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Medical Home Disparities for Children by Insurance Type and State of Residence

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Abstract

The objectives of this study are (1) to compare the prevalence of a medical home between children with public and private insurance across states, (2) to investigate the association between a medical home and state health care characteristics for children with public and private insurance. We performed a cross-sectional analysis of the 2007 National Survey of Children's Health, estimating the prevalence of parents' report of a medical home and its components for publicly- and privately-insured children in all 50 states and the District of Columbia. We then performed a series of random-effects multilevel logistic regression models to assess the associations between a medical home and insurance type, individual sociodemographic characteristics, and state level characteristics/policies. The prevalence of a medical home varied significantly across states for both publicly- and privately-insured children (ranges: 33–63 % and 57–76 %, respectively). Compared to privately-insured children, publicly-insured children had a lower prevalence of a medical home in all states (public–private difference: 5–34 %). Low prevalence of a medical home was driven primarily by less family-centered care. Variation across states and differences by insurance type were largely attributable to lower reports of a medical home among traditionally vulnerable groups of children, including racial/ethnic minorities and non-English primary language speakers. The prevalence of a medical home was not associated with state level characteristics/policies. There are significant disparities between states in parents' report of a medical home for their children, especially for publicly-insured children. Interventions seeking to address these disparities will need to target family-centered care for traditionally vulnerable populations of children.

Keywords

Medical home; Public insurance; Disparities; Health policy; National Survey of Children's Health

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Conflict of interest None.

Introduction

The medical home model has taken a central role in efforts to improve the delivery of primary care for children. A medical home is defined by the American Academy of Pediatrics (AAP) as a source of primary care that is "accessible, continuous, comprehensive, family centered, coordinated, compassionate, and culturally effective," with the goal of improving delivery of preventive care as well as management of chronic disease [1].

Medical home programs for children are funded in nearly every state by public and private insurers [2-4]. Although the historic focus of medical home initiatives has been on children with special health care needs, many of these programs also target healthy children. As most state programs began in 2007 or later [3], there are few baseline estimates at the state level to evaluate the progress of these efforts.

There are compelling reasons to investigate variation across states in medical homes for children. Differences between states could influence the ability of primary care providers to provide care consistent with a medical home. There are significant differences in private insurance markets and regulations with important effects on primary care [5]. Additionally, due to the state-federal partnership model for Medicaid and the Children's Health Insurance Program (CHIP), public insurance policies can differ dramatically between states [6]. A prior study suggested significant state variation in medical homes for children with special health care needs [7], but state-level influences on medical homes have not been investigated for primarily healthy populations of children.

Additionally, differential access to primary care between publicly- and privately-insured children could result in within-state disparities between these groups. Historically, children with public insurance have had less access to primary care compared to those with private insurance [8, 9]. A recent study suggests that a public–private medical home disparity exists on the national level [10], but this has not been investigated at the level of individual states.

This study sought to investigate the relationship between the medical home and state factors by addressing three research questions: (1) Does the prevalence of a medical home differ for children with public versus private insurance *within states*?; (2) Does the prevalence of a medical home vary *between states* for children with public versus private insurance?; (3) Is between-state variation in the prevalence of a medical home associated with state-level demographic or insurance characteristics?

Methods

We performed a cross-sectional analysis of the 2007 National Survey of Children's Health (NSCH), estimating the prevalence of a medical home and its components for children with public and private insurance in all 50 states and the District of Columbia (subsequently referred to as "states"). We then performed a series of random-effects multilevel logistic regression models to assess the associations between a medical home and insurance type, other sociodemographic characteristics, and state-level factors.

Data Sources

For a complete description of the 2007 NSCH, please see the introduction to this supplement. The publicly-available data set used for this study contained the original survey data, as well as derived variables used to construct the medical home composite [11]. These data were supplemented with state-level data for 2007 from several sources, including the U.S. Census Bureau (state-level demographic data, including prevalence of minorities and those who speak a primary language other than English) [12], the American Medical

Association Masterfile (physician workforce data) [13], the Uniform Data System of the Health Resources and Services Administration [percentage of individuals with an income of less than 200 % federal poverty level (FPL) who were served by a community health center (CHC)] [14], and the website of the Henry J. Kaiser Family Foundation (Medicaid-to-Medicare reimbursement rates for primary care, percent of Medicaid enrollees in managed care, and overall health maintenance organization (HMO) market penetration) [6].

Dependent Variable: Medical Home Composite

The medical home composite is a dichotomous indicator of parent report of a medical home. The composite is constructed from 18 questions in the 2007 NSCH to reflect multiple aspects of the 2002 AAP definition of the medical home [15]. For a child to have a medical home, the parent must indicate the presence of five components: (1) usual source of care; (2) personal doctor/nurse; (3) family-centered care; (4) care coordination, if needed; and (5) no difficulty getting referrals, if needed [15]. If any component is absent, the child is considered to not have a medical home. Family-centered care made up the largest component, with 5 questions required for all respondents (see Table 3) and an additional question about interpreters, if needed. The medical home composite variable was missing in 4 % of the sample of publicly- and privately-insured children.

Independent Variables

For the multilevel models, we examined several individual-level characteristics previously shown to be associated with a medical home, including child age, race/ethnicity, gap in insurance coverage during the prior year, and special health care needs; parent education; and household structure, income, and primary language [7, 16-20]. A single imputation of the poverty level was used for 8.5 % of the sample with missing income data [21]. After children with missing medical home data were excluded, 1.9 % of the population had missing data on the independent variables of interest.

We hypothesized associations between the state prevalence of medical home and several state-level health care variables, some specific to publicly- or privately-insured children and some applicable to both. For both groups, we assessed associations with primary care workforce for children (pediatricians plus family physicians) and diversity of the state population (percent that did not speak English as a primary language, percent that was minority race/ethnicity). These diversity variables were included based on significant findings in a prior study of children with special health care needs [7] and the hypothesis that providers in more diverse states may be more comfortable at providing care consistent with a medical home to a diverse population. For publicly-insured children, we included the percent of Medicaid enrollees in managed care and the state Medicaid-to-Medicare payment ratio for primary care services, as a measure of the relative attractiveness of Medicaid fees within a given state [22]. Because CHCs can be a critical source of primary care for publicly-insured children and are often designed around a medical home model, we also included the percent of individuals with incomes less than 200 % FPL who were served by CHCs. For privately-insured children, we included the penetration rate of HMOs in the overall state insurance market. Data on primary care payment in the private insurance markets were not available.

Analysis

We calculated the prevalence of a medical home for publicly- and privately-insured children nationally and in all states. For each state, differences in prevalence by insurance type were assessed using χ^2. We then fit a random-effects (random-intercept) multilevel logistic regression model with children nested in states and included a random slope term for insurance type to assess the independent association between insurance type and the

probability of a medical home, as well as any variation in the degree of this association across states, unadjusted and adjusted for individual-level sociodemographic characteristics. To illustrate the effect of this adjustment on medical home prevalence, we used the multilevel model to predict the probability that a child would have a medical home in each state if the child had sociodemographic characteristics reflecting national averages.

Next, we calculated the prevalence of all five components of the medical home composite in each state for children with public and private insurance. As the medical home composite is an all-or-none measure, we identified the component with the lowest prevalence in each state, which would be the primary contributor to the overall prevalence of a medical home. Because family-centered care encompassed the largest number of questions in the composite, we also compared responses between the groups for the five questions that applied to all respondents.

Lastly, we performed a series of random-effects multilevel logistic regression models to estimate the association of individual- and state-level characteristics with the probability of a medical home. Separate models were fit for children with public and private insurance due to the differences in state-level factors hypothesized to influence care. For each group, we performed a series of three models. Model 1 (“empty” model) was used to assess state-to-state variation without adjustment for any individual or state characteristics [23, 24]. Model 2 included individual characteristics to estimate the degree to which state-to-state variation is attributable to the composition of individuals in each state. Model 3 (full model) included individual and state characteristics to assess if state-level factors influence the probability of having a medical home after adjustment for individual characteristics.

We summarized data from our multilevel logistic models in several ways based on recommendations from the literature [23, 24]. First, we present the state-level (level 2) variance for each model. In the first (“empty”) model, this allows an assessment of the degree of state-to-state variance. In subsequent models, changes in the state-level variance can be used to assess the explanatory power of the variables included. Changes in state-level variance between each subsequent model are summarized as the proportional change in variance. Next, we calculated the median odds ratio from the state-level variance of each model. The median odds ratio is a summary statistic for the area-level effect on an outcome; in this case, it represents the median odds of an individual child having a medical home if the child lived in a state with high versus low prevalence of medical home [23]. For example, a median odds ratio of 1.4 would suggest that moving from a low prevalence state to a high prevalence state would increase a child’s odds of having a medical home 1.4 times, on average. Additionally, the median odds ratio can be compared to the odds ratios for other variables in the model. Finally, we present the associations between medical home and individual- and state-level variables as odds ratios with robust standard errors.

All analyses were performed using Stata 10.1 (StataCorp LP, College Station, TX, USA). Due to the complex survey design, survey commands were used in bivariate analyses to account for stratification by state and to adjust for unequal probability of selection, using the supplied survey weights. Multilevel models were fit using the publicly-available add-on program GLLAMM [25]. This program was chosen to allow for the estimation of multilevel models using complex survey data with design weights [26, 27]. Although consensus on multilevel analysis with complex survey data is still emerging, we followed recommendations to fit models with survey weights re-scaled using “method 2” given moderate cluster sizes for publicly-insured children (~ 200 per state) [26, 28, 29].

Results

The characteristics of children with public and private insurance in the United States who participated in the 2007 NSCH are shown in Table 1.

National Estimates of Medical Home Prevalence

The national prevalence of a medical home for all children was 57.5 % (95 % CI 56.7–58.4 %). There was a significant difference in medical home prevalence between privately- and publicly-insured children (66.5 vs. 45.4 %, $p < 0.001$).

State Estimates of Medical Home Prevalence

The prevalence of a medical home varied significantly across states for children with public and private insurance (Table 2). For privately-insured children, the lowest prevalence was 57 % in Nevada, and the highest prevalence was 76 % in Nebraska. For publicly-insured children, the lowest prevalence was 33 % in Texas, and the highest prevalence was 63 % in Vermont.

In all states, publicly-insured children had a lower prevalence of a medical home compared with privately-insured children (Table 2). The size of the medical home gap between publicly- and privately-insured children varied widely among states, from a low of 5 % in West Virginia to a high of 34 % in Texas. In bivariate analyses, this gap by insurance type was statistically significant in nearly all states (exceptions: FL, ND, WV).

In the multilevel analysis adjusting only for insurance type, publicly-insured children had a lower odds of a medical home compared to privately-insured children [public adjusted odds ratio: 0.48 (95 % CI 0.45–0.51)]. The magnitude of this association did not vary significantly across states [random slope variance: 0.049 (SE 0.027)]. Predicted probabilities of a medical home from this model were similar to measured prevalence estimates (Table 2). In the model adjusting for additional sociodemographic characteristics, publicly-insured children still had a lower odds of a medical home compared to privately-insured children, but the odds ratio approached the null [public adjusted odds ratio: 0.91 (95 % CI 0.85–0.97)]. Although there was statistically significant variance across states in this public–private medical home gap [random slope variance: 0.028 (SE 0.007)] in the adjusted model, this variation did not appear to be meaningful. The predicted probabilities of a medical home from this adjusted model showed small public–private medical home gaps (range: 2–4 %) and very limited state-to-state variation for each group (public range: 56–58 %; private range: 59–60 %) (Table 2).

State Estimates of Medical Home Components

The medical home components that applied to every child were: usual source of care, personal doctor/nurse, and family-centered care. Parents reported a high prevalence of a usual source of care (public range: 86–98 %; private range: 94–99 %) and a personal doctor/nurse (public range: 84–97 %; private range: 89–99 %). In every state, family-centered care was the component of the medical home with the lowest prevalence for children with both public (range: 45–76 %) and private insurance (range: 68–82 %). In states with low medical home prevalence, publicly-insured children were less likely to report nearly all aspects of family-centered care (Table 3).

There was state-to-state variation in care coordination and problems getting referrals, but these had limited effect on the overall prevalence of a medical home due to the relatively low percentage of children needing these services (41 % for care coordination and 16 % for referrals). In many states, low percentages of both publicly- and privately-insured children

reported receiving needed help with care coordination (public range: 54–74 %; private range: 64–81 %). There was also significant state variation in those with no problems getting needed referrals (public range: 52–97 %; private range: 80–94 %).

Medical Home Prevalence: Associations with Individual and State Characteristics

Table 4 presents the series of multilevel logistic models for children with public and private insurance. The “empty” models show small but significant state-level variance for both publicly- and privately insured children.

For children with public insurance, the majority of state-to-state variation in the prevalence of a medical home was attributable to the sociodemographic characteristics of children within different states (proportional change in variance from model 1 to model 2: −67 %) (Table 4). Publicly-insured children had significantly lower odds of having a medical home if they were school-aged or adolescent, were minority race/ethnicity, spoke a primary language other than English, had a special health care need, had a gap in insurance coverage in the prior year, or had a parent with a high school education or less. In the final model with individual and state characteristics, state-level variables explained little of the residual state-level variance (proportional change in variance from model 2 to model 3: −16 %) and were not significantly associated with the odds of a publicly-insured child having a medical home (Table 4).

For privately-insured children, a smaller proportion of state-to-state variation in the prevalence of a medical home was attributable to individual child characteristics (proportional change in variance from model 1 to model 2: −26 %) (Table 4). The same child characteristics were associated with lower odds of having a medical home as for publicly-insured children. Additionally, odds of a medical home were lower for those with a lower household income and a household composition other than two biological parents. Although the addition of state-level variables explained a proportion of the residual variance (proportional change in variance from model 2 to model 3: −39 %), none of the specific state-level variables were significantly associated with the odds of having a medical home for privately-insured children (Table 4).

Discussion

In this large nationally representative survey, the prevalence of parental report of a medical home varies significantly among states, particularly for publicly-insured children. A prior study showed state variation in the prevalence of medical homes for children with special health care needs [7], but this is the first study to show similar findings for predominantly healthy children. These results also demonstrate that a disparity in medical home by insurance type is present in nearly every state, but varies significantly in size. The state-specific findings of this study provide an important baseline against which to measure the progress of the many public, private, and mixed-payer medical home initiatives for children [2-4].

A public–private medical home disparity has previously been shown at the national level and was largely attributable to the sociodemographic differences between the groups [10]. In this study, the public–private disparity, and state variation in the size of this disparity, were also largely attributable to a higher representation of traditionally marginalized populations in public insurance and in specific states. This is consistent with prior studies showing medical home disparities for these populations [7, 16-20]. In the final multilevel models for both publicly- and privately-insured children, the median odds ratios were statistically significant, but the values of these median odds ratios were close to one. Due to the nature of odds ratios for common outcomes, these values are unlikely to indicate practically

meaningful state-to-state variation in the prevalence of a medical home, after accounting for individual sociodemographic characteristics. The results here reemphasize the importance of primary care policies targeting vulnerable populations of children, particularly among publicly-insured populations.

Surprisingly, none of the state-level characteristics included were associated with the prevalence of a medical home. Although we included state characteristics that were significant predictors in a prior study [7] and those promoted as key determinants of primary care access and quality, these characteristics are not specific to medical home implementation and, thus, may not be strongly linked to the prevalence of a medical home. Additionally, we used cross-sectional state characteristics and did not assess the influence of state policies leading up to 2007. Future work should utilize longitudinal study designs to explore the influence of broad state insurance policies as well as specific programs promoting medical home implementation.

The lack of association of state characteristics with medical home prevalence may also be attributable to the observation that variation in this measure of the medical home was driven primarily by variation in parents' report of family-centered care. The state characteristics we studied were more likely to be associated with access to a usual source of care or personal doctor or nurse, but there was limited variation across states for these components. Interventions to improve this parent-reported measure of the medical home will need to target the family-centered care component, requiring efforts to promote provider communication skills and parent empowerment to engage providers. A key potential policy is the inclusion of parent (patient) perspectives in medical home implementation and outcome measurement [30, 31].

The analyses in this study have several limitations. All data were cross-sectional and cannot determine causality or the potential influence of policies prior to 2007. Parent report of provider behavior may not accurately reflect actual behavior, although arguably parents' perceptions of family-centered care and care coordination may be as important for satisfaction and health care decisions as "objective" provider behavior.

In conclusion, there are significant disparities between states in parents' report of a medical home for their children, especially for publicly-insured children. Interventions seeking to address these disparities will need to target family-centered care for marginalized populations.

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Abbreviations

AAP	American Academy of Pediatrics
CHC	Community health center
CHIP	Children’s Health Insurance Program
FPL	Federal poverty level
HMO	Health maintenance organization
ICC	Intra-class correlation coefficient
NSCH	National Survey of Children’s Health

Table 1

Demographic characteristics of children with public and private insurance in the United States, 2007 National Survey of Children's Health

	Public insurance	Private insurance
Survey population[a]	19,748	64,165
Weighted population		
n	21,205,602	45,073,890
% of total population[b]	29	62
Child age in years, % (95 % CI)[c, d]		
0–5	40 (38–41)	31 (30–32)
6–11	32 (30–33)	32 (32–33)
12–17	29 (27–30)	37 (36–38)
Race/ethnicity, % (95 % CI)[c, d]		
White, non-Hispanic	35 (33–36)	69 (68–71)
African-American, non-Hispanic	25 (24–27)	9 (9–10)
Hispanic	32 (30–34)	12 (11–13)
Other	9 (8–10)	10 (9–10)
Non-English primary language, % (95 % CI)[c]	23 (22–25)	5 (5–6)
Children with special health care needs, % (95 % CI)[c]	24 (22–25)	18 (17–19)
Insurance gap over prior 12 months, % (95 % CI)[c]	13 (11–14)	4 (3–4)
Household income, % (95 % CI)[c, d]		
≥400% FPL	4 (3–5)	44 (43–45)
200–399% FPL	16 (15–18)	39 (38–40)
100–199% FPL	34 (33–36)	13 (12–14)
0–99% FPL	45 (44–47)	4 (3–4)
Parental education, % (95 % CI)[c]		
>High school	36 (34–37)	78 (77–78)
12 years/high school graduate	39 (38–41)	18 (17–19)
<High school	25 (24–27)	4 (4–5)
Family structure, % (95 % CI)[c]		
Two parents	54 (52–56)	86 (85–87)
Single mother	36 (34–37)	10 (10–11)
Other	10 (9–11)	4 (3–4)

[a] Total survey population $n = 91,642$, weighted $n = 73,758,616$

[b] Sample also included 9 % uninsured, not included in this analysis, and 1 % missing data

[c] Differences by insurance type significant at $p < 0.05$

[d] Percentages may not sum to 100 % due to rounding

Table 2

National and state prevalence of a medical home for children with public and private insurance, 2007

	Public prevalence, % (95 % CI)	Private prevalence, % (95 % CI)	Private versus public difference[a]	Unadjusted predicted public prevalence[c], % (95 % CI)	Unadjusted predicted private prevalence[c], % (95 % CI)	Adjusted predicted public prevalence[d], % (95 % CI)	Adjusted predicted private prevalence[d], % (95 % CI)
United States	45 (44–47)	67 (66–68)	21[b]	–	–	–	–
AK	44 (37–51)	59 (55–63)	15[b]	45 (39–52)	61 (55–67)	56 (48–64)	60 (51–67)
AL	46 (39–52)	66 (62–70)	21[b]	46 (40–52)	66 (61–71)	56 (48–64)	60 (52–67)
AR	54 (49–59)	69 (66–73)	15[b]	54 (49–59)	69 (65–73)	56 (47–63)	59 (51–66)
AZ	45 (36–53)	59 (55–64)	15[b]	46 (40–52)	61 (56–67)	57 (48–65)	60 (52–67)
CA	34 (26–42)	62 (56–67)	27[b]	36 (31–41)	62 (57–66)	57 (48–65)	60 (52–67)
CO	41 (30–51)	69 (65–73)	29[b]	43 (37–49)	69 (64–74)	57 (49–65)	60 (52–67)
CT	46 (39–53)	69 (66–72)	23[b]	47 (40–54)	69 (63–74)	57 (49–65)	60 (52–68)
DC	38 (33–43)	63 (59–67)	25[b]	40 (33–47)	64 (57–70)	57 (49–65)	60 (52–68)
DE	47 (41–54)	67 (64–70)	20[b]	48 (41–56)	67 (60–73)	56 (48–64)	59 (51–67)
FL	54 (45–63)	63 (57–68)	9	52 (45–59)	63 (56–69)	57 (49–65)	60 (52–68)
GA	47 (40–55)	70 (66–73)	22[b]	48 (42–55)	70 (64–74)	57 (49–65)	60 (52–68)
HI	47 (40–54)	65 (62–69)	18[b]	46 (40–53)	66 (60–71)	57 (49–65)	60 (52–67)
IA	57 (49–65)	72 (68–75)	15[b]	57 (49–64)	71 (65–77)	57 (49–65)	60 (52–67)
ID	48 (41–55)	64 (60–67)	16[b]	46 (39–53)	65 (58–71)	57 (49–65)	60 (52–67)
IL	41 (35–47)	64 (60–67)	22[b]	42 (34–49)	64 (57–71)	57 (49–65)	60 (52–67)
IN	55 (48–63)	68 (64–72)	13[b]	54 (48–60)	69 (63–74)	57 (49–65)	60 (52–67)
KS	50 (42–57)	69 (66–72)	19[b]	50 (43–57)	69 (63–74)	57 (49–65)	60 (52–68)
KY	58 (53–64)	67 (63–70)	8[b]	56 (50–63)	66 (60–72)	57 (49–65)	59 (51–67)
LA	45 (39–51)	69 (65–72)	24[b]	45 (37–52)	68 (61–74)	57 (49–65)	60 (52–68)
MA	55 (47–63)	71 (68–75)	17[b]	55 (47–63)	71 (65–77)	57 (49–65)	60 (52–68)
MD	43 (34–51)	65 (61–68)	22[b]	44 (39–50)	65 (60–70)	57 (49–65)	60 (51–67)
ME	54 (48–60)	73 (70–76)	19[b]	54 (48–60)	72 (68–77)	57 (49–65)	60 (52–68)

	Public prevalence, % (95 % CI)	Private prevalence, % (95 % CI)	Private versus public difference[a]	Unadjusted predicted public prevalence[c], % (95 % CI)	Unadjusted predicted private prevalence[c], % (95 % CI)	Adjusted predicted public prevalence[d], % (95 % CI)	Adjusted predicted private prevalence[d], % (95 % CI)
MI	50 (42–57)	70 (66–73)	20[b]	49 (44–54)	69 (65–73)	57 (49–65)	60 (52–67)
MN	51 (42–61)	68 (64–72)	17[b]	51 (43–58)	69 (62–74)	57 (49–65)	60 (52–68)
MO	57 (50–63)	71 (68–74)	14[b]	56 (49–63)	70 (64–76)	57 (49–65)	60 (52–68)
MS	43 (38–48)	64 (60–68)	21[b]	44 (39–50)	65 (60–70)	57 (49–65)	60 (52–67)
MT	55 (48–62)	67 (64–70)	12[b]	54 (46–62)	67 (60–74)	57 (49–65)	60 (52–67)
NC	56 (49–63)	67 (64–71)	11[b]	56 (49–63)	69 (62–74)	57 (49–65)	60 (52–67)
ND	60 (52–68)	67 (64–69)	7	58 (50–66)	67 (60–74)	58 (49–65)	60 (52–68)
NE	59 (50–67)	76 (72–79)	17[b]	59 (51–66)	75 (69–80)	57 (49–65)	60 (52–68)
NH	59 (51–66)	73 (70–76)	14[b]	58 (52–64)	73 (68–77)	58 (49–65)	60 (52–68)
NJ	40 (32–48)	66 (62–69)	26[b]	40 (35–46)	65 (60–70)	58 (49–65)	60 (52–68)
NM	39 (34–45)	62 (58–67)	23[b]	40 (35–46)	62 (57–67)	57 (49–65)	60 (52–68)
NV	35 (25–44)	57 (53–61)	22[b]	35 (29–42)	58 (51–64)	58 (49–65)	60 (52–68)
NY	43 (37–49)	65 (61–69)	22[b]	44 (39–50)	66 (61–70)	58 (49–65)	60 (52–68)
OH	52 (44–60)	74 (71–78)	22[b]	53 (47–59)	73 (68–77)	57 (49–65)	60 (52–68)
OK	47 (41–52)	66 (62–69)	19[b]	45 (40–51)	66 (61–70)	57 (49–65)	60 (52–67)
OR	49 (40–57)	73 (70–77)	25[b]	50 (43–56)	72 (67–77)	57 (49–65)	60 (52–67)
PA	48 (40–55)	69 (65–73)	22[b]	47 (41–54)	69 (63–74)	57 (49–65)	60 (52–67)
RI	50 (42–57)	71 (67–74)	21[b]	50 (43–57)	70 (64–76)	57 (49–65)	60 (52–67)
SC	52 (45–58)	65 (62–69)	14[b]	51 (45–56)	66 (61–70)	58 (49–65)	60 (52–68)
SD	53 (46–60)	70 (67–73)	18[b]	53 (46–60)	70 (64–75)	58 (49–66)	60 (52–68)
TN	49 (43–55)	71 (68–75)	22[b]	49 (43–56)	70 (64–75)	58 (49–65)	60 (52–68)
TX	33 (26–39)	67 (62–72)	34[b]	35 (30–41)	65 (60–71)	58 (49–65)	60 (52–68)
UT	52 (41–64)	70 (66–73)	17[b]	52 (45–60)	69 (63–75)	57 (49–65)	59 (51–67)
VA	53 (44–61)	63 (59–66)	10[b]	51 (43–59)	64 (56–70)	58 (49–65)	60 (52–68)
VT	63 (57–69)	72 (68–75)	9[b]	63 (57–68)	72 (67–77)	57 (49–65)	60 (52–67)
WA	53 (45–60)	66 (62–71)	14[b]	52 (45–59)	66 (60–72)	58 (49–65)	60 (52–68)

	Public prevalence, % (95 % CI)	Private prevalence, % (95 % CI)	Private versus public difference[a]	Unadjusted predicted public prevalence[c], % (95 % CI)	Unadjusted predicted private prevalence[c], % (95 % CI)	Adjusted predicted public prevalence[d], % (95 % CI)	Adjusted predicted private prevalence[d], % (95 % CI)
WI	49 (41–57)	69 (66–72)	20[b]	49 (44–55)	69 (64–73)	57 (49–65)	60 (51–67)
WV	62 (57–68)	68 (64–71)	5	60 (54–66)	69 (63–74)	58 (49–65)	60 (52–67)
WY	55 (48–61)	64 (60–68)	9[b]	54 (48–60)	65 (60–71)	57 (49–65)	59 (51–67)

[a] Rounded values may vary slightly from differences in the private versus public prevalence shown in the table

[b] $p < 0.05$

[c] Estimates from a multilevel model predicting the probability of a medical home, including public versus private insurance as an independent variable with a random slope for insurance type. No other independent variables were included

[d] Adjusted for child age, race/ethnicity, gap in insurance coverage during the prior year, and special health care needs; parent education; and household structure, income, and primary language

Table 3

Selected states' prevalence of components of family-centered care for children with public and private insurance, 2007

	Did the provider spend enough time?[a]		Did the provider listen carefully?[a]		Was the provider sensitive to family values and customs?[a]		Did the provider provide needed information?[a]		Did the provider make the family feel like partners in care?[a]	
	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private
States with highest medical home prevalence for publicly-insured children										
VT	86[b]	91	93	96	94	96	88[b]	93	93	94
WV	86	86	93	94	90[b]	95	88	90	93	93
ND	85	88	87	92	87[b]	95	87	87	90	92
NH	87	92	92	95	92	95	86	90	91	93
NE	78[b]	89	94	95	93	96	87[b]	93	93	94
States with lowest medical home prevalence for publicly-insured children										
NM	65[b]	83	78[b]	91	78[b]	92	76[b]	88	81[b]	89
DC	63[b]	86	84[b]	92	80[b]	90	78[b]	87	85	88
NV	62[b]	79	81	87	75[b]	88	75[b]	83	77	84
CA	65[b]	83	78[b]	91	76[b]	93	77	84	78[b]	89
TX	61[b]	84	84[b]	91	83[b]	92	76[b]	87	84	88

[a] Percent responding always/usually versus sometimes/never

[b] Difference between public and private significant at $p < 0.05$

Table 4

Multilevel regression models estimating the association between a medical home and individual- and state-level covariates for children with public and private insurance, 2007

	Public			Private		
	Model 1: "empty" model	**Model 2: individual-level covariates**	**Model 3: individual- and state-level covariates**	**Model 1: "empty" model**	**Model 2: individual-level covariates**	**Model 3: individual- and state-level covariates**
Measures of variation						
State-level variance (SE)	0.075 (0.031)	0.025 (0.006)	0.021 (0.006)	0.027 (0.005)	0.020 (0.006)	0.012 (0.004)
Proportional change in variance		−67 %	−16 %		−26 %	−39 %
Median odds ratio (95 % CI)	1.30 (1.12–1.42)	1.16 (1.11–1.20)	1.15 (1.09–1.19)	1.17 (1.13–1.20)	1.14 (1.09–1.19)	1.11 (1.06–1.14)
Individual covariates (OR, 95 % CI)						
Child age, years						
0–5		Ref	Ref		Ref	Ref
6–11		**0.77 (0.70–0.85)**	**0.76 (0.69–0.84)**		**0.72 (0.67–0.77)**	**0.72 (0.67–0.77)**
12–17		**0.70 (0.64–0.76)**	**0.69 (0.64–0.75)**		**0.62 (0.59–0.66)**	**0.62 (0.59–0.66)**
Race/ethnicity						
White, non-Hispanic		Ref	Ref		Ref	Ref
African-American, non-Hispanic		**0.47 (0.41–0.54)**	**0.48 (0.41–0.55)**		**0.57 (0.51–0.63)**	**0.57 (0.51–0.63)**
Hispanic		**0.62 (0.52–0.74)**	**0.62 (0.51–0.75)**		**0.75 (0.66–0.84)**	**0.76 (0.67–0.85)**
Multi/other		**0.63 (0.53–0.75)**	**0.63 (0.53–0.75)**		**0.69 (0.63–0.77)**	**0.70 (0.63–0.77)**
Non-English primary language		**0.41 (0.34–0.50)**	**0.42 (0.34–0.52)**		**0.39 (0.34–0.46)**	**0.39 (0.34–0.46)**
Special health care need		**0.70 (0.63–0.78)**	**0.70 (0.63–0.78)**		**0.60 (0.57–0.64)**	**0.60 (0.57–0.64)**
Gap in insurance		**0.67 (0.57–0.79)**	**0.67 (0.57–0.79)**		**0.61 (0.57–0.64)**	**0.61 (0.53–0.71)**
Household income						
>400 % FPL		Ref	Ref		Ref	Ref
200–399 % FPL		1.15 (0.97–1.35)	1.13 (0.95–1.33)		**0.85 (0.80–0.91)**	**0.85 (0.80–0.91)**
100–199 % FPL		1.04 (0.85–1.28)	1.04 (0.84–1.28)		**0.72 (0.67–0.77)**	**0.72 (0.67–0.77)**
0–99 % FPL		0.93 (0.77–1.12)	0.91 (0.75–1.11)		**0.51 (0.45–0.59)**	**0.51 (0.45–0.59)**
Parental education						
>High school		Ref	Ref		Ref	Ref
High school/equivalent		**0.79 (0.72–0.86)**	**0.78 (0.71–0.86)**		**0.79 (0.73–0.84)**	**0.79 (0.73–0.84)**
<High school		**0.66 (0.59–0.75)**	**0.66 (0.59–0.75)**		**0.59 (0.51–0.69)**	**0.59 (0.51–0.69)**

	Public			Private		
	Model 1: "empty" model	**Model 2: individual-level covariates**	**Model 3: individual- and state-level covariates**	**Model 1: "empty" model**	**Model 2: individual-level covariates**	**Model 3: individual- and state-level covariates**
Family structure						
Two parents		Ref	Ref		Ref	Ref
Single mother		**0.91 (0.81–0.99)**	**0.90 (0.81–1.00)**		**0.82 (.076–0.89)**	**0.82 (.076–0.89)**
Other		**0.70 (0.62–0.79)**	**0.71 (0.63–0.81)**		**0.63 (0.55–0.71)**	**0.63 (0.55–0.71)**
State covariates (OR, 95 % CI)						
Non-English primary language, %[a]			1.00 (0.99–1.00)			0.99 (0.98–1.00)
Minority race/ethnicity, %[a]			1.00 (0.99–1.00)			1.00 (0.99–1.00)
PCPs per 100,000 children[a]			1.02 (0.97–1.07)			0.99 (0.96–1.02)
Medicaid-to-Medicare payment ratio[a]			0.97 (0.92–1.03)			NA
Medicaid enrollees in managed care, %[a]			1.00 (0.96–1.04)			NA
Individuals with income <200 % FPL served by CHCs, %[a]			0.97 (0.92–1.03)			NA
HMO penetration (overall market), %[a]			NA			1.00 (1.00–1.00)

Bold text indicates statistical significance, $p < 0.05$

CHCs community health centers, *FPL* federal poverty level, *PCPs* primary care providers

[a]Odds associated with an increase of one standard deviation