

Health Care Access for Infants and Toddlers in Rural Areas

Jessie Laurore, Gayane Baziyants, and Sarah Daily

Introduction

Approximately 1 million infants and toddlers live in ruralⁱ areas in the United States. While some rural communities offer certain protective factors that support positive health and development, many children in rural areas are more likely to face a unique combination of challenges that impact their health and development—for instance, fewer health care providers, barriers to accessing care, and higher rates of poverty.¹ Understanding the unique opportunities and challenges that very young children and their families living in rural areas encounter is an important step for any policymaker working to improve outcomes for all children in their state.

While many public reports provide indicator data on rural health care access at the national level, this brief uses data from the *State of Babies Yearbook: 2020*ⁱⁱ to examine state-level differences in how infants and toddlers living in rural areas are faring. Equipped with these data, state policymakers can explore strategies to support the needs of very young children and their families.

Key findings include the following:

- Mothers in rural areas are less likely to receive timely prenatal care and more likely to have births that occur outside of hospitals than mothers in urban areas.
- Infants and toddlers in rural areas are less likely to receive a preventive medical or dental visit and less likely to receive recommended vaccines; low-income infants and

ⁱ *State of Babies Yearbook* products use the Office of Management and Budget and Census Bureau definitions for rural: “nonmetropolitan areas of ‘open countryside’ and ‘towns’ and places with fewer than 2,500 people,” as well as “urban clusters with populations ranging from 2,500 to 49,000 people that are not part of a larger metro area.”

ⁱⁱ *State of Babies Yearbook: 2020* is a national and state resource developed by ZERO TO THREE that compiles national and state-level data on children ages 0 to 3. These data measure progress across three policy areas: good health, strong families, and positive early learning experiences.

toddlers in rural families with low incomes are less likely to have health insurance than their peers in urban areas.

Key health outcomes for infants and toddlers in rural areas:

- Infant mortality and preterm birth rates are higher in rural communities than in urban areas.
- Low birth weight is a significant challenge in rural areas for some states, compared to more urban areas.
- Infants in rural areas are less likely than urban infants to be breastfed.

At the conclusion of this brief, we provide a few recommendations for policymakers to ensure equitable health care access for infants and toddlers living in rural areas, including the following:

- Identify any existing barriers rural families may face in enrolling their infants and toddlers in their state's Children's Health Insurance Program (CHIP).
- Promote the importance of timely and appropriate vaccinations among rural families and utilize existing programs designed to help cover the cost.
- Explore options such as mobile health clinics and telemedicine to ensure that children in rural areas have access to a pediatrician for routine check-ups and to address their health needs.
- Identify whether there are gaps in how existing home visiting programs in a state serve rural children and families. If these exist, states can employ a variety of approaches to address the issue—for example, a task force or directive to the state public health department to identify potential reasons for these gaps—and can identify strategies for reaching these families. States can also work with community hospitals, doulas, birthing centers, and mobile health clinics to provide group prenatal visits.

Findings: Health Care Access in Rural Areas

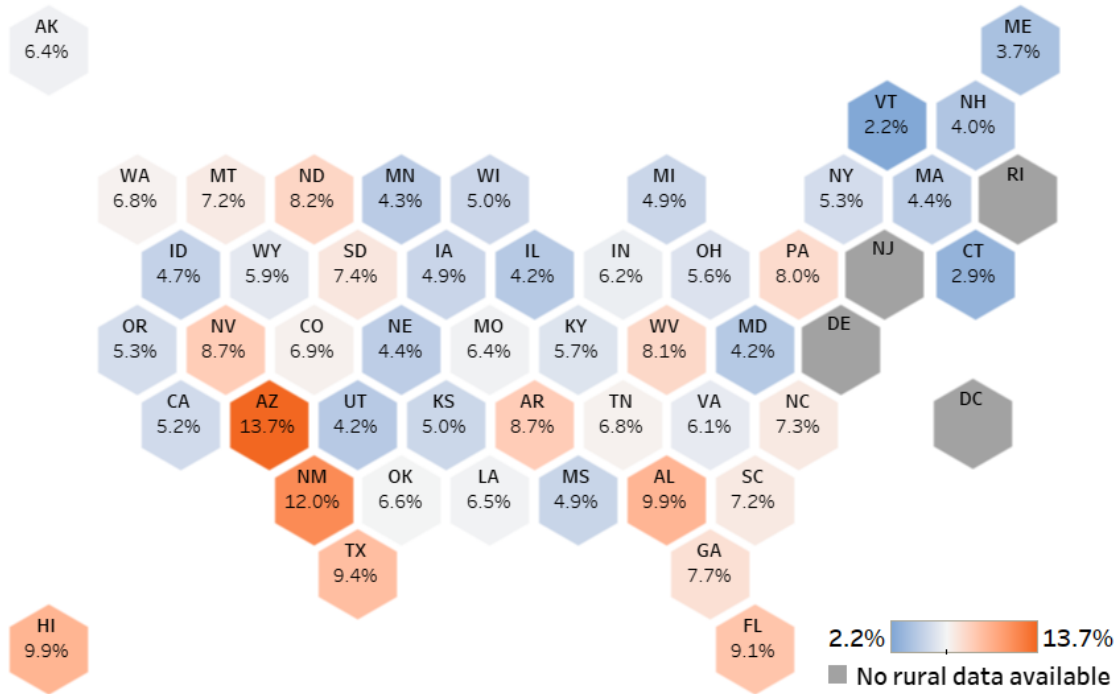
Nationwide, there is a shortage of obstetric providers in rural areas, which may contribute to difficulties in accessing prenatal and postnatal care. This care includes, but is not limited to, vital services such as routine mother and baby monitoring, mental health and substance abuse screenings, genetic screenings, nutrition support, and breastfeeding support. Furthermore, people in rural areas often experience additional barriers to accessing health care, including distance from providers. This can result in fewer preventive and emergency care visits, which is associated with decreased health outcomes.²

In addition to challenges related to access and supply of providers, individuals in rural areas experience higher rates of poverty, compared to urban residents.³ The rural poverty rate in the United States was 16.1 percent as of 2018, while the urban poverty rate was 12.6 percent, according to the American Community Survey (ACS).⁴ Research shows that family income is associated with child health, and that being in a low-income family is associated with decreased child health—suggesting a need for more data on the health of children in rural areas.⁵ Although poverty remains an issue across the country, regardless of geographic location, additional challenges related to rural poverty are distinct to these communities, including distance from providers.

Prenatal care

In several states, rural mothers access prenatal care less frequently than their urban peers (see **Figure 1**).⁶ Prenatal care promotes maternal and child health, in part by addressing risks for conditions that complicate pregnancy, such as high blood pressure and diabetes, and for other factors such as substance use and an unhealthy diet.⁷ Yet across the country, women in rural areas have less access to prenatal care because of hospital closures and a shortage of healthcare providers.⁸ Hospital closures are often due to financial distress related to treating higher percentages of uninsured patients or because of community poverty rates.⁹

Figure 1. Percentage of rural women receiving late or no prenatal care, by state: 2018



While the national average of women receiving late or no prenatal care in rural areas (6.6%) is higher than that of women in urban areas (6.2%), there is a range across states. The percentage of women in rural areas receiving late or no prenatal care ranges from 2.2 percent (Vermont) to 13.7 percent (Arizona; also see **Table 1** and the **Appendix**). States in the Southeast and Southwest have higher rates of women in rural areas receiving late or no prenatal care; states in the Northeast and Midwest have lower rates, and states in the West have a mix of above and below average rates.

Table 1. Percentage of women receiving late or no prenatal care, by urbanicity: 2018

State	Rural	Urban	Percentage Point Difference
North Dakota	8.2%	3.5%	4.7%
Arizona	13.7%	9.2%	4.6%
South Dakota	7.4%	3.9%	3.5%
Wyoming	5.9%	8.8%	-2.8%
Alabama	9.9%	7.3%	2.6%

Note. Among those states with data available, this table presents the five states with the largest percent differences between rural and urban communities.

Birthing facilities

Approximately 30,000 births in rural areas (about 3%) occur outside of hospitals in about one quarter of all states (Alaska, California, Hawaii, Idaho, Indiana, Michigan, Missouri, Montana, New York, Ohio, Pennsylvania, Washington, and Wisconsin)ⁱⁱⁱ (see **Table 2** in the **Appendix** for further details).¹⁰ Although 3 percent may seem low, research suggests that the percentage of out-of-hospital births is increasing.¹¹ In 2004, 0.87 percent of births occurred out-of-hospital, a figure that rose to 1.61 percent in 2017, an 85 percent increase.

Women in rural areas face similar barriers to accessing birthing facilities as they do to accessing prenatal care (i.e., hospital closures and a shortage of healthcare providers). Family physicians and midwives often provide services to counteract the rural shortage of obstetric providers.¹² Accessing midwife care may pose a challenge, though, as many private health insurance plans do not cover certified nurse-midwife services (although Medicaid does).¹³ Freestanding birth centers, defined as a “health care facility for childbirth where care is provided in the midwifery and wellness model,” may be a promising option for women in rural areas, as global research suggests that births in such centers may have equitable outcomes with hospital births; nationally, the data are mixed.^{14,15}

Nationally, data from CDC Wonder show that, compared to urban home births, both planned and unplanned rural home births are less frequently attended by a certified nurse midwife and more frequently attended by an “other” attendant, which can include a “husband or family member, emergency medical technician, police officer, or firefighter.”^{16,17} See **Tables 3 and 4** and the **Appendix** for additional details.

Research comparing planned and unplanned home births suggests that the latter are associated with an increased level of risk for both the mother and the child, as unplanned home births are often seen among women who have had late or no prenatal care.¹⁸ Although unplanned rural home births are frequently attended by a doctor of medicine or doctor of osteopathy, the majority of these births are still attended by “other” attendants. Data suggest that unplanned rural home births may also be at an increased risk because “other” attendants may be much less qualified to deal with complications that may arise.

ⁱⁱⁱ Data from CDC Wonder, a database with public health data from the Centers for Disease Control and Prevention (CDC).

Table 2. Percentage of planned home births attended by different types of attendants, by urbanicity: 2018

	Rural	Urban	Percentage Point Difference
Certified Nurse Midwife (CNM)	24.7%	32.1%	-7.4%
Doctor of Medicine (MD)	0.7%	0.7%	0.0%
Doctor of Osteopathy (DO)	0.1%	0.1%	0.0%
Other	24.3%	17.8%	6.3%
Other Midwife	50.2%	49.4%	0.6%

Table 3. Percentage of rural home births attended by different types of attendants, by whether the home birth was planned: 2018

	Planned	Unplanned	Percentage Point Difference
Certified Nurse Midwife (CNM)	24.7%	5.3%	19.3%
Doctor of Medicine (MD)	0.7%	19.9%	-18.4%
Doctor of Osteopathy (DO)	0.1%	2.7%	-2.6%
Other	24.3%	68.1%	-41.3%
Other Midwife	50.2%	4.0%	45.8%

Health insurance

There is a significant difference in access to health insurance between infants and toddlers in low-income families who live in rural areas and their non-rural counterparts (5.1% urban uninsured, 7.0% rural uninsured). The state-level distribution of rural infants and toddlers in low-income families (at or below 200% of the federal poverty line) who lack health insurance is mapped in **Figure 2**.¹⁹ Figures range from 0.1 percent (Vermont) to 17.3 percent (Arizona). Notably, these two states also have the lowest and highest rates of mothers who lack access to timely prenatal care, respectively. Infants and toddlers who do not have health insurance may not be able to access health care. States with higher rates of children who are uninsured, live in low-income families, and reside in rural areas are colored orange on the map, and those with lower rates are blue. States in the Southwest and Northeast have higher rates of uninsured children, states in the Southeast have lower rates, and states in the West have a mix of above and below average rates.

Figure 2. Percentage of rural infants and toddlers in low-income families who are uninsured, by state: 2017

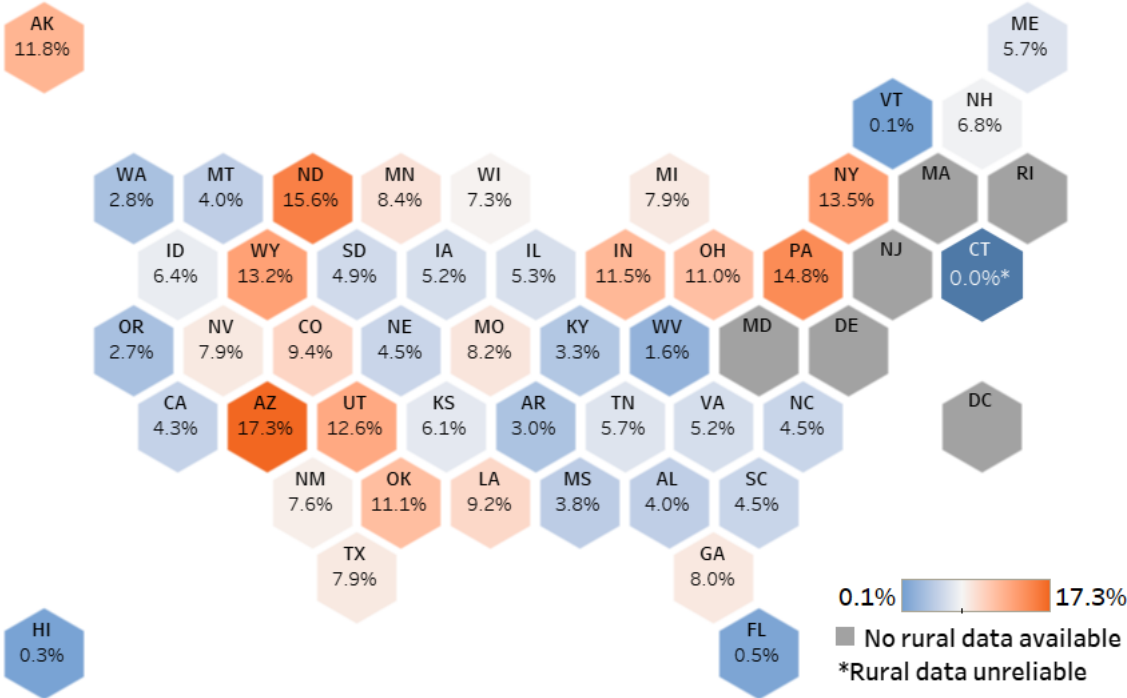


Table 4 shows the respective rural and urban percentages for the five states where rural populations have a higher percentage of uninsured low-income infants and toddlers than their urban counterparts. More detail can be found in the **Appendix**.

Table 4. Percentage of infants and toddlers in low-income families who lacked health insurance, by states with the largest percentage point differences and by urbanicity: 2017

State	Rural	Urban	Percentage point Difference
New York	13.5%	2.9%	10.6%
Pennsylvania	14.8%	6.0%	8.7%
Arizona	17.3%	9.4%	7.9%
Ohio	11.0%	4.1%	6.8%
Alaska	11.8%	5.6%	6.1%

Note. Among those states with data available, this table presents the top five states with the largest percent differences between rural and urban communities.

Recommended vaccines

According to the CDC, *children in rural areas received recommended vaccines less frequently than their urban peers*, which may reflect poorer access to health care providers and less awareness of (or proximity to) the Vaccination for Children (VFC) program, which provides free vaccines to children.²⁰ Approximately 30 percent of children under age 3 do not receive recommended vaccines (see the **Appendix, Table 6**).²¹ The most recent data from the Centers for Disease Control and Prevention (CDC) show that, among children ages 19 to 35 months, vaccination status and insurance status are correlated.²² Children covered by Medicaid are less likely than those covered by private insurance to receive vaccines, and uninsured children are less likely than both groups.

Preventive health and dental visits

Research suggests that children in rural areas are less likely than children in urban areas to have received a preventive medical or dental visit, which may be due to lower rates of being insured.^{23,24} The lower incidence of preventive health visits in rural areas may also help explain lower immunization rates. Moreover, barriers specific to rural areas that impact oral health include reduced access to fluoridated water and oral health education (in addition to provider shortages, distance from care, and poverty, which impact all types of health care).²⁵ Nationally, 91.1 percent of infants and toddlers received doctor's visits (i.e., well-child check-ins) and approximately one third (31.9%) of toddlers received a dental visit in the past year (see the **Appendix, Tables 7 and 8**).²⁶

Findings: Health Care Outcomes in Rural Areas

Inequities in the aforementioned prenatal, perinatal, and postnatal indicators show differential access to key health supports that can shape child development and child outcomes. The next section discusses selected outcomes—infant mortality, low birthweight, preterm birth, and breastfeeding—in further detail.

Infant mortality

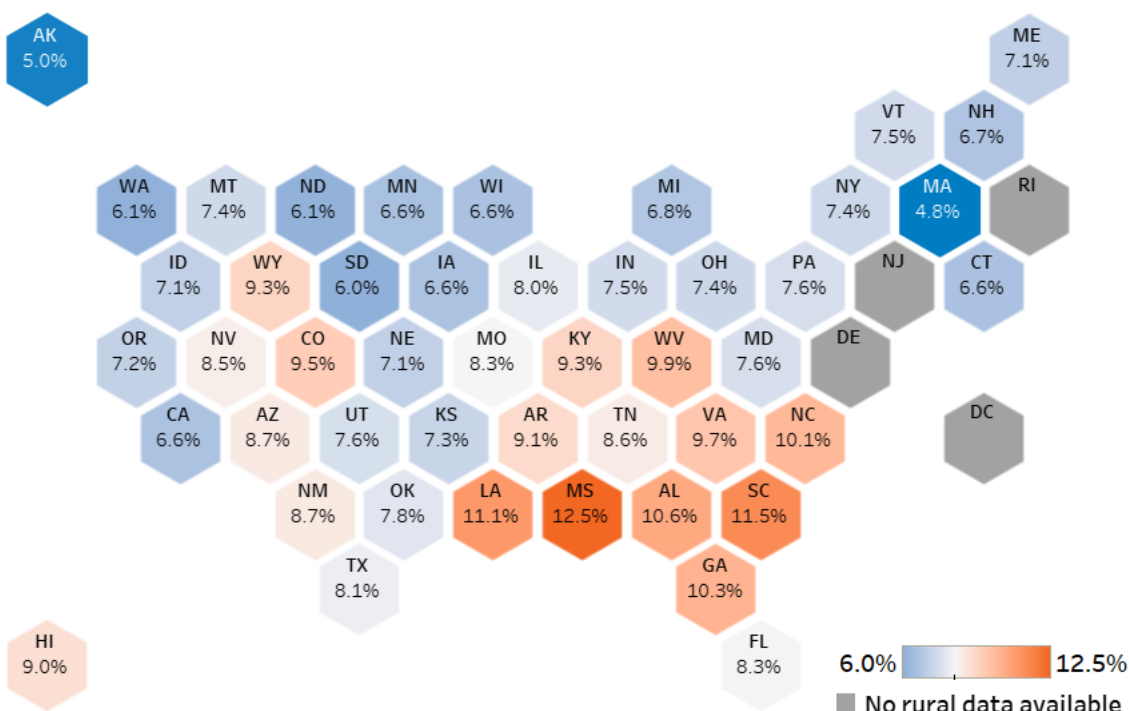
Data on infant mortality (or “the death of an infant before his or her first birthday”) at the national level exhibit rural-urban disparities, with infant mortality higher in rural communities.^{27,28} The rates per 1,000 live births are as follows: 6.69 (rural counties), 6.29 (small and medium urban counties), and 5.49 (large urban counties). These disparities exist during both periods of infancy: neonatal (i.e., birth to 27 days) and post-neonatal (28 days to 11 months).²⁹ Infants in rural areas are more likely than those in urban areas to experience deaths due to congenital malformation, sudden infant death syndrome, and unintentional injuries—three of the five leading causes of infant death. However, infants in rural areas are less likely than urban infants to experience deaths due to low

birthweight and maternal complications.³⁰ Although urban-rural data are available at the national level, they are not available at the state level.

Low birthweight

Rates of low birthweight (or “weight at birth less than 2,500 g (5.5 lb)”) are similar in urban and rural areas; however, there are stark differences by state and region.^{31,32} At the national level, 8.3 percent of infants are born with low birthweight. The urban and rural figures are equal (each 8.3 percent), but the data vary by state. The state-level distribution of low birthweight in rural areas is mapped in **Figure 3**.³³ Figures range from 4.8 percent (Massachusetts) to 12.5 percent (Mississippi). States with higher rates of low birthweight are colored in orange, and those with lower rates are blue. States in the Southeast have higher rates of low birthweight, states in the Northeast and Midwest have lower rates, and states in the West and Southwest have a mix of above and below average rates.

Figure 3. Percentage of rural infants with low birthweight, by state: 2018



The five states with the largest percentage point differences between rural and urban infants are listed in **Table 5** below; more detail can be found in the **Appendix**.

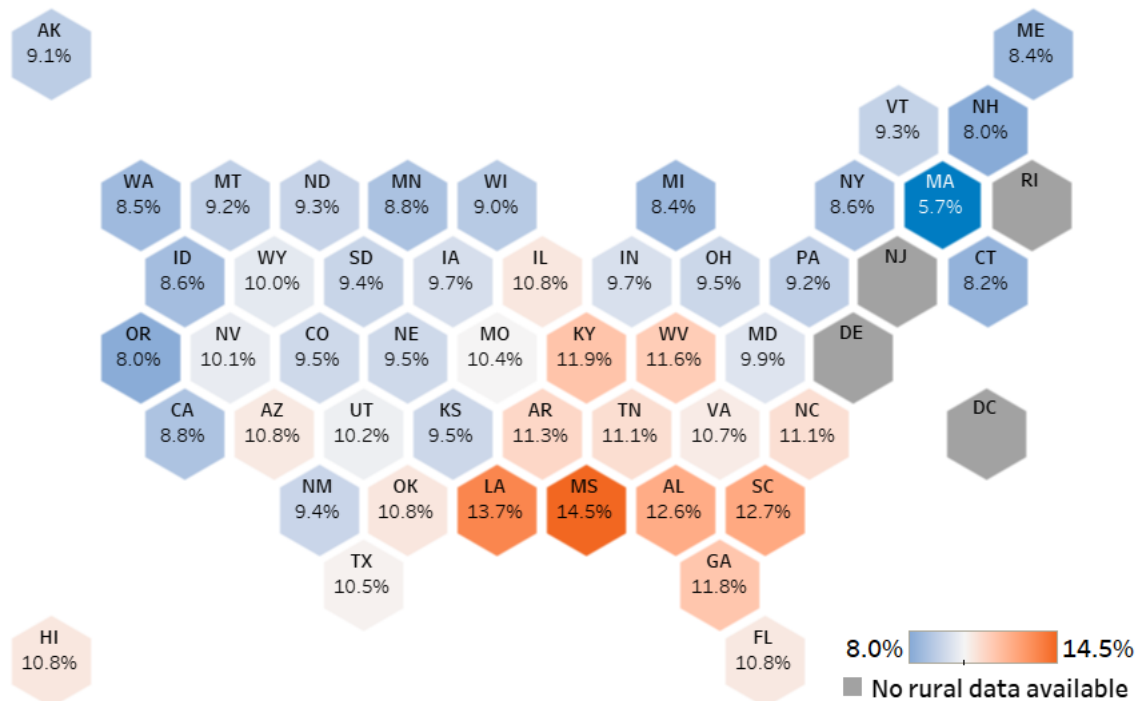
Table 5. Percentage of infants with low birthweight, by state and urbanicity: 2018

State	Rural	Urban	Percentage Point Difference
Massachusetts	4.8%	7.6%	-2.8%
South Carolina	11.5%	9.3%	2.2%
Michigan	6.8%	8.8%	-2.0%
Virginia	9.7%	8.0%	1.7%
Wisconsin	6.6%	8.0%	-1.4%

Preterm birth

Nationally, preterm birth (or birth before 37 weeks) rates are slightly higher in rural areas than in urban areas.³⁴ At the national level, 10.0 percent of babies are born preterm (10.0 percent urban and 10.4 percent rural). The state-level distribution of rural preterm birth rates is mapped in **Figure 4.**³⁵ Figures range from 5.7 percent (Massachusetts) to 14.5 percent (Mississippi). States with higher rates of preterm birth are colored orange and those with lower rates are blue. States in the Southeast have higher rates of preterm birth, states in the Northeast and Midwest have lower rates, and states in the West and Southwest have a mix of above and below average rates.

Figure 4. Percentage of rural births that are preterm, by state: 2018



Nationally, states with lower rates of low birthweight also have lower rates of preterm birth, while states with higher rates of low birthweight have higher preterm birth rates. (This is to be expected because preterm birth can cause low birthweight.³⁶) **Table 6** shows the five states with the largest percentage differences between rural and urban preterm births. More detail can be found in the **Appendix**.

Table 6. Percentage of infants born preterm, by state and urbanicity: 2018

State	Rural	Urban	Percentage Point Difference
Massachusetts	5.7%	9.0%	-3.3%
Vermont	9.3%	7.2%	2.1%
Michigan	8.4%	10.3%	-1.9%
South Carolina	12.7%	11.1%	1.5%
Virginia	10.7%	9.3%	1.4%

Breastfeeding

Rates of breastfed infants are lower in rural areas than in urban areas, according to research from the Centers for Disease Control and Prevention (CDC).^{37,38} This may be because breastfeeding education programs and medical information about breastfeeding are more difficult for women in rural areas to access.³⁹ Urban-rural data at the state level could be helpful in ensuring that rural areas also meet national objectives for breastfeeding. Nationally, over 80 percent of newborn infants in the United States have been breastfed and 54.6 percent are still breastfed at 6 months (see the **Appendix, Table 11**).⁴⁰ These numbers are close to the national health goals set by the Healthy People 2020 objectives (81.9 percent ever breastfed and 60.6 percent breastfed at 6 months).⁴¹

How to Support Infants and Toddlers in Rural Areas

To support equitable access to basic health care and support services in rural areas, states and policymakers should consider expanding access to health insurance, health care, vaccinations, home visiting programs, and other community-based initiatives. The following are examples of specific recommendations.

Identify any existing barriers that rural families may face in enrolling their infants and toddlers in the state’s Children’s Health Insurance Program (CHIP). CHIP is a series of federal grants to states that help provide health insurance to children and families not eligible for Medicaid coverage. CHIP covers families who are above Medicaid thresholds but who do not earn enough to obtain a private form of coverage.⁴² Together, Medicaid and CHIP cover more than one in three children in the United States.⁴³ These programs

can also help children in low-income families gain better access to health care visits, which may include screenings, dental visits, and hospital visits.⁴⁴

Medicaid and CHIP can bridge the financial gap for children living in rural communities by providing a means of health coverage that would otherwise not be available through Medicaid. Yet in a number of states, low-income infants and toddlers in urban areas are more likely to be enrolled in CHIP than those in rural areas. Efforts to understand why rural families are less likely to enroll in this resource—or to identify challenges might prevent these families from doing so—could inform efforts to increase enrollment in rural areas.

Explore options such as mobile health clinics and telemedicine to ensure that children in rural areas have access to a pediatrician for routine check-ups and to address their health needs. All children need access to well-child visits and other health care needs, including emergency care. Infants and toddlers living in rural communities face both logistical and financial challenges in accessing health care. These challenges include closures of rural clinics and hospitals, provider shortages, and an inability to travel to urban areas to receive health care (due to distance or other reasons).⁴⁵ Children who live further from main hospitals and clinics may be unable to receive consultation from doctors as readily, even when they need services. Mobile health clinics and telemedicine services can help address issues related to distance by providing health care services from afar to infants and toddlers in rural areas. These services can include videoconference consultations, telephone lines, or email exchanges. Telemedicine is a safe, efficient, and affordable method for families to contact health care providers whenever they need.⁴⁶

Promote the importance of timely and appropriate vaccinations among rural families and utilize existing programs designed to help cover the cost. State policymakers and health care providers can play a crucial role in promoting timely and appropriate vaccination. Their efforts could include educating parents on the benefits of vaccinations for their children, as well as letting parents know about the Vaccines for Children (VFC) program. VCF is a federally funded program that serves children who are unable to obtain vaccines due to the cost of health care. The Centers for Disease Control and Prevention (CDC) purchases vaccines and distributes them to local, state, and territorial agencies, which then gives them to providers at no charge.⁴⁷ The VFC program covers children under age 19 who are underinsured or uninsured, eligible for Medicaid, or of American Indian or Alaska Native race/ethnicity.

Research shows that rates of receipt of recommended vaccination for children ages 19 to 35 months remained stable in 2017, although rates were lower among children in rural areas and among uninsured children.⁴⁸ While most parents opt to vaccinate their children, some parents refuse vaccinations. In 2006, 74.5 percent of pediatricians reported having at least one parent who refused vaccines for their children, but this

number increased to 87.0 percent by 2013; the most commonly reported reason for refusal was a belief that vaccines are unnecessary.⁴⁹ The region where an infant or toddler lives has been found to be a significant predictor of vaccine refusal, with non-inner city urban, suburban, and rural regions more likely to experience vaccine refusal than urban inner cities. Parents who opt not to vaccinate place their children at risk for contracting or transmitting diseases. The same is true for parents who delay vaccinations, as this causes an increase in the time a child remains unvaccinated and makes it less likely that the vaccination series will come to completion.

Identify whether there are gaps in how existing home visiting programs in a state serve rural children and families. If these exist, states can employ a variety of approaches to address the issue—for example, a task force or directive to the state public health department to identify potential reasons for these gaps—and identify strategies for reaching these families. For a variety of reasons, new parents may face challenges when caring for infants and toddlers, including financial strains, lack of social support, or substance abuse problems.⁵⁰ Home visiting helps address some of these challenges by providing in-home support to families, and serves many children who are at-risk or low-income (see the **Appendix, Table 12**). With home visiting, support services are brought directly into the home by the visitor, which can help families feel safe and supported. These services can include—but are not limited to—working with mothers to promote and connect them with prenatal care, visiting families with children who are experiencing health challenges to train them in health management, providing nutritional training and support for families whose children are born low-weight, or visiting families to promote health child-family relationships.⁵¹ The provider is also able to individualize services to the specific child and family by observing interactions in the home.

Some challenges are inherent to delivering home visiting services in a rural area. Providers might not be able to reach the child and family due to travel distance or inability to locate the family's home (e.g., due to discrepancies between directions and the actual road).⁵² However, providers can continue to identify and meet these families to help promote positive child development. For example, they can schedule home visit times during the early evening hours, send post cards before the set date, ask families for verbal directions to their homes and compare those to county maps, and obtain multiple alternate phone numbers at the first visit to reach the family.⁵³ Research has found that home visiting programs have improved parents' interactions with children; improved children's cognitive, social, and emotional health; and improved weight-for-age in physically isolated or disadvantaged children.⁵⁴

Work with community hospitals, doulas, birthing centers, and mobile health clinics to provide group prenatal visits. Group prenatal visits are similar to individual visits in that they educate women on pregnancy, childbirth, and the postpartum process.⁵⁵ In group

prenatal visits, mothers join the provider in a group setting with other women going through the same process. The group setting encourages mothers to interact and receive social support from others in the room. Studies in rural areas have indicated that women and teens of color^{iv} who have participated in group prenatal visits had lower rates of preterm birth and low birth weight than those who participated in individual prenatal visits.⁵⁶

Group prenatal visits can alleviate the isolation that may be associated with living in a rural area. Mothers can feel part of a bigger group and maintain contact with someone from the group if concerns arise. Additionally, group prenatal visits streamlined transfers to local hospitals because participating women have already made connections with an OB-GYN provider (often the group facilitator).⁵⁷

Conclusion

Using national and state-level data, this brief shows a clear need for increased access to care for residents in rural areas. The key access indicators—prenatal care, birthing facilities, health insurance, immunizations, and preventive health and dental visits—show that rural populations are more often disadvantaged on these indicators, relative to their counterparts in urban or suburban areas. States and communities may need to tailor their approaches to improving rural health care access to support these areas' unique needs. Medicaid, the Children's Health Insurance Program, and the Vaccines for Children program are all policies which can be beneficial, while home visiting and group prenatal visits can offer additional support to rural populations.

Although this brief presents state-level urban-rural data for a variety of health access indicators and health outcomes, there is a need for more robust state and community-level data, which could refine the field's understanding of challenges related to rural health care access and tailor it to specific communities. Further research and more state-level urban-rural data—especially data that can help us understand access and health outcomes for low-income rural populations and people of color living in rural areas—will be integral to supporting states and communities. For example, this brief could not present data disaggregated by race or ethnicity for the indicators presented because the sample populations for these data sets are simply too small. We do know, however, that 16 percent of people residing in rural areas are individuals of color.⁵⁸ People of color in rural areas can face the same barriers and challenges as other residents in their communities but may face additional, unique challenges. The latter include racism that indirectly or directly targets certain racial or ethnic identity group(s), language barriers, and cultural differences in beliefs related to health.

^{iv} This term refers to individuals of all racial and ethnic backgrounds, except non-Hispanic white.

Finally, more research on effective and supportive practices that promote positive infant and toddler health outcomes among rural populations will go a long way toward ensuring that a state's vision to support *all children* can be achieved.

Appendix

Table 1. Percentage of women receiving late or no prenatal care, by state and urbanicity: 2018

State	Rural	Urban	Percentage Point Difference
Alabama	9.9%	7.3%	2.6%
Alaska	6.4%	5.6%	0.8%
Arizona	13.7%	9.2%	4.6%
Arkansas	8.7%	9.4%	-0.7%
California	5.2%	3.6%	1.5%
Colorado	6.9%	5.8%	1.1%
Connecticut	2.9%	3.7%	-0.8%
Delaware	NA	7.0%	NA
District of Columbia	NA	7.6%	NA
Florida	9.1%	7.8%	1.3%
Georgia	7.7%	8.9%	-1.2%
Hawaii	9.9%	10.9%	-1.0%
Idaho	4.7%	4.2%	0.5%
Illinois	4.2%	6.3%	-2.1%
Indiana	6.2%	6.5%	-0.3%
Iowa	4.9%	3.7%	1.2%
Kansas	5.0%	3.6%	1.4%
Kentucky	5.7%	5.8%	-0.1%
Louisiana	6.5%	6.6%	-0.1%
Maine	3.7%	4.2%	-0.6%
Maryland	4.2%	6.7%	-2.5%
Massachusetts	4.4%	4.7%	-0.3%
Michigan	4.9%	4.8%	0.2%
Minnesota	4.3%	3.3%	1.0%
Mississippi	4.9%	4.8%	0.1%

State	Rural	Urban	Percentage Point Difference
Missouri	6.4%	6.4%	0.0%
Montana	7.2%	4.9%	2.2%
Nebraska	4.4%	4.9%	-0.5%
Nevada	8.7%	8.7%	0.0%
New Hampshire	4.0%	3.6%	0.4%
New Jersey	NA	6.0%	NA
New Mexico	12.0%	10.8%	1.2%
New York	5.3%	4.9%	0.4%
North Carolina	7.3%	6.6%	0.6%
North Dakota	8.2%	3.5%	4.7%
Ohio	5.6%	6.2%	-0.6%
Oklahoma	6.6%	7.0%	-.04%
Oregon	5.3%	4.5%	0.8%
Pennsylvania	8.0%	6.2%	1.8%
Rhode Island	NA	1.7%	NA
South Carolina	7.2%	7.2%	0.1%
South Dakota	7.4%	3.9%	3.5%
Tennessee	6.8%	6.0%	0.8%
Texas	9.4%	9.6%	-0.2%
Utah	4.2%	4.4%	-0.2%
Vermont	2.2%	1.3%	0.9%
Virginia	6.1%	4.9%	1.2%
Washington	6.8%	5.7%	1.1%
West Virginia	8.1%	5.9%	2.2%
Wisconsin	5.0%	3.7%	1.3%
Wyoming	5.9%	8.8%	-2.8%
United States	6.6%	6.2%	0.4%

Source: United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2018, on CDC WONDER Online Database, September 2019. Retrieved October 2019 from <http://wonder.cdc.gov/natality-expanded-current.html>

Table 2. Percentage of out-of-hospital births, by state and urbanicity: 2018

State	Rural	Urban
Alabama	0.5%	0.5%
Alaska	4.4%	7.7%
Arizona	0.8%	1.8%
Arkansas	1.0%	1.2%
California	3.9%	1.0%
Colorado	2.3%	2.6%
Connecticut	1.8%	0.9%
Delaware	NA	2.0%
District of Columbia	NA	0.6%
Florida	1.4%	1.8%
Georgia	0.6%	1.0%
Hawaii	3.5%	1.2%
Idaho	3.5%	3.7%
Illinois	1.1%	0.6%
Indiana	6.2%	1.6%
Iowa	2.5%	1.0%
Kansas	1.9%	2.1%
Kentucky	2.3%	1.2%
Louisiana	0.2%	0.4%
Maine	2.8%	1.7%
Maryland	0.0%	1.3%
Massachusetts	1.4%	0.8%
Michigan	3.6%	1.1%
Minnesota	2.5%	2.3%
Mississippi	0.5%	0.6%
Missouri	4.2%	1.9%
Montana	4.2%	3.3%
Nebraska	0.5%	0.3%

State	Rural	Urban
Nevada	1.2%	1.4%
New Hampshire	2.7%	2.0%
New Jersey	NA	0.6%
New Mexico	1.7%	2.5%
New York	6.1%	1.2%
North Carolina	0.9%	1.6%
North Dakota	1.0%	0.8%
Ohio	4.5%	1.1%
Oklahoma	1.2%	1.7%
Oregon	2.7%	3.7%
Pennsylvania	8.5%	3.1%
Rhode Island	NA	0.6%
South Carolina	0.9%	1.8%
South Dakota	0.7%	0.9%
Tennessee	1.9%	1.4%
Texas	1.2%	1.5%
Utah	2.9%	3.2%
Vermont	2.2%	1.2%
Virginia	1.7%	1.2%
Washington	4.2%	3.7%
West Virginia	0.8%	1.0%
Wisconsin	7.3%	1.4%
Wyoming	1.9%	1.4%
United States	2.6%	1.5%

Source: United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2018, on CDC WONDER Online Database, March 2019. Retrieved March 2020 from <http://wonder.cdc.gov/natality-expanded-current.html>

Table 3. Percentage of planned home births attended by different types of attendants, by urbanicity: 2018

	Rural	Urban	Percentage Point Difference
Certified Nurse Midwife (CNM)	24.7%	32.1%	-7.4%
Doctor of Medicine (MD)	0.7%	0.7%	0.0%
Doctor of Osteopathy (DO)	0.1%	0.1%	0.0%
Other	24.3%	17.8%	6.5%
Other Midwife	50.2%	49.4%	0.8%

Source: United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2018, on CDC WONDER Online Database, September 2019. Retrieved October 2019 from <http://wonder.cdc.gov/natality-expanded-current.html>

Table 4. Percentage of rural home births attended by different types of attendants, by whether the home birth was planned: 2018

	Planned	Unplanned	Percentage Point Difference
Certified Nurse Midwife (CNM)	24.7%	5.3%	19.4%
Doctor of Medicine (MD)	0.7%	19.9%	-19.2%
Doctor of Osteopathy (DO)	0.1%	2.7%	-2.6%
Other	24.3%	68.1%	-43.8%
Other Midwife	50.2%	4.0%	46.2%

Source: United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2018, on CDC WONDER Online Database, September 2019. Retrieved October 2019 from <http://wonder.cdc.gov/natality-expanded-current.html>

Table 5. Percentage of rural and urban infants and toddlers in low income families who lacked health insurance: 2017

State	Rural	Urban	Percentage Point Difference
Alabama	4.0%	3.2%	0.7%
Alaska	11.8%	5.6%	6.1%
Arizona	17.3%	9.4%	7.9%
Arkansas	3.0%	6.0%	-3.0%
California	4.3%	3.8%	0.5%
Colorado	9.4%	3.8%	5.6%

State	Rural	Urban	Percentage Point Difference
Connecticut	0.0% ^a	4.7%	-4.7%
Delaware	NA	5.0%	NA
District of Columbia	NA	0.8%	NA
Florida	0.5%	6.4%	-5.9%
Georgia	8.0%	7.6%	0.4%
Hawaii	0.3%	2.2%	-1.9%
Idaho	6.4%	2.6%	3.7%
Illinois	5.3%	3.0%	2.3%
Indiana	11.5%	6.2%	5.3%
Iowa	5.2%	3.9%	1.3%
Kansas	6.1%	7.8%	-1.7%
Kentucky	3.3%	2.7%	0.6%
Louisiana	9.2%	3.2%	5.9%
Maine	5.7%	3.1%	2.5%
Maryland	NA	5.6%	NA
Massachusetts	NA	1.6%	NA
Michigan	7.9%	3.0%	4.9%
Minnesota	8.4%	4.2%	4.2%
Mississippi	3.8%	3.2%	0.6%
Missouri	8.2%	6.5%	1.7%
Montana	4.0%	5.3%	-1.3%
Nebraska	4.5%	7.5%	-3.0%
Nevada	7.9%	8.7%	-0.8%
New Hampshire	6.8%	3.1%	3.6%
New Jersey	NA	4.6%	NA
New Mexico	7.6%	4.4%	3.2%
New York	13.5%	2.9%	10.6%
North Carolina	4.5%	3.9%	0.6%

State	Rural	Urban	Percentage Point Difference
North Dakota	15.6%	22.7%	-7.1%
Ohio	11.0%	4.1%	6.8%
Oklahoma	11.1%	5.1%	6.0%
Oregon	2.7%	4.6%	-1.9%
Pennsylvania	14.8%	6.0%	8.7%
Rhode Island	NA	4.7%	NA
South Carolina	4.5%	4.7%	-0.2%
South Dakota	4.9%	1.7%	3.3%
Tennessee	5.7%	4.6%	1.1%
Texas	7.9%	7.8%	0.1%
Utah	12.6%	9.5%	3.1%
Vermont	0.1%	1.9%	-1.8%
Virginia	5.2%	6.4%	-1.2%
Washington	2.8%	4.3%	-1.5%
West Virginia	1.6%	0.5%	1.1%
Wisconsin	7.3%	3.7%	3.6%
Wyoming	13.2%	NA	NA
United States	7.0%	5.1%	35.7%

Table 6. Percentage of infants and toddlers who received the recommended doses of DTaP, polio, MMR, Hib, HepB, varicella, and PCV vaccines by ages 19 through 35 months: 2017

State	Percentage
Alabama	71.2%
Alaska	69.5%
Arizona	66.5%
Arkansas	69.4%
California	68.6%
Colorado	71.0%

State	Percentage
Connecticut	75.3%
Delaware	77.1%
District of Columbia	74.0%
Florida	76.2%
Georgia	65.6%
Hawaii	69.8%
Idaho	69.2%
Illinois	75.4%
Indiana	66.3%
Iowa	72.8%
Kansas	69.5%
Kentucky	71.0%
Louisiana	70.0%
Maine	72.7%
Maryland	75.2%
Massachusetts	82.1%
Michigan	69.9%
Minnesota	66.1%
Mississippi	68.7%
Missouri	71.2%
Montana	66.2%
Nebraska	77.9%
Nevada	71.3%
New Hampshire	78.9%
New Jersey	69.3%
New Mexico	71.9%
New York	67.5%
North Carolina	70.9%

State	Percentage
North Dakota	78.8%
Ohio	66.4%
Oklahoma	67.3%
Oregon	70.3%
Pennsylvania	70.4%
Rhode Island	74.4%
South Carolina	66.0%
South Dakota	74.7%
Tennessee	79.3%
Texas	67.8%
Utah	67.9%
Vermont	74.0%
Virginia	77.1%
Washington	69.9%
West Virginia	74.7%
Wisconsin	69.2%
Wyoming	72.0%
United States	70.4%

Source: Centers for Disease Control and Prevention, National Center for Immunization and Respiratory Diseases. (2018). Combined 7-vaccine Series coverage among children 19-35 months by State, HHS Region, and the United States, National Immunization Survey-Child (NIS-Child), 2017. Retrieved from <https://www.cdc.gov/vaccines/imz-managers/coverage/childvaxview/data-reports/7-series/trend/index.html>

Table 7. Percentage of infants and toddlers who had a preventive medical visit in the past year: 2016-2017

State	Percentage
Alabama	89.4%
Alaska	89.0%
Arizona	90.4%
Arkansas	95.8%
California	88.3%
Colorado	93.8%
Connecticut	96.0%
Delaware	86.3%
District of Columbia	96.6%
Florida	95.2%
Georgia	94.5%
Hawaii	85.7%
Idaho	93.4%
Illinois	89.0%
Indiana	88.9%
Iowa	93.5%
Kansas	91.0%
Kentucky	85.8%
Louisiana	93.1%
Maine	96.8%
Maryland	90.6%
Massachusetts	93.9%
Michigan	93.0%
Minnesota	87.8%
Mississippi	88.1%
Missouri	91.1%
Montana	96.5%

State	Percentage
Nebraska	88.9%
Nevada	92.8%
New Hampshire	93.1%
New Jersey	94.9%
New Mexico	85.4%
New York	85.5%
North Carolina	94.4%
North Dakota	91.5%
Ohio	94.4%
Oklahoma	87.7%
Oregon	96.8%
Pennsylvania	93.2%
Rhode Island	94.4%
South Carolina	88.6%
South Dakota	93.7%
Tennessee	93.8%
Texas	89.6%
Utah	94.8%
Vermont	91.9%
Virginia	95.2%
Washington	94.8%
West Virginia	93.9%
Wisconsin	87.8%
Wyoming	91.8%
United States	91.1%

^a The data for Kentucky and Ohio were deemed unreliable based on the survey sample.

Source: Child and Adolescent Health Measurement Initiative, (2019). 2016-17 National Survey of Children's Health (NSCH) State Constructed Data Set. Data Resource Center for Child and Adolescent Health supported by Cooperative Agreement U59MC27866 from the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB). Retrieved September 10, 2019 from www.childhealthdata.org

Table 8. Percentage of children ages 1-2 who had a preventive dental visit in the past year: 2016-2017

State	Percentage
Alabama	34.3% ^a
Alaska	24.9%
Arizona	44.1% ^a
Arkansas	26.5% ^a
California	28.0% ^a
Colorado	44.1% ^a
Connecticut	33.7% ^a
Delaware	24.5% ^a
District of Columbia	30.4%
Florida	32.1% ^a
Georgia	35.9% ^a
Hawaii	45.5% ^a
Idaho	25.1%
Illinois	18.4%
Indiana	30.3% ^a
Iowa	39.9% ^a
Kansas	28.1% ^a
Kentucky	19.3%
Louisiana	43.7% ^a
Maine	33.6% ^a
Maryland	30.7% ^a
Massachusetts	30.2% ^a
Michigan	25.6% ^a
Minnesota	24.3%
Mississippi	30.6% ^a
Missouri	18.6%
Montana	34.5% ^a
Nebraska	30.9% ^a

State	Percentage
Nevada	23.1%
New Hampshire	28.7% ^a
New Jersey	21.2% ^a
New Mexico	45.0% ^a
New York	27.1% ^a
North Carolina	40.7% ^a
North Dakota	20.5% ^a
Ohio	22.2% ^a
Oklahoma	28.4% ^a
Oregon	46.3% ^a
Pennsylvania	32.4% ^a
Rhode Island	31.2% ^a
South Carolina	33.0% ^a
South Dakota	31.9%
Tennessee	27.6%
Texas	46.9% ^a
Utah	37.4% ^a
Vermont	26.0%
Virginia	28.5% ^a
Washington	48.6% ^a
West Virginia	26.0% ^a
Wisconsin	28.2% ^a
Wyoming	35.9% ^a
United States	31.9%

^a The data for these states were deemed unreliable based on the survey sample.
Source: Child and Adolescent Health Measurement Initiative, (2019). 2016-17 National Survey of Children's Health (NSCH) Stata Constructed Data Set. Data Resource Center for Child and Adolescent Health supported by Cooperative Agreement U59MC27866 from the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB). Retrieved September 10, 2019 from www.childhealthdata.org

Table 9. Percentage of infants with low birthweight, by state and urbanicity: 2018

State	Rural	Urban	Percentage Point Difference
Alabama	10.6%	10.7%	-0.1%
Alaska	5.0%	6.3%	-1.3%
Arizona	8.7%	7.5%	1.2%
Arkansas	9.1%	9.5%	-0.4%
California	6.6%	7.0%	-0.4%
Colorado	9.5%	9.4%	0.1%
Connecticut	6.6%	7.7%	-1.1%
Delaware	NA	8.9%	NA
District of Columbia	NA	10.0%	NA
Florida	8.3%	8.7%	-0.3%
Georgia	10.3%	10.1%	0.2%
Hawaii	9.0%	8.2%	0.8%
Idaho	7.1%	7.3%	-0.2%
Illinois	8.0%	8.6%	-0.6%
Indiana	7.5%	8.2%	-0.7%
Iowa	6.6%	7.1%	-0.5%
Kansas	7.3%	7.4%	-0.2%
Kentucky	9.3%	8.6%	0.6%
Louisiana	11.1%	10.7%	0.4%
Maine	7.1%	7.3%	-0.2%
Maryland	7.6%	8.8%	-1.2%
Massachusetts	4.8%	7.6%	-2.8%
Michigan	6.8%	8.8%	-2.0%
Minnesota	6.6%	6.9%	-0.4%
Mississippi	12.5%	11.7%	0.8%
Missouri	8.3%	8.9%	-0.5%
Montana	7.4%	7.5%	-0.1%

State	Rural	Urban	Percentage Point Difference
Nebraska	7.1%	7.8%	-0.6%
Nevada	8.5%	8.7%	-0.2%
New Hampshire	6.7%	6.8%	-0.1%
New Jersey	NA	7.9%	NA
New Mexico	8.7%	9.3%	-0.6%
New York	7.4%	8.1%	-0.7%
North Carolina	10.1%	9.0%	1.1%
North Dakota	6.1%	7.1%	-1.0%
Ohio	7.4%	8.8%	-1.4%
Oklahoma	7.8%	8.5%	-0.7%
Oregon	7.2%	6.6%	0.5%
Pennsylvania	7.6%	8.4%	-0.8%
Rhode Island	NA	7.6%	NA
South Carolina	11.5%	9.3%	2.2%
South Dakota	6.0%	7.3%	-1.3%
Tennessee	8.6%	9.5%	-0.9%
Texas	8.1%	8.5%	-0.4%
Utah	7.6%	7.1%	0.5%
Vermont	7.5%	6.3%	1.2%
Virginia	9.7%	8.0%	1.7%
Washington	6.1%	6.7%	-0.6%
West Virginia	9.9%	9.0%	0.9%
Wisconsin	6.6%	8.0%	-1.4%
Wyoming	9.3%	9.5%	-0.2%
United States	8.3%	8.3%	0.6%

Source: United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2018, on CDC WONDER Online Database, September 2019. Retrieved October 2019 from <http://wonder.cdc.gov/natality-expanded-current.html>

Table 10. Percentage of infants born preterm, by state and urbanicity: 2018

State	Rural	Urban	Percentage Point Difference
Alabama	12.6%	12.5%	0.1%
Alaska	9.1%	9.3%	-0.2%
Arizona	10.8%	9.4%	1.3%
Arkansas	11.3%	11.8%	-0.5%
California	8.8%	8.8%	0.0%
Colorado	9.5%	9.2%	0.4%
Connecticut	8.2%	9.4%	-1.2%
Delaware	NA	9.6%	NA
District of Columbia	NA	10.1%	NA
Florida	10.8%	10.2%	0.6%
Georgia	11.8%	11.4%	0.4%
Hawaii	10.8%	10.2%	0.7%
Idaho	8.6%	9.3%	-0.7%
Illinois	10.8%	10.7%	0.2%
Indiana	9.7%	10.4%	-0.6%
Iowa	9.7%	10.0%	-0.4%
Kansas	9.5%	9.5%	0.0%
Kentucky	11.9%	11.0%	0.9%
Louisiana	13.7%	12.9%	0.8%
Maine	8.4%	8.7%	-0.3%
Maryland	9.9%	10.2%	-0.3%
Massachusetts	5.7%	9.0%	-3.3%
Michigan	8.4%	10.3%	-1.9%
Minnesota	8.8%	9.0%	-0.2%
Mississippi	14.5%	13.9%	0.6%
Missouri	10.4%	10.8%	-0.4%
Montana	9.2%	8.9%	0.3%

State	Rural	Urban	Percentage Point Difference
Nebraska	9.5%	10.9%	-1.4%
Nevada	10.1%	10.1%	0.0%
New Hampshire	8.0%	8.5%	-0.5%
New Jersey	NA	9.5%	NA
New Mexico	9.4%	10.0%	-0.6%
New York	8.6%	9.0%	-0.3%
North Carolina	11.1%	10.2%	0.8%
North Dakota	9.3%	9.8%	-0.5%
Ohio	9.5%	10.5%	-1.0%
Oklahoma	10.8%	11.7%	-0.8%
Oregon	8.0%	7.8%	0.2%
Pennsylvania	9.2%	9.6%	-0.4%
Rhode Island	NA	9.0%	NA
South Carolina	12.7%	11.1%	1.5%
South Dakota	9.4%	9.5%	-0.1%
Tennessee	11.1%	11.1%	0.0%
Texas	10.5%	10.8%	-0.3%
Utah	10.2%	9.3%	0.9%
Vermont	9.3%	7.2%	2.1%
Virginia	10.7%	9.3%	1.4%
Washington	8.5%	8.3%	0.2%
West Virginia	11.6%	12.0%	-0.4%
Wisconsin	9.0%	10.2%	-1.2%
Wyoming	10.0%	9.5%	0.5%
United States	10.4%	10.0%	3.9%

Source: United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2018, on CDC WONDER Online Database, September 2019. Retrieved October 2019 from <http://wonder.cdc.gov/natality-expanded-current.html>

Table 11. Percentage of infants ever breastfed, percentage breastfed at 6 months: 2017

State	Ever breastfed	Breastfed at 6 months
Alabama	65.4%	37.1%
Alaska	92.4%	67.4%
Arizona	81.2%	52.6%
Arkansas	73.3%	45.5%
California	87.8%	60.8%
Colorado	90.0%	62.7%
Connecticut	86.5%	57.5%
Delaware	78.7%	53.9%
District of Columbia	81.1%	61.0%
Florida	79.4%	48.2%
Georgia	80.1%	52.4%
Hawaii	91.1%	64.8%
Idaho	90.7%	63.7%
Illinois	83.5%	54.3%
Indiana	79.7%	47.7%
Iowa	82.0%	52.0%
Kansas	84.5%	56.1%
Kentucky	72.8%	44.4%
Louisiana	66.9%	36.5%
Maine	87.7%	59.0%
Maryland	86.6%	64.6%
Massachusetts	84.3%	56.2%
Michigan	77.7%	51.6%
Minnesota	87.1%	61.6%
Mississippi	60.5%	31.8%
Missouri	85.6%	53.9%
Montana	88.5%	62.5%

State	Ever breastfed	Breastfed at 6 months
Nebraska	82.2%	55.7%
Nevada	82.6%	48.3%
New Hampshire	85.4%	60.3%
New Jersey	83.0%	54.4%
New Mexico	85.3%	55.5%
New York	84.6%	58.5%
North Carolina	84.6%	54.1%
North Dakota	81.5%	53.1%
Ohio	80.3%	48.4%
Oklahoma	74.3%	45.8%
Oregon	91.0%	72.2%
Pennsylvania	83.3%	56.1%
Rhode Island	81.1%	52.4%
South Carolina	75.4%	45.8%
South Dakota	79.0%	57.8%
Tennessee	77.1%	41.6%
Texas	85.9%	54.8%
Utah	88.8%	62.5%
Vermont	91.6%	69.2%
Virginia	83.8%	63.6%
Washington	89.9%	67.4%
West Virginia	68.3%	38.2%
Wisconsin	80.8%	55.8%
Wyoming	89.6%	55.2%
United States	82.9%	54.6%

Source: U.S. Department of Health and Human Services (DHHS). National Center for Immunization and Respiratory Diseases. (2018). The 2017 National Immunization Survey-Child, Atlanta, GA: Centers for Disease Control and Prevention.

Table 12. Of infants and toddlers who could benefit from evidence-based home visiting, percentage receiving those services: 2017

State	Percentage
Alabama	0.5%
Alaska	2.4%
Arizona	3.0%
Arkansas	0.9%
California	1.0%
Colorado	1.9%
Connecticut	3.4%
Delaware	2.6%
District of Columbia	1.9%
Florida	1.7%
Georgia	0.6%
Hawaii	1.2%
Idaho	1.9%
Illinois	2.0%
Indiana	4.3%
Iowa	4.2%
Kansas	5.7%
Kentucky	5.4%
Louisiana	1.6%
Maine	5.7%
Maryland	0.9%
Massachusetts	1.2%
Michigan	2.2%
Minnesota	2.0%
Mississippi	0.6%
Missouri	9.9%
Montana	2.5%

State	Percentage
Nebraska	1.6%
Nevada	0.2%
New Hampshire	1.0%
New Jersey	1.5%
New Mexico	1.9%
New York	1.4%
North Carolina	2.2%
North Dakota	1.5%
Ohio	2.7%
Oklahoma	3.3%
Oregon	2.1%
Pennsylvania	2.7%
Rhode Island	6.1%
South Carolina	1.3%
South Dakota	2.1%
Tennessee	0.9%
Texas	0.5%
Utah	1.2%
Vermont	2.8%
Virginia	1.3%
Washington	1.9%
West Virginia	2.3%
Wisconsin	1.9%
Wyoming	2.1%
United States	1.9%

Source: National Home Visiting Resource Center. (2018). 2018 Home Visiting Yearbook. Arlington, VA: James Bell Associates and the Urban Institute. Retrieved September 2019 from https://www.nhvr.org/wp-content/uploads/NHVRC_Yearbook_2018_FINAL.pdf

-
- ¹ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.
- ² National Research Council, & Committee on Population. (2013). *US health in international perspective: Shorter lives, poorer health*. National Academies Press.
- ³ Housing Assistance Council. (2012). *Poverty in Rural America*. Rural research brief. Retrieved from http://ruralhome.nonprofitsoapbox.com/storage/research_notes/rrn_poverty.pdf
- ⁴ United States Department of Agriculture Economic Research Service. (2020). *Rural poverty & well-being*. Retrieved March 12, 2020 from <https://www.ers.usda.gov/topics/rural-economy-population/rural-poverty-well-being/>
- ⁵ Brooks-Gunn, J., & Duncan, G. J. (1997). The effects of poverty on children. *The Future of Children*, (7)2, 55-71.
- ⁶ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.
- ⁷ National Institute of Child Health and Human Development. (2017). *What is prenatal care and why is it important?* Retrieved January 24, 2020 from <https://www.nichd.nih.gov/health/topics/pregnancy/conditioninfo/prenatal-care>
- ⁸ Centers for Medicare & Medicaid Services. (2019). *Improving access to maternal health care in rural communities*. Retrieved January 24, 2020 from <https://www.cms.gov/About-CMS/Agency-Information/OMH/equity-initiatives/rural-health/rural-maternal-health>
- ⁹ Centers for Medicare & Medicaid Services. (2019). *Improving access to maternal health care in rural communities*. Retrieved January 24, 2020 from <https://www.cms.gov/About-CMS/Agency-Information/OMH/equity-initiatives/rural-health/rural-maternal-health>
- ¹⁰ United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2018, on CDC WONDER Online Database, September 2019. Retrieved March 12, 2020 from <http://wonder.cdc.gov/natality-expanded-current.html>
- ¹¹ MacDorman, M. F., & Declercq, E. (2019). Trends and state variations in out-of-hospital births in the United States, 2004-2017. *Birth*, 46(2), 279-288. doi: 10.1111/birt.12411
- ¹² Centers for Medicare & Medicaid Services. (2019). *Improving access to maternal health care in rural communities*. Retrieved January 24, 2020 from <https://www.cms.gov/About-CMS/Agency-Information/OMH/equity-initiatives/rural-health/rural-maternal-health>
- ¹³ Centers for Medicare & Medicaid Services. (2019). *Improving access to maternal health care in rural communities*. Retrieved January 24, 2020 from <https://www.cms.gov/About-CMS/Agency-Information/OMH/equity-initiatives/rural-health/rural-maternal-health>.
- ¹⁴ American Association of Birth Centers. (n.d.). *What is a birth center?* Retrieved February 6, 2020 from https://www.birthcenters.org/page/bce_what_is_a_bc
- ¹⁵ National Academies of Sciences, Engineering, and Medicine. (2020). *Birth Settings in America: Outcomes, Quality, Access, and Choice*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25636>.
- ¹⁶ Declercq, E. MacDorman, M. F., & Stotland, N. (2010). Characteristics of planned and unplanned home births in 19 states. *Obstetrics and Gynecology*, 116(1), 93-99. doi: 10.1097/AOG.0b013e3181e21f6d.
- ¹⁷ United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2018, on CDC WONDER Online Database, September 2019. Retrieved March 12, 2020 from <http://wonder.cdc.gov/natality-expanded-current.html>
- ¹⁸ Declercq, E. Mac Dorman, M. F., & Stotland, N. (2010). Characteristics of planned and unplanned home births in 19 states. *Obstetrics and Gynecology*, 116(1), 93-99. doi: 10.1097/AOG.0b013e3181e21f6d.
- ¹⁹ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.

-
- ²⁰ Hill HA, Elam-Evans LD, Yankey D, Singleton JA, Kang Y. Vaccination Coverage Among Children Aged 19–35 Months – United States, 2017. *MMWR Morb Mortal Wkly Rep* 2018;67:1123–1128.
- ²¹ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.
- ²² Centers for Disease Control and Prevention. (2018). Vaccination coverage among children aged 19-35 months – United States, 2017. *Morbidity and Mortality Weekly Report*, 67(40), 1123-1128. Retrieved January 24, 2020 from <https://www.cdc.gov/mmwr/volumes/67/wr/mm6740a4.htm>.
- ²³ U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. (2015). *The Health and Well-being of Children in Rural Areas: A Portrait of the Nation 2011-2012*. Rockville, MD: U.S. Department of Health and Human Services. Retrieved January 24, 2020 from https://mchb.hrsa.gov/nsch/2011-12/rural-health/pdf/rh_2015_book.pdf
- ²⁴ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.
- ²⁵ National Advisory Committee on Rural Health and Human Services. (2018). *Improving oral health care services in rural America: Policy brief and recommendations*. Retrieved January 24, 2020 from <https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/rural/publications/2018-Oral-Health-Policy-Brief.pdf>
- ²⁶ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.
- ²⁷ Centers for Disease Control and Prevention. (2019). *Infant mortality*. Retrieved January 23, 2020 from <https://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm#about>.
- ²⁸ Ely, D. M. & Hoyert, D. L. (2018). *Differences between rural and urban areas in mortality rates for the leading causes of infant death: United States, 2013-2015*. Retrieved January 23, 2020 from <https://www.cdc.gov/nchs/data/databriefs/db300.pdf>
- ²⁹ Ely, D. M. & Hoyert, D. L. (2018). *Differences between rural and urban areas in mortality rates for the leading causes of infant death: United States, 2013-2015*. Retrieved January 23, 2020 from <https://www.cdc.gov/nchs/data/databriefs/db300.pdf>
- ³⁰ Ely, D. M. & Hoyert, D. L. (2018). *Differences between rural and urban areas in mortality rates for the leading causes of infant death: United States, 2013-2015*. Retrieved January 23, 2020 from <https://www.cdc.gov/nchs/data/databriefs/db300.pdf>
- ³¹ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.
- ³² World Health Organization. (2014). *Global nutrition targets 2025: Low birth weight policy brief*. Retrieved March 11, 2020 from https://www.who.int/nutrition/publications/globaltargets2025_policybrief_lb/en/
- ³³ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.
- ³⁴ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.
- ³⁵ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.
- ³⁶ Cutland, C. L., Lackritz, E. M., Mallett-Moore, T., Bardají, A., Chandrasekaran, R., Lahariya, C., ... & Muñoz, F. M. (2017). Low birth weight: Case definition & guidelines for data collection, analysis, and presentation of maternal immunization safety data. *Vaccine*, 35(48Part A), 6492.
- ³⁷ Centers for Disease Control and Prevention. (2019). *Breastfeeding facts*. Retrieved January 27, 2020 from <https://www.cdc.gov/breastfeeding/data/facts.html>
- ³⁸ Wiener, R. C. & Wiener, M. A. (2011). Breastfeeding prevalence and distribution in the USA and Appalachia by rural and urban setting. *Rural and Remote Health*, 11(2), 1713.
- ³⁹ Aschbrenner, K. & Cornish, D. L. (2017). Barriers to breastfeeding among rural women in the United States. *UNiversitas*, 12(2016-2017).

-
- ⁴⁰ Keating, K., Cole, P., & Schaffner, M. (2020). *State of babies yearbook: 2020*. Washington, DC: ZERO TO THREE.
- ⁴¹ For more information see: <https://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health/objectives>
- ⁴² Eligibility (n.d.). Medicaid.gov Keeping America Healthy. Retrieved from <https://www.medicaid.gov/chip/eligibility/index.html>
- ⁴³ Rudowitz, R., Artiga, S., & Arguello, R. (2014). *Children's health coverage: Medicaid, CHIP and the ACA*. Retrieved from <http://www.kff.org/health-reform/issue-brief/childrens-health-coverage-medicaid-chip-and-the-aca/>
- ⁴⁴ Rudowitz, R., Artiga, S., & Arguello, R. (2014). *Children's health coverage: Medicaid, CHIP and the ACA*. Retrieved from <http://www.kff.org/health-reform/issue-brief/childrens-health-coverage-medicaid-chip-and-the-aca/>
- ⁴⁵ Foutz, J., Artiga, S., & Garfield, R. (2017). *The role of Medicaid in rural America*. Retrieved from <https://www.kff.org/medicaid/issue-brief/the-role-of-medicaid-in-rural-america/>
- ⁴⁶ Smith, A. C., Bensink, M., Armfield, N., Stillman, J., & Caffery, L. (2005). Telemedicine and rural health care applications. *Journal of postgraduate medicine*, 51(4), 286.
- ⁴⁷ Centers for Disease Control and Prevention (n.d.). Vaccines for Children Program (VFC). Retrieved from <https://www.cdc.gov/vaccines/programs/vfc/about/index.html>
- ⁴⁸ Centers for Disease Control and Prevention. (2018). Vaccination coverage among children aged 19-35 months – United States, 2017. *Morbidity and Mortality Weekly Report*, 67(40), 1123-1128. Retrieved January 24, 2020 from <https://www.cdc.gov/mmwr/volumes/67/wr/mm6740a4.htm>.
- ⁴⁹ Hough-Telford, C., Kimberlin, D. W., Aban, I., Hitchcock, W. P., Almquist, J., Kratz, R., & O'Connor, K. G. (2016). Vaccine delays, refusals, and patient dismissals: a survey of pediatricians. *Pediatrics*, 138(3), e20162127.
- ⁵⁰ Peacock, S., Konrad, S., Watson, E., Nickel, D., & Muhajarine, N. (2013). Effectiveness of home visiting programs on child outcomes: a systematic review. *BMC Public Health*, 13(1), 17.
- ⁵¹ Gomby, D. S. (2005). *Home visitation in 2005: Outcomes for children and parents* (Vol. 7). Invest in Kids working paper. Retrieved from <https://files.givewell.org/files/Cause3/Nurse-Family%20Partnership/B/Gomby%202005.PDF>
- ⁵² Horner, S. D. (2006). Home visiting for intervention delivery to improve rural family asthma management. *Journal of Community Health Nursing*, 23(4), 213-223.
- ⁵³ Horner, S. D. (2006). Home visiting for intervention delivery to improve rural family asthma management. *Journal of Community Health Nursing*, 23(4), 213-223.
- ⁵⁴ Peacock, S., Konrad, S., Watson, E., Nickel, D., & Muhajarine, N. (2013). Effectiveness of home visiting programs on child outcomes: a systematic review. *BMC Public Health*, 13(1), 17.
- ⁵⁵ The American College of Obstetricians and Gynecologist: Women's Health Care Physicians. (2018). *ACOG Committee Opinion: Group Prenatal Care*. Retrieved from: <https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Group-Prenatal-Care?IsMobileSet=false>
- ⁵⁶ Centers for Medicare and Medicaid Services, U.S. Department of Health and Human Services (HHS). (2018). Improving Access to Maternal Health Care in Rural Communities. Retrieved from: <https://www.cms.gov/About-CMS/Agency-Information/OMH/equity-initiatives/rural-health/09032019-Maternal-Health-Care-in-Rural-Communities.pdf>
- Ickovics, J. R., Kershaw, T. S., Westdahl, C., Rising, S. S., Klima, C., Reynolds, H., & Magriples, U. (2003). Group prenatal care and preterm birth weight: Results from a matched cohort study at public clinics. *Obstetrics & Gynecology*, 102(5), 1051-1057.
- ⁵⁷ Centers for Medicare & Medicaid Services (2019). *Improving access to maternal health care in rural communities*. Retrieved from <https://www.cms.gov/About-CMS/Agency-Information/OMH/equity-initiatives/rural-health/09032019-Maternal-Health-Care-in-Rural-Communities.pdf>