



Well-Child Visits in Medicaid in 2019 and 2020

An Analysis of over 9 million Black and White Medicaid-Enrolled Children from 18 States

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Introduction

The onset of the COVID-19 public health emergency (PHE) in March 2020 markedly disrupted the receipt of routine health care services for children. At least one-quarter of all parents reported missed, delayed, or skipped well-child visits for their children during the first year of the pandemic (Lebrun-Harris, Sappenfield, and Warren 2022; Nguyen et al. 2022). However, it is not known how access to routine care affected Medicaid-enrolled children specifically, nor how this may have varied according to the race and ethnicity of Medicaid-enrolled children.

Approximately 30 percent of white children and over half of Black children in the US received health insurance coverage through Medicaid or the Children's Health Insurance Program (CHIP; hereafter, Medicaid) as of 2021 (Artiga, Hill, and Damico 2022).¹ Although Medicaid-covered children have more comprehensive benefits and lower cost sharing relative to privately insured children, they also face more provider access issues, and the majority of children covered by Medicaid live in lower-income families, who were hit hardest by the COVID-19 economic fallout (Parker, Minkin, and Bennett 2020; Haley et al. 2023; Decker 2012). Understanding how routine health care—particularly well-child visit rates—changed during the pandemic for Medicaid-covered children is important for identifying shortfalls and targeting efforts to ensure children catch up on missed care.

Well-child visits are critical for children's health, as they include a comprehensive physical examination, anticipatory guidance, screenings, assessments to identify developmental, behavioral, or growth delays, and delivery of recommended immunizations or vaccinations. Infants and toddlers are

recommended to have multiple well-child visits each year; from age 3, annual well-child visits are recommended through adolescence.² In Medicaid, the mandatory Early and Periodic Screening, Diagnostic and Treatment (EPSDT) program requires states to provide recommended well-child visits to all Medicaid-enrolled children at no cost to them. Although states are required to report annually on EPSDT performance, they are not required to report on EPSDT metrics stratified by race or ethnicity. Evidence is urgently needed on whether Medicaid-covered children fell behind on well-child visits during the COVID-19 pandemic. This evidence can be used to inform efforts to ensure children have since “caught up” on missed care.

Health disparities for Black children relative to non-Hispanic white children are extensively documented and existed long before the COVID-19 pandemic (Flores and The Committee on Pediatric Research 2010). These disparities are the result of myriad institutional and structural factors, such as racist laws and policies that disproportionately expose Black children to environmental hazards and make it more difficult for Black families to access health care, as well as the implicit bias of and discrimination by health care providers (Danielson 2022; Johnson et al. 2017; Bailey, Feldman, and Bassett 2020; Liu et al. 2021; Bleich et al. 2019; Gonzalez et al. 2021). Given the importance of well-child visits for children’s health and COVID-19’s disproportionate economic and health impacts on Black families, a lower well-child visit rate for Black relative to white Medicaid-covered children before and/or during the COVID-19 pandemic could exacerbate or contribute to important health disparities among children (Tai et al. 2022).

In this analysis, we examine well-child visit rates among Medicaid-enrolled children in 18 states during 2019 and 2020 by non-Hispanic Black (hereafter, Black) versus non-Hispanic white (hereafter, white) race and ethnicity. Stratifying the analyses by age, we examine the overall change in well-child visit rates from 2019 to 2020, i.e., before and after the start of the COVID-19 PHE, and we assess whether well-child visit rates differentially changed for Black and white children from 2019 to 2020 within each age group. We use Medicaid enrollment and claims data representing the universe of pediatric Medicaid enrollees in each state included in our analysis. Although we focus our analysis on children continuously enrolled in Medicaid during the study period, the continuous coverage provision under the Families First Coronavirus Response Act of 2020 meant that Medicaid enrollees were unlikely to lose their Medicaid coverage during the PHE.

Previous studies have found overall declines in children’s preventive care and differences by race and ethnicity in the receipt of well-child visits during the early months of the pandemic (Ackerson et al. 2021; DeSilva et al. 2022; Batioja, Elenwo, and Hartwell 2023).³ However, these existing studies rely on data from surveys or health systems of a limited size and geographic scope, and little research has focused specifically on children with Medicaid coverage. By using newly available claims data from the Centers for Medicare and Medicaid Services (CMS) that represent the most comprehensive source of data on health care use among Medicaid enrollees and reflect administrative records of well-child visits rather than self-reported survey responses, this study provides new insights on well-child visit receipt among 9.4 million children living in 18 different states who were served by Medicaid and CHIP programs in 2019 and 2020.

Methods

Data and Study Population

We use the 2019 and 2020 Transformed Medicaid Statistical Information System (T-MSIS) Analytic Files (TAF) from CMS, which contain 100 percent of enrollment, claims, and encounter data for Medicaid enrollees in all US states and are nationally standardized for research purposes. We use the TAF Demographics and Eligibility (DE) file to identify our study population and enrollee characteristics, including race and other demographic characteristics, and we use the TAF Other Services (OT) claims file to identify well-child visits.

Although the TAF data include all claims and encounter records submitted for Medicaid-covered services by providers and plans, details on patient characteristics are limited, and the quality of these data vary significantly across states.⁴ In particular, the completeness and accuracy of the race and ethnicity information in the TAF vary considerably. Therefore, we use a systematic process to ensure our study only includes states with adequate data quality. First, using the CMS Data Quality Atlas resource, we eliminate states with known quality issues related to key variables in the OT file (e.g., quality issues related to diagnosis and procedure codes, which are necessary to identify well-child visits). Second, we exclude states where the race and ethnicity variable in the DE file is missing for more than 20 percent of children enrollees or states where the shares of children classified as white and Black according to this variable are not comparable to Medicaid enrollee benchmarks from the American Community Survey (Smith, O'Brien, and Kenney 2023). See Appendix table A.1 for details on this state selection process. This process results in the following 18 states included in our analysis: California, Delaware, Florida, Kentucky, Maine, Michigan, Mississippi, North Carolina, Nebraska, New Hampshire, New Mexico, Nevada, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, and Washington.

Our study population includes children ages 0–18 continuously enrolled in Medicaid/CHIP during 2019 and/or 2020 whose race and ethnicity are identified in the TAF DE file as “Black, non-Hispanic” (Black) or “white, non-Hispanic” (white). We limit our analysis to Black and white children because of race and ethnicity data quality concerns for Hispanic children and children of other races (more details on the race and ethnicity variable are provided below). In sensitivity analyses, we limit the study population to children continuously enrolled throughout both 2019 and 2020 to ensure our findings are not driven by changes in the composition of Medicaid enrollees because of the continuous coverage requirement that took effect in March 2020.⁵ We exclude children who were dually enrolled in Medicare or who received restricted Medicaid benefits. These selection criteria yield data on 9,435,402 unique children across the 18 states studied. See Appendix table A.2 for details.

Key Variables

Our outcome is well-child visits, identified by claims with an ICD-10 diagnosis code of Z00110, Z00111, Z00121, or Z00129, indicating a routine health examination for children or a Current Procedural Terminology procedure code of 99391–99495 or 99381–99385, indicating a comprehensive

preventive medicine evaluation.⁶ For each enrollee and each year (2019 and 2020), we create a binary indicator variable for having any well-child visits during the year and a count variable for the number of well-child visits during the year.

Although we follow existing methods and coding guidelines from Bright Futures/American Academy of Pediatrics to identify well-child visits using claims data, well-child visits tend to be undercounted in claims data, and the extent of this measurement error may vary by state.⁷ However, since we focus on difference-in-differences estimates—i.e., the differential change in well-child visits rates from 2019 to 2020 between Black and white children within states—in order for this measurement error to affect our key findings, there would need to have been systematic changes to coding practices within states that differentially affected Black and white children during this period, which is highly unlikely.

Our key independent variable indicates Black versus white race. This variable is intended to be a proxy for exposure to systemic racism. We define race according to the “race and ethnicity constructed code” variable from the TAF DE file (Lett et al. 2022), which contains race and ethnicity data collected during the Medicaid enrollment process. Although this variable is designed to reflect enrollees’ self-reported race and ethnicity categorized according to OMB’s data collection standards for race and ethnicity, no published studies exist on the validity of the race and ethnicity measures included in the TAF (Nead, Hinkston, and Wehner 2022).⁸ Other independent variables include age in years as of December 31, sex (male or female), primary plan type (comprehensive managed care or fee-for-service), eligibility category (CHIP; Supplemental Security Income or disability; adoption, foster, or guardianship; or all other), state and zip code of residence, and rural versus urban (based on the Rural-Urban Commuting Area code associated with zip code, where codes 1–3 are urban and 4–10 are rural).

Statistical Analysis

We calculate the share of Medicaid-enrolled children who had a well-child visit during 2019 and 2020 and the change in this share from 2019 to 2020, overall and by Black or white race, sex, age group, plan type, eligibility category, urban versus rural, and state. We plot the overall share of Black and white children with a well-child visit in 2019 and 2020 and calculate the unadjusted difference in the change for Black children relative to white children by age group. To estimate Black–white racial disparities in the difference in the probability of a well-child visit from 2019 to 2020 after controlling for other observable characteristics, we use multivariable linear regression with an indicator for Black race, calendar year 2020, an interaction term for Black race by 2020 (the key coefficient), and the observable characteristics as covariates (see Appendix for full regression equations). Following previous literature, we use linear regression for ease of interpretation but note that sensitivity analyses using logistic regression yield similar results (Karaca-Mandic, Norton, and Dowd 2012). We cluster standard errors by enrollee zip code to account for potential correlation of the error term among children living in the same zip code because of shared factors influencing access to care (for example, the number of providers accepting Medicaid patients). Since multiple well-child visits per year are recommended for children up to age 3, we stratify the analyses by ages 0–3 and ages 4–18, and for children ages 0–3, we

repeat all analyses on an outcome of the number of well-child visits per year (stratified by each year of age since the recommended number of visits varies by year of age).⁹

We perform several sensitivity analyses, including the use of logistic instead of linear models, adding zip code fixed effects to examine whether differences exist even among children living in the same zip code, removing one state at a time from the sample to ensure the results are not driven by any single state, equally weighting each state in the models, estimating models for each state separately, stratifying by urban/ rural, and looking at well-child visit rates among children who were not continuously enrolled in Medicaid for the full calendar year. To ensure our findings are not driven by changes to Medicaid eligibility rules during the study period (i.e., the continuous coverage provision), we perform a sensitivity analysis limiting the study population to children enrolled throughout both 2019 and 2020. Finally, given the potential for bias because of systematic miscoding of well-child visits (for example, if some routine services that would have been provided in a well-child visit were done when children presented with an illness and the visit was not coded as a well-child visit), we create an alternative outcome defined as any well-child office visit or any “sick” visit, where the latter is defined by procedure codes 99201–99205 or 99211–99215.

We perform all analyses using SAS Enterprise Guide version 7.15 (SAS Institute Inc.) and STATA version 17 (StataCorp LLC). This study is deemed exempt by the Urban Institute Institutional Review Board.

Results

Our 2019 sample includes 7,572,182 Black and white children continuously enrolled in Medicaid with full benefits while the 2020 sample includes 8,246,254 such children (table 1), representing a combined total of 9,435,402 unique children. In both years, approximately 38 percent of the sample were Black and just over half were male. The age distribution was similar in both years, with approximately 20 percent of the children ages 0–3; 22 percent ages 4–7, 8–11, and 12–15; and 14 percent ages 16–18. A slightly higher share of children was enrolled in comprehensive managed care plans in 2020 (81.6 percent) than in 2019 (79.1 percent). In both years, approximately 78 percent of the sample lived in urban areas, and 22 percent lived in rural areas. The distributions of eligibility categories and states were relatively constant across the years.

TABLE 1
Characteristics of White and Black Medicaid-Enrolled Children in Study Population, 2019–20

	2019		2020	
	Number	Percent	Number	Percent
Overall	7,572,182	100.0%	8,246,254	100.0%
Race and ethnicity				
Black, non-Hispanic	2,929,053	38.7%	3,155,827	38.3%
White, non-Hispanic	4,643,129	61.3%	5,090,427	61.7%
Biological sex				
Female	3,705,068	48.9%	4,032,788	48.9%

	2019		2020	
	Number	Percent	Number	Percent
Male	3,867,114	51.1%	4,213,466	51.1%
Age in years				
0-3	1,537,025	20.3%	1,602,631	19.4%
4-7	1,659,839	21.9%	1,802,852	21.9%
8-11	1,697,534	22.4%	1,828,068	22.2%
12--15	1,628,958	21.5%	1,817,943	22.0%
16-18	1,048,826	13.9%	1,194,760	14.5%
Plan type				
Comprehensive managed care	5,988,089	79.1%	6,731,109	81.6%
Fee-for-service	1,584,093	20.9%	1,515,145	18.4%
Eligibility category				
All other eligibility groups	6,171,117	81.5%	6,765,562	82.0%
CHIP	793,727	10.5%	875,405	10.6%
SSI or disability	357,158	4.7%	369,675	4.5%
Adoption, foster, or guardianship	250,180	3.3%	235,612	2.9%
Urban/rural residence				
Urban	5,912,779	78.1%	6,464,120	78.4%
Rural	1,659,403	21.9%	1,782,134	21.6%
State				
California	872,456	11.5%	891,217	10.8%
Delaware	67,594	0.9%	71,657	0.9%
Florida	1,053,930	13.9%	1,121,573	13.6%
Kentucky	443,736	5.9%	452,087	5.5%
Maine	75,585	1.0%	82,621	1.0%
Michigan	686,711	9.1%	849,687	10.3%
Mississippi	312,879	4.1%	332,755	4.0%
North Carolina	805,426	10.6%	820,243	9.9%
Nebraska	83,260	1.1%	89,790	1.1%
New Hampshire	57,113	0.8%	61,361	0.7%
New Mexico	65,157	0.9%	65,551	0.8%
Nevada	109,256	1.4%	122,206	1.5%
Ohio	867,020	11.5%	929,551	11.3%
Oklahoma	221,222	2.9%	244,556	3.0%
Pennsylvania	695,663	9.2%	823,592	10.0%
South Dakota	35,583	0.5%	39,544	0.5%
Texas	770,156	10.2%	883,966	10.7%
Washington	349,435	4.6%	364,297	4.4%
Census region				
Northeast	828,361	10.9%	967,574	11.7%
South	3,674,943	48.5%	3,926,837	47.6%
Midwest	1,672,574	22.1%	1,908,572	23.1%
West	1,396,304	18.4%	1,443,271	17.5%

Source: 2019–20 Transformed Medicaid Statistical Information System Analytic Files from 18 states.

Notes: SSI = Supplemental Security Income; CHIP= Children's Health Insurance Program. Study population includes Black, non-Hispanic and white, non-Hispanic children ages 0-18 continuously enrolled in full-benefit Medicaid or CHIP during the calendar year in the following 18 states: California, Delaware, Florida, Kentucky, Maine, Michigan, Mississippi, North Carolina, Nebraska, New Hampshire, New Mexico, Nevada, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, and Washington. Enrollee age is defined as age in years as of December 31. Urban and rural are defined according to rural-urban commuting area primary codes associated with residential zip codes.

Table 2 shows the receipt of well-child visits in 2019 and 2020 and the difference from 2019 to 2020 overall, by Black versus white race and other observable characteristics. Among children ages 0–3, 80.9 percent had a well-child visit in 2019, and 76.3 percent had a well-child visit in 2020 (a decline of 4.5 percentage points from 2019 to 2020) the average number of well-child visits was 2.10 in 2019 and 1.94 in 2020, a decline of 0.16 from 2019 to 2020 (results available on request). Among children ages 4–18, 48.9 percent had a well-child visit in 2019, and 41.7 percent had a well-child visit in 2020, a decline of 7.3 percentage points from 2019 to 2020. In 2019, for children ages 0–3, white children had a slightly larger share of well-child visits compared with Black children (81.0 percent versus 80.7 percent, respectively), whereas for children ages 4–18, white children had a slightly smaller share than Black children (48.3 percent versus 50.0 percent). For both age groups (0–3 and 4–18), the decline from 2019 to 2020 was larger for Black children compared with white children, such that the share of children with well-child visits in 2020 was smaller among Black children than white children in both age groups. Well-child visit rates were similar for male and female children, and well-child visit rates were higher for managed care enrollees than fee-for-service enrollees. Well-child visit rates declined substantially with age; for example, in 2019, 80.9 percent of children ages 0–3 had a well-child visit compared with 59.2 percent of children ages 4–7, and only 37.8 percent of children ages 16–18 had one. Well-child visit rates varied across states, but declines from 2019 to 2020 occurred in all 18 states.

TABLE 2

Share of Medicaid Enrollees Ages 0–18 with Well-Child Visits, 2019–20

	Children Ages 0 to 3			Children Ages 4 to 18		
	2019	2020	2019–20	2019	2020	2019–20
Number of enrollees	1,537,025	1,602,631		6,035,157	6,643,623	
Overall	80.9%	76.3%	-4.5 pp	48.9%	41.7%	-7.3 pp
Race and ethnicity						
Black, non-Hispanic	80.7%	75.4%	-5.3 pp	50.0%	41.0%	-9.0 pp
White, non-Hispanic	81.0%	76.9%	-4.0 pp	48.3%	42.1%	-6.2 pp
Biological sex						
Female	80.8%	76.2%	-4.6 pp	49.2%	42.2%	-7.0 pp
Male	80.9%	76.5%	-4.4 pp	48.7%	41.1%	-7.6 pp
Age in years						
0	88.2%	88.3%	0.1 pp	N/A	N/A	N/A
1	89.6%	86.3%	-3.2 pp	N/A	N/A	N/A
2	78.3%	72.9%	-5.4 pp	N/A	N/A	N/A
3	67.3%	59.1%	-8.2 pp	N/A	N/A	N/A
4–7	N/A	N/A	N/A	59.2%	51.4%	-7.8 pp
8–11	N/A	N/A	N/A	46.1%	39.0%	-7.1 pp
12–15	N/A	N/A	N/A	48.6%	40.6%	-8.0 pp
16–18	N/A	N/A	N/A	37.8%	32.5%	-5.3 pp
Primary plan type						
Comprehensive managed care	82.2%	77.0%	-5.1 pp	50.5%	42.5%	-8.0 pp
Fee-for-service	76.3%	73.1%	-2.9 pp	43.2%	38.0%	-5.1 pp
Eligibility category						
All other eligibility groups	81.0%	76.5%	-4.5 pp	48.6%	41.2%	-7.5 pp

	Children Ages 0 to 3			Children Ages 4 to 18		
	2019	2020	2019–20	2019	2020	2019–20
CHIP	79.6%	72.8%	-6.9 pp	49.1%	42.1%	-7.0 pp
SSI or disability	71.4%	66.9%	-4.6 pp	49.1%	42.4%	-6.8 pp
Adoption, foster, or guardianship	85.6%	84.2%	-1.4 pp	55.1%	51.6%	-3.5 pp
Urban/rural residence						
Urban	80.9%	76.1%	-4.8 pp	50.2%	42.6%	-7.6 pp
Rural	80.7%	77.1%	-3.6 pp	44.5%	38.3%	-6.1 pp
State						
California	70.7%	61.9%	-8.8 pp	45.2%	34.7%	-10.6 pp
Delaware	85.2%	81.6%	-3.6 pp	58.1%	50.9%	-7.1 pp
Florida	77.7%	74.8%	-2.9 pp	44.4%	42.6%	-1.8 pp
Kentucky	78.7%	74.9%	-3.8 pp	43.5%	35.7%	-7.8 pp
Maine	88.2%	84.0%	-3.8 pp	58.8%	49.9%	-7.8 pp
Michigan	81.2%	74.1%	-4.2 pp	51.2%	40.4%	-8.9 pp
Mississippi	80.5%	78.5%	-7.1 pp	37.4%	30.8%	-10.8 pp
North Carolina	81.9%	79.9%	-2.1 pp	51.9%	45.2%	-6.6 pp
Nebraska	81.2%	78.9%	-2.0 pp	45.5%	40.4%	-6.6 pp
New Hampshire	81.3%	79.0%	-2.2 pp	59.9%	53.6%	-5.1 pp
New Mexico	82.4%	75.5%	-2.3 pp	45.4%	37.3%	-6.3 pp
Nevada	78.9%	72.1%	-6.9 pp	41.7%	33.4%	-8.1 pp
Ohio	85.0%	79.9%	-6.9 pp	49.9%	42.9%	-8.3 pp
Oklahoma	78.5%	75.3%	-5.1 pp	38.1%	35.0%	-7.0 pp
Pennsylvania	85.6%	81.5%	-3.2 pp	58.2%	51.1%	-3.2 pp
South Dakota	79.1%	72.9%	-4.2 pp	36.3%	32.6%	-7.1 pp
Texas	86.2%	80.7%	-6.2 pp	57.2%	47.1%	-3.7 pp
Washington	79.8%	74.1%	-5.6 pp	45.7%	34.5%	-10.1 pp

Source: 2019–20 Transformed Medicaid Statistical Information System Analytic Files from 18 states.

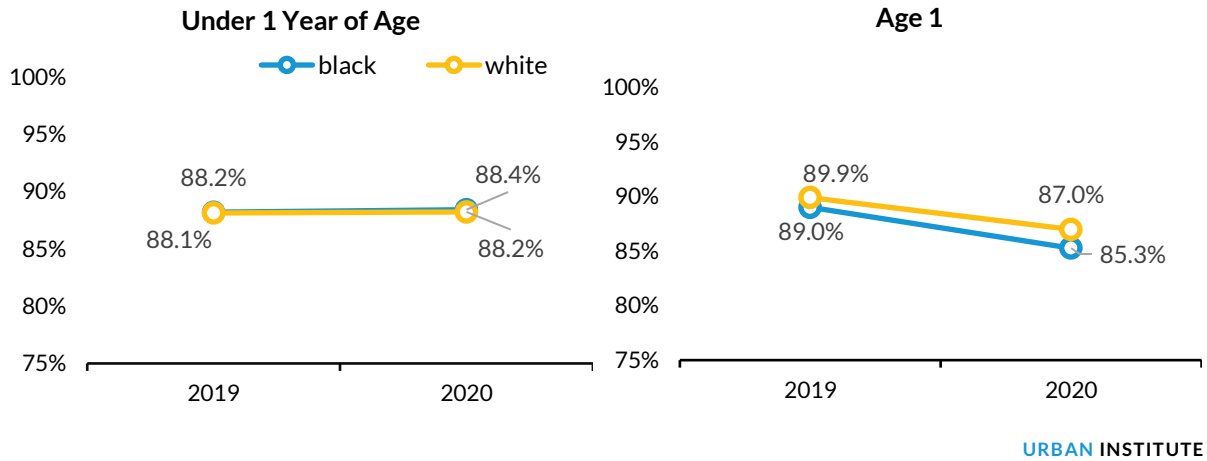
Notes: SSI = Supplemental Security Income; CHIP= Children's Health Insurance Program; pp = percentage point. Study population includes Black, non-Hispanic and white, non-Hispanic children ages 0–18 continuously enrolled in full-benefit Medicaid or CHIP during the calendar year in the following 18 states: California, Delaware, Florida, Kentucky, Maine, Michigan, Mississippi, North Carolina, Nebraska, New Hampshire, New Mexico, Nevada, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, and Washington. Enrollee age is defined as age in years as of December 31. Urban and rural are defined according to rural-urban commuting area primary codes associated with residential zip codes.

Figure 1 depicts well-child visit rates by year for Black versus white children and broken out by additional age groups. Among children ages 1–18, Black children experienced a greater decline from 2019 to 2020 than white children.¹⁰ For example, for children ages 12–15, in 2019, 50.2 percent of Black children and 47.6 percent of white children had a well-child visit. In 2020, 40.1 percent of Black children and 40.9 percent of white children had a well-child visit. Therefore, Black children experienced a decline of 10.1 percentage points relative to a decline of 6.7 percentage points experienced by white children, a differential decline of 3.4 additional percentage points for Black children ages 12–15.

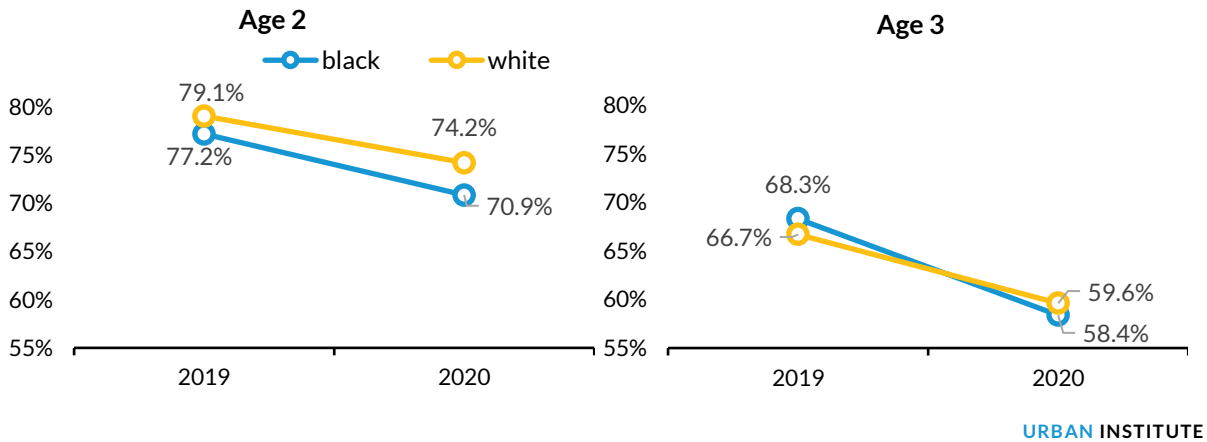
FIGURE 1

Share of Medicaid-Enrolled Children with Well-Child Visits by Race, 2019–20

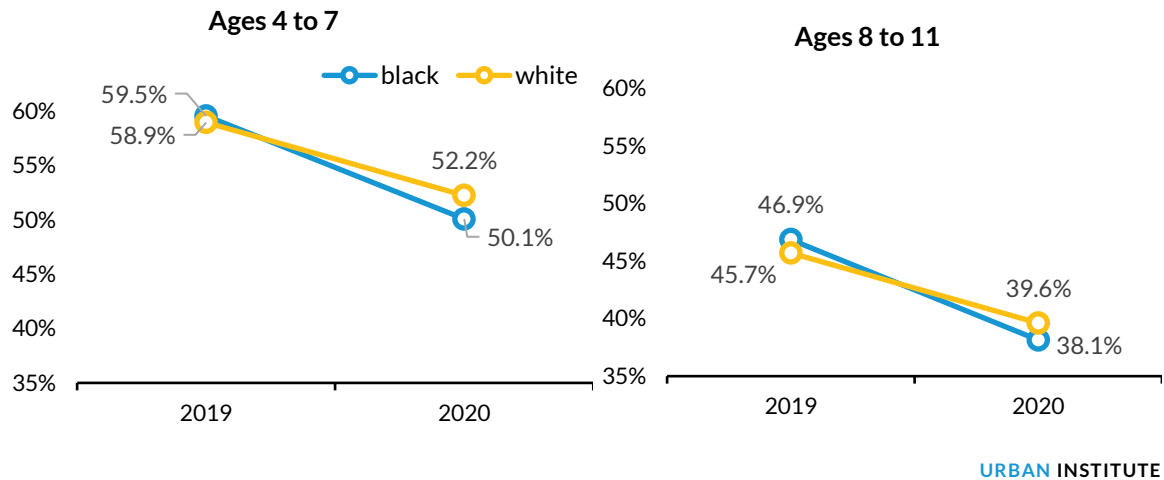
Panel A. ages 0–1



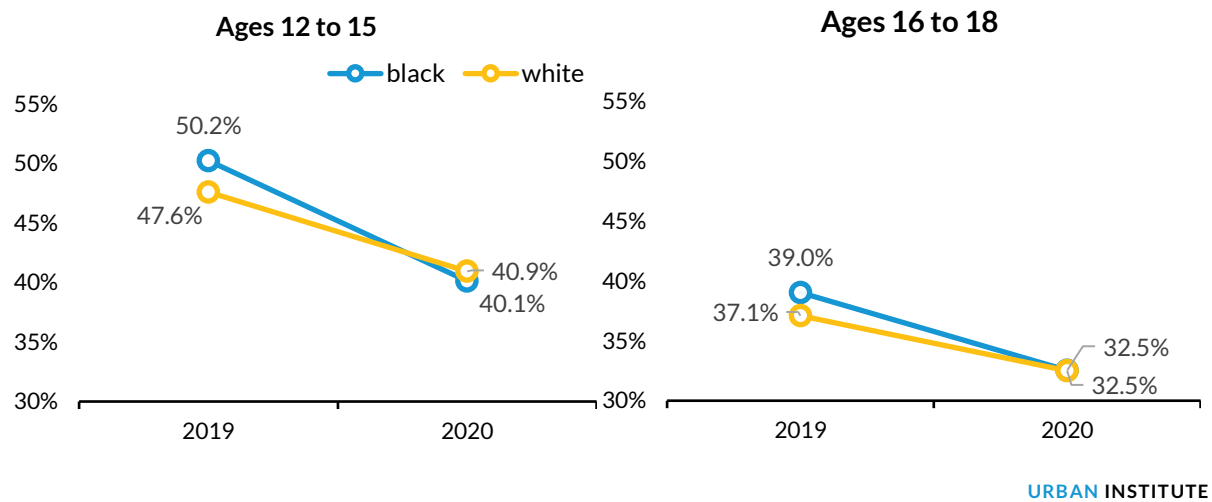
Panel B. ages 2–3



Panel C. ages 4–7 and 8–11



Panel D. ages 12-17 and 16-18



Source: 2019–20 Transformed Medicaid Statistical Information System Analytic Files from 18 states.

Notes: The study population includes Black, non-Hispanic and white, non-Hispanic children ages 0–18 continuously enrolled in full-benefit Medicaid or the Children’s Health Insurance Program during the calendar year in the following 18 states: California, Delaware, Florida, Kentucky, Maine, Michigan, Mississippi, North Carolina, Nebraska, New Hampshire, New Mexico, Nevada, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, and Washington. Enrollee age is defined as age in years as of December 31.

After adjusting for other observable characteristics, the probability of having a well-child visit declined significantly more for Black children than white children, especially for children ages 4–18 (ages 0–3: -1.38 percentage points, 95 percent CI -1.57 to -1.18; ages 4–18: -2.86 percentage points, 95 percent CI -3.01 to -2.72) (table 3). These point estimates were similar when not adjusted for other characteristics (table 2). The adjusted results also show that well-child visit rates are substantially lower for fee-for-service enrollees than those with managed care. This difference is considerably smaller when not adjusting for state, suggesting within-state differences in fee-for-service versus managed care drive this effect. Among children 2–3 years old, for whom more than one well-child visit is recommended per year, the average number of well-child visits per year declined significantly more for Black children than white children from 2019 to 2020, while the differential decline was not significant for children ages 0–1 (results available on request).

TABLE 3

Association between Medicaid Enrollee Characteristics and Well-Child Visits for Children Ages 0 to 3 and 4 to 18, Multivariable Regression Results, 2019–20

	Ages 0–3		Ages 4–18	
Year				
2019	REF		REF	
2020		-4.25*** (-4.37, -4.12)		-6.61*** (-6.70, -6.52)
Race				
white	REF		REF	
Black		-0.64*** (-0.83, -0.46)		0.78*** (0.60, 0.96)
Year 2020 x Black race		-1.38*** (-1.57, -1.18)		-2.86*** (-3.01, -2.72)
Primary plan type				
Comprehensive managed care	REF		REF	
Fee-for-service		-24.54*** (-25.06, -24.03)		-20.68*** (-20.94, -20.44)
Eligibility category				
All other eligibility groups	REF		REF	
CHIP		2.72*** (2.47, 2.97)		3.13*** (3.01, 3.25)
SSI or disability		-4.79*** (-5.43, -4.16)		1.51*** (1.33, 1.69)
Adoption, foster, or guardianship		10.14*** (9.36, 10.92)		11.57*** (11.26, 11.88)
Urban/rural residence				
Urban	REF		REF	
Rural		-0.55*** (-0.79, -0.31)		-3.73*** (-4.00, -3.46)
Constant		64.90*** (64.61, 65.19)		26.21*** (25.99, 26.43)

Source: 2019–20 Transformed Medicaid Statistical Information System Analytic Files from 18 states.

Notes: SSI = Supplemental Security Income; CHIP = Children's Health Insurance Program; REF = reference group. Estimates reflect percentage points and come from linear regression models with standard errors clustered by enrollee zip code. Outcome is a binary indicator for having a well-child visit during the year. Study population includes Black, non-Hispanic and white, non-Hispanic children continuously enrolled in full-benefit Medicaid or the Children's Health Insurance Program during the calendar year in the following 18 states: California, Delaware, Florida, Kentucky, Maine, Michigan, Mississippi, North Carolina, Nebraska, New Hampshire, New Mexico, Nevada, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, and Washington. Models additionally control for state-fixed effects and age in years. Enrollee age is defined as age in years as of December 31. Urban and rural are defined according to rural-urban commuting area primary codes associated with residential zip codes. Estimates represent percentage points. 95 percent confidence intervals are in parentheses. Models also control for state and age in years (coefficients not shown). *** Estimate differs significantly at the 0.05/0.01 level, using two-tailed tests.

Models that additionally control for zip code show the Black-white differences to be of a similar magnitude to the main models and still statistically significant. Other sensitivity analyses, such as those using an outcome of any well-child or sick visit (described above) and those relaxing the continuous enrollment requirement, were also consistent with the main models. Results for each individual state were largely consistent with the pooled model, and models stratified by urban versus rural showed the 2019 to 2020 Black–white differences were smaller in rural areas than in urban areas and that there was not a racial difference for children ages 1–2 in rural areas (results available on request).

Discussion

We examined well-child visit rates in 2019 and 2020 among Black and white Medicaid-enrolled children in 18 states. In 2019, nearly 1 in 5 children ages 0–3 did not have a well-child visit, and over half of

children ages 4–18 did not have a well-child visit— implying nearly 3.4 million children in the 18 states we studied missed at least one recommended visit in 2019. Well-child visit rates declined sharply with age, with older children and adolescents considerably less likely to have one than young children. Well-child visit rates declined substantially from 2019 to 2020, such that nearly 4.3 million children in the 18 study states missed at least one recommended visit in 2020. Although well-child visit rates were similar for Black and white Medicaid-enrolled children in 2019, the decline in well-child visit rates from 2019 to 2020 was significantly greater for Black children compared with white children—whether adjusting for other observable characteristics or not. These patterns were seen even when comparing Black and white Medicaid-enrolled children living in the same zip code.¹¹ Although statistically significant differences are not surprising given how large our dataset is, the differences were also quite large in practical terms. For example, for ages 4–18, over 72,300 additional Black enrollees in our sample missed their well-child visit in 2020 relative to the number that would have been expected had Black enrollees' pattern mirrored that of white enrollees.

Missed well-child visits are concerning as they may lead to missed identification of developmental delays, delayed diagnosis of health conditions, or the emergence of vaccine-preventable diseases—thus having potentially profound adverse effects on children's physical, social, and emotional development and their mental, reproductive, and physical health.¹² The low well-child visit rates that we identify in this study, which are broadly consistent with state-level data reported by CMS and previous national estimates of well-child visit rates from the Medical Expenditure Panel Survey, raise concerns about unmet health care needs among Medicaid-enrolled children. These concerns may be especially pertinent for older children and adolescents, given the very low well-child visit rates we find for them (Abdus and Selden 2022).¹³ It is especially worrisome when Medicaid-covered children do not receive recommended preventive health care, given their greater exposure to poverty and material hardship compared with their privately insured peers (Campbell, O'Brien, and Tumin 2022).

During the COVID-19 PHE, states implemented Medicaid telehealth flexibilities (e.g., expanded coverage of services and modalities and payment parity with in-person visits) to expand access to care. However, only 1.1 percent of the well-child visits provided in 2020 in our analysis were delivered via telehealth, suggesting telehealth did not typically substitute for in-person well-child visits among Medicaid-enrolled children during the early months of the pandemic. Moreover, even if telehealth became more widely available to Medicaid enrollees later in the pandemic, certain aspects of well-child visits—such as physical examinations and vaccinations—cannot be provided via telehealth.

There are numerous reasons why Black Medicaid-enrolled children may have experienced greater declines in well-child visits compared with white Medicaid-enrolled children during the early months of the COVID-19 pandemic. Racist policies and practices that contribute to residential segregation and wealth and income inequalities in the US put Black families at a higher risk of experiencing barriers to health care—such as difficulty accessing appointments because of transportation barriers, lack of proximity to providers accepting Medicaid, lack of trust between providers and patients, unfair treatment and discrimination, or an inability of parents to take time off of work or obtain child care—especially during times of disruption (Heaps, Abramsohn, and Skillen 2021; Smith et al. 2022; McDaniel

2021; Benatar et al. 2023). Furthermore, the pandemic had disproportionate impacts on Black families both in terms of the burden of COVID-19 illness and the economic impacts of the crisis (Tai et al. 2022).¹⁴

Medicaid and CHIP plans, programs, providers, and health systems may need to do more to ensure all children—especially older children and adolescents—receive well-child visits each year and that, in particular, Black children are caught up on the care they may have missed during the early months of the pandemic so that existing health disparities do not further widen as a result. For example, revising managed care contracts to hold plans accountable for the provision of well-child visit rates across all age groups and by race/ethnicity, simplification of Medicaid transportation benefits, Medicaid partnerships with cross-sector service providers, and improvements to appointment reminder systems may all promote access to well-child visits (Garg et al. 2022; Anthony et al. 2021).¹⁵ Additionally, policymakers and other stakeholders will want to be aware of health care access issues that emerged during the pandemic to inform broader policy responses and structural changes that are needed to address wider health disparities in children’s health (Ponce et al. 2023). It will also be important for future research to examine whether and for whom access to well-child visits may have improved since 2020, especially since CMS data suggest overall well-child visit rates in Medicaid were even lower in 2022 compared with 2020.¹⁶

This study has several limitations. First, we focus on Black and white Medicaid-enrolled children because of concerns about data quality in the TAF for children of other races and of Hispanic ethnicity; this is a noteworthy limitation, particularly given the increasingly diverse pediatric population in the US.¹⁷ Although we rely on the race and ethnicity variable in the TAF data to identify children as Black or white, this variable may not reflect the nuances of children’s racial and ethnic identities.¹⁸ Second, while our study population includes over 9.4 million Medicaid enrollees living in a diverse set of 18 US states of varying size and from all four census regions, the patterns we identify may not be generalizable to other states given differences in Medicaid programs, the populations they serve, and the health care systems across states. Third, we use diagnosis and procedure codes on outpatient claims and encounter data to identify well-child visits, and our claims-based estimates are lower than some estimates from survey data reflecting self-reported health care use.¹⁹ This approach could bias our results to the extent that there could be inconsistencies in the TAF data over time that differentially affected how well-child visits were coded for Black versus white children within a state. We also focus on children continuously enrolled in Medicaid or CHIP throughout the year, and well-child visit rates may be even lower for children with gaps in their coverage. Sensitivity analyses where we included children who were not continuously enrolled yielded lower overall rates of well-child visits but similar declines in well-child visits from 2019 to 2020 overall and by race.

In sum, this study documents low rates of well-child visit receipt in the Medicaid program both before and after the start of the COVID-19 pandemic. In 2019, over half of Black and white Medicaid-enrolled children ages 4 to 18 did not have any well-child visits, and nearly 20 percent of those ages 0 to 3 did not have one. Well-child visit rates dropped even lower in 2020, and Black children experienced larger declines relative to white children. We document these patterns using administrative Medicaid

claims and encounter data from a geographically and politically diverse set of 18 states, suggesting they are likely held in other parts of the country. These findings raise concern that many children are not benefitting from the EPSDT benefit in Medicaid—which is designed to ensure access to recommended screenings, diagnostic and preventive care, and follow-up treatment. Future research should examine access to care among other racial and ethnic groups, other types of health care services, and a longer time horizon following the start of the pandemic to see how well Medicaid is meeting children’s health care needs. Such information will help target efforts to make up for shortfalls and ensure that children’s physical, developmental, emotional, and mental health needs are being identified and addressed effectively within the Medicaid program and that the EPSDT benefit is reaching children as intended.²⁰

Appendix

TABLE A.1

TAF Data Quality and Selection of States for Analysis, 2019

Criterion	2019	
	Remaining states	Count of remaining states
No requirements	AK, AL, AZ, AR, CA, CO, CT, DC, DE, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WI, WV, and WY	51
Low concern on beneficiary age	AK, AL, AZ, AR, CA, CO, CT, DC, DE, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WI, WV, and WY	51
Low concern on zip code	AK, AL, AZ, AR, CA, CO, CT, DC, DE, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, NY, OH, OK, OR, PA, SC, SD, TN, TX, UT, VA, WA, WI, WV, and WY	49
Low or medium concern on “Claims Volume—OT”	AK, AL, AZ, AR, CA, CO, CT, DC, DE, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MD, ME, MI, MO, MS, MT, NC, ND, NE, NH, NM, NV, NY, OH, OK, OR, PA, SC, SD, TN, TX, UT, VA, WA, WI, WV, and WY	46
Low or medium concern on “CMC Plan Encounters—OT”+	AK, AL, AZ, CA, CT, DC, DE, FL, GA, HI, IA, IL, IN, KS, KY, MD, ME, MI, MO, MS, MT, NC, ND, NE, NH, NM, NV, NY, OH, OK, OR, PA, SC, SD, TN, TX, UT, VA, WA, WI, and WY	41
Low or medium concern on “Diagnosis Code—OT”	AK, AL, AZ, CA, CT, DC, DE, FL, GA, HI, IA, IL, IN, KS, KY, MD, ME, MI, MO, MS, MT, NC, ND, NE, NH, NM, NV, NY, OH, OK, OR, PA, SC, SD, TN, TX, UT, VA, WA, WI, and WY	41
Low or medium concern on “Procedure Codes—OT Professional”	AK, AL, AZ, CA, CT, DC, DE, FL, GA, HI, IA, IL, IN, KS, KY, MD, ME, MI, MO, MS, MT, NC, ND, NE, NH, NM, NV, NY, OH, OK, OR, PA, SC, SD, TN, TX, VA, WA, WI, and WY	40

2019		
Criterion	Remaining states	Count of remaining states
Exclude IL because they use an outdated final action algorithm [^] ; exclude IN because of an unexpectedly low number of outpatient claims with nonmissing diagnosis and procedure codes in January–March 2019	AK, AL, AZ, CA, CT, DC, DE, FL, GA, HI, IA, KS, KY, MD, ME, MI, MO, MS, MT, NC, ND, NE, NH, NM, NV, NY, OH, OK, OR, PA, SC, SD, TN, TX, VA, WA, WI, and WY	38
Black NH and white NH with moderate- or high-quality data [±]	CA, DE, FL, KY, ME, MI, MS, NC, NE, NH, NM, NV, OH, OK, PA, SD, TX, and WA	18

Source: 2019–20 Transformed Medicaid Statistical Information System Analytic Files, the Centers for Medicare and Medicaid Services Data Quality Atlas assessments for TMSIS Analytic Files (TAF), available at <https://www.medicaid.gov/dq-atlas/landing/topics>, and Laura Barrie Smith, Claire O'Brien, Genevieve M. Kenney, *Examining Race and Ethnicity Data Quality for Medicaid/CHIP-Enrolled Children in the T-MSIS Analytic Files*, Washington, DC: Urban Institute, March 15, 2023.

Notes: OT= other services; CMC = comprehensive managed care. + States with unclassified data are included. ^ More information on Illinois TAF data can be found at “TAF Technical Guidance: How to Use Illinois Claims Data,” MACBIS, February 2020. ± We only included states in our analyses where less than 20 percent of children in the state had a missing value for race/ethnicity and where the share of children identified as white, non-Hispanic and Black, non-Hispanic was within 10 percentage points and 50 percent of estimates of the race/ethnicity distribution among Medicaid-enrolled children from the American Community Survey (see Laura Barrie Smith, Claire O'Brien, Genevieve M. Kenney, *Examining Race and Ethnicity Data Quality for Medicaid/CHIP-Enrolled Children in the T-MSIS Analytic Files*, Washington, DC: Urban Institute, March 15, 2023.)

TABLE A.2

Identification of Medicaid-Enrolled Children, 2019

Exclusion	Number of enrollees remaining	Number of enrollees excluded from last step	Share of enrollees excluded from last step	Share of the starting sample remaining
All enrollee records in the Demographics and Eligibility TAF file in our states, 2019	45,862,628	0	0.0%	100.0%
Exclude enrollees with a missing birth date	45,661,040	201,588	0.4%	99.6%
Exclude enrollees older than 18 years as of December 31	20,626,936	25,034,104	54.8%	45.2%
Exclude enrollees with missing eligibility information or zip code	20,578,116	48,820	0.2%	99.8%
Exclude enrollees dually eligible for Medicare in any month of 2019	20,573,652	4,464	0.0%	100.0%
Exclude enrollees with restricted Medicaid benefits	20,263,043	310,609	1.5%	98.5%
Exclude duplicate records for the same enrollee	20,262,645	398	0.0%	100.0%
Exclude enrollees with multiple enrollment records with conflicting information	19,695,800	566,845	2.8%	97.2%
Exclude enrollees with missing sex	19,695,462	338	0.0%	100.0%
Exclude enrollees not continuously enrolled in Medicaid or CHIP for at least 330 days in 2019	16,089,395	3,606,067	18.3%	81.7%

Exclusion	Number of enrollees remaining	Number of enrollees excluded from last step	Share of enrollees excluded from last step	Share of the starting sample remaining
Exclude enrollees who we do not identify as Black NH or white NH	7,572,182	8,517,213	52.9%	47.1%

Source: 2019 Transformed Medicaid Statistical Information System Analytic Files (TAF) from 18 states.

Notes: CHIP= Children's Health Insurance Program; NH = non-Hispanic. State-specific sample creation tables are available on request.

TABLE A.3

Identification of Medicaid-Enrolled Children, 2020

Exclusion	Number of enrollees remaining	Number of enrollees excluded from last step	Share of enrollees excluded from last step	Share of the starting sample remaining
All enrollee records in the Demographics and Eligibility TAF file in our states, 2020	46,060,495	0	0.0%	100.0%
Exclude enrollees with a missing birth date	45,968,914	91,581	0.2%	99.8%
Exclude enrollees older than 18 years as of December 31	20,345,392	25,623,522	55.7%	44.3%
Exclude enrollees with missing eligibility information or zip code	20,301,737	43,655	0.2%	99.8%
Exclude enrollees dually eligible for Medicare in any month of 2020	20,297,540	4,197	0.0%	100.0%
Exclude enrollees with restricted Medicaid benefits	20,165,457	132,083	0.7%	99.3%
Exclude duplicate records for the same enrollee	20,160,929	4,528	0.0%	100.0%
Exclude enrollees with conflicting key variables	19,505,737	655,192	3.2%	96.8%
Exclude enrollees with missing sex	19,505,425	312	0.0%	100.0%
Exclude enrollees not continuously enrolled in Medicaid or CHIP for at least 330 days in 2020	17,442,353	2,063,072	10.6%	89.4%
Exclude enrollees who we do not identify as Black NH or white NH	8,246,254	9,196,099	52.7%	47.3%

Source: 2020 Transformed Medicaid Statistical Information System Analytic Files (TAF) from 18 states.

Notes: CHIP = Children's Health Insurance Program; NH = non-Hispanic. State-specific sample creation tables are available on request.

Notes

¹ "MACStats: Medicaid and CHIP Data Book," MACPAC, December 2022.

² "Preventive Care/Periodicity Schedule," American Academy of Pediatrics, accessed May 23, 2023, <https://www.aap.org/en/practice-management/care-delivery-approaches/periodicity-schedule/>.

- ³ “Medicaid and CHIP and the COVID-19 Public Health Emergency: Preliminary Medicaid and CHIP Data Snapshot,” CMS, accessed October 23, 2024.
- ⁴ “Exploring Data Quality (DQ) Assessments by Topic,” Medicaid, accessed October 31, 2023, <https://www.medicaid.gov/dq-atlas/landing/topics/info>.
- ⁵ “FAQS About Families First Coronavirus Response Act, Coronavirus Aid, Relief, and Economic Security Act, and Health Insurance Portability and Accountability Act Implementation Part 58,” CMS, March 29, 2023.
- ⁶ “Fact Sheet: Service Use among Medicaid & CHIP Beneficiaries Age 18 and Under during COVID-19,” CMS, September 23, 2020, <https://www.cms.gov/newsroom/fact-sheets/fact-sheet-service-use-among-medicaid-chip-beneficiaries-age-18-and-under-during-covid-19>.
- ⁷ “Fact Sheet: Service Use among Medicaid & CHIP Beneficiaries Age 18 and Under during COVID-19,” CMS.
- ⁸ “HHS Implementation Guidance on Data Collection Standards for Race, Ethnicity, Sex, Primary Language, and Disability Status,” ASPE, October 30, 2011, <https://aspe.hhs.gov/reports/hhs-implementation-guidance-data-collection-standards-race-ethnicity-sex-primary-language-disability-0>.
- ⁹ “AAP Schedule of Well-Child Care Visits,” HealthyChildren.org, accessed January 5, 2023, <https://www.healthychildren.org/English/family-life/health-management/Pages/Well-Child-Care-A-Check-Up-for-Success.aspx>.
- ¹⁰ For infants under 1 year of age, neither Black nor white children experienced a decline; see Appendix for more details on well-child visit rates for infants under 1.
- ¹¹ Given that we examine receipt of any well-child visit and the count of well-child visits during the calendar year, as opposed to whether the number received aligns with recommendations from the American Academy of Pediatrics, it should be noted that the shortfalls may be greater for children ages 0-3 who should be receiving multiple visits per year.
- ¹² “Quality of Care for Children in Medicaid and CHIP: Findings from the 2020 Child Core Set Chart Pack,” CMS, November 2021.
- ¹³ “Quality of Care for Children in Medicaid and CHIP: Findings from the 2020 Child Core Set Chart Pack,” CMS.
- ¹⁴ Lindsay M. Monte and Daniel J. Perez-Lopez, “COVID-19 Pandemic Hit Black Households Harder Than White Households, Even When Pre-Pandemic Socio-Economic Disparities Are Taken Into Account,” US Census Bureau, July 21, 2021, <https://www.census.gov/library/stories/2021/07/how-pandemic-affected-black-and-white-households.html>.
- ¹⁵ “HHS Call to Action: Addressing Health-Related Social Needs in Communities Across the Nation,” ASPE, November 16, 2023, <https://aspe.hhs.gov/reports/hhs-call-action>.
- ¹⁶ “Quality of Care for Children in Medicaid and CHIP.”
- ¹⁷ “U.S. Child Population Decreasing, Becoming More Diverse,” AAP News, November 1, 2021, <https://publications.aap.org/aapnews/news/17443/U-S-child-population-decreasing-becoming-more>.
- ¹⁸ Heather Saunders, and Priya Chidambaram, “Medicaid Administrative Data: Challenges with Race, Ethnicity, and Other Demographic Variables,” KFF (blog), April 28, 2022, <https://www.kff.org/medicaid/issue-brief/medicaid-administrative-data-challenges-with-race-ethnicity-and-other-demographic-variables/>.
- ¹⁹ “MACStats: Medicaid and CHIP Data Book.”

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Genevieve M. Kenney is an institute fellow and the former vice president for health policy at the Urban Institute. She is a nationally renowned expert on Medicaid, the Children's Health Insurance Program (CHIP), and health insurance coverage, health care access and quality, and health outcomes for low-income adults, children, and families. She has played a lead role in several Medicaid and CHIP evaluations, including multiple congressionally mandated CHIP evaluations, and has conducted state-level evaluations of the implementation of managed care and other service delivery reform initiatives and policy changes in Medicaid and CHIP. Currently, she is leading a project focused on health equity that involves working with a community advisory board. In other work, she is assessing reproductive health access and Medicaid policies aimed at improving outcomes in the postpartum period and the unwinding of the continuous coverage requirement in Medicaid. In her prior work, she has used mixed methods to examine Medicaid expansions for pregnant women, parents, and children; Medicaid family planning waivers; and a range of policy choices related to Medicaid and CHIP. Kenney is an advisory board member of the University of North Carolina's Rural Health Research Program and the Hilltop Institute. She received a master's degree in statistics and a doctoral degree in economics from the University of Michigan.

Timothy Waidmann is a senior fellow in the Health Policy Center. He has over 30 years of experience designing and conducting studies on varied health policy topics, including disability and health among the elderly; Medicare and Medicaid policy; disability and employment; public health and prevention; health status and access to health care in vulnerable populations; health care utilization among high-cost, high-risk populations; geographic variation in health care needs and utilization; and the relationships between health and a wide variety of economic and social factors. Waidmann's publications based on these studies have appeared in high-profile academic and policy journals. He has

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