The Robert Larner, M.D. College of Medicine | **Vermont Child Health Improvement Program**

Perinatal Public Health Report

An Overview of Vermont Perinatal Data Trends and Perinatal Community Support Programs

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Prepared by the Vermont Perinatal Quality Collaborative (PQC-VT)

January 2026

PERINATAL QUALITY COLLABORATIVE VERMONT

Perinatal Public Health Summary Report of Births to Vermonters

Objective:

A comprehensive report prepared by the Vermont Perinatal Quality Collaborative (PQC-VT) to understand births and related pregnant person factors and infant outcomes across Vermont using birth certificate data and publicly available data sets.

Key Characteristics of Pregnant Vermonters

Live Births in NH or VT, 2019-2023

29.7% received WIC benefits during pregnancy

39.3% used Medicaid as the primary payer for delivery services

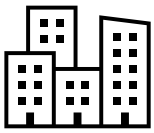
90.2 % abstained from cigarette use

68.3% had adequate prenatal care utilization

90.4% breastfed their babies prior to hospital discharge.

Where Vermonters with Newborns Reside*

Live Births in NH or VT, 2019-2023



19.5% Metropolitan Core Areas

31.5% Suburban/Large Rural Areas

49% Small Rural Areas

*Classified by zip code of residence using the four category Rural-Urban Commuting Code classification (See appendix I for more information on RUCA codes.)

Source: All data represented in Table 1 is sourced from VT and NH Birth Certificate data for births occurring in Vermont to Vermont residents and to Vermont residents giving birth in New Hampshire from 2019 -23.

Summary Scorecard of Key Perinatal Indicators

Measure[a]	Vermont		
	2019	2023	5-Year Trend[b]
Under recommended gestational weight gain, FTS[c]	13.8%	13.1%	-
Over recommended gestational weight gain, FTS[c]	49.1%	49.8%	-
Delivery covered by Medicaid	41.4%	37.4%	↘
Received WIC benefits	30.9%	28.9%	↘
Abstained from cigarette use	87.2%	93.6%	↗
Quit cigarette use	39.6%	32.0%	↘
Hepatitis C positive	1.4%	1.1%	-
Hepatitis B positive	0.2%	0.1%	-
Pre-pregnancy diabetes	1.1%	1.7%	↗
Pre-pregnancy hypertension	2.8%	4.5%	↗
Gestational diabetes	6.2%	7.9%	↗
Gestational hypertension or preeclampsia	10.5%	10.9%	-
Adequate prenatal care utilization[d]	74.1%	66.9%	↘
Gestational Age (GA) < 37 weeks	8.0%	7.3%	-
GA > 41 weeks	0.5%	0.6%	-
Small for gestation age (SGA)	13.4%	13.1%	-
Breastfed during birth hospitalization	91.0%	91.0%	-
Cesarean Section	25.7%	27.2%	↗

a. Definitions for these birth certificate measures can be found within the National Center for Health Statistics Guide to Completing the Facility Worksheets for the Certificate of Live Birth and Report of Fetal Death (2003 revision).
b. Gestational weight gain indicators are among full term singleton (FTS) pregnant people that had pre-pregnancy weight and weight at delivery data available (N=13,113).
c. Statistical trend analysis was used to determine if a change over the five-year period was statistically significant. Only statistically significant ($p<0.01$) trends have an arrow with the direction of the trend.
d. See Appendix I for more information on the Adequacy of Prenatal Care Utilization Score (Kotelchuck Index), and SGA calculations.

Source: All data represented in Table 1 is sourced from VT and NH Birth Certificate data for births occurring in Vermont to Vermont residents and to Vermont residents giving birth in New Hampshire from 2019 -23.

Background

Vermont's prenatal and perinatal health system has long been supported by collaborative public-health, clinical, and quality-improvement efforts. In 2021, the Perinatal Quality Collaborative–Vermont (PQC-VT) was established to formalize and enhance this legacy work by bringing together key family and child health stakeholders, an integrated data team, and quality-improvement specialists

Perinatal quality collaboratives (PQCs) are state-based, multidisciplinary teams of clinical providers, data analysts, public health professionals, and other stakeholders working together to improve care delivery and health outcomes for pregnant people and their newborns.[1] In Vermont, PQC-VT partners closely with birthing hospitals and statewide perinatal support programs to improve quality of care, perinatal health outcomes, and care transitions for new parents.

The assessment of health issues affecting pregnant people and their newborns is a critical responsibility of the Family and Child Health Division of the Vermont Department of Health.[2] Vital records analysis provides important insight into gaps in health care delivery, disparities in outcomes, and changes over time. Findings from these analyses can guide programmatic, funding, policy, and legislative responses. This Perinatal Public Health Report uses vital records from births to Vermonters occurring in both Vermont and New Hampshire to create a public-health–directed outcomes dashboard reflecting pregnancy, newborn, and infant health outcomes statewide.

Table 1. Characteristics of Pregnant Vermonters, 2019-2023.

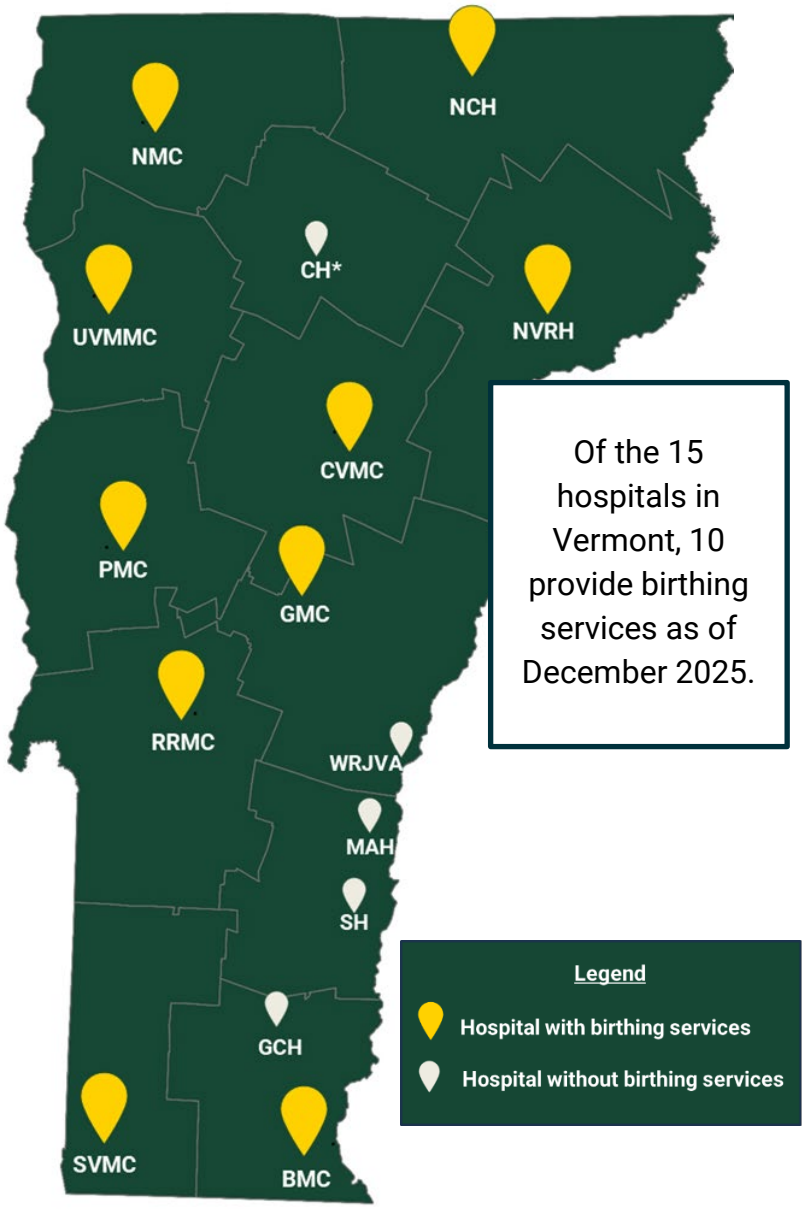
Total Pregnant Persons	**25,453**	
Education	HS or less	28.9%
	Some college	17.2%
	College or more	53.9%
Age	<20 years	2.5%
	20-29 years	39.4%
	30-39 years	53.9%
	40+ years	4.1%
Race/ Ethnicity	White	91.4%
	Black	3.0%
	Asian	2.9%
	Hispanic	2.7%
Rurality	Urban	19.5%
	Suburban-rural	31.5%
	Small/isolated rural	49.0%

Source: All data represented in Table 1 is sourced from VT and NH Birth Certificate data for births occurring in Vermont to Vermont residents and to Vermont residents giving birth in New Hampshire from 2019 -23.

Local Maternity Care Access

Birthing centers located within Vermont's community hospitals are an important part of local maternity care, offering safe, high-quality services close to home.[3,4] When care is available within their communities, birthing people are better able to stay connected to family, friends, and trusted community-based supports, such as prenatal care providers, home visiting programs, lactation support, and other regional services that contribute to healthy pregnancies and births.[5] Between 2019 and 2025, two hospitals in Vermont closed their birthing services. As access to birthing centers within hospitals has continued to evolve across the state, this changing landscape has affected where and how families receive care.

Lack of access to care, along with social determinants of health, such as economic stability, access to nutritious food, housing, and education,[6,7] puts specific pockets of Vermonters, especially those living in rural areas, at a higher risk for perinatal complications and reduced access to care.



Of the 15 hospitals in Vermont, 10 provide birthing services as of December 2025.

**Copley Hospital Closed Birthing Services in November 2025.*

Health equity related indicators within this report will be acknowledged by this icon and will present statewide data stratified by key social determinants of health and by populations at elevated risk for disparate outcomes.

Methods and Data Notes

Birth certificate data for births to Vermonters from 2019-2023 were obtained from the Vermont Department of Health extracted in October 2025 and from the New Hampshire Department of Health and Human Services received by PQC-VT in August 2025. Unless otherwise noted, the data within tables and figures of this report are from this vital records data.

All births to non-Vermont residents are excluded. Only births occurring in Vermont or New Hampshire to Vermont residents are included in the report.

Discussion of the data and analyses presented in this report can be used to identify areas of excellence, as well as opportunities for improvement. Examination of statewide outcomes can promote continued work toward optimal perinatal care.

Data in this report can also provide a basis for structuring and implementing a Quality Monitoring process and for developing local practice guidelines. Variables include risk factors in pregnancy (previous and acquired), measures of pregnancy care and newborn outcomes. Size for gestational age was classified as small (below the 10th percentile), appropriate or large (above the 90th percentile), and adjusted for the gestational age at birth and the actual birthweight distribution of the population of Vermont newborns using the algorithm described in the Appendix.

The Summary Dashboard is formatted following the model of the Vermont family and infant health scorecard.[8] Healthy People 2030 targets are indicated on figures where appropriate.

Additional Data Sources

- Pregnancy Risk Assessment and Monitoring System (PRAMS) data was obtained from the Vermont Department of Health, PRAMS Team, December 2025.
- Maternal Mortality data was obtained by the Vermont Department of Health, Maternal Mortality Review Reports 2024, 2025 & 2026.
- Infant Mortality data was obtained from the National Center for Health Statistics, Period Linked Birth/Infant Death data, 2019-2023.
- WIC data was obtained from Vermont WIC and includes data from 2019-2024 and comprehensive data from the 2019-2022 Vermont WIC Program Participant Demographics Data Brief and the 2018-2022 Vermont WIC Program Participation and Reach Data Brief. Vermont WIC data dashboard can be found here: https://www.healthvermont.gov/family/wic/wic-plans-reports
- Strong Families Vermont Home Visiting data was obtained from the Vermont Department of Health and includes data from 2019-2024.
- DULCE data was obtained from Vermont DULCE in November 2025 and includes data from 2020-2024
- Doula Program data was obtained from the Vermont Department of Health, Division of Family and Child Health, and includes data from 2019-2024.

Overview & Sociodemographic Data - Vermont

Figure 1: Percent of Vermont Live Births by AHS District of residence, 2019-23.

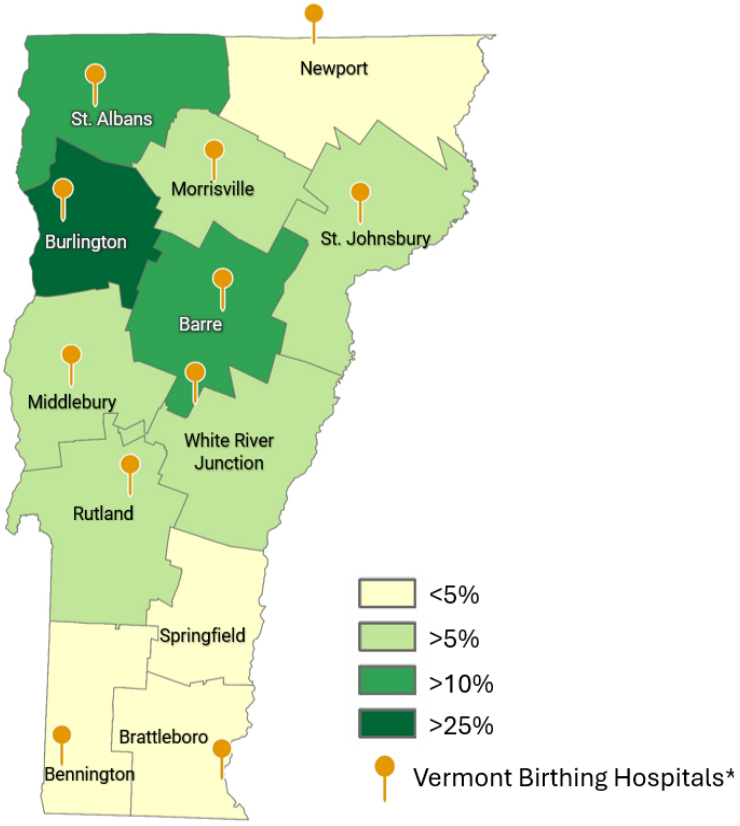


Figure 2: Number of live hospital births to Vermonters, 2019-23.

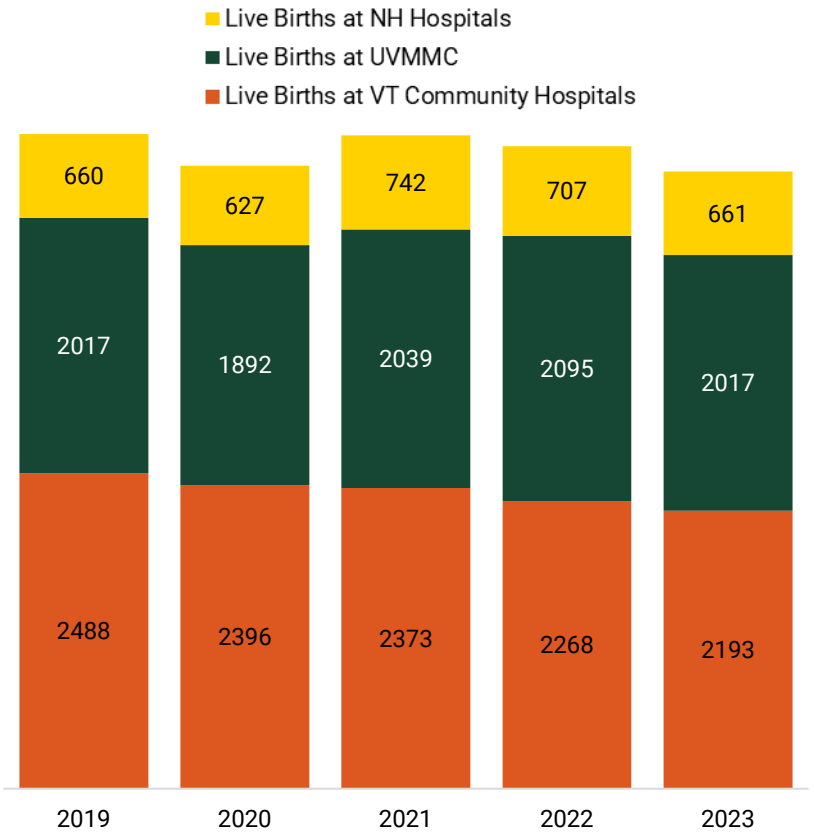
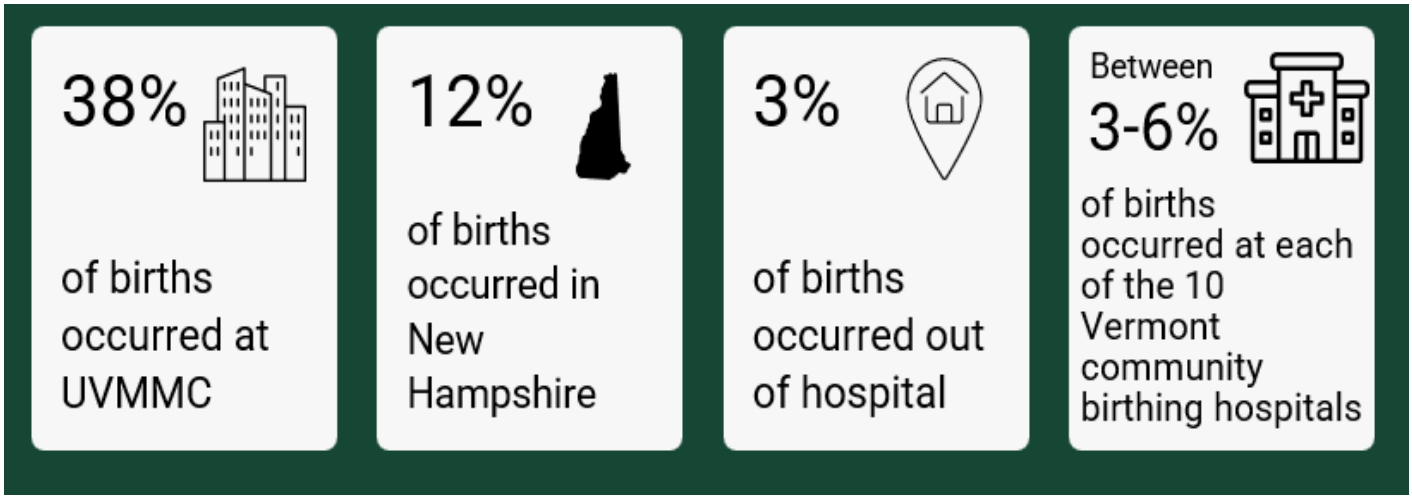


Figure 3: *Where Vermonters are Giving Birth, 2019-23*.



Data includes births to Vermont residents that took place in a Vermont or New Hampshire hospital or out-of-hospital.
Source: VT and NH Birth Certificate, 2019-2023
*Includes all hospitals with birthing services open as of 12/31/2023

Risk & Care - Vermont

Prepregnancy Weight & Weight Gain[a]

Figure 4: % of pregnant persons giving birth between 2019-23 by prepregnancy weight status.

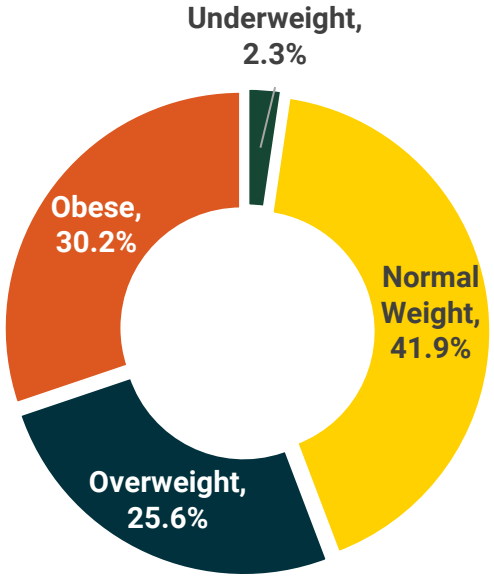
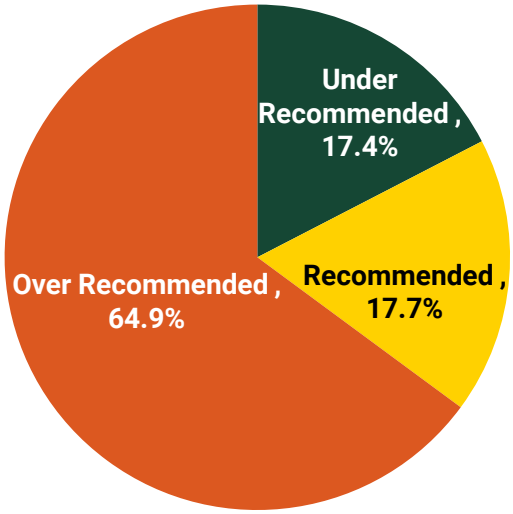


Figure 5: % of pregnant persons with full term singleton pregnancies by gestational weight gain, 2019-23.*



ACOG recommendations[9] for gestational weight gain differ by prepregnancy weight status: Underweight: 28-40 lbs.; Normal weight: 25-35 lbs.; Overweight: 15-25 lbs.; Obese: 11-20 lbs.

Statewide Support Resources

Figure 6: % of live births where Medicaid was the primary payer for delivery services, 2019-23.

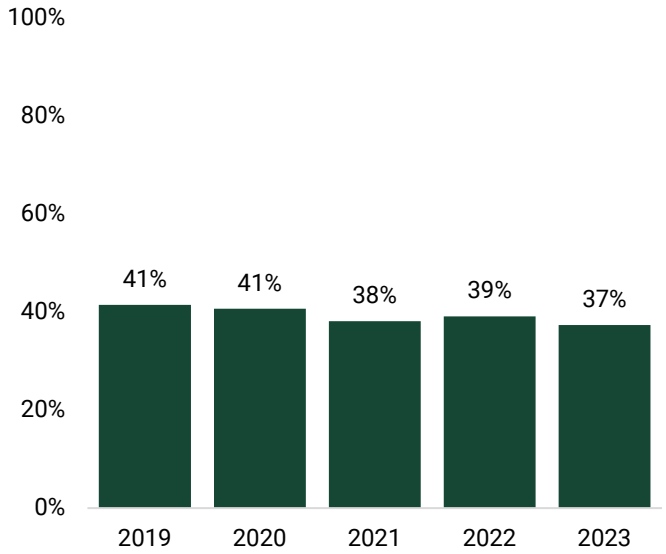
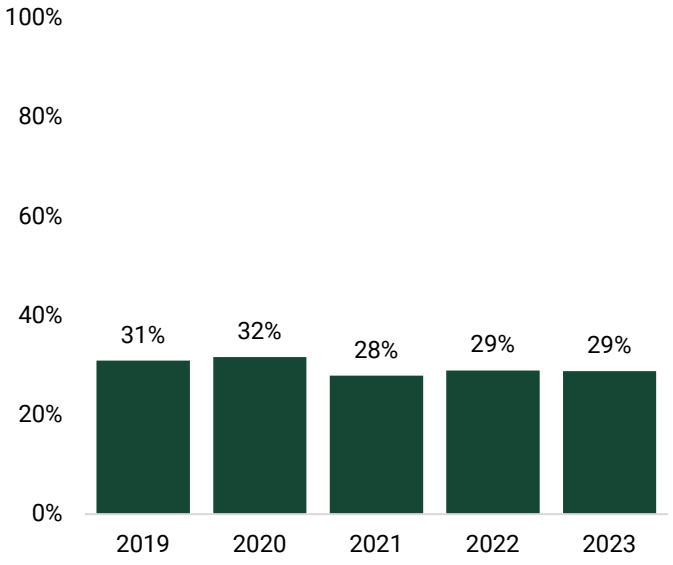


Figure 7: % of pregnant persons receiving WIC benefits during pregnancy, 2019-23.



a. Figure 4 includes prepregnancy weight status weight data for all pregnant people, excluding missing data (N=25,477); Figure 5 includes gestational weight gain for all pregnant people that had full term singleton births and provided pre-pregnancy weight and weight at delivery (N=13,113)

Source: Data from the above figures is sourced from VT and NH Birth Certificate data for births occurring in Vermont to Vermont Residents and to Vermont residents giving birth in New Hampshire from 2019 through 2023

Substance Use - Vermont

***Figure 8**: % of pregnant persons who abstained from smoking cigarettes during pregnancy, 2019-23.*

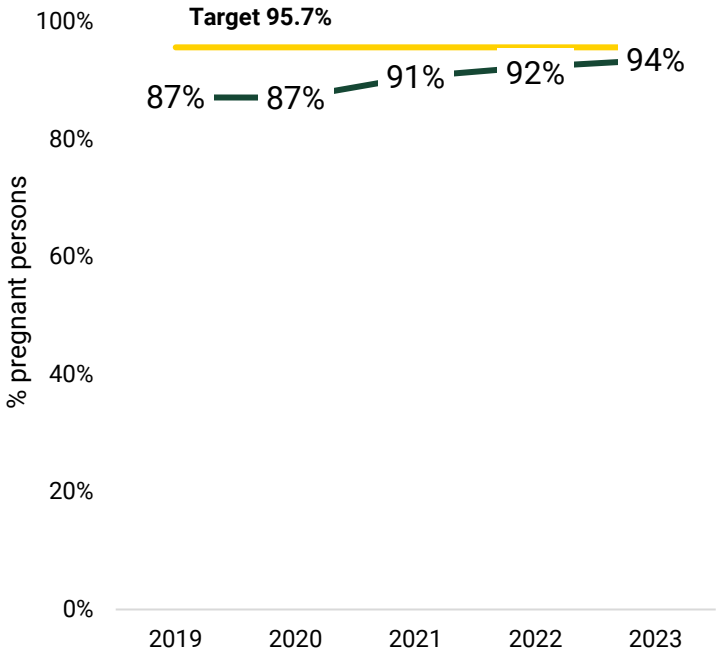
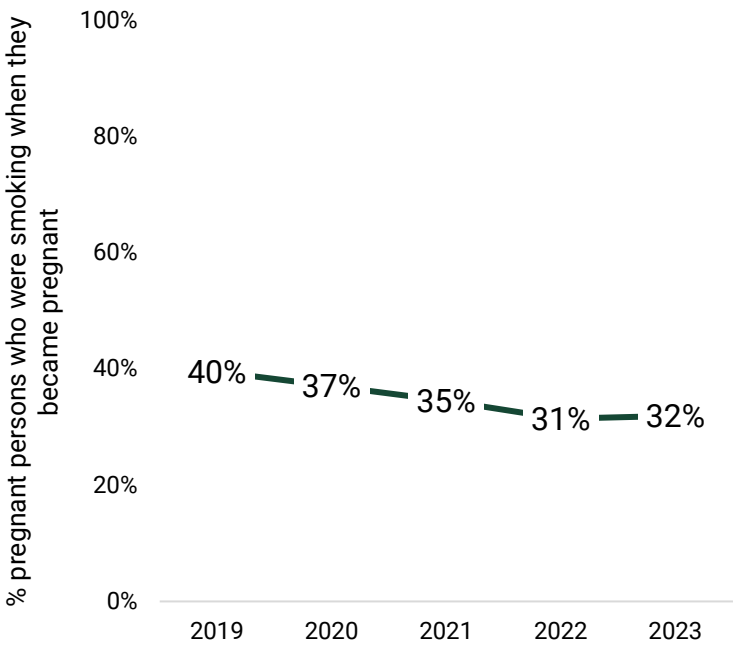


***Figure 9**: % of pregnant persons who quit smoking cigarettes during pregnancy, 2019-23.*



Source: Data from the above figures is sourced from VT and NH Birth Certificate data for births occurring in Vermont and to Vermont Residents and to Vermont residents giving birth in New Hampshire from 2019 through 2023

PRAMS Vermont Substance Use Data

Marijuana: 20% of PRAMS respondents reported using marijuana before pregnancy, and 12% reported usage during pregnancy. 5% of women used CBD products while pregnant

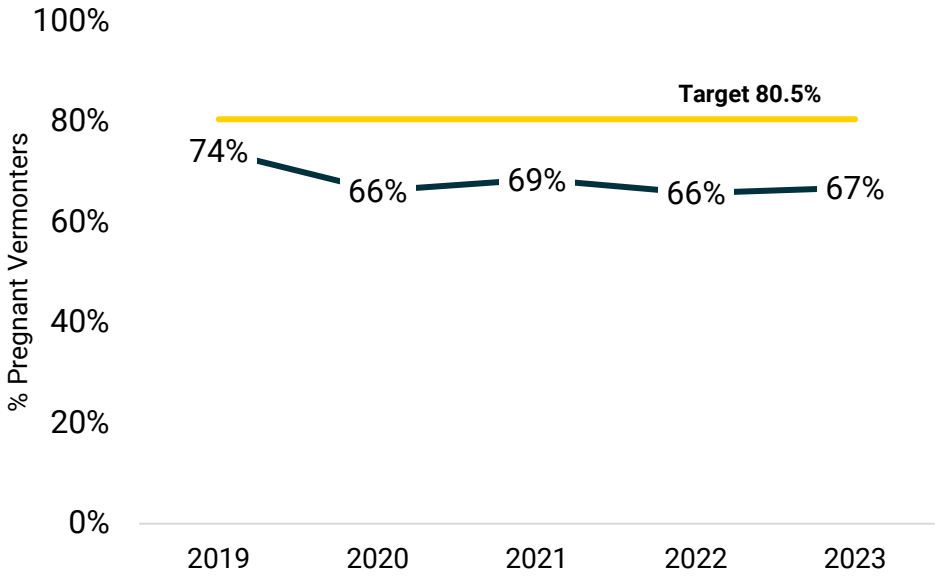
Alcohol: 30% of PRAMS respondents reported drinking alcohol in the first 3 months of pregnancy, dropping to 11% in the second and third trimesters. Women in younger age groups were more likely to binge drink early in pregnancy (7%), including prior to knowing that they were pregnant, and women aged 30+ had higher rates of drinking alcohol in the third trimester (14%)

E-cigarettes: 10% reported using e-cigarettes in the 3 months before pregnancy. 3% reported using in the last 3 months of pregnancy. 9% reported using in the past 2 years to cut down or stop smoking cigarettes.

Source: All data represented in this box is sourced from the Vermont Department of Health. 2023 PRAMS Highlights.

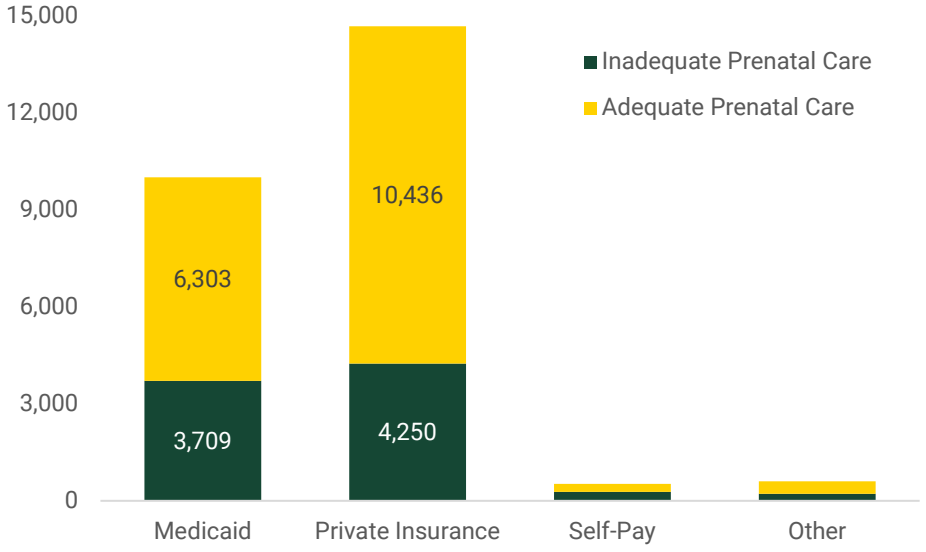
Prenatal Care - Vermont

Figure 10: % of pregnant persons with adequate prenatal care utilization (Kotelchuck), 2019-23.



Statewide, about the same proportion of people from rural and urban/suburban areas have inadequate levels of prenatal care, but this varies greatly by region.
Individuals living in rural areas with lower education levels have lower rates of adequate prenatal care in 11 out of 12 Vermont Health Districts than those with higher education levels.

Figure 11: Adequacy of prenatal care utilization by primary payer for delivery services, 2019-23.



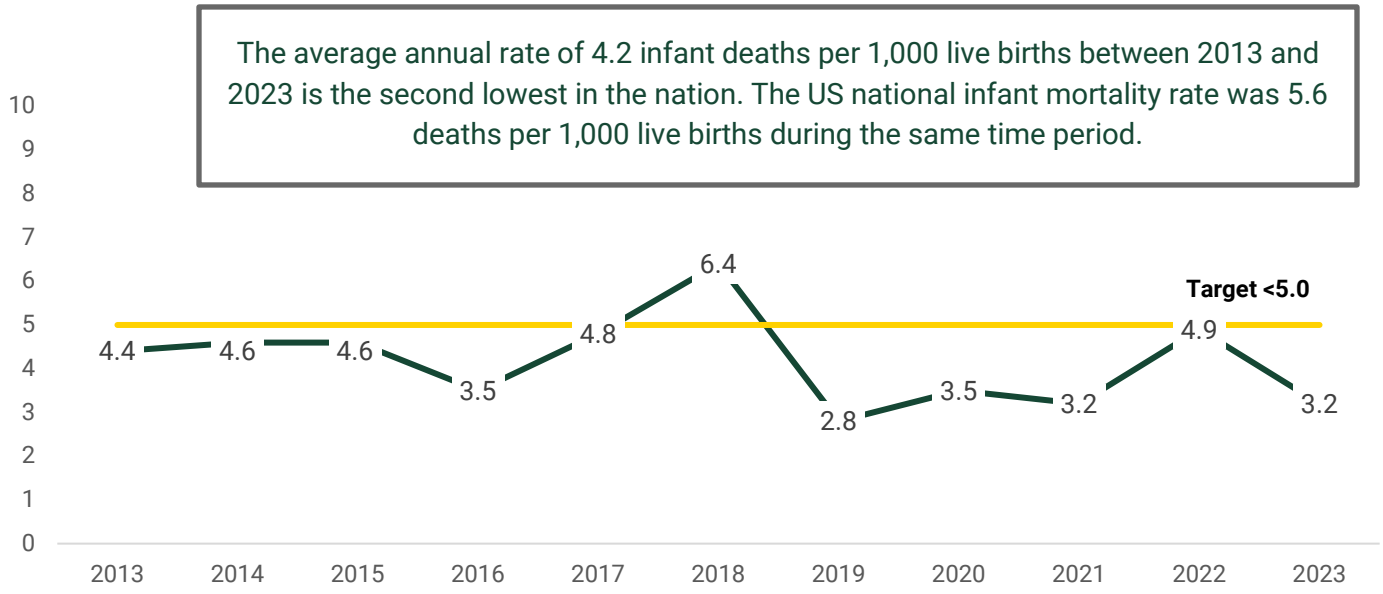
Individuals with Medicaid as their primary source of payment had lower rates of adequate prenatal care than those with private insurance.

See Appendix I for more information on the Adequacy of Prenatal Care Utilization Score (Kotelchuck Index)

Source: All data represented on this page is sourced from VT and NH Birth Certificate data for births occurring in Vermont to Vermont Residents and to Vermont residents giving birth in New Hampshire from 2019 through 2023

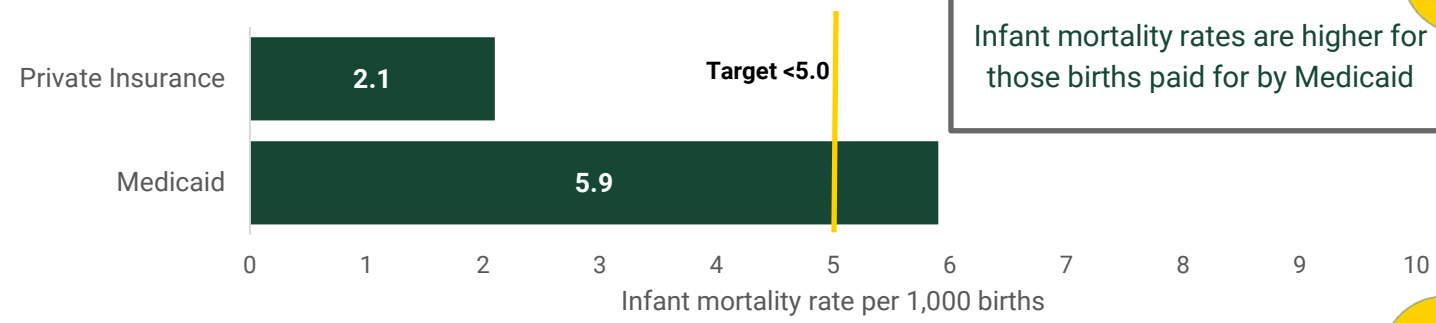
Infant Mortality: Vermont

Figure 12: Infant mortality rate per 1,000 live births; 2013-23



Source: National Center for Health Statistics, Period Linked Birth/Infant Death data, 2013-2023.

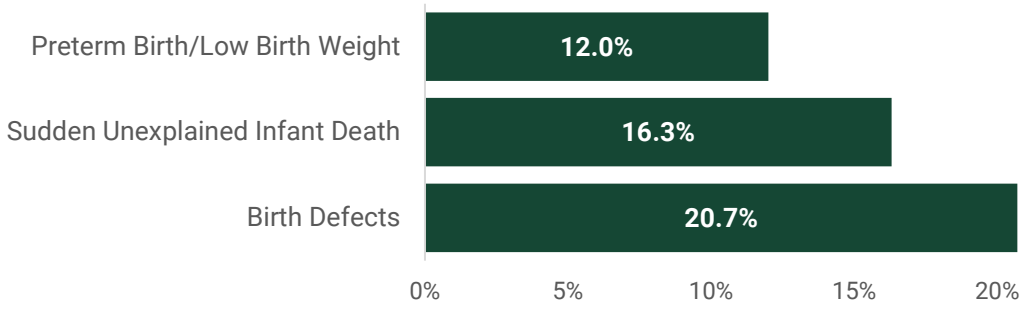
Figure 13: Infant mortality rate per 1,000 births by insurance type, 2021-23



Infant mortality rates are higher for those births paid for by Medicaid

Source: National Center for Health Statistics, Period Linked Birth/Infant Death data, 2021-2023.

Figure 14: Leading causes of infant mortality, 2019-23



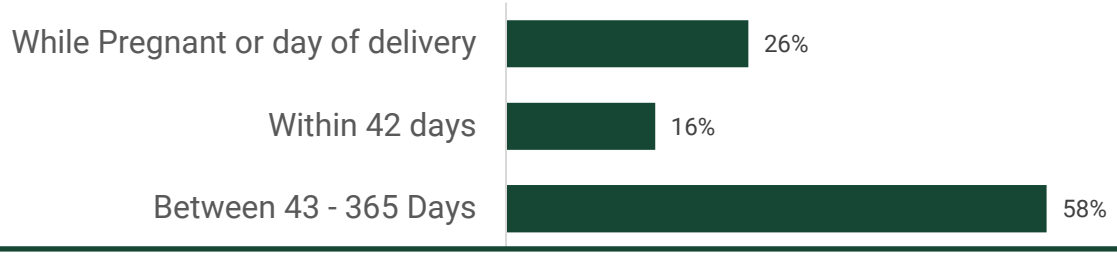
In Vermont, the prevalence of preterm birth is highest among Hispanic infants (10%), followed by White (8.1%), Black (8.0%), and Asian/Pacific Islander infants (7%). No clear patterns by race/ethnicity are observed in infant mortality rates in the state.

Source: National Center for Health Statistics, Period Linked Birth/Infant Death data, 2019-2023.
Note: The years differ across figures as a result of variation in data availability and reporting timelines across topics and data sources.

Maternal Mortality: Vermont

The Vermont Department of Health Maternal Mortality Review Panel conducts annual multidisciplinary reviews of maternal deaths among birthing people to identify factors associated with these losses. Trends in maternal mortality are aggregated over 13 years to account for the small number of maternal deaths that occur annually. This allows for identification of predominant trends over time.

Figure 15: Timing of Pregnancy-Associated Deaths in Vermont, 2012 -2024



Health Related Social Needs

In most cases, maternal deaths were affected by multiple health related social needs rather than a single isolated factor.

Income: Lower household incomes are linked to higher maternal mortality rates. 93% of deceased mothers had Medicaid as their primary insurance. Two-thirds of deaths were to people enrolled in WIC.

Rurality: 87% of maternal deaths since 2012 were to residents of rural counties. Between 2012 and 2024, the pregnancy associated mortality ratio was ~3 times higher in rural counties than in Chittenden County, Vermont's metropolitan county.

Education: 71% of maternal deaths were to people with a high school education or less. 6% had a college degree or higher.

Age: 55% of maternal deaths occurred to people age 30 or older. 19% were to those aged 20-24. There were no maternal deaths for people younger than 20 years old.

Substance Use

Substance use was directly related to 55% cases of maternal death and was a cause of nearly half (48%) of all maternal deaths.

Mental Health

Since 2012, 13% of maternal deaths were a result of suicide.

90% of decedents had a diagnosis of at least one mental health disorder.

Source: All data represented on this page is sourced from Vermont Department of Health. Maternal Mortality Review Reports 2024, 2025, and 2026.

Perinatal Mental Health: PRAMS Vermont Data

The Pregnancy Risk Management Monitoring System (PRAMS) is a self-reported survey of people who are 2-6 months postpartum. The survey questions cover their perinatal experiences, behaviors, and healthcare utilization. Vermont has participated in PRAMS since 2001.

***Figure 16**: % of perinatal people experiencing depression, 2023.*

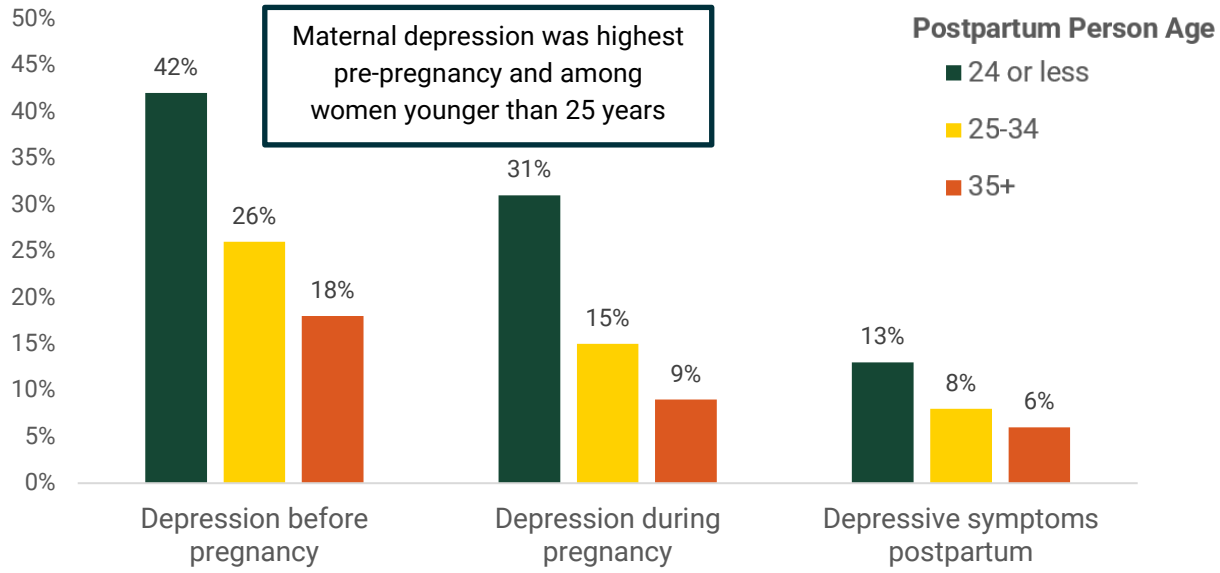
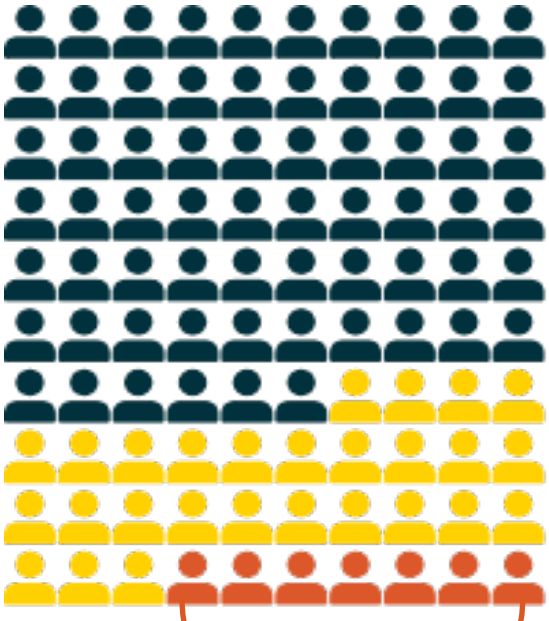


***Figure 17**: Postpartum mental health needs, 2023.*



- Did not feel as though they needed mental health services
- Needed and received mental health services
- Needed and did not receive mental health services

20% of people who said they felt they needed mental health services were unable to access care.

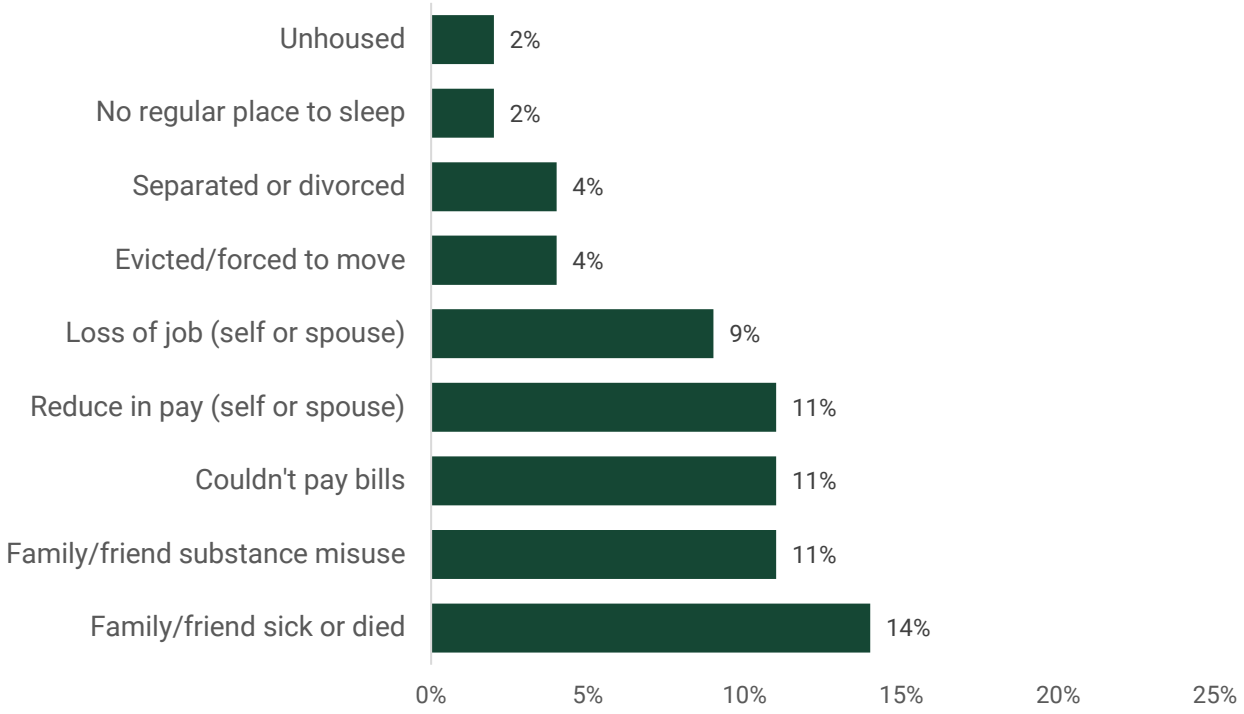
The most common reasons for this limited access were:

- Lack of time due to job/childcare/other commitments (62%)
- Could not get appointment as soon as needed (25%)
- Did not know where to get services (19%)
- Did not want others to find out they needed treatment (16%)

Source: All data represented on this page is sourced from the Vermont Department of Health. 2023 PRAMS Highlights.

Health Related Social Needs: PRAMS Vermont Data

Figure 18: % of pregnant people experiencing stress-related events within 1 year before delivery, 2023.



Food insecurity impacted 8% of PRAMS respondents:

- 6% reported that sometimes food ran out before they had money to buy more.
- 2% reported that food always ran out before they had money to buy more.

Transportation issues impacted 6% of PRAMS respondents.

- 4% reported that not having transportation kept them from medical and non-medical appointments, or work.
- 5% reported that lack of transportation kept them from doing errands.

Employment and Paid Leave

- 80% of PRAMS respondents worked during their pregnancies, and of those that worked, 80% planned to return to their jobs, 20% did not.
- 47% of respondents returning to work did not have paid leave.
- 69% of respondents felt their leave was too short regardless of whether paid/unpaid.

Source: The data represented on this page is sourced from the Vermont Department of Health. 2023 PRAMS Highlights and 2020 PRAMS Highlights

Program Spotlight

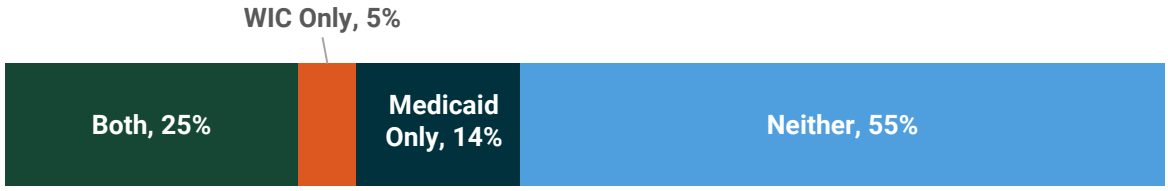
Community Perinatal Support Programs

Overview of statewide and regional data on programs supporting pregnant and postpartum people and families.

Statewide Support Resources: WIC

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is a USDA-funded program that provides food benefits, nutrition education, breastfeeding support, and counseling to eligible pregnant Vermonters, as well as parents and caregivers of children under age five.

Figure 19: WIC and Medicaid participation rates during pregnancy, 2018-22.



Source: Vermont WIC Program Participant Demographics, June 2024

Figure 20: Ages of maternal participants enrolled in WIC, 2019-22.

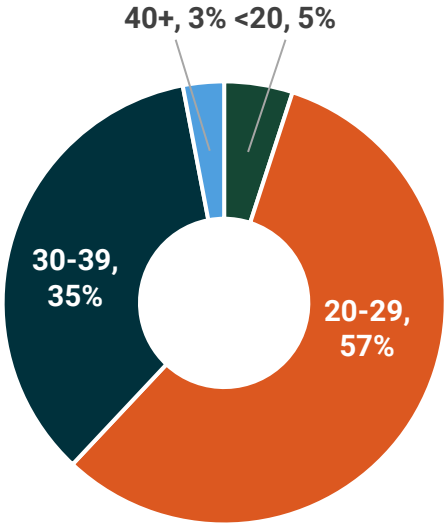


Figure 21: Education levels of maternal participants enrolled in WIC, 2019-22.

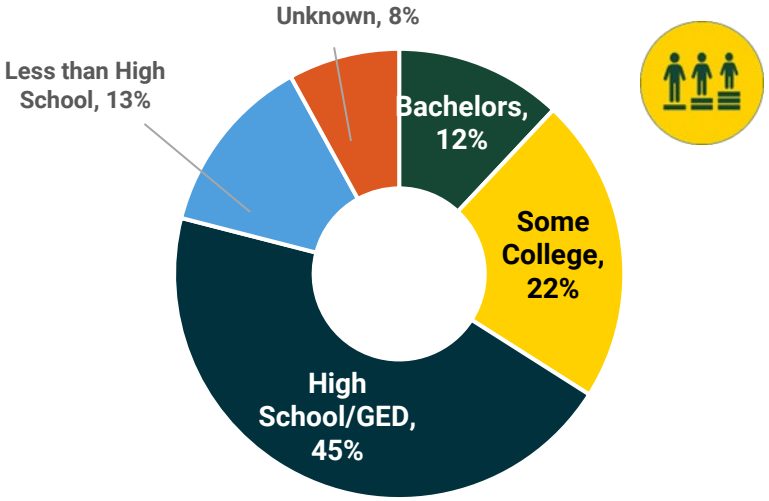
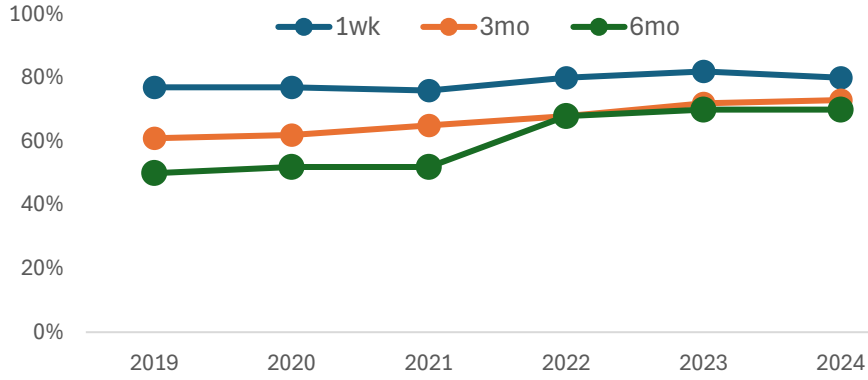


Figure 22: Trends in breastfeeding among WIC participants, 2019-24.



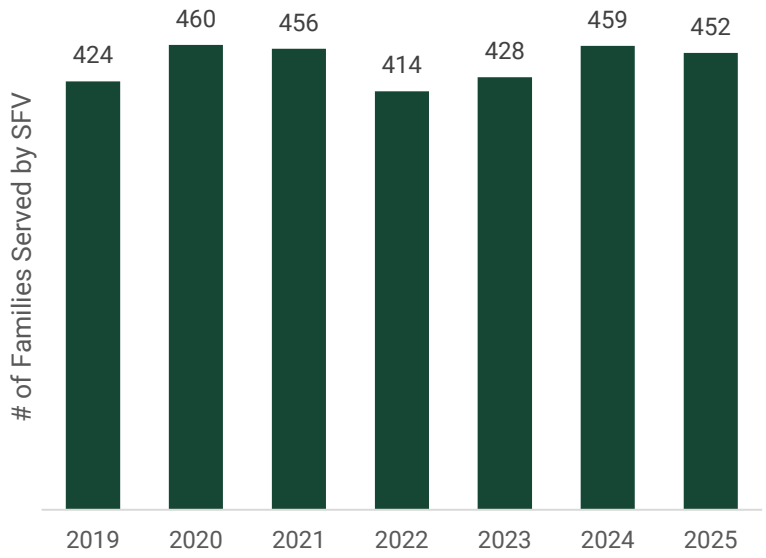
6-month postpartum breastfeeding rates have increased among WIC participants between 2019 and 2024.

Source: The data from figures 21-23 was obtained from the Vermont WIC Data Dashboard and includes data from 2019-2024 and comprehensive data from the 2019-2022 Vermont WIC Program Participant Demographics Data Brief and the 2018-2022 Vermont WIC Program Participation and Reach Data Brief.

Statewide Support Resources: Strong Families Vermont Nurse Home Visiting Program (SFV)

Strong Families Vermont is a nurse home visiting program for pregnant and postpartum Vermonters with the goals of lactation and mental health support, maternal and newborn nursing assessment and health education, supporting infant development, and a positive transition to parenthood.

Figure 23: Number of pregnant persons served by the Strong Families Vermont Nurse Home Visiting Program.

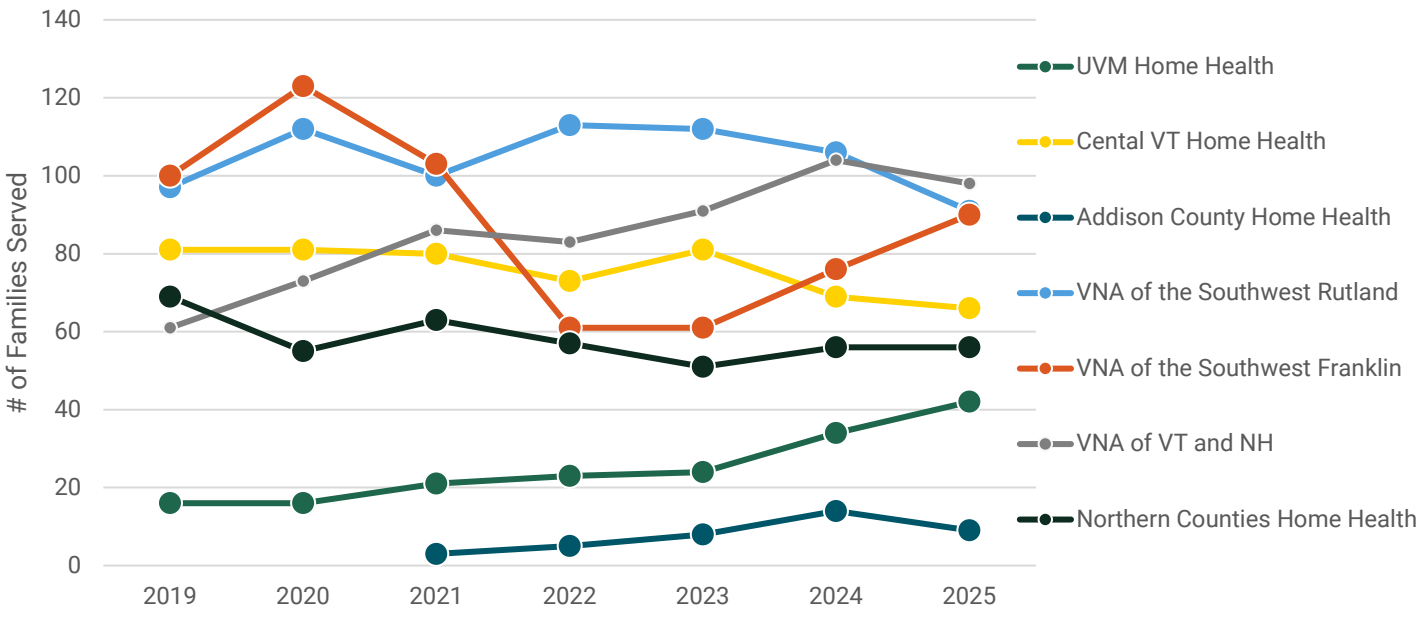


Between 2019 and 2025 there were

3093

families served by Strong Families Vermont home visiting program

Figure 24: Number of families served by SFV by site, 2019-25.



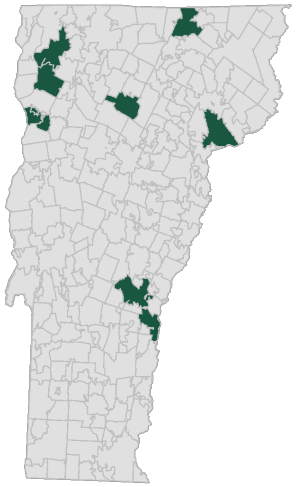
Source: The data on this page is sourced from Vermont Department of Health Strong Families Vermont Nurse Home Visiting Program, 2019-2024

Statewide Support Resources: DULCE

DULCE (Developmental Understanding Legal Collaboration for Everyone) is a program in which a family specialist is placed at pediatric offices around the state to address social determinants of health and provide support to parents and promote healthy development of infants from birth to six months of age. Between 2019 and 2024, DULCE served 2047 families across 10 sites, 9 of which are currently active.

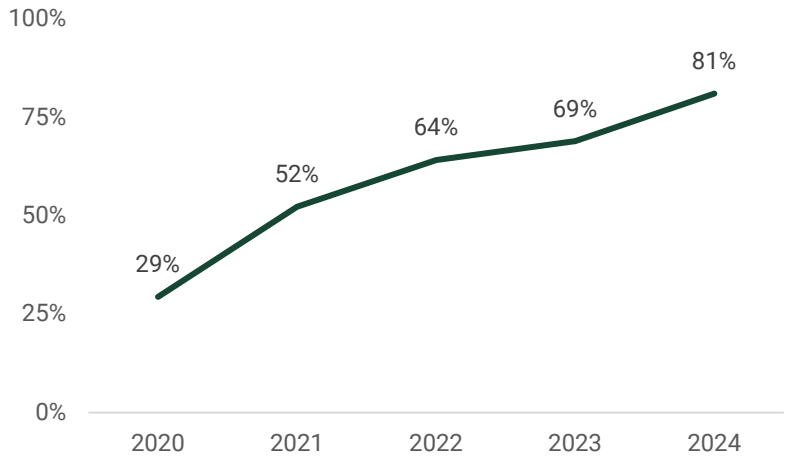
14% of DULCE families served in 2024 were BIPOC, and 5% spoke a language other than, or in addition to, English at home

Vermont DULCE Sites, 2019-2024*



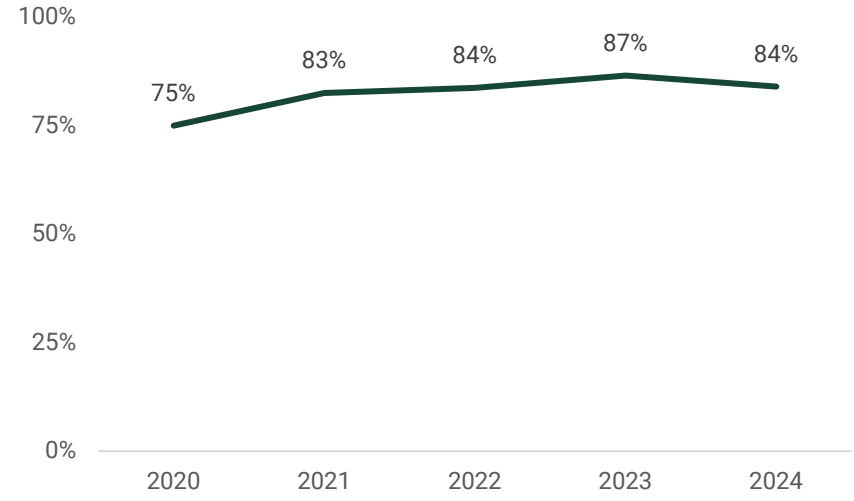
*Includes sites that closed after 2019 as well as sites that opened between 2019 and 2024.

Figure 25: % of DULCE families connected to parental supports.



DULCE connects participating families to community-based supports such as home visiting, Help Me Grow, parent groups, play groups, literacy support, lactation support, childcare, and family resource centers.

Figure 26: % of DULCE families with any positive screen who were connected to resources



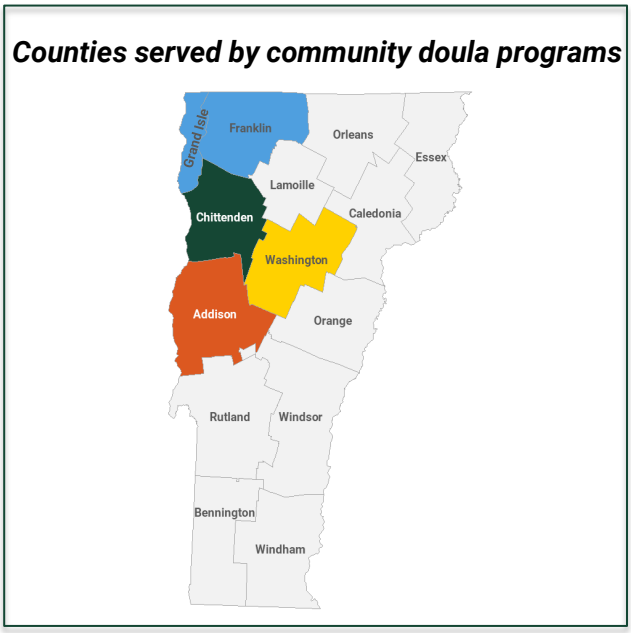
Participating DULCE parents are screened for mental health concerns, intimate partner violence, food security, employment concerns, financial security, utilities, transportation, housing stability, housing health and safety, and substance use disorder.

Source: The data on this page was provided by DULCE Vermont in November 2025.

Statewide Support Resources: Community Doula Programs

The goals of community-based doula programs are to increase wellness, promote healthy attachment and mitigate the risk and impact of perinatal mood disorders. There are four community-based doula programs supported by the Family and Child Health (FCH) division at the Vermont Department of Health, providing support and guidance during the perinatal period.

Counties served by community doula programs



The HEART Program, serving residents of Franklin and Grand Isle Counties, was established in 2018 and provides access to trained doula support. The program offers perinatal support as well as bereavement support for individuals and families who have experienced pregnancy loss or infant loss.

The Doula Project in Washington County provides prenatal, labor, and postpartum support. Services are delivered using a trauma-informed, person-centered approach that recognizes the diverse needs of individuals who may experience mental health challenges, cognitive limitations, substance use disorders, or a history of trauma.

Recently funded community doula programs serving **Chittenden and Addison Counties** prioritize outreach to individuals and communities that experience greater barriers to maternity care, including migrant populations and communities that have been historically underrepresented or underserved.

In addition to the FCH-supported Community Doula Programs in Vermont, a range of free, low-cost, and private doula services are available across the state. **UVMMC** offers free labor support through a volunteer doula program. Other Vermont community birthing hospitals generally welcome doulas as part of the care team and may connect birthing people to community-based or independent doula supports; however, the availability and structure of these services vary by hospital.

Community Doula Program Impact

400+	96%	100%
families served since 2019	of those surveyed reported **improved day-to-day circumstance**	of those surveyed **felt better able to handle challenges**

The Vermont state legislature has also taken steps to expand access to doula care through Medicaid by passing legislation in 2025 establishing a framework for reimbursement (S.53), with the goal of increasing access to doula services for Medicaid-insured Vermonters over time.[10] Together, these efforts reflect a statewide focus on improving access to culturally responsive, community-based maternity support and strengthening perinatal care systems in Vermont.

Source: The data on this page is from the Vermont Department of Health, Division of Family and Child Health, December 2025.

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Appendix I

Rural–Urban Commuting Area (RUCA) codes

Rural–Urban Commuting Area (RUCA) codes from the USDA Economic Research Service were used to classify rural and urban residence based on census tract–level population density, urbanization, and commuting patterns. Primary RUCA codes (1–10) categorize areas as metropolitan, micropolitan (suburban), small town, or rural using 2020 Census data with 2024 ZIP code approximations.

U.S. Department of Agriculture, Economic Research Service. (2025, September 26). *Rural-Urban Commuting Area codes.* https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes

Adequacy of Prenatal Care Utilization (Kotelchuck Index)

The Adequacy of Prenatal Care Utilization Index (APNCU; Kotelchuck) uses prenatal care initiation and number of prenatal visits from birth certificate data to create a summary score indicative of the adequacy of prenatal care received. The number of prenatal care visits attended is compared to the expected number of visits, based on the American College of Obstetricians and Gynecologists prenatal care standards for uncomplicated pregnancies and is adjusted for gestational age. For the purposes of this report, adequate and adequate plus categories are combined.

- Inadequate: Prenatal care started after month 4 or under 50% of expected visits were received
- Intermediate: Prenatal care started by month 4 and between 50-79% of expected visits were received
- Adequate: Prenatal care started by month 4 and of 80-109% of expected visits were received
- Adequate plus: Prenatal care started by month 4 and 110% or more of expected visits were received

Centers for Medicare & Medicaid Services. (2024, December 30). *Critical Access Hospitals*. U.S. Department of Health & Human Services. https://www.cms.gov/medicare/health-safety-standards/certification-compliance/critical-access-hospitals.

Appendix I *(cont.)*

Small for Gestational Age (SGA) Weight Percentile Documentation

The classifications of SGA and LGA represent weights below the 10th and above the 90th percentiles respectively. Birthweights that fall below or above these cutoffs are considered small or large for gestational age. To adjust for the progression of growth during pregnancy, birthweight cutoffs are tied to gestational age. Classification of SGA and LGA are most meaningful when based on the actual birthweight distribution of the population being studied – Vermont infants. The following formula is used to compute percentile cutoffs for birthweights based on gestational age, using the normal birthweight distribution of Vermont's live born infants.

$$\mathrm{pN}_{GA} = \left(1 + \mathrm{Z}_N \times \mathrm{P}\sigma \times {}^{\mathrm{P}\bar{\mathrm{X}}}/_{\mathrm{H}\bar{\mathrm{X}}}\right) \times {}^{\mathrm{P}\bar{\mathrm{X}}}/_{\mathrm{H}\bar{\mathrm{X}}} \times e^{0.578+0.332(GA+0.5)-0.00354(GA+0.5)^2}$$

Where pN_{GA} is the birthweight cutoff in grams at the Nth percentile for gestational age of GA. For simplicity, days are ignored. Z_N is the Z score of the Nth percentile. For 10th percentile (SGA), that is -1.282. For the 90th percentile (LGA) that is 1.282. $\mathrm{P}\sigma$ is the standard deviation of birthweights 40^{+0} – 40^{+6} expressed as a decimal percentage of the mean of birthweights 40^{+0} – 40^{+6} in the population of interest. Based on Vermont's Birth Certificate Registry data from 2016 through 2020, this is 12.428%, or 0.1248. $\mathrm{P}\bar{\mathrm{X}}$ is the mean of birthweights 40^{+0} – 40^{+6} in the population of interest. Based on Vermont's Birth Certificate Registry data from 2016 through 2020, this is 3577.3 grams. $\mathrm{H}\bar{\mathrm{X}}$ is the mean birthweight at 40.5 weeks based on Hadlock's Formula, $e^{0.578+0.332(40.5)-0.00354(40.5)^2} \approx 3705$ grams. For more information on this method of Gestational Age and Birthweight classification, see Mikolajczyk et al, 2011.[6] For more details on Hadlock's weight standard, see Hadlock et al. 1991.[7] The WHO's worksheet for Weight percentile calculation, based off of Mikolajczyk et al, 2011, can be found here:
https://www.who.int/reproductivehealth/topics/best_practices/weight_percentiles_calculator.xls

Mikolajczyk, R. T., Zhang, J., Betran, A. P., Souza, J. P., Mori, R., Gülmezoglu, A. M., & Merialdi, M. (2011). A global reference for fetal-weight and birthweight percentiles. *The Lancet, 377*(9780), 1855–1861. https://doi.org/10.1016/S0140-6736(11)60364-4

Hadlock, F. P., Harrist, R. B., & Martinez-Poyer, J. (1991). In utero analysis of fetal growth: A sonographic weight standard. *Radiology, 181*(1), 129–133. https://doi.org/10.1148/radiology.181.1.1887021

Appendix II

Supplemental Data

Table 2. Pre-pregnancy and pregnancy acquired risk factors, 2019-2023.						
	2019	**2020**	**2021**	**2022**	**2023**	**Mean**
Diabetes	1.1%	1.1%	1.6%	1.4%	1.7%	1.4%
Hypertension	2.8%	3.7%	3.9%	4.8%	4.5%	3.9%
Hepatitis B Positive	0.2%	0.2%	0.1%	0.2%	0.1%	0.2%
Hepatitis C Positive	1.4%	1.7%	1.3%	1.3%	1.1%	1.4%
Gestational diabetes	6.2%	7.4%	9.0%	8.7%	7.9%	7.8%
Gestational hypertension/preeclampsia	10%	10%	11%	12%	11%	10.9%

Table 3. Characteristics of Newborns, 2019-2023.						
	2019	**2020**	**2021**	**2022**	**2023**	**Mean**
GA <34 Weeks	2.1%	1.8%	2.0%	2.4%	1.7%	2.0%
GA 34-36 weeks	6.0%	5.6%	5.8%	6.2%	5.7%	5.8%
GA 37-41 weeks	91.3%	92.1%	91.5%	90.5%	91.9%	91.4%
GA >41 weeks	0.7%	0.6%	0.8%	1.0%	0.8%	0.7%
NICU Admission	7.1%	7.1%	7.8%	8.0%	8.2%	7.6%
SGA	13%	14%	13%	13%	13%	13%
Breastfed	91.0%	90.3%	89.5%	90.7%	91.0%	90.5%

Source: Data from the above figures is sourced from VT and NH Birth Certificate data for births occurring in Vermont and to Vermont Residents and to Vermont residents giving birth in New Hampshire from 2019 through 2023