/ethnic makeup of caregivers remained relatively similar across the years except that the percentage of Hispanics in the sample increased, parallel to the actual increase in their percent of the population at large. Several demographic variables were noticeably different in 2008 in comparison to other years. Overall, caregivers were older, had higher income, and higher levels of

education relative to other study years. The percentage of children with public insurance doubled between 2008 and 2011. The percentage of households where there was an option for ESI decreased from 85% in 2008 to 73.5% in 2011. The mean distance to the closest public hospital was 18.4 miles (range 0-87 miles). Over a quarter (26.6%) of households were located less than 10 miles from the closest public hospital. Thirty-eight percent of households were located within 10-20 miles of a public hospital. For 35% of households, the closest public hospital was farther than 20 miles.

Table 1: Sample Characteristics, stratified by Survey Year

| | Overall (N=2508) | 2003 (n=638) | 2006 (n=642) | 2008 (n=623) | 2011 (n=605) |
|-------------------------|-----------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | N (%) | n (%) | n (%) | n (%) | n (%) |
| Age | | | | | |
| Less than 24 | 85 (3.4) | 39 (6.2) | 17 (2.8) | 18 (2.8) | 11 (1.8) |
| 25-29 | 233 (9.3) | 84 (13.2) | 79 (12.4) | 36 (5.8) | 34 (5.6) |
| 30-34 | 470 (18.8) | 128 (20.1) | 128 (20.0) | 102 (16.5) | 111 (18.5) |
| 35-44 | 1011 (40.4) | 250 (39.3) | 258 (40.4) | 263 (42.3) | 239 (39.6) |
| 45-55 | 601 (24.1) | 118 (18.6) | 138 (21.6) | 177 (28.4) | 168 (27.9) |
| 55 and over | 98 (4.0) | 15 (2.6) | 17 (2.8) | 26 (4.2) | 40 (6.6) |
| Gender | | | | | |
| Male | 626 (25.0) | 151 (23.6) | 136 (21.2) | 143 (23.0) | 196 (32.4) |
| Female | 1882 (75.0) | 487 (76.4) | 506 (78.8) | 480 (77.0) | 409 (67.6) |
| Race/Ethnicity | | | | | |
| White | 1091 (43.5) | 298 (46.8) | 283 (44.0) | 265 (42.6) | 245 (40.4) |
| Black | 402 (16.1) | 100 (15.6) | 103 (16.1) | 101 (16.3) | 98 (16.2) |
| Hispanic | 851 (33.9) | 203 (31.8) | 212 (33.0) | 217 (34.9) | 219 (36.2) |
| Other | 164 (6.5) | 37 (5.8) | 44 (6.9) | 38 (6.2) | 43 (7.2) |
| Education | | | | | |
| High school | 708 (28.2) | 217 (34.1) | 180 (28.1) | 128 (20.5) | 183 (30.3) |
| College | 1287 (51.3) | 316 (49.5) | 350 (54.4) | 348 (55.9) | 273 (45.2) |
| Grad school | 496 (19.8) | 97 (15.2) | 105 (16.4) | 145 (23.3) | 149 (24.5) |
| Refused | 17 (0.7) | 8 (1.2) | 7 (1.1) | 2 (0.3) | 0 (0.0) |
| Marital status | | | | | |
| Single | 297 (11.8) | 76 (11.9) | 70 (11.0) | 65 (10.4) | 86 (14.2) |
| Married | 2099 (83.7) | 532 (83.5) | 546 (85.0) | 541 (86.9) | 480 (79.2) |
| Separated | 112 (4.5) | 30 (4.6) | 26 (4.0) | 17 (2.7) | 39 (6.6) |
| Household income | | | | | |
| <\$25,000 | 382 (15.2) | 122 (19.1) | 97 (15.1) | 49 (7.9) | 113 (18.7) |

| | | | | | |
|--|-------------|------------|------------|------------|------------|
| \$25,000-\$49,999 | 510 (20.4) | 168 (26.4) | 128 (20.0) | 92 (14.8) | 122 (20.2) |
| \$50,000-\$74,999 | 377 (15.0) | 104 (16.3) | 101 (15.8) | 121 (19.4) | 51 (8.4) |
| \$75,000 or more | 968 (38.6) | 198 (31.0) | 254 (39.5) | 276 (44.2) | 240 (39.7) |
| Refused | 271 (10.8) | 46 (7.2) | 62 (9.6) | 85 (13.7) | 79 (13.0) |
| Size of employer | | | | | |
| Fewer than 10 | 250 (10.1) | 73 (11.4) | 67 (10.4) | 51 (8.6) | 60 (9.9) |
| 10-49 | 286 (11.5) | 75 (11.8) | 71 (11.0) | 57 (9.6) | 83 (13.7) |
| 50-99 | 207 (8.3) | 57 (8.9) | 50 (7.8) | 32 (5.4) | 68 (11.1) |
| 100-999 | 496 (20.0) | 123 (19.3) | 126 (19.6) | 114 (19.2) | 132 (21.9) |
| 1000 or more | 1241 (50.1) | 310 (48.6) | 329 (51.2) | 339 (57.2) | 263 (43.4) |
| Age of youngest child | | | | | |
| 0-2 | 627 (25.0) | 179 (28.0) | 180 (28.1) | 127 (20.3) | 141 (23.3) |
| 3-5 | 507 (20.2) | 134 (21.0) | 127 (19.8) | 129 (20.7) | 118 (19.5) |
| 6-10 | 621 (24.8) | 149 (23.3) | 174 (27.1) | 163 (26.2) | 135 (22.3) |
| 11-15 | 516 (20.5) | 129 (20.2) | 122 (19.0) | 131 (21.1) | 133 (22.0) |
| 16-18 | 238 (9.5) | 48 (7.5) | 39 (6.0) | 73 (11.7) | 78 (12.9) |
| Number of children | | | | | |
| 1 | 769 (30.7) | 220 (34.5) | 183 (28.5) | 196 (31.4) | 170 (28.2) |
| 2 | 1094 (43.6) | 271 (42.5) | 268 (41.7) | 276 (44.4) | 279 (46.1) |
| 3 | 455 (18.1) | 104 (16.3) | 134 (20.8) | 102 (16.4) | 115 (19.0) |
| 4 | 130 (5.2) | 26 (4.0) | 41 (6.4) | 35 (5.6) | 28 (4.6) |
| 5 or more | 60 (2.4) | 17 (2.7) | 17 (2.6) | 14 (2.2) | 13 (2.1) |
| Public insurance | | | | | |
| No | 2016 (80.4) | 505 (79.1) | 529 (82.3) | 541 (86.9) | 442 (73.0) |
| Yes | 492 (19.6) | 133 (20.9) | 113 (17.7) | 82 (13.1) | 163 (27.0) |
| Employer sponsored insurance option | | | | | |
| Not offered | 531 (21.2) | 140 (22.0) | 137 (21.4) | 93 (15.0) | 161 (26.5) |
| Offered | 1977 (78.8) | 498 (78.0) | 505 (78.6) | 530 (85.0) | 444 (73.5) |

*Weighted estimates

Associations between Option of ESI, Proximity to Free Care, and Child Insurance Type

Of the 2,508 households who had one or more employed caregivers, 1,977 (78.8%) reported that they had the option for ESI at work (Table 2). Of households with the option of ESI, 80.4% had children insured through work, 5.8% had children covered through privately purchased insurance,

9.2% had children enrolled in public insurance (Medicaid or CHIP), and 4.6% had children who were uninsured. Of households without the option for ESI, 7.3% had children insured through work, 10.9 % had children covered through privately purchased insurance, 58.5% had children enrolled in public insurance, and 23.3% reported that their children were uninsured. All differences were statistically significant ($p < 0.0001$).

Table 2. Option for Employer Sponsored Insurance and Child Insurance Status

| Option for ESI | Employer N(%) | Private Purchase N(%) | Public N(%) | Uninsured N(%) |
|-----------------------|--------------------------|--------------------------------------|------------------------|---------------------------|
| Yes (N=1977) | 1589 (80.4) | 114 (5.8) | 182 (9.2) | 92 (4.6) |
| No (N=531) | 39 (7.3) | 58 (10.9) | 310 (58.5) | 124 (23.3) |

All differences statistically significant, $p < 0.0001$

Multinomial logistic regression was conducted to determine associations between the option for ESI, proximity to a public hospital, and insurance coverage. In the first model without proximity to a public hospital as an independent variable, the analysis demonstrated a statistically significant association between the option of ESI and child insurance type (Table 3). Children living in households without the option for ESI had higher odds (OR 10.87, 95% CI 7.31-16.17) of enrollment into public insurance compared to children in households with such an option, after controlling for socio-demographic variables and year. Children without the option for ESI also had higher odds (OR 9.50, 95% CI 6.14-14.70) of being uninsured compared to children with the option for ESI. In a separate model for which proximity to a public hospital was available as an independent variable (years 2008 and 2011), no statistically significant relationship was found between proximity to a public hospital and insurance coverage. The results demonstrating associations between ESI and insurance coverage remained unchanged. Variables associated with lower odds of being either publicly insured or uninsured included higher caregiver education, higher household income, and larger employer workplace size. Black and Hispanic race were associated with higher odds of public insurance only.

Table 3: Odds of Being Publicly Insured or Uninsured, with respect to Private Insurance Coverage

| Parameter | Reference | Insurance (ref=Private) | OR | 95% CI |
|------------------------------|------------------|--------------------------------|-----------|---------------|
| ESI option | vs. Yes | Public | 10.87 | 7.31-16.17 |
| | | Uninsured | 9.50 | 6.14-14.70 |
| Race/ethnicity | vs. White | Public | 1.46 | 0.69-3.09 |
| | | Uninsured | 1.31 | 0.61-2.82 |
| Other | | Public | 2.23 | 1.50-3.31 |
| | | Uninsured | 1.27 | 0.83-1.95 |
| Hispanic | | Public | 1.97 | 1.24-3.16 |
| | | Uninsured | 0.91 | 0.51-1.61 |
| Black | | Public | 1.56 | 0.25-9.69 |
| | | Uninsured | 2.73 | 0.44-16.93 |
| Education | vs. High school | Public | 0.55 | 0.39-0.77 |
| | | Uninsured | 0.44 | 0.30-0.66 |
| Refused | | Public | 0.21 | 0.11-0.39 |
| | | Uninsured | 0.29 | 0.15-0.58 |
| Marital status | vs. Married | Public | 1.69 | 0.91-3.16 |
| | | Uninsured | 2.08 | 1.04-4.16 |
| Separated | | Public | 0.82 | 0.53-1.28 |
| | | Uninsured | 0.53 | 0.31-0.92 |
| Household income | vs. <\$25,000 | Public | 0.06 | 0.03-0.10 |
| | | Uninsured | 0.07 | 0.04-0.15 |
| \$25,000-\$49,999 | | Public | 0.23 | 0.15-0.35 |
| | | Uninsured | 0.48 | 0.29-0.80 |
| \$50,000-\$74,999 | | Public | 0.02 | 0.01-0.04 |
| | | Uninsured | 0.11 | 0.06-0.21 |
| \$75,000 or more | | Public | 0.01 | 0.01-0.02 |
| | | Uninsured | 0.02 | 0.01-0.04 |
| Size of employer | | Public | 0.77 | 0.69-0.87 |
| | | Uninsured | 0.71 | 0.62-0.81 |
| Age of youngest child | | Public | 1.01 | 0.98-1.04 |
| | | Uninsured | 1.00 | 0.97-1.04 |

Table 3: Odds of Being Publicly Insured or Uninsured, with respect to Private Insurance Coverage

| Parameter | Reference | Insurance (ref=Private) | OR | 95% CI |
|--------------------|-----------|-------------------------|------|-----------|
| Number of children | | Public | 1.19 | 1.03-1.37 |
| | | Uninsured | 0.90 | 0.75-1.07 |
| Survey year | | Public | 1.23 | 1.07-1.41 |
| | | Uninsured | 1.06 | 0.90-1.24 |

ESI=Employer sponsored insurance, OR=Odds ratio, CI=Confidence interval

Discussion

This report presents a broad review of trends in insurance coverage for children in the Houston metro area of Texas, observed at four specific points in time capturing a period of economic downturn. During this time period, substantial increases in enrollment in Medicaid and CHIP occurred, concurrent with decreases both in households where one or more caregiver had the option of purchasing ESI for their children and the overall percentage of children with ESI. These correlational findings both highlight and reaffirm the safety net role of public insurance in shielding children from declines in ESI. In addition, our analyses quantify trends for particularly vulnerable populations, including low income children and racial/ethnic minorities. As demonstrated in previous studies, we found that lacking the option for ESI was associated with higher odds of being publicly insured or being uninsured. Even with the offer of ESI, take up of ESI decreased over time for households earning between \$25,000 and \$50,000. This trend may be reflective of increasing cost burdens on employees. We did not find a relationship between proximity to a public hospital and insurance coverage.

At the local level, our study raises several key points regarding trends in child insurance coverage. First, it demonstrates the importance of ESI for children's health care coverage. Children in households without the option for ESI have significantly higher odds of being enrolled into public insurance programs. If parents do not have the option to cover their children through work, they must purchase private insurance, pursue public insurance, or leave their children uninsured. Purchase of public insurance may be cost-prohibitive for many families. While private insurance and public insurance programs confer comparable access to medical services¹⁶, public insurance presents a number of barriers for families, including knowledge of eligibility criteria, a burdensome enrollment process, inadequate bilingual services, and potential requirements for frequent re-enrollment.¹⁷ Finally, children who go

uninsured will lack access to medical services or must rely heavily on access to low-cost or free public care.

Our study did not show a relationship between proximity to public hospitals and insurance coverage. Previous studies have assessed whether the availability of low-cost or free care may influence choices regarding insurance coverage, with the expectation that such care may substitute for insurance coverage. Studies have shown mixed results regarding the influence of public hospitals on insurance coverage. A study by Rask and Rask showed that proximity to a public hospital in a county is associated with a decreased likelihood of private coverage, specifically for those with income between 100% and 400% of poverty.¹⁸ However, a study by Davidoff et al did not find a substitution effect of free or low-cost providers on public or private insurance.¹³ A report by Sasso et al only found weak evidence of substitution effects by safety net hospitals on private or public insurance coverage.¹⁹ The report concluded that because so many low-income children are eligible for Medicaid or CHIP, they can usually be enrolled into appropriate programs when they see safety net providers. Therefore while safety net hospitals play a critical role during the decrease in ESI and economic downturn, they may not substitute for insurance. Other factors such as high premiums, out-of-pocket expenses, and eligibility for public insurance may have more influence on insurance coverage choices.²⁰⁻²²

While our study results did have similarities with findings from other studies, it also differed from national studies in several key areas. In contrast to national studies, which showed a steady decline in employer options for ESI and coverage of children by ESI between 2000 and 2010, our population of children in Houston only demonstrated declines between 2008 and 2011. In similar contrast to national trends, the employment rate in Houston only began to decrease between 2008 and 2011 (95.3% to 91.8%).¹⁵ Therefore this change in employment rate may account for the declines in ESI being a more recent trend relative to national-level data. While the decrease of ESI has occurred broadly across nearly all states, the size of the decline has varied substantially by state, reflecting differences in regional economies.²³

As ESI continues to decline, general awareness of public insurance does not superficially appear to be a major barrier. Among our sample of caregivers with uninsured children in 2011, over 90% were aware of Medicaid and 80% were aware of CHIP. In 2003, only 66% of caregivers with uninsured children were familiar with Medicaid and 61% were familiar with CHIP. While these findings reveal positive trends, the research design of the study made it difficult to distinguish between several

competing explanations: greater awareness led to greater public coverage; over time more individuals became aware of public coverage, particularly during the economic downturn; and during economic crises, individuals made greater efforts to find out about public programs because they expected to need coverage long-term. For families with children potentially eligible for public coverage, awareness of specific policies designed to reduce barriers to enrollment and retention in coverage may be more critical to ensuring enrollment than general awareness of the programs.²⁴⁻²⁷ Awareness may be especially relevant in Texas, which recently ranked last in the Agency for Healthcare Research and Quality report card on delivery of health care services. Texas' Medicaid program has consistently ranked among the most deficient in comparison to other states. Texas Medicaid has specifically ranked as one of the 10 most deficient state programs for difficulty of eligibility.¹¹ With implementation of the Affordable Care Act, parental knowledge of insurance options will be critical with the expansion of Medicaid and the development of health care exchanges. As shown in Figure 8, the income ceiling for Medicaid and CHIP will be changing with Medicaid expansion. To provide context for these changes, the federal poverty limits for a family of four in 2013 are \$22,350 (100%FPL), \$31,322 (133%FPL), and \$47,100 (200%FPL).²⁸



Current & Future Medicaid/CHIP Eligibility Levels

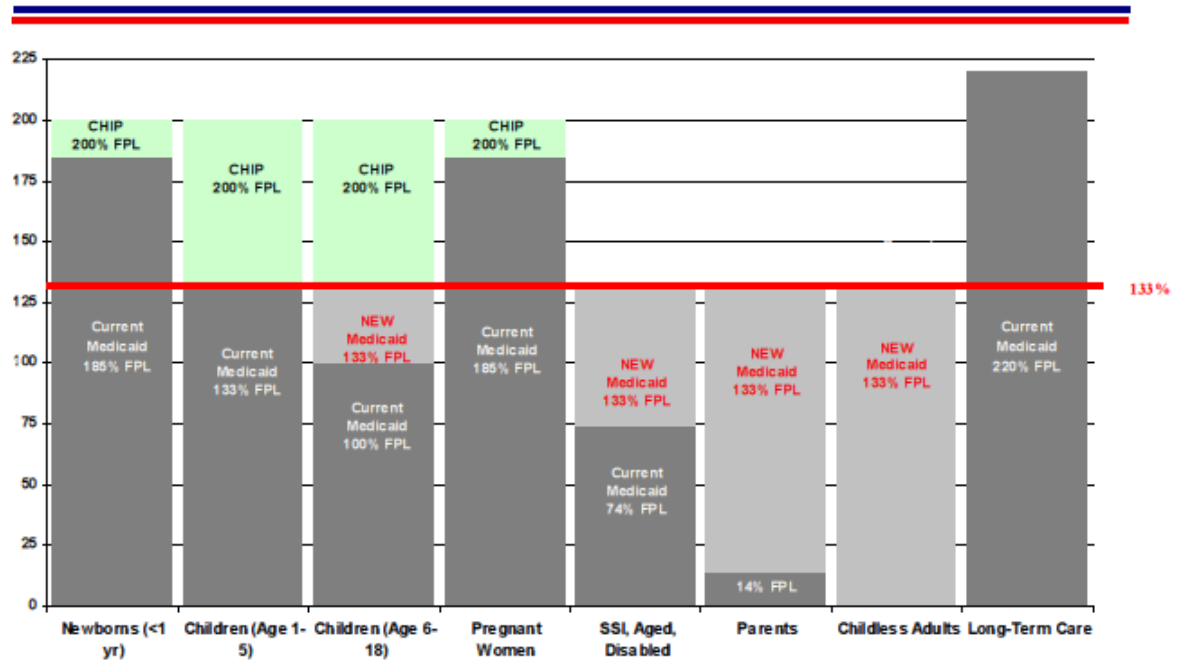


Figure 8. Current and Future Medicaid/CHIP Eligibility Levels in Texas (Available at www.hhsc.state.tx.us/...chip.../Medicaid-CHIP-Payment-Systems-and-Policy.ppt)

Our study had several strengths, including large, representative respondent samples for one of the largest metro-areas in the US over an eight year period. However, the study also had several limitations. First, our method for estimating the relationship between the ESI option and insurance status may differ significantly from other studies.^{2,4,13,23} Second, the data are only for the Houston, Texas metropolitan area and we do not know the degree to which findings generalize. Economic trends, changes in ESI, and policies regarding public insurance may vary at state and local levels. Third, the results are subject to biases inherent to telephone surveys, including the exclusion of households without phone access and reliance on respondent report. Fourth, an unexpected finding from our study was that a number of children in households without the option for

ESI were covered through ESI. In determining the availability of ESI, our survey instrument algorithm made assumptions about family structure that may have underestimated access to ESI. The survey instrument only assessed the option of ESI for the respondent and their spouse. We may have missed the availability of ESI from other family members and partners in care residing outside the household. Fifth, citizenship of the caregiver was not collected due to privacy concerns. However, previous studies have demonstrated citizenship is both associated with having the option for ESI and the likelihood of public insurance coverage for children.²⁹ Lastly, individual participants were not followed longitudinally, which limits inferences regarding causality.

Conclusions

In our study of children's health insurance in Houston, Texas, the decrease in the proportion of children covered through ESI was correlated with an increase in enrollment in public insurance, highlighting its role as a safety net. Low-income and racial/ethnic minority children especially benefited from public insurance during the study period. While proximity to public hospitals plays a major role in providing access to care, it did not have a substitution effect in our study. Despite the increase in enrollment in public programs both in Houston and nationally, numerous studies documented that children eligible for public insurance continue to be uninsured^{3,30,31}, highlighting a critical gap between those in need of coverage and use of the available safety net. While overall awareness of public insurance has increased, specific awareness of eligibility may be key to future policy solutions. State and local governments must continue to identify strategies to promote awareness of public insurance among eligible residents and reduce logistical barriers to obtaining and preserving continuity of coverage.

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