DHHS
MONTGOMERY COUNTY
Department of Health and Human Services

Maternal and Infant Health in Montgomery County, MD 2012-2021




Montgomery County, Maryland
Department of Health and Human Services
Public Health Services
Health Planning and Epidemiology

Health Planning and Epidemiology

Maternal and Infant Health in Montgomery County, MD 2012-2021

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Maternal and Infant Health in Montgomery County, MD 2012-2021

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Contents

Health Officer's Message 6
Chief of Public Health Services' Message 7
LIST OF TABLES 8
LIST OF FIGURES 9
LIST OF MAPS 11
EXECUTIVE SUMMARY 12
INTRODUCTION 14
PREVENTION 16
SUMMARY OF MATERNAL AND INFANT HEALTH 22
DEMOGRAPHIC AND SOCIAL DETERMINANTS 26
MATERNAL AND INFANT HEALTH IN MONTGOMERY COUNTY 32
Chapter I: Births 33
Birth Rate 33
Fertility Rate 33
Adolescent Birth 34
Chapter II: Maternal Characteristics and Behaviors 36
Maternal Age 36
Marital Status 37
Education Attainment 38
Plurality 39
Tobacco Use 40
Alcohol Use 41
Substance Abuse 41
Prenatal Care 42
Breastfeeding 43
Chapter III: Birth Outcomes 44
Preterm Births 44
Low Birth Weight 45
Congenital Anomalies 47
Infant Mortality 48

Neonatal Mortality 50
Post-Neonatal Mortality 51
Fetal Deaths 52
Neonatal Intensive Care Unit Admissions 54
Apgar Score 55
Chapter IV: Maternal Mortality and Morbidity 56
Maternal Mortality 56
Severe Maternal Morbidity 58
Adverse Birth Outcomes 60
Maternal Postpartum Depression and Mental Health 61
DHHS MATERNAL CHILD HEALTH PROGRAMS & SERVICES 62
Perinatal Administrative Care Coordination Team (PACCT) 64
Montgomery Perinatal Program (MPP) 65
Babies Born Health Program 66
African American Health Program: Start More Infants Living Equally (SMILE) Program 69
Care Coordination for Pregnant and Parenting Teens 72
Infant at Risk Program 73
Immunization Program 74
Pregnancy Tests 75
Home Birth Validation 75
Lead Poisoning and Asthma Prevention and Environmental Case Management Program 76
Administrative Care Coordination – Ombudsman Program (ACCU) 77
Fetal and Infant Mortality Review (FIMR) Board and Community Action Team (CAT) 79
Family Planning 83
DHHS Program and Services Contact Information 84
CONCLUSION 85
REFERENCES 87
APPENDIX A: TERMS AND DEFINITIONS 94
APPENDIX B: TECHNICAL NOTES 97

APPENDIX C: SOURCES OF ADDITIONAL INFORMATION 100

Health Officer's Message

Dear Residents:

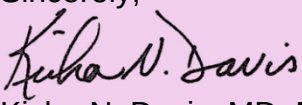
Maternal and Infant Health is at the heart of building a healthy future for our community. The health and well-being of mothers and their babies not only shape the next generation but also serve as a key indicator of our broader public health landscape. To ensure a brighter and healthier future for all, we must continuously focus on the full spectrum of reproductive health—from before conception, through pregnancy and the first year of life, and across the childbearing years.

Our role is to make the critical data and insights from our surveillance efforts accessible and understandable. This empowers our community partners to innovate in practice, shape policies, develop preventive strategies, and craft health promotion messages that resonate with those we serve.

This report sheds light on the state of maternal and infant health in Montgomery County. While we are proud that our county outperforms state and national averages on many health indicators, we must acknowledge and address the disparities that exist. The data reveals troubling differences in pregnancy-related outcomes among racial and ethnic groups, with non-Hispanic Black and Hispanic women facing significantly higher risks of severe maternal morbidity compared to their non-Hispanic White counterparts.

We are committed to bridging these gaps. Through the dedicated programs and initiatives of the Department of Health and Human Services, we are working to provide essential education and services that help reduce adverse pregnancy-related outcomes and improve maternal and infant health across all communities in our county. Together, we can create a healthier, more equitable future for every mother and child in Montgomery County.

Sincerely,



Kisha N. Davis, MD, MPH, FAAFP
County Health Officer
Montgomery County Department of Health and Human Services

Chief of Public Health Services' Message

Dear Residents of Montgomery County,

It is with great pride and a deep sense of responsibility that I present the updated report on maternal and infant health in Montgomery County, Maryland. This report reflects the Department of Health and Human Services' unwavering commitment to ensuring that every mother and birthing person has the ability to experience a positive and healthy pregnancy, birth, and postpartum period. It also reflects our commitment to ensuring every infant can begin their life story with optimal health and well-being.

Maternal and infant health is not just a measure of the well-being of mothers, birthing people, and their babies; it is a cornerstone of our community's overall health and a predictor of our future. The health and safety of our mothers, birthing persons, and infants are paramount. This report provides a comprehensive overview of the improvements we have made and the challenges that remain.

Over the past decade, Montgomery County has consistently performed better than state and national averages in many key maternal and infant health indicators. However, not all residents have enjoyed this same success. Unfortunately, we continue to see persistent and significant disparities in outcomes among different racial and ethnic groups within our community. These disparities are a constant reminder that while we have made progress on some metrics, we still have so much work to do.

This report not only paints a picture of the health of our moms, birthing people, and babies, it also showcases the programs and services that the Department of Health and Human Services offers to address these challenges. From prenatal care to infant health screenings, our programs are designed to provide comprehensive support to mothers and their babies, with a focus on equity and accessibility.

As you read through this report, I encourage you to consider the collective effort required to continue improving maternal and infant health in our county. It is through collaboration with our partners, providers, and the community that we can make the greatest impact.

Thank you for your continued support and dedication to the health and well-being of our residents. Together, we can ensure that every mother and child in Montgomery County has the opportunity to thrive.

Sincerely,

Nina C. Ashford, DrPH, MPH
Chief, Public Health Services
Montgomery County Department of Health and Human Services

LIST OF TABLES

Table 1. Various Factors Impacting Infant Health Across the Reproductive Health Continuum 16

Table 2. Percent Population Estimates by Selected Characteristics, Montgomery County, Maryland, and US, 2017-2021 27

Table 3. Percent Families Below Poverty Level by Race/Ethnicity, Montgomery County, Maryland, and US, 2017-2021 28

Table 4. Unemployment Rate by Race/Ethnicity, Montgomery County, Maryland, and US, 2017-2021 30

Table 5. Percent Individuals with College Degree or Higher by Race/Ethnicity, Montgomery County, Maryland, and US, 2017-2021 31

Table 6. Rate of Congenital Anomaly in Montgomery County from 2012-2021, and Maryland from 2016-2020 47

Table 7. PACCT Screening Dispositions in FY24 65

Table 8. Maternity Partnership Program and Montgomery Perinatal Program Enrollment FY 2014 - FY 2024 66

Table 9. FY24 Birth Outcomes 70

Table 10. FY24 MPP Case Management Outcomes 70

Table 11. Patient Race 72

Table 12. Patient Ethnicity 72

Table 13. Number of Pregnant/Parenting Teen receiving Home Based Case Management 73

Table 14. Infant at Risk Referrals by Fiscal Year, 2014-2024 74

Table 15. Number and Percentage of Children 0-72 Months Old Tested for Lead with Number and Percentage of New (Incident) and Existing (Prevalent) Cases of High Blood Lead Levels in Montgomery County, 2017-2021 76

Table 16. ACCU Program Statistics, FY2023 78

LIST OF FIGURES

Figure 1. Adolescent Birth Rate by Race/Ethnicity, Montgomery County and Maryland, 2017-2021 .. 22
Figure 2. Adolescent Births by Race/Ethnicity, Montgomery County, 2017-2021 22
Figure 3. Percent Births with Late or No Prenatal Care by Race/Ethnicity, Montgomery County and Maryland, 2017-2021 22
Figure 4. Percent Late or No Prenatal Care by Race/Ethnicity, Montgomery County, 2017-2021 22
Figure 5. Percent Preterm Birth by Race/Ethnicity, Montgomery County and Maryland, 2017-2021 .. 23
Figure 6. Percent Preterm Birth by Race/Ethnicity, Montgomery County, 2017-2021..... 23
Figure 7. Percent Low Weight Births by Race/Ethnicity, Montgomery County and Maryland, 2017-2021 23
Figure 8. Percent Low Weight Births by Race/Ethnicity, Montgomery County, 2017-2021 23
Figure 9. Infant Mortality Rate by Race/Ethnicity, Montgomery County and Maryland, 2017-2021 24
Figure 10. Percent Infant Mortality by Race/Ethnicity, Montgomery County, 2017-2021 24
Figure 11. Percent Severe Maternal Morbidity by Race/Ethnicity, Montgomery County, 2020-2022 .. 25
Figure 12. Percent Severe Maternal Morbidity by Maternal Age, Montgomery County, 2020-2022.... 25
Figure 13. Crude Birth Rate, Montgomery County, Maryland, and US, 2012-2021 33
Figure 14. Crude Birth Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021..... 33
Figure 15. Fertility Rate, Montgomery County, Maryland, and US, 2017-2021..... 34
Figure 16. Fertility Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021 34
Figure 17. Adolescent Birth Rate in Montgomery County, Maryland, and US, 2012-2021..... 35
Figure 18. Adolescent Birth Rate by Race/Ethnicity, Montgomery County, MD, 2012-2021..... 35
Figure 19. Adolescent Birth Rate by Age, Montgomery County, MD, 2012-2021 35
Figure 20. Percent Births among Women aged 35-44 years, Montgomery County and Maryland, 2017-2021..... 36
Figure 21. Percent Births among Women aged 35-44 years by Race/Ethnicity, Montgomery County, MD 2017-2021 36
Figure 22. Percent Births to Unmarried Women, Montgomery County, Maryland, and US, 2017-2021 37
Figure 23. Percent Births to Unmarried Women by Race/Ethnicity, Montgomery County, MD, 2017-2021..... 37
Figure 24. Percent Births to Women without High School Education in Montgomery County and Maryland, 2017-2021 38
Figure 25. Percent Births to Women without High School Education by Race/Ethnicity, Montgomery County, MD, 2017-2021 38
Figure 26. Percent Plural Births in Montgomery County and Maryland, 2017-2021..... 39
Figure 27. Percent Plural Births by Race/Ethnicity, Montgomery County, MD, 2017-2021..... 39
Figure 28. Tobacco Use during Pregnancy, Montgomery County, MD, 2017-2021 40
Figure 29. Tobacco Use during Pregnancy by Race/Ethnicity, Montgomery County, MD, 2017-202140
Figure 30. Percent Births with Delayed/No Prenatal Care, Montgomery County and Maryland, 2017-2021..... 42
Figure 31. Percent Births with Delayed/No Prenatal Care by Race/Ethnicity, Montgomery County, MD, 2017-2021 42
Figure 32. Percent Infants Breastfed before Discharge, Montgomery County, MD, 2017-2021 43

Figure 33. Percent infants Breastfed before Discharge by Race/Ethnicity, Montgomery County, MD 2017-2021 43
Figure 34. Percent Preterm Births, Montgomery County and Maryland, 2017-2021 44
Figure 35. Percent Preterm Births by Race/Ethnicity, Montgomery County, MD, 2017-2021 44
Figure 36. Percentage of Low Weight Births, Montgomery County, Maryland, and US, 2017-2021 ... 45
Figure 37. Percentage of Low and Very Low Weight Births by Race/Ethnicity, Montgomery County, MD, 2017-2021 45
Figure 38. Percentage of Very Low Weight Births, Montgomery County and Maryland, 2017-2021 ... 46
Figure 39. Average Length of Stay (LOS) by Birth Weight in Montgomery County and Maryland, 2020-2022 46
Figure 40. Average Cost of Hospitalization by Birth Weight in Montgomery County and Maryland, 2020-2022 46
Figure 41. Infant Mortality Rate, Montgomery County, Maryland, and US, 2012-2021 48
Figure 42. Infant Mortality Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021 48
Figure 43. Neonatal Mortality Rate, Montgomery County, Maryland, and US, 2012-2021 50
Figure 44. Neonatal Mortality Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021 50
Figure 45. Post-neonatal Mortality Rate, Montgomery County, Maryland, and US, 2012-2021 51
Figure 46. Post-neonatal Mortality Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021 51
Figure 47. Fetal Death Rate, Montgomery County, Maryland, and US, 2012-2021 52
Figure 48. Fetal Death Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021 52
Figure 49. Percent NICU Admissions in Montgomery County, MD, 2017-2021 54
Figure 50. Percent NICU Admissions by Race/Ethnicity, Montgomery County, MD, 2017-2021 54
Figure 51. Percent Births with Low Apgar 5 min Score (0-6), Montgomery County, MD, 2017-2021 .. 55
Figure 52. Percent Births with Low Apgar 5 min Score (0-6) by Race/Ethnicity, Montgomery County, MD, 2017-2021 55
Figure 53. Number of Pregnancy-Associated Deaths by Jurisdiction, Maryland, 2019 57
Figure 54. Number of Pregnancy-Related Deaths Rate by Jurisdiction, Maryland, 2019 57
Figure 55. Percentage of Delivery Hospitalizations with Severe Maternal Morbidity, Montgomery County, MD, 2019-2022 59
Figure 56. Percent of Severe Maternal Morbidity by Race/Ethnicity, Montgomery County, MD, 2020-2022 59
Figure 57. Percent of Severe Maternal Morbidity by Maternal Age, Montgomery County, MD, 2020-2022 59
Figure 58. Percent of Severe Maternal Morbidity by Delivery Method, Montgomery County, MD, 2020-2022 59
Figure 59. Percent Low Birth Weight, Montgomery County, Maryland, and US, 2017-2021 60
Figure 60. Percent Low and Very Low Weight Births by Race/Ethnicity, Montgomery County, MD, 2017-2021 60
Figure 61. Participant Enrollment and Referrals by Year, SMILE Program, Montgomery County, MD, 2018-2023 69

LIST OF MAPS

Map 1. Median Household Income by Census Tract, Montgomery County, 2021 29
Map 2. Infant Mortality Rate by Census Tract, Montgomery County, 2015-2021..... 49
Map 3. Fetal Death Rate by Census Tract, Montgomery County, 2012-2021..... 53

EXECUTIVE SUMMARY

Maternal and infant health indicators are an important proxy for the health of a community. Montgomery County performs better than state and national averages on most maternal and infant health indicators. A closer examination of the overall averages, however, reveals great disparities of pregnancy-related outcomes among population subgroups based on race/ethnicity and geographic areas. It is critical to highlight these areas, to better target efforts and resources to meet the evolving needs of a changing population in the County. The major findings of maternal and infant health topics examined in this report are summarized below.

Demographic and Social Determinants

(1) The County's population is becoming more diverse over time; the percentages of NH-Black, Asian/Pacific Islander, and Hispanic residents have increased while the NH-White population is decreasing. Between 2017 and 2021, NH Black residents have increased by 0.6%, whereas Asian/Pacific Islanders have increased by 0.2%, and Hispanics have increased by 0.4%. NH-White residents have decreased by 1.3%.
(2) In 2021 an increasing percentage of County families are living in poverty; however, the County's overall poverty level (4.6%) is lower than Maryland's (6.6%) and much lower than that of the U.S. (9.5%); the Hispanic (14%) and NH-Black (12.8%) groups had the highest poverty levels.

Births

(1) Adolescent (15-19 years old) birth rates in Montgomery County have decreased over the years, the County has consistently lower rates than Maryland and the U.S.
(2) Hispanics have the highest adolescent birth rates than other groups, though also decreasing.

Maternal Characteristics and Behaviors

(1) The County has consistently higher percentages of births among women age 35-44 and lower percentages of births (35% in 2021) to unmarried women than Maryland (24% in 2021).
(2) The percentages of births with delayed/no prenatal care were on a decreasing trend until 2020 (6.2%) but increased in 2021 (7.1%); NH-Blacks (10.2%) have the highest percentages among all the groups.

Birth Outcomes

(1) Though the County has consistently lower percentages of preterm births than Maryland, there is an increasing trend since 2018 (from 8.3% in 2018 to 9.4% as of 2021). NH-Blacks (10.1%) and Hispanics (9.8%) have the highest percentages among all the groups.
(2) The County has consistently lower percentages of low weight births (7.6%) than Maryland (8.9%); NH-Blacks have the highest percentages (9.8%) among all the groups.
(3) Infant and fetal death rates in the County are consistently lower than that from Maryland; NH-Blacks (9.8%) have the highest rates.

Maternal Mortality and Morbidity

(1) There is an increasing trend of severe maternal morbidity in the County over time.
(2) NH-Blacks and Hispanics are at higher risk of severe maternal morbidity than other groups; Younger (<20 yrs old) and older (40+ yrs old) maternal ages, as well as cesarean delivery, have increased risks of severe maternal morbidity.

DHHS Programs

DHHS Maternal and Child Health programs work closely with partners, providers, and communities to provide case management, care coordination, education and services to County residents to reduce adverse pregnancy-related outcomes and improve maternal and infant health in the County.

INTRODUCTION

Montgomery County is the most populous county in Maryland with a population estimate of over 1.06 million in 2020 from the U.S. Census; it also has the highest percentage (33.2%) of residents over 25 years of age who hold post-graduate degrees. In 2022, it was ranked by the American Community Survey as the 19th richest in the country, with a median household income of $118,323[1].
Montgomery County has a very diverse population and an increasing trend toward becoming more diverse over time. In 2022, there were 40.1% Non-Hispanic White, 18.5% Non-Hispanic Black, 15.4% Asian/Pacific Islander, and 20.3% Hispanic or Latino based on the estimate from the U.S. Census. Of the County's population, 32.6% are born outside the U.S.

Since 2014, Montgomery County has among the highest overall County Health Ranking in Maryland and is consistently ranked one of the healthiest counties in the U.S.[2]. However, ongoing efforts are needed to make improvements in the areas of access to health care, health inequities, and unhealthy behaviors. Though doing better than the State's and other jurisdiction's averages in most pregnancy-related outcomes, there are significant disparities of pregnancy-related outcomes among racial and ethnic groups and geographic areas. This report provides an overview of maternal and infant health in Montgomery County, compared to Maryland and the U.S. for 2012-2021. It also includes information describing programs within DHHS that provide maternal and infant health services to County residents, including types of services provided, and data on clients served. Most of these programs are located in Public Health Services.
This report is organized into three major sections: (1) the maternal and infant health by year, race/ethnicity, and maternal age where appropriate; (2) DHHS program services and clients, and (3) the appendices. Here are the features of this report:

- A section on prevention is included to illustrate the importance of prevention at different levels to improve pregnancy-related outcomes.
- Comparison of risky behaviors and outcomes by race/ethnicity, maternal age (where appropriate), and geographic areas are included to illustrate the disparities of risks.
- Trends in risky behaviors and outcomes are examined over time, to illustrate the effectiveness of prevention and intervention.
- Comparisons of pregnancy-related outcomes between sub-county areas (i.e. Census Tract and Zip Code) and the County overall through Geographic Information System (GIS) mapping are provided to identify potential risks for outcomes associated with different lifestyles and possible environmental/occupational exposures.
- Comparison of risk behaviors and outcomes between the County, Maryland and U.S. are made where appropriate.
- Information from the 2016-2020 Maryland Pregnancy Risk Assessment Monitoring System (PRAMS) is included to provide insight on risk behaviors and prevalence pertinent to pregnancy-related outcomes.
- Information from the Healthy People 2030 is included to provide a benchmark for progress made and areas for ongoing efforts.
- A list of definitions for pregnancy-related terms is provided in the appendices.
- Technical notes are included in the appendices to provide information on methodological issues.
- Sources of additional information are included in the appendices.

Montgomery County Department of Health and Human Services, Montgomery County, Maryland

The Montgomery County Department of Health and Human Services (DHHS) is an integrated local health department that is responsible for public health and human services that address the needs of our community's most vulnerable children, adults and seniors. DHHS has more than 130 programs and delivers services to more than 20 locations. DHHS's core services protect the community's health, protect the health and safety of at-risk children and vulnerable adults, and address basic human needs, including food, shelter, and clothing. The five main service areas of DHHS include Aging and Disability Services, Behavioral Health and Crisis Services, Children, Youth and Family Services, Public Health Services, and Special Needs Housing. Additionally, the Office of Community Affairs provides direct services through several programs. DHHS has more than 1,700 employees and provides services to more than 120,000 clients annually (1 in every 8 residents).

DHHS Public Health Services – Health Planning and Epidemiology

DHHS Public Health Services includes the following program areas: Community and Population Health, Communicable Diseases and Epidemiology, Maternal and Infant Health, Health Planning and Epidemiology, Licensure and Regulatory Services, and School Health Services.

The Health Planning and Epidemiology is the expert in planning and analytic epidemiology within DHHS and is responsible for the community health needs assessment, program evaluations, disease surveillance and outbreak investigations, health statistics and data management, epidemiology and biostatistics, ongoing development and maintenance of a population data warehouse, and special research projects in collaboration with internal and external partners and academic institutions.

PREVENTION

The goal of prevention is to reduce the associated morbidity and mortality. Improving maternal and infant health, and preventing mortality, requires ongoing consideration of the evolving continuum of reproductive health across the life span. This ranges from family planning and pre-conception care during the childbearing years through postpartum and infant care during the first year of life. Below is the framework provided by the Association of Maternal and Child Health programs that examines various factors that impact infant health across the reproductive health continuum[3].

Table 1. Various Factors Impacting Infant Health Across the Reproductive Health Continuum [3]

Preconception		Pregnancy	Labor & Delivery	Birth Outcomes	
Maternal Risk Indicators	Environment & Health Care System	Risk Indicators	Risk Indicators	Morbidity	Mortality
Pregnancy-related • High parity • History of poor birth outcome • Intendedness of pregnancy • Short inter-pregnancy interval • Poor health status **Demographic** • Race/Ethnicity • Nativity • Uninsured/Under-insured • Lack of employ-ment • Low educational attainment **Behavioral Risks** • Poor nutrition • Physical inactivity • Substance use • Stress • Poor mental health **Genetic Risks** • Maternal low birth weight/small for gestational age	**Physical Environment** • Lack of housing • Urbanicity **Social Environment** • Poverty • High crime rates • Health inequity **Health Care System** • Infertility treatment • Lack of access to family planning services • Lack of access to family practice providers	**Maternal** • Insufficient or excess gestational weight gain • Substance use (Smoking, alcohol, drugs) • Multiple gestation • Lack of social support • Extremes of maternal age • Medical risk factors **Environment** • Lack of social support • Adverse living conditions **Health Care System** • Variations in the quality of the in-hospital care provided • Inadequate prenatal care • Limited access to obstetrical and high-risk perinatal services	**Maternal** • Uninsured/ Underinsured **Health Care System** • No plan for delivery at risk-appropriate hospital • Mode of delivery • Delivery complications • Lack of breastfeeding	• Low and very low birth weight • Preterm and very preterm • Small for gestational age • Post-term • Congenital Malformations and anomalies • Macrosomia	• Fetal • Neonatal • Postneonatal • Cause specific

Many types of pregnancy-related conditions, such as low birth weight and preterm births, may be prevented with pre-conception planning and early entrance into prenatal care. When not prevented, the medical community has made considerable progress in improving the quality of life and survival of infants born too soon or too small. Strategies towards preventing poor birth outcomes in Maternal Child Health are categorized into three levels of intervention.

Primary prevention – is to limit the occurrence of health conditions by controlling exposure to risk factors or increasing an individual's resistance to them (e.g., through healthy diet). The first step is to identify the relevant exposures and to assess their impact on the risk of developing disease in the

population. For example, a healthy diet and positive movement during pregnancy can prevent hypertension or pre-eclampsia that often leads to serious negative birth outcomes. Quitting smoking before conception or during pregnancy may decrease the risk of preterm birth, low birth weight births, and certain birth defects. This report provides examples of adverse pregnancy-related outcomes that can be prevented using primary prevention strategies.

This report includes County-specific information from the 2016-2020 Maryland Pregnancy Risk Assessment Monitoring System (PRAMS) and 2016 Maryland Behavioral Risk Factor Surveillance System (BRFSS) whenever possible and appropriate. Supported by the Centers for Disease Control and Prevention, Maryland PRAMS is a surveillance project to help us learn why some babies are born healthy and others are not. One out of every 35 women who give birth each month is selected at random to participate in the PRAMS survey. The Maryland Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing telephone-based chronic disease surveillance program designed to collect data on the behaviors and conditions that place Maryland adults at risk for chronic diseases, injuries, and preventable infectious diseases. Maryland BRFSS also collects information on health care access and health disparities. The typical sample size is approximately 15,000 non-institutionalized Maryland residents age 18 and older per year.

This icon indicates data from the 2016-2020 Maryland Pregnancy Risk Assessment Monitoring System (PRAMS), a CDC surveillance system to assess maternal attitudes and experiences before, during, and shortly after pregnancy.

Secondary prevention – refers to the detection of diseases at an early stage, when intervention is more effective than at the time of usual diagnosis and treatment. Early detection and intervention can reduce or eliminate the complications related to the condition, including death. Screening represents an important component of secondary prevention. Prenatal visits provide strategic opportunities for the early identification of pregnancy related conditions that may lead to adverse birth outcomes . It also provides an opportunity to initiate appropriate interventions to reduce the consequences of those health conditions.

Most secondary prevention efforts for maternal child health concerns are completed by a medical provider and include a long list of screenings and tests to ensure that diseases and conditions of pregnancy, postpartum and infancy are detected and treated early. DHHS MCH Programs ensures that all pregnant patients are receiving prenatal care, all newborns are receiving pediatric care, and all postpartum patients receive their postpartum visits with their OB provider and are linked to primary care for long term follow-up of any pregnancy related conditions.

Setting Prevention Goals and Objectives
It is important to set up long-term objectives for achieving these goals through various prevention and health promotion activities. Through comparing results with Healthy People 2030, a program of national health-promotion and disease-prevention goals set by the US Department of Health and Human Services, it provides information on progress made and ongoing efforts. Objectives from Healthy People 2030 are included in this report whenever possible and appropriate.

This icon indicates goals of Healthy People 2030 from the CDC National Center for Health Statistics.

Other Information on Prevention

Family Planning

Nearly half of all pregnancies in the US are unintended[4]. Approximately one in eight pregnancies in the US results in a preterm birth. The US continues to have one of the highest adolescent pregnancy rates in the developed world, while infant mortality rates remain high compared with other developed countries. Many of these outcomes disproportionately affect racial and ethnic minority populations. Family planning and other reproductive health services can help address these public health challenges by providing education, counseling, and medical services including access to the needed reproductive health resources.

The 2014 recommendations from the Centers for Disease Control and Prevention and the U.S. Office of Population Affairs define family planning to include[4]:

- "providing contraception to help women and men plan and space births, prevent unintended pregnancies, and reduce the number of abortions;
- offering pregnancy testing and counseling;
- helping clients who want to conceive;
- providing basic infertility services;
- providing preconception health services to improve infant and maternal outcomes and improve women's and men's health; and
- providing sexually transmitted disease (STD) screening and treatment services to prevent tubal infertility and improve the health of women, men, and infants."

Montgomery County's Maternal Child Health Program provides free pregnancy testing and reproductive health education and referrals on a walk-in basis in two of their service sites. Unfortunately, most of the people the programs work with are already pregnant at the time they come for our services. After supporting the families to ensure that the pregnancy and delivery are safe and healthy, the MCH Programs work with the postpartum person and the newborn. The program staff teach the importance of Healthy Child Spacing and encourage families to wait eighteen months or more from the birth of their newborn until the start of the next pregnancy. Healthy Child Spacing prevents poor birth outcomes for the mom and subsequent pregnancy and prevents poor infant health for the first infant. Child Spacing education includes education and referrals for family planning services.

Improving the quality of family planning services will lead to improved reproductive health outcomes. The Institute of Medicine describes quality health care to encompass safety, effectiveness, a client-centered approach, timeliness, efficiency, accessibility, equity and value[4].

In developing Healthy People 2030, the US Department of Health and Human Services proposed the following objectives on family planning:

- Reduce the proportion of pregnancies that are unintended;
- Reduce the proportion of pregnancies conceived within 18 months of a previous birth;
- Reduce pregnancies among adolescent females aged 15 to 19 years;
- Increase the proportion of adolescents aged 15-17 years who have never had sexual intercourse;
- Increase the proportion of sexually active females aged 15 to 19 years who use a condom and hormonal or intrauterine contraception at last intercourse;
- Increase the proportion of sexually active males aged 15 to 19 years who used a condom at last intercourse;

- Increase the proportion of sexually active adolescents aged 15 to 19 years who use any method of contraception at first intercourse;
- Increase the proportion of female adolescents who received formal instruction on delayed sex, birth control methods, HIV/AIDS prevention, and sexually transmitted diseases before there were 18 years old;
- Increase the proportion of females in need of publicly supported contraceptive services and supplies who receive those services and supplies;
- Increase the proportion of females aged 20 to 44 years at risk of unintended pregnancy who use most effective or moderately effective methods of contraception;
- Increase the proportion of adolescent females aged 15 to 19 at risk of unintended pregnancy who use most effective or moderately effective methods of contraception; and
- Increase the proportion of publicly funded family planning clinics that offer the full range of reversible contraceptive methods onsite.

For more information on family planning in the US, please visit:
https://www.healthypeople.gov/2020/topics-objectives/topic/family-planning
For more information on family planning services offered within Montgomery County, Maryland, please visit: www.infomontgomery.org

Birth Spacing

As mentioned above, Birth Spacing, also known as interpregnancy interval, is the time from one child's birth until the next pregnancy[5]. Pregnancies that begin less than 18 months after birth are associated with delayed prenatal care and other adverse birth outcomes such as preterm birth, low birthweight, and neonatal morbidity. Pregnancies that begin less than 18 months after birth are also associated with other health conditions that include developmental delay, asthma, and vision and hearing loss. Nationally, interpregnancy intervals of less than 6 months are most common among non-Hispanic black mothers (7.1%), followed by Hispanic (5.0%) and non-Hispanic white (4.1%) mothers[6].

Healthy People 2030 currently has a goal of reducing the proportion of pregnancies conceived within 18 months of a previous birth by 6.9 percent (from 33.8% to 26.9%)[7].

The American College of Obstetricians and Gynecologists have recommended shifting postpartum care from a single 6 week visit to a postpartum process that include up to 12 weeks of ongoing follow-up as needed with a care team made up of family and friends, the primary maternal care provider, the infant's health care provider, the family's primary care provider, lactation support, care coordinator or case manager, home visitor and specialty consultants such as a behavioral health care provider[8].

Safe Sleep

Approximately 3,500 sleep-related infant deaths are reported each year in the US. Causes include sudden infant death syndrome (SIDS), accidental suffocation and strangulation in bed, and unknown causes. The American Academy of Pediatrics recommends infant sleep practices that include placing infants to sleep on their backs, room sharing but not bed sharing, and keeping soft objects and loose bedding out of the infant's sleep environment. Data from PRAMS show that unsafe sleep practices were most commonly reported by younger, less educated, and racial/ethnic minority mothers, suggesting priority groups that might need to be reached with clear, culturally appropriate messages[9].

Having all infants placed: alone in a crib, on their backs, with no toys, pillows or blankets is a primary goal of the Montgomery County Maternal Child Health Program. Great effort is given towards providing education and when needed, safe portable cribs to all families in need.

Folic Acid Intake
The Centers for Disease Control and Prevention recommends that all women of reproductive age get 400 micrograms (µg) of folic acid daily, in addition to consuming food with folate from a varied diet to help prevent neural tube defects. Neural tube defects are major birth defects of the baby's brain (anencephaly) and spine (spina bifida)[10]. People who are potentially in a preconception period or are pregnant are highly encouraged to take prenatal vitamins to get the recommended dose of folic acid. The DHHS MCH Program provides prenatal vitamins, free of charge, for all the patients enrolled in the program. Program staff will also provide free prenatal vitamins to non-patients on a limited basis.

Breastfeeding
Breastfeeding, the provision of human milk, is one of the most effective ways for a mother to protect the health of her infant and prevent disease. Current clinical and public health guidelines recommend exclusive breastfeeding for the first six months of life and continued breastfeeding for at least one year (up to two years of age or longer), with age-appropriate additional feeding.

Despite continued improvement in breastfeeding initiation, duration, and exclusivity in the US in the past decade, the CDC noted that as of 2019, the percentage of birthing parents who initiated breastfeeding was 73.6% for Black, 85.5% for White, and 87.4% for Hispanic families. On average, there is a 17-percentage point gap in breastfeeding initiation between black and white infants born between 2009 and 2014, with the black-white gap in breastfeeding widening at six and 12 months[11]. African American women have the lowest breastfeeding initiation and duration rates compared with all other racial and ethnic groups.

Health risks associated with not breastfeeding include ear infections, gastrointestinal infections/diarrhea, respiratory infections, necrotizing enterocolitis, SIDS, allergies, asthma, celiac disease, obesity, diabetes, childhood leukemia, and lymphoma. Breastfeeding has been shown to decrease direct and indirect insurance claim costs and missed days from work due to caring for a sick infant. Infants who are breastfed have a reduced risk of obesity later in life.

The Centers for Disease Control and Prevention along with other national public health partners have developed nine strategies to support providers, pregnant and lactating women, communities, and businesses to increase breastfeeding. These include maternity care practices; professional education; access to professional support; peer support programs; support for breastfeeding in the workplace; support for breastfeeding in early care and education; access to breastfeeding education and information; social marketing; and addressing the marketing of infant formula[12].

The MCH Programs employ an Internationally Certified Lactation Consultant to work with staff to help them support families in their breastfeeding journey. Additionally, the program currently has ten staff members in training to become Certified Lactation Counselors.

SUMMARY OF MATERNAL AND INFANT HEALTH

Births

Figure 1. Adolescent Birth Rate by Race/Ethnicity, Montgomery County and Maryland, 2017-2021

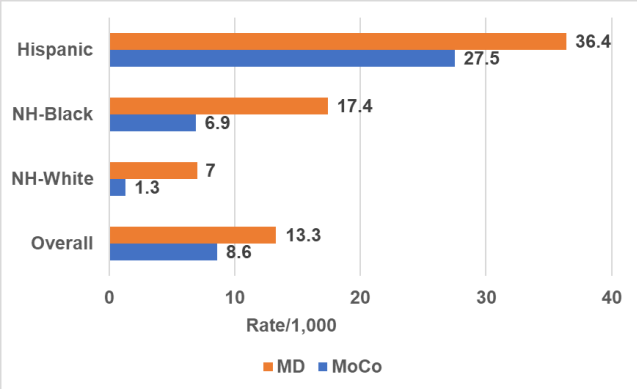
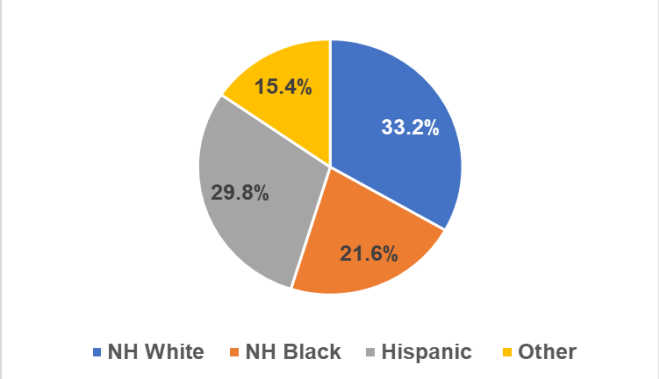


Figure 2. Adolescent Births by Race/Ethnicity, Montgomery County, 2017-2021



* Based on total no of events

Maternal Characteristics and Behaviors

Figure 3. Percent Births with Late or No Prenatal Care by Race/Ethnicity, Montgomery County and Maryland, 2017-2021

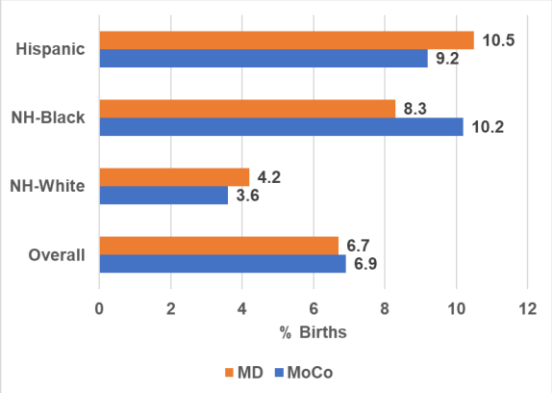
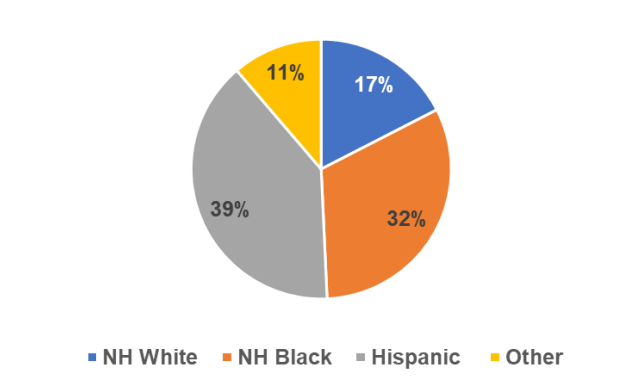


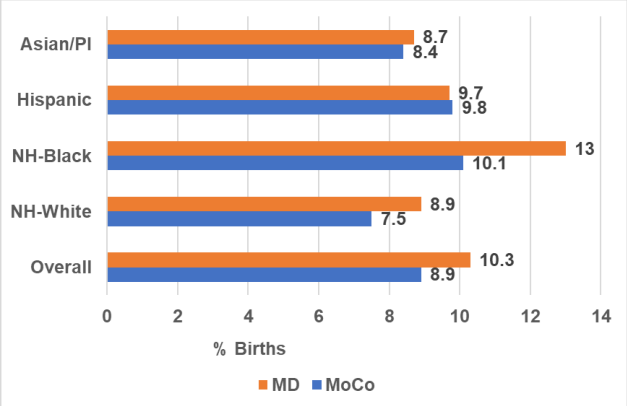
Figure 4. Percent Late or No Prenatal Care by Race/Ethnicity, Montgomery County, 2017-2021



* Based on total no of events

Birth Outcomes

Figure 5. Percent Preterm Birth by Race/Ethnicity, Montgomery County and Maryland, 2017-2021



* Based on total no of events

Figure 6. Percent Preterm Birth by Race/Ethnicity, Montgomery County, 2017-2021

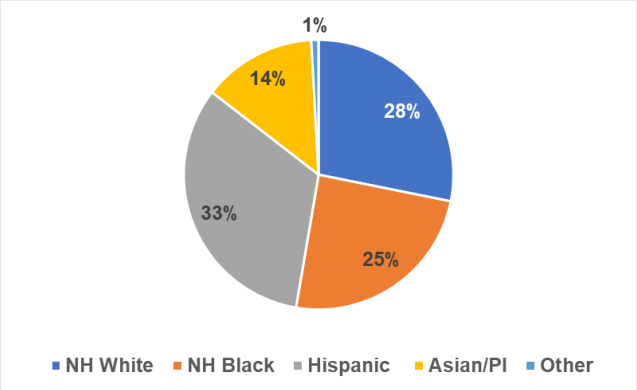
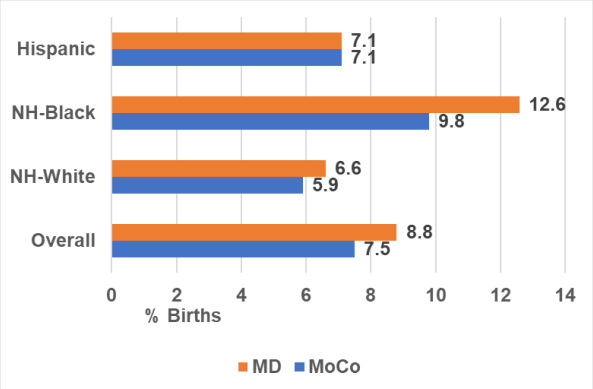


Figure 7. Percent Low Weight Births by Race/Ethnicity, Montgomery County and Maryland, 2017-2021



* Based on total no of events

Figure 8. Percent Low Weight Births by Race/Ethnicity, Montgomery County, 2017-2021

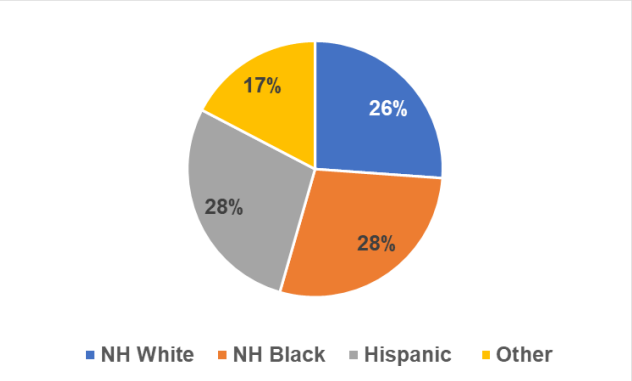


Figure 9. Infant Mortality Rate by Race/Ethnicity, Montgomery County and Maryland, 2017-2021

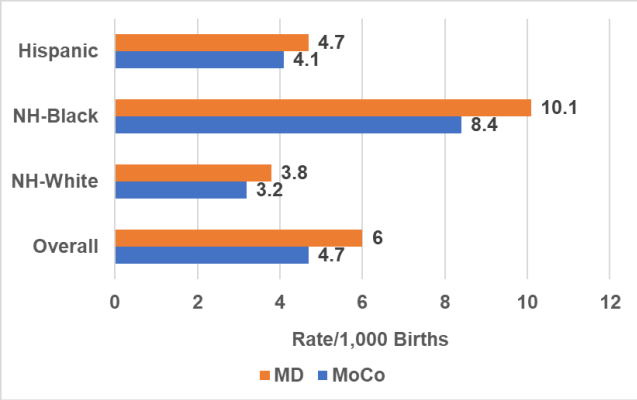
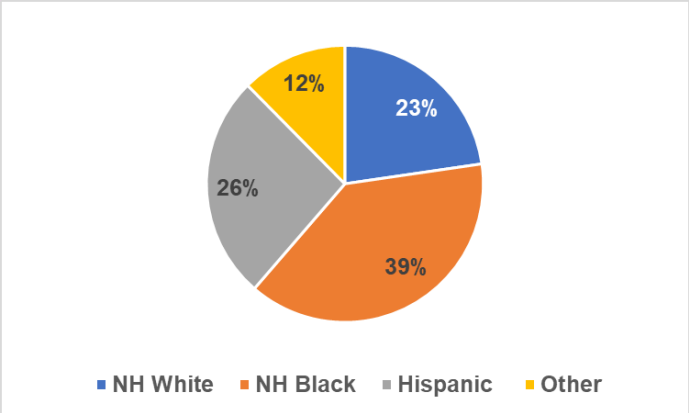


Figure 10. Percent Infant Mortality by Race/Ethnicity, Montgomery County, 2017-2021



* Based on total no of events

Severe Maternal Morbidity

Figure 11. Percent Severe Maternal Morbidity by Race/Ethnicity, Montgomery County, 2020-2022

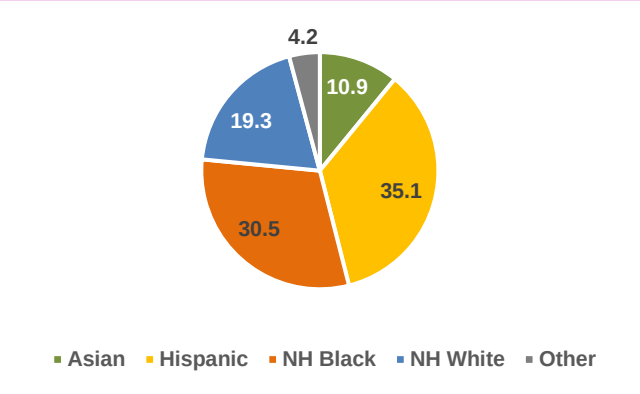
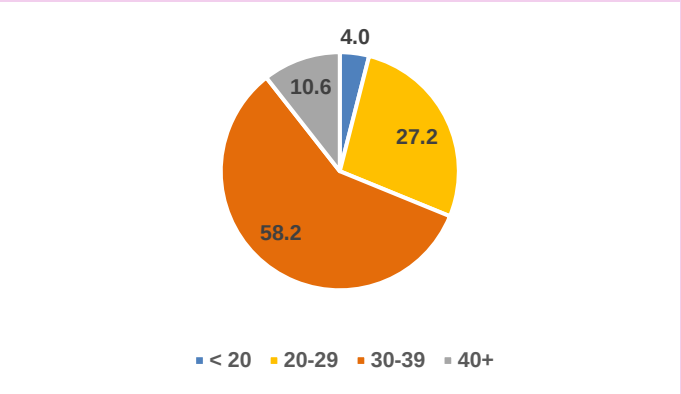


Figure 12. Percent Severe Maternal Morbidity by Maternal Age, Montgomery County, 2020-2022



* Based on total no of events

DEMOGRAPHIC AND SOCIAL DETERMINANTS

The health and health needs in Montgomery County cannot be measured nor met without understanding the number of people living in the county and population characteristics. Changes in population size, density, distribution, age, race, ethnicity and migration affect the healthcare resources needed, the cost of care provided, and the conditions associated with each population group. Risks associated with disease and health conditions vary across population subgroups with different characteristics over time.

Socioeconomic status (SES) describes a person's position in society expressed on an ordinal scale using criteria that includes income, level of education attained, occupation, or a combination of these and other dimensions[13]. A person's SES is one of the strongest and most consistent predictors of morbidity and mortality and persists across most diseases throughout life and extends across many risk factors for disease[14]. SES underlies environmental exposure, health behavior, and health care, and is associated with many health problems including low birth weight, cardiovascular disease, hypertension, arthritis, diabetes and cancer. Socioeconomic disparities are the most fundamental causes of health disparities[15].

Many factors can affect pregnancy and childbirth, including preconception health status, age, access to appropriate health care across the reproductive continuum, and poverty[16]. Likewise, Infant and child health are influenced by SES and behavioral factors that include education, family income, and breast feeding, as well as the physical and mental health of parents and caregivers.

Social Determinants of Health can also contribute to pregnancy outcomes. Factors such as access to safe food, housing and environment, access to education and health services and stressors such as interpersonal racism, poverty, and domestic violence can cause women to be more vulnerable to poor birth outcomes for mom and baby. Montgomery County's Maternal Child Health Programs, and especially the Babies Born Healthy Program strives to improve the social determinants of health for their program participants by offering home delivered healthy food, transportation to medical appointments, childcare for medical appointments, and basic resources such as portable cribs.

Demographics

- In 2021, the County's population was over 1.05 million (Table 2).
- The sex distribution in the County is consistent over time and is similar to that of Maryland and the U.S. (Table 2).
- The County's population is aging over time; the age distribution of the County is similar to that of Maryland and the U.S. (Table 2).
- The County's population is getting more diverse over time; the NH-Black, Asian/PI and Hispanic populations have increased while the NH-White population is decreasing. The county has a high Asian/PI and Hispanic population than that of Maryland and the U.S. (Table 2).

Table 2. Percent Population Estimates by Selected Characteristics, Montgomery County, Maryland, and US, 2017-2021

		2017	2018	2019	2020	2021		
		MoCo	MoCo	MoCo	MoCo	MoCo	MD	US
Total						1,055,924		
Gender	Male	48.4	48.4	48.3	48.4	48.8	48.7	49.5
	Female	51.6	51.6	51.7	51.6	51.2	51.3	50.5
Age Group	< 5	6.3	6.3	6.2	6	5.7	5.7	5.6
	5-17	16.9	17	16.9	16.9	16.9	16.4	16.5
	18-34	20.8	20.5	20.3	20.1	20.1	21.9	22.7
	35-64	41	40.7	40.6	40.4	40.6	39.8	38.3
	65+	15	15.5	16.1	16.5	16.6	16.3	16.8
Race/Ethnicity	NH-White	45	43.4	44.2	43.7	42	48.8	58.1
	NH-Black	19	18.5	19.4	19.6	19	30.3	12.2
	Asian/PI	16.2	15.5	16.1	16.4	15.8	6.9	5.8
	Hispanic	19.6	19.9	20.1	20	20.1	11.2	18.8

Source: American Community Survey, US Census.

Social Determinants

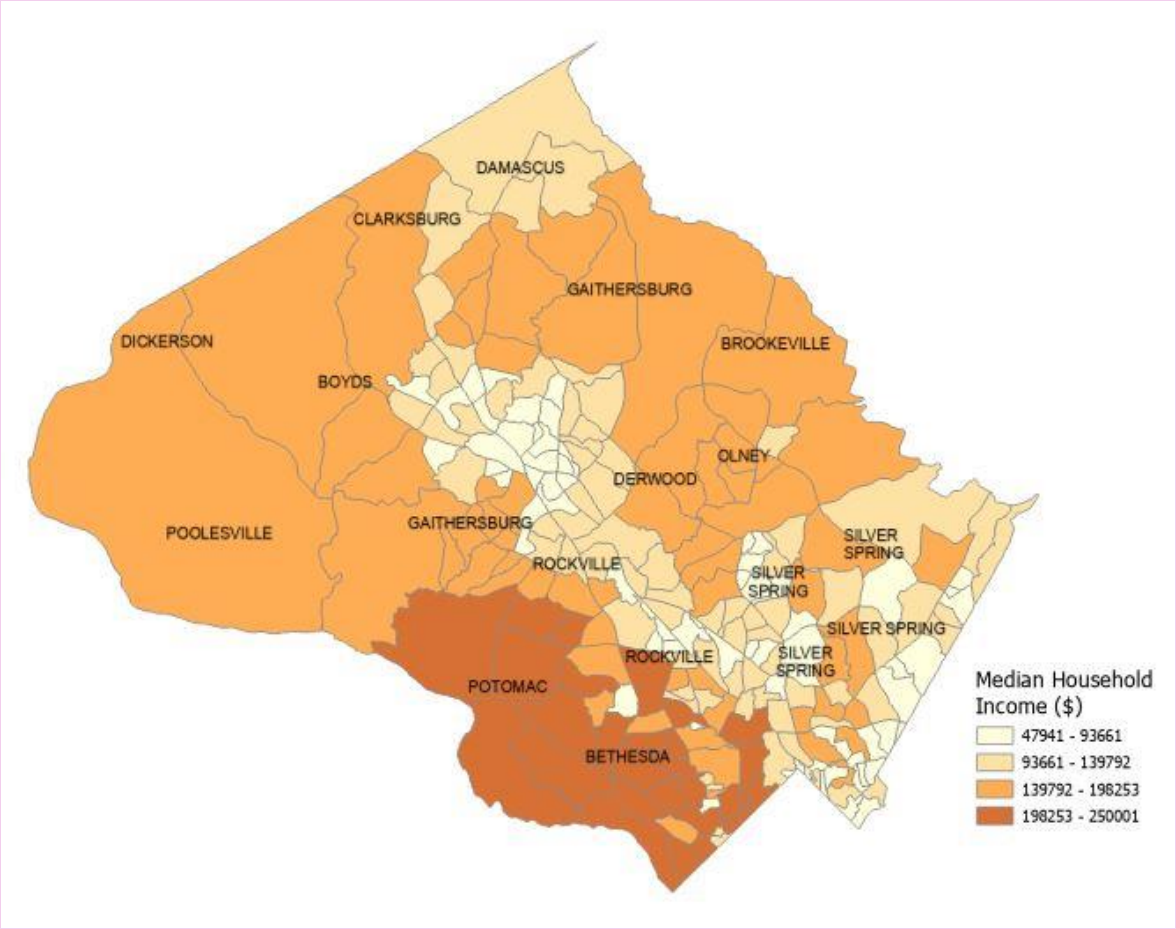
- There is an increasing trend of percent of families below the poverty level (8.6% as of 2021) in the County over time (Table 3).
- All population subgroups have increasing trends of percent families below poverty level; NH-Black (12.8%) and Hispanic (14%) groups have much higher percent than NH-White (7.6%) and Asian/PI (4.6%) (Table 3).
- The overall percent families below poverty level in the County (8.6% as of 2021) is lower than that in Maryland (10.3% as of 2021) and much lower than the U.S.(12.8% as of 2021) (Table 3).

Table 3. Percent Families Below Poverty Level by Race/Ethnicity, Montgomery County, Maryland, and US, 2017-2021

	2017	2018	2019	2020	2021		
	MoCo	MoCo	MoCo	MoCo	MoCo	MD	US
All	6.9	6.9	7.4	6.6	8.6	10.3	12.8
NH-White	3.6	3.7	3.3	3.5	4.6	6.6	9.5
NH-Black	11.2	11.1	13.6	10.4	12.8	14.5	21.8
Asian/PI	5.8	6.3	5.9	5.9	7.6	8.8	10.2
Hispanic	11.1	9.7	11.5	10	14	15.3	17.5

Source: American Community Survey, US Census.

Map 1. Median Household Income by Census Tract, Montgomery County, 2021



- The overall unemployment rate in the County began to increase in 2020 and is consistent across all race/ethnicity groups (Table 4).
- The unemployment rate in the County is higher than that of Maryland but lower than the U.S. rate (Table 4).
- Among race/ethnicity groups, NH-Black and Hispanic groups have higher rates of unemployment than other population subgroups (Table 4).

Table 4. Unemployment Rate by Race/Ethnicity, Montgomery County, Maryland, and US, 2017-2021

	2017	2018	2019	2020	2021		
	MoCo	MoCo	MoCo	MoCo	MoCo	MD	US
All	4.5	3.2	3.1	4.6	6.1	5.9	6.3
NH-White	3.3	3.2	3.1	3.2	4.2	4.4	5
NH-Black	7.5	6.1	7.4	7.6	10	8.4	10.6
Asian/PI	3.3	3.3	3.5	4	5.1	4.6	5.8
Hispanic	5	4.2	5.3	5.5	7.2	6.2	7.5

- The overall percent of individuals with a college education or higher in the County has increased over time and is consistent across all race/ethnicity groups (Table 5).
- The percent of individuals with a college education or higher in the County is much higher than that in Maryland and the U.S. and is consistent across all race/ethnicity groups (Table 5).
- Among race/ethnicity groups, NH-White and Asian/PI groups have higher percentages of college education or higher than other population subgroups (Table 5).

Table 5. Percent Individuals with College Degree or Higher by Race/Ethnicity, Montgomery County, Maryland, and US, 2017-2021

	2017	2018	2019	2020	2021		
	MoCo	MoCo	MoCo	MoCo	MoCo	MD	US
All	57.8	58.6	57.2	59.2	60.9	42.5	35
NH-White	71.5	73.1	72.5	72.8	76.4	48.4	38.9
NH-Black	43.2	44.2	44.8	45.3	47.1	32.5	24.9
Asian/PI	66.8	67.4	68.5	68.5	67.2	62.9	56.4
Hispanic	25.1	25	24.6	26.8	28	24.6	19.7

MATERNAL AND INFANT HEALTH IN MONTGOMERY COUNTY

Overview of Maternal and Infant Health

Despite tremendous progress in recent years, maternal and infant health remains an important public health challenge in both developing and developed countries. During the 20th century, maternal and child health indicators have improved with maternal and neonatal mortality rates decreasing substantially[17]. However, this progress has not been enough to achieve the United Nations Millennium Development Goals (MDG), necessitating the need for further concerted action[17]. Maternal and infant health has gained increasing attention by health organizations such as World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF) and Centers for Disease Control and Prevention (CDC), galvanizing the efforts to promote the well-being of both mothers and their infants.

Despite spending a considerable amount on hospital based maternity care, the US has not been performing well on maternal and infant health (MIH) indicators[18]. The maternal mortality rate (MMR) has increased in recent years from 17 deaths per 100,000 in 1990 to 23.8 deaths per 100,000 in 2020[18]. Similarly, the U.S. has a higher infant mortality rate than peer countries[19]. Parts of U.S. are falling short on meeting national standards and Healthy People 2020 targets associated with maternal and infant health[18]. Furthermore, race/ethnicity is an important predictor of access to care within the country. Blacks and minority populations generally perform worse than Whites on several MIH indicators[18]. These differences cannot be explained by race alone. It is well-documented that the U.S history of racism has embedded within the present-day health care system and continues to drive present-day day MIH disparities [19].

Maternal health broadly encompasses aspects related to family planning, pregnancy, childbirth and postpartum period. Preconception health focuses on optimizing the mother's health and preparing it for a forthcoming pregnancy. In addition to focusing on behavioral and lifestyle changes, it stresses preventive actions, including vaccinations, healthy eating and other lifestyle changes such as quitting smoking. Upon conception, it is essential to provide women access to prenatal care for continuous monitoring and evaluation of both the mother and the fetus. After birth, postpartum health, including mental well-being and initiation of breastfeeding, remain an important aspect of maternal health.

Maternal health is strongly associated with infant health. Women who remain healthy before and during pregnancy give birth to healthier infants with minimal risk of adverse birth outcomes. A vast majority of maternal deaths result from preventable causes during pregnancy/childbirth[20]. Hence, prenatal care is an important factor to eliminate preventable deaths among mothers. Additionally, improved access to prenatal care improves infant health due to earlier detection and treatment of developmental delays and disabilities, enabling children to reach their full potential[21]. Maternal and infant health predicts the looming health challenges for families, communities and health care systems[21]. The health of mothers defines the health of the next generation.

Chapter I: Births

Birth Rate

Birth rate combined with other demographics can provide information about the growth of a population. Over the past decade, birth rates declined globally, owing to several possible factors including declining marriage rate, higher economic costs, higher proportion of women joining workforce and changing family dynamics[22]. Changes in birth rate are also associated with contraceptive use and public health interventions[22].

- Montgomery County has a decreasing birth rate trend during 2012-2021, following the same trends as Maryland and the U.S.; birth rates in the County are consistently higher than those of Maryland and the U.S. during 2012-2018; By 2018, the county birth rates are lower than that of Maryland and by 2020, the county birth rates also fall lower than that of the U.S. (Fig. 13).
- Among population subgroups, the Hispanic group has the highest birth rate, followed by NH-Black, Asian/PI and NH-White (Fig. 14).

Figure 13. Crude Birth Rate, Montgomery County, Maryland, and US, 2012-2021

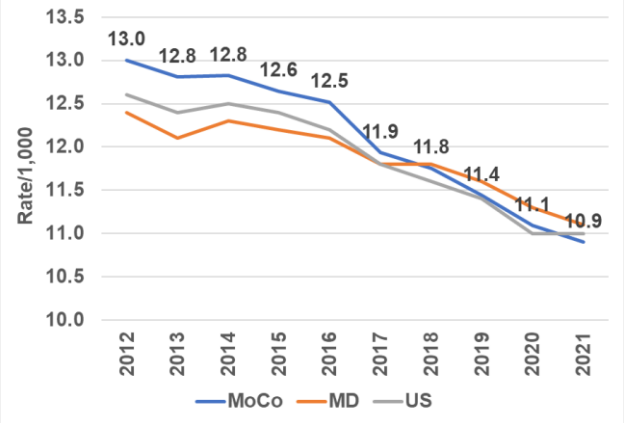
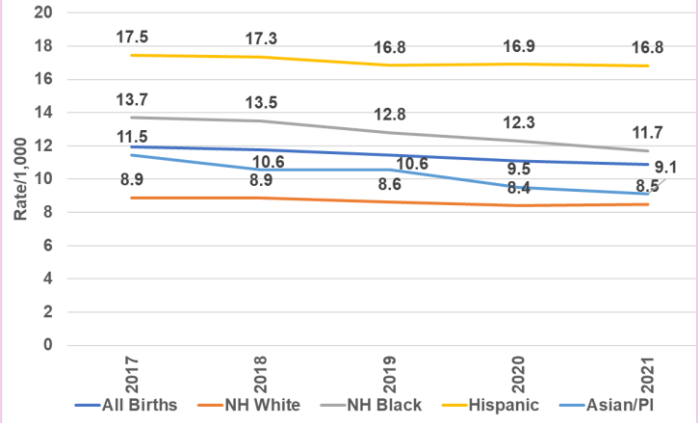


Figure 14. Crude Birth Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021



Fertility Rate

The fertility rate describes the number of births to women of childbearing age. Fertility rates help to understand the growth and the structure of a population. Higher fertility rates indicate that higher numbers of young people constitute the overall population and drives growth. In developed countries, fertility rates are associated with lifestyle choices, economic forces and lower mortality rate[23]. Easier access to contraception and an increasing shift towards having children later in life have led to declining fertility rates in developed countries[23]. When lower fertility rates are coupled with longer life expectancy, it results in an aging population, which can have exceptional effects on health care systems and costs[24].

- Montgomery County has a decreasing fertility rate trend during 2017-2021, following the same trend as the U.S.; fertility rates in the County are consistently higher than those of the U.S. (Fig. 15).
- Among population subgroups, the Hispanic group has the highest fertility rate, followed by NH-Black and NH-White (Fig. 16).

Figure 15. Fertility Rate, Montgomery County, Maryland, and US, 2017-2021

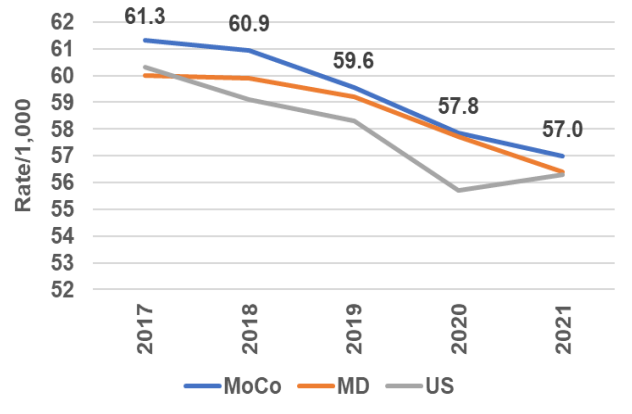
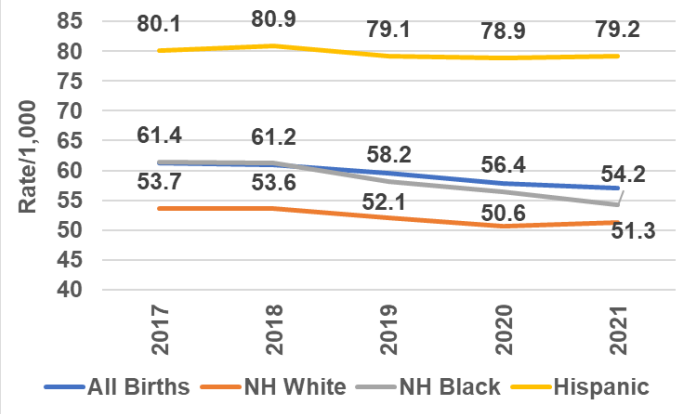


Figure 16. Fertility Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021



Adolescent Birth

Early childbearing is more prevalent among teens who have compromised socioeconomic conditions[25]. Teen pregnancy is associated with an increased risk for infant mortality, preterm birth, and low birth weight[26]. Moreover, younger mothers are more likely to develop complications such as fistula and obstructed labor[25].

- Adolescent (15-19 yrs. old) birth rates in the County are decreasing over time, following the same trends as Maryland and the U.S; adolescent birth rates in the County are consistently lower than those of Maryland and the U.S. (Fig. 17).
- Among population subgroups, the Hispanic group has the highest adolescent birth rate, followed by NH-Black, and NH-White (Fig. 18).
- Moreover, the birth rate is consistently higher among 18-19-year-old teens in Montgomery County, compared to 15-17-year-old teens (Fig. 19).

Figure 17. Adolescent Birth Rate in Montgomery County, Maryland, and US, 2012-2021

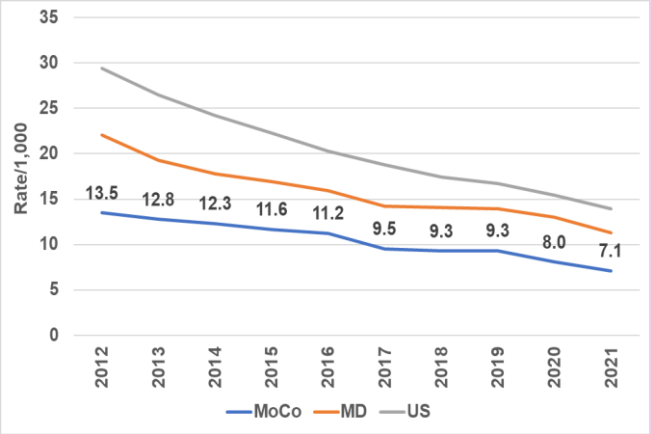


Figure 18. Adolescent Birth Rate by Race/Ethnicity, Montgomery County, MD, 2012-2021

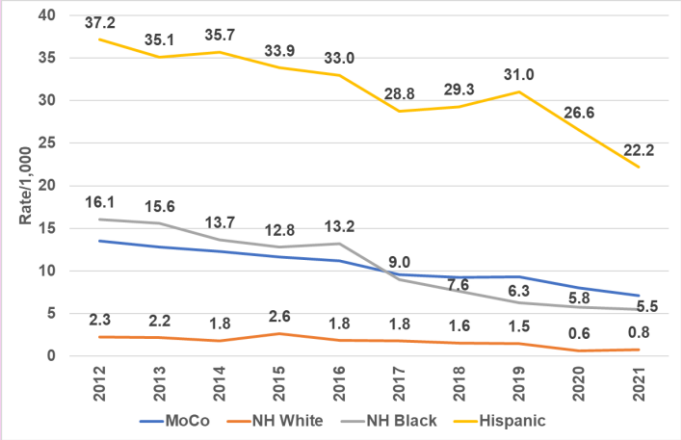
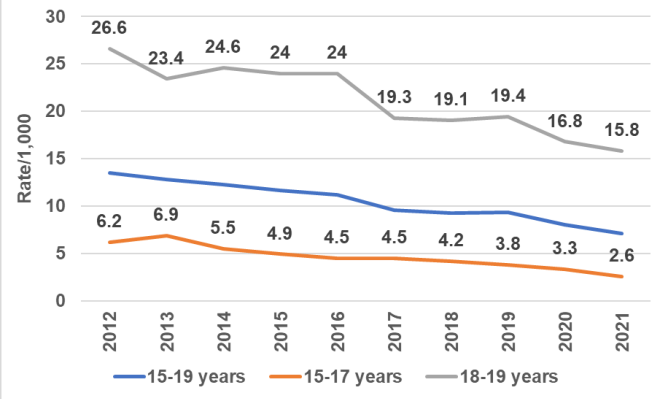


Figure 19. Adolescent Birth Rate by Age, Montgomery County, MD, 2012-2021



Maternal Age

Maternal age is an important determinant of a mother's and her child's health. As teen pregnancies result in increased risk of maternal and child morbidities, increasing maternal age is also associated with negative health outcomes. The incidence of preeclampsia, gestational hypertension, cesarean delivery, preterm birth and placental complications are higher among older mothers compared to younger mothers[27]. Additionally, increasing maternal age is associated with chromosomal abnormalities, such as trisomy, due to an increased chance of genetic errors[28]. With changes in birth trends, more women are giving birth in the later years of their lives; maternal age is considered an obstetrical risk factor.

- Montgomery County has an increasing trend in the percentage of births to older women aged between 35 and 44, following the same trends as Maryland but consistently higher. (Fig. 20).
- Among population subgroups, the Asian/PI and NH-White groups have a higher percentage of births among women aged 35-44, followed by NH-Black, and Hispanics (Fig. 21).

Figure 20. Percent Births among Women aged 35-44 years, Montgomery County and Maryland, 2017-2021

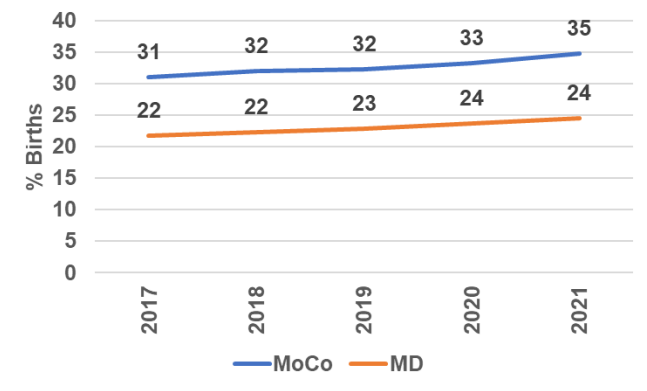
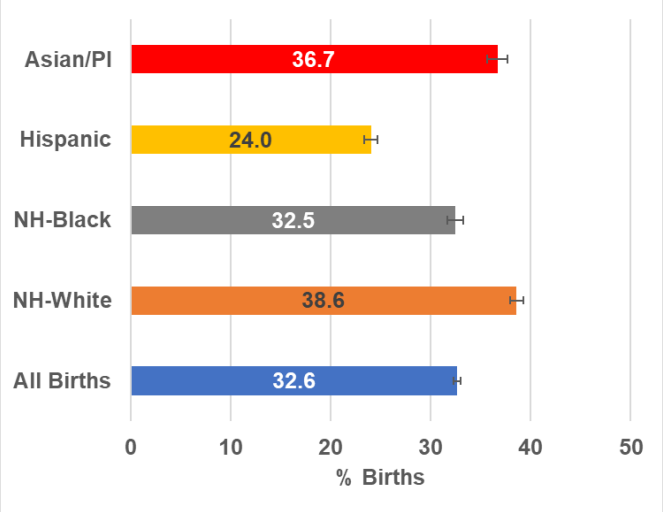


Figure 21. Percent Births among Women aged 35-44 years by Race/Ethnicity, Montgomery County, MD 2017-2021



Marital Status

The marital status of mothers is an important predictor of maternal and infant health. Prior evidence suggests that unmarried women experience increased risk of low birth weight, preterm birth and small for gestational age (SGA) infants[29]. Fetal and neonatal mortality rates are also higher among unmarried women[29]. Compared to married women, unmarried women have lower Apgar* 1 min scores and higher number of admissions to intensive care among their infants [29]. With changing societal attitudes, more women are opting to have children outside of marriage[29]. Unmarried women experience adverse outcomes possibly due to increased emotional stress, limited access to prenatal care and lack of social support[29].

- Montgomery County follows a stable trend of percent of births to unmarried women, similar to that in Maryland and the U.S.; the percentage of births to unmarried women in the County is consistently lower than that of Maryland and U.S. (Fig. 22).
- Among population subgroups, the Hispanic group has the highest percentage of births to unmarried women, followed by NH-Black, NH-White, and Asian/PI (Fig. 23).

Figure 22. Percent Births to Unmarried Women, Montgomery County, Maryland, and US, 2017-2021

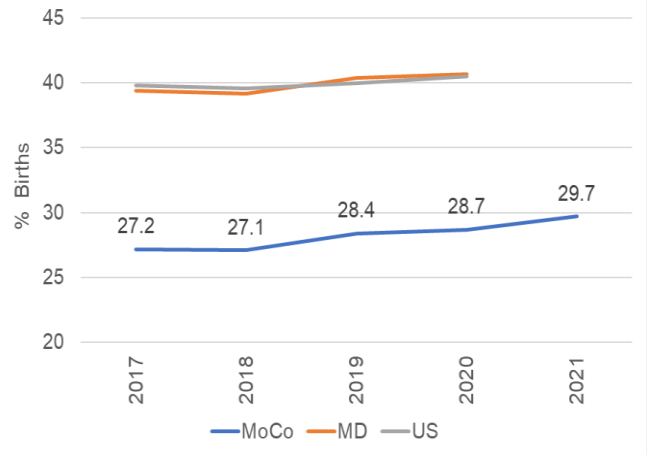
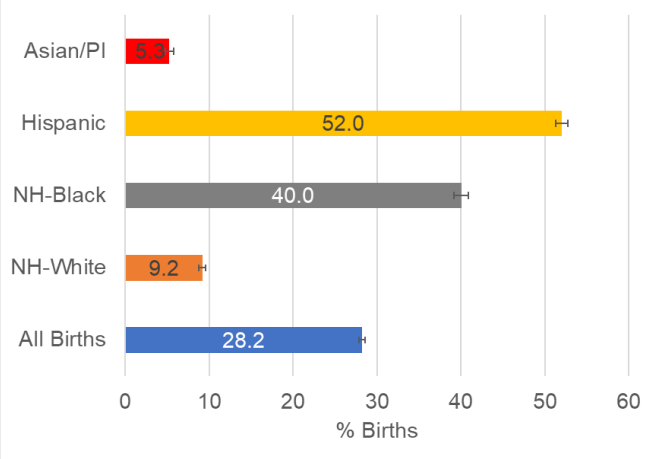


Figure 23. Percent Births to Unmarried Women by Race/Ethnicity, Montgomery County, MD, 2017-2021



* Apgar scores provides a quick and concise evaluation of a newborn's health at one and five minutes after birth. The Apgar score evaluates a child's activity/muscle tone, pulse/heart rate, grimace, appearance, and respiration/breathing, assigning a score of 1 for fair activity and 2 for good. Typically, scores over 7 indicate no immediate medical emergency while scores lower than 7 require closer evaluation of the child for any adverse outcomes. More information and data on Apgar scores are on page xx.

Education Attainment

The Socio-economic status of pregnant women has implications for birth outcomes. Education, particularly, has been shown to be a protective factor for certain adverse birth outcomes, including preterm birth, stillbirth, and neonatal mortality[30]. Among socioeconomic measures, education is considered to have the most influential effect on pregnancy related outcomes[30].

- The percentage of births to women without a high school education in the County fluctuated between 2017-2021, while Maryland shows an increasing trend until 2019 by which it began to decrease (Fig. 24).
- Among population subgroups, Hispanics has the highest percentage of births to women without high school education, followed by NH-Black, Asian/PI, and NH-White (Fig. 25).

Figure 24. Percent Births to Women without High School Education in Montgomery County and Maryland, 2017-2021

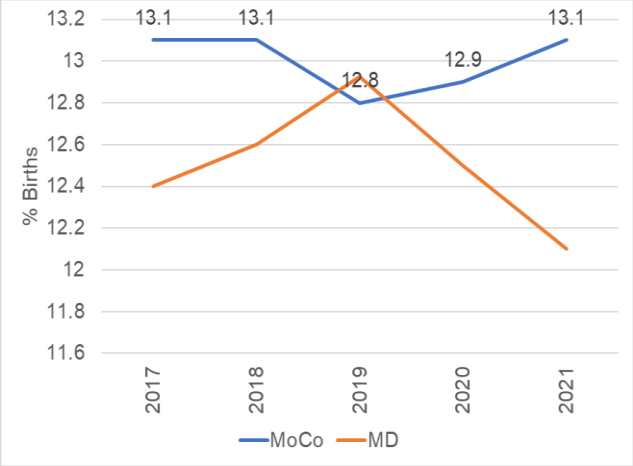
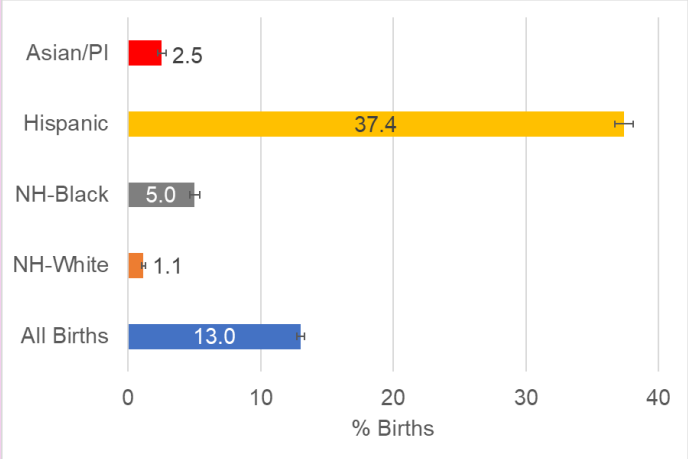


Figure 25. Percent Births to Women without High School Education by Race/Ethnicity, Montgomery County, MD, 2017-2021



Plurality

Plural births refer to twins and higher-order multiple births. With increasing use of artificial reproductive technologies and older childbearing age, multiple births have increased considerably over the past few decades. Plural births are at risk of low birth weight and preterm birth[31]. Plural births are associated with an increased risk of infant mortality. Parents with multiples experience increased anxiety, depression, and stress.

- Montgomery County has a relatively constant percentage of plural births between 2017-2021, following the same trends as Maryland but consistently higher. (Fig. 26).
- Among population subgroups, NH-Black and NH-White groups have a higher percentage of plural births, followed by Asian/PI and Hispanic groups (Fig. 27).

Figure 26. Percent Plural Births in Montgomery County and Maryland, 2017-2021

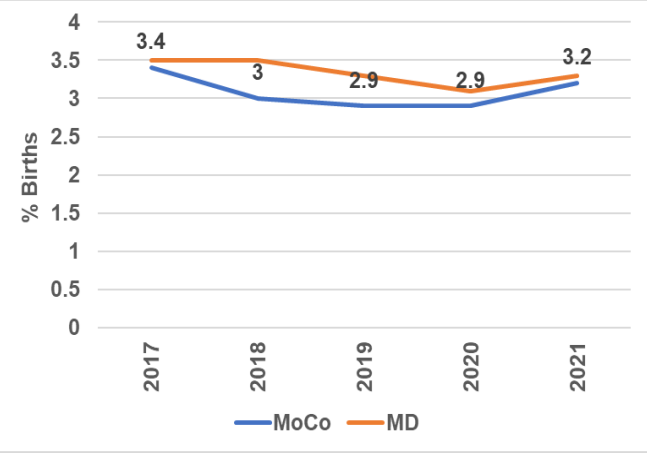
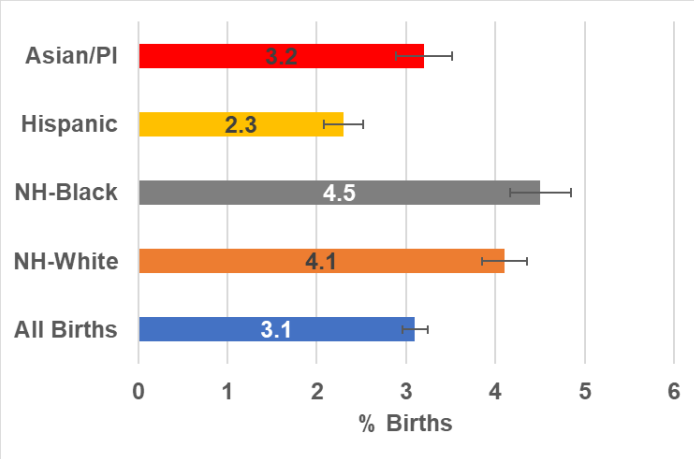


Figure 27. Percent Plural Births by Race/Ethnicity, Montgomery County, MD, 2017-2021



Tobacco Use

The use of tobacco during pregnancy can cause serious fetal and maternal health problems due to the harmful effects of substances such as nicotine and tar. Smoking in pregnant women can cause fetal growth restriction, stillbirth, preterm birth, spontaneous abortion, and sudden infant death syndrome[32]. Even after birth, children can develop behavioral disorders due to exposure to maternal smoking[32].

- Montgomery County has an overall decreasing trend for tobacco use during pregnancy, though this information collected from birth records may be under-reported (Fig. 28).
- Among population subgroups, NH-Black and NH-White have higher percentage of tobacco use during pregnancy, followed by Hispanic and Asian/PI (Fig. 29)

Figure 28. Tobacco Use during Pregnancy, Montgomery County, MD, 2017-2021

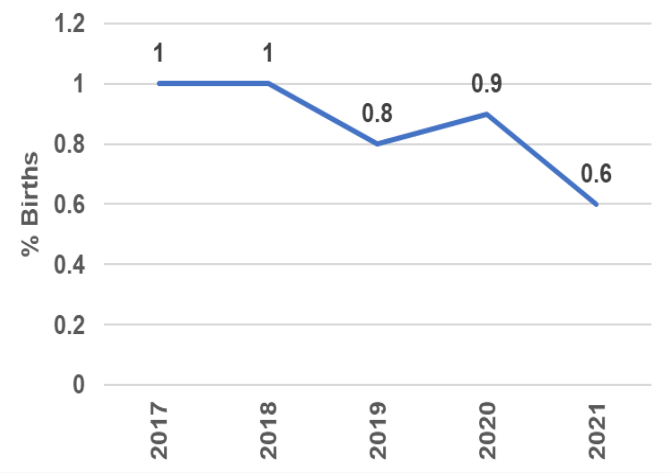
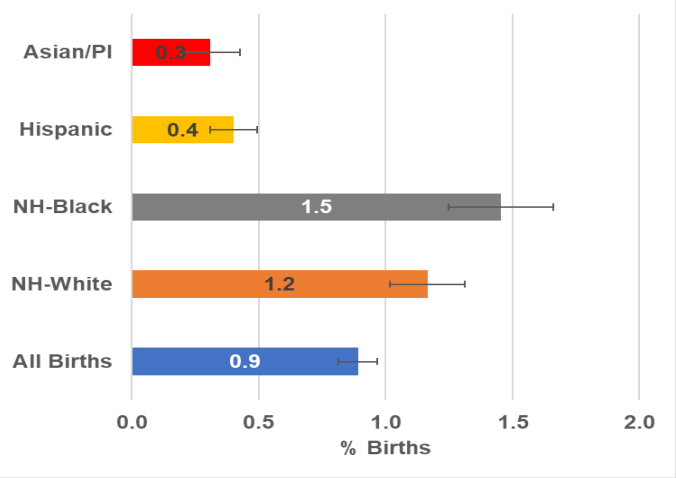


Figure 29. Tobacco Use during Pregnancy by Race/Ethnicity, Montgomery County, MD, 2017-2021



PRAMS
PREGNANCY RISK ASSESSMENT MONITORING SYSTEM

- 11% of mothers in Maryland reported smoking during the 3 months prior to pregnancy (2020).
- 4% of mothers in Maryland reported smoking during the last three months of pregnancy (2020).

Healthy People 2030

- 4.3 % of pregnant women do not abstain from cigarette smoking.

Alcohol Use

Drinking during pregnancy can adversely affect birth outcomes as it can cause birth defects and fetal alcohol spectrum disorder (FASD) leading to mental health problems for the infant [33]. It can also compromise the intellectual abilities and motor skills of infants[33]. Although women are advised against binge drinking during pregnancy, recent guidelines also suggest that alcohol should be avoided even before conception[33].

- 15.5% of mothers in Maryland reported binge drinking 3 months prior to pregnancy (2020).
- 93.3% of pregnant women in Maryland reported no alcohol use during the last three months of pregnancy (2020).

- 55.6 % of mothers not drinking alcohol prior to 3 months before pregnancy.
- 92.2% of pregnant women abstaining from alcohol during the past 30 days (15-44 years).
- 100 % of pregnant women abstaining from binge drinking during the past 30 days (15-44 years).

Substance Abuse

Apart from alcohol and tobacco, marijuana, cocaine, heroin, inhalants, hallucinogens, and misuse of prescription-type drugs pose a serious public health challenge[34]. Maternal substance use can have pharmacological effects on the fetus depending on the type of substance used, duration of the exposure, and the gestational period at which the exposure occurred[34]. Cocaine and marijuana can both readily cross the placental barrier and reach the fetus. Cocaine causes increased contractions and hypertension[34]. In infants, it may cause congenital abnormalities and impair growth in later years of life. Similarly, marijuana/cannabis can also cross the placenta, and may cause harmful birth defects/disorders[34].

- 95.3 % of pregnant women abstaining from illicit use of drugs in the last 30 days (15-44 years).

Prenatal Care

Access to prenatal care can significantly help reduce maternal and infant mortality. It allows for early diagnosis and intervention which can eliminate/reduce preventable morbidity and mortality. However, prenatal care is more effective the earlier it is initiated, ideally during the very first trimester. The American Academy of Pediatrics (AAP) and American College of Obstetricians and Gynecologists (ACOG) recommend examining pregnant women with no serious complications every 4 weeks during the first 28 weeks, every 2-3 weeks 29-36 weeks, and every week from 37 weeks until delivery[37].

- the percentage of births with late or no prenatal care in Montgomery County has been consistently lower than that of Maryland until the year 2020 (Fig. 30).
- Among population subgroups, the NH-Black group has the highest percentage of births with late or no prenatal care, followed by Hispanic, Asian/PI, and NH-White (Fig. 31).

Figure 30. Percent Births with Delayed/No Prenatal Care, Montgomery County and Maryland, 2017-2021

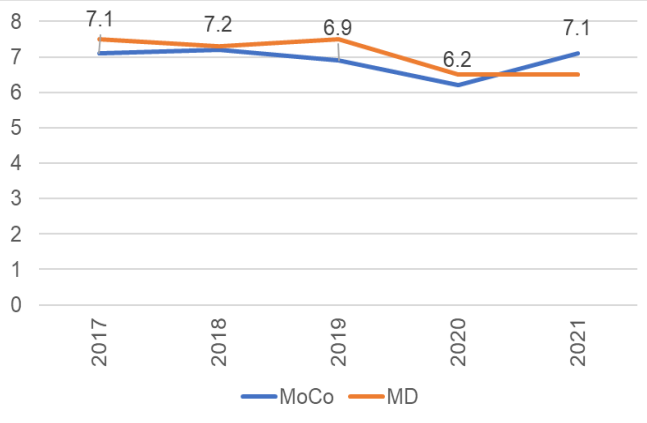
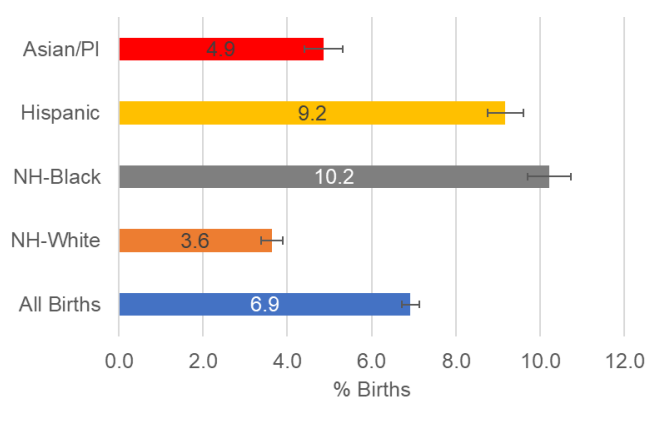


Figure 31. Percent Births with Delayed/No Prenatal Care by Race/Ethnicity, Montgomery County, MD, 2017-2021



PRAMS
PREGNANCY RISK ASSESSMENT MONITORING SYSTEM

- 86% of mothers in Maryland reported initiation of prenatal care from first trimester in 2020. 32% of Hispanic mothers began prenatal care during the second or third trimester of pregnancy, compared to 15% of NH Black mothers, 9% of NH Asian mothers and 5% of NH White mothers.

Healthy People 2030

- 19.5% of pregnant women not receiving early and adequate prenatal care.

Breastfeeding

Breastfeeding is the most complete form of infant nutrition. Breastfed infants have reduced risk of developing type 2 diabetes, obesity, asthma, infections, and sudden infant death syndrome (SIDS)[38]. Additionally, it benefits the mother by lowering the risk of heart disease, type 2 diabetes, ovarian cancer, and breast cancer[38].

- Montgomery County has an increasing trend for infants that were breastfed before hospital discharge between years 2017-2019; the trend began to decrease in 2019 (Fig. 32). It is important to note that this is based on data collected in birth records and may not reflect the prevalence of sustained long-term breastfeeding practices after hospital discharge.
- Among population subgroups, the NH-Black has the lowest percentage of infants that were breastfed before hospital discharge followed by Hispanic, NH-White, and Asian/PI (Fig. 33).

Figure 32. Percent Infants Breastfed before Discharge, Montgomery County, MD, 2017-2021

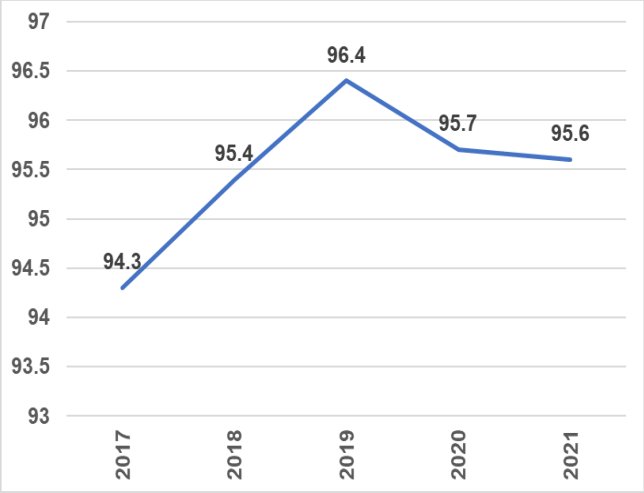
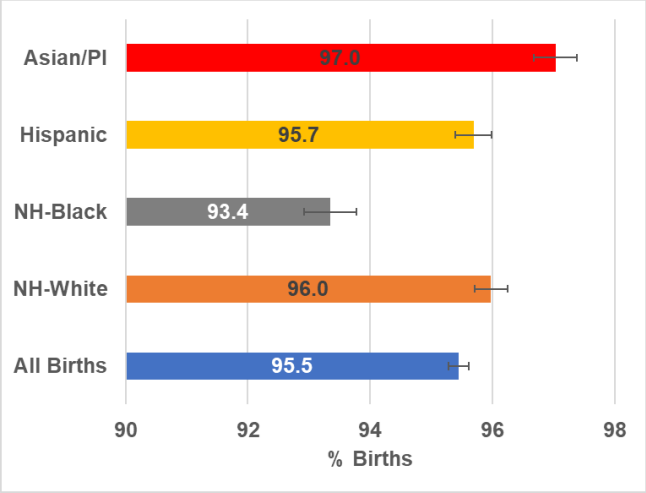


Figure 33. Percent infants Breastfed before Discharge by Race/Ethnicity, Montgomery County, MD 2017-2021



Preterm Births

Birth before 37 weeks of gestation is a likely cause of perinatal morbidity and mortality. It also predisposes children to an increased risk of developing disabilities and neurological deficiencies[39]. Additionally, care for preterm infants may require extended hospital stays which results in higher health care costs[39].

- Though fluctuating over time, the percent of preterm births in the County is consistently lower than that of Maryland (Fig. 34).
- Among population subgroups, the NH-Black has the highest percentage of preterm births followed by Hispanics, Asian/PI and NH-White (Fig. 35).

Figure 34. Percent Preterm Births, Montgomery County and Maryland, 2017-2021

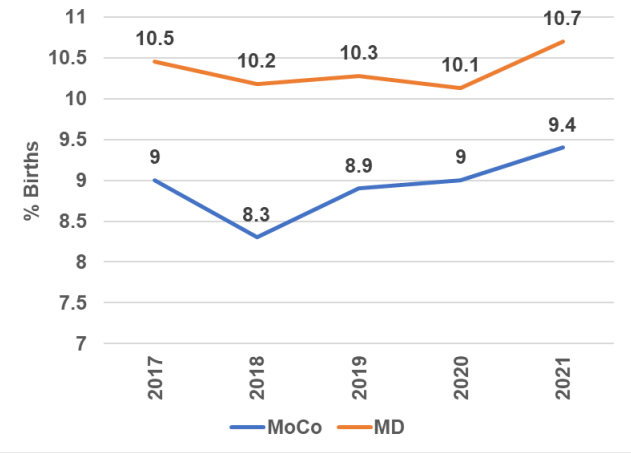
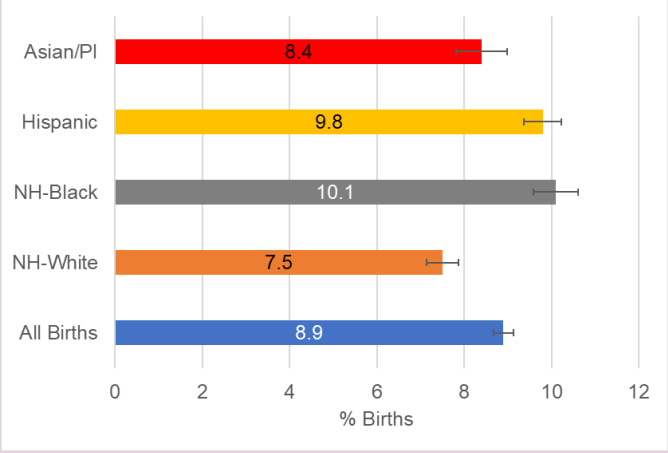


Figure 35. Percent Preterm Births by Race/Ethnicity, Montgomery County, MD, 2017-2021



Healthy People 2030

Preterm births: 9.4 % of live births

Low Birth Weight

Birth weight is another important predictor of intrauterine growth that affects the physical and mental well-being of children as they grow. Many factors such as maternal weight, height, blood pressure and age can cause low birth weight[40]. Undernutrition of the mother during preconception can affect the timing of birth, and hence birth weight[47]. Low birth weight is also associated with cerebral palsy, sudden death syndrome, cognitive deficiencies, neonatal morbidity and mortality[40].

- The trend of low weights births in Montgomery County over time is similar to that of Maryland and the U.S.; the percent of low weight births in the County has been consistently lower than that of Maryland and the U.S. (Fig. 36).
- Among population subgroups, NH-Blacks has the highest percentage of low weight births compared to other groups, and NH-White has the lowest percentage (Fig. 37).
- Similar to the trend for low birth weight, the percentage of infants with very low birth weight is highest among NH-Black, and the lowest for NH-White (Fig. 37).
- The percentage of very low weight births in Montgomery County has fluctuated over time. For Maryland, the percentage of very low weight births consistently remained higher than the County (Fig. 38).

Figure 36. Percentage of Low Weight Births, Montgomery County, Maryland, and US, 2017-2021

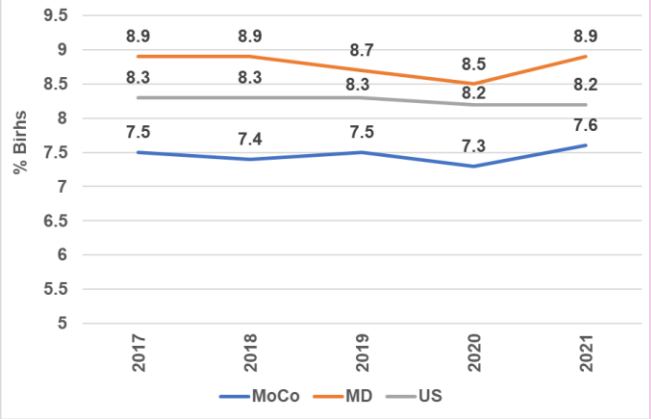


Figure 37. Percentage of Low and Very Low Weight Births by Race/Ethnicity, Montgomery County, MD, 2017-2021

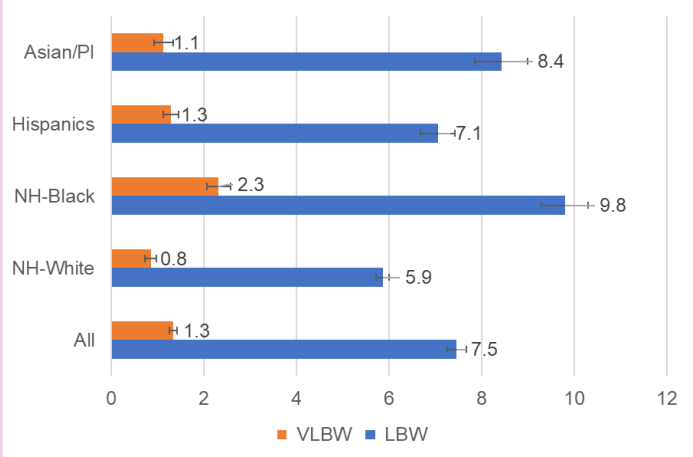
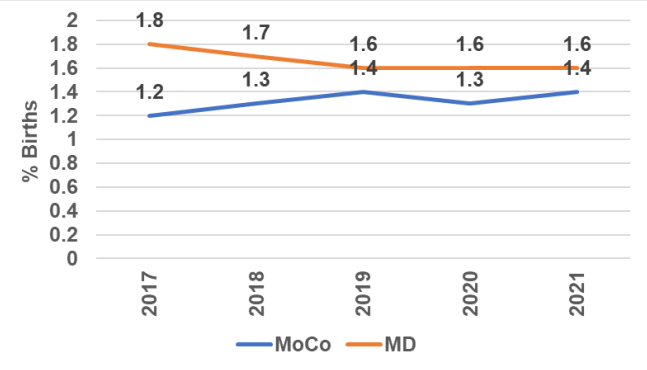


Figure 38. Percentage of Very Low Weight Births, Montgomery County and Maryland, 2017-2021



Health Care Utilization and Costs Associated with Low Weight Births

As low birth weight negatively impacts the health of an infant, it results in increased health care utilization and cost[46]. A considerable proportion of infant hospitalization and pediatric costs are attributed to low weight births in U.S, suggesting that improved birth weight can lead to substantial health care savings[46].

- The average length of hospitalization is highest among infants born with very low birth weight (< 1,500 g) followed by those weighing between 1,500g-2,500g and over 2,500g in Montgomery County and Maryland (Fig. 39).
- The average cost of hospitalization is also highest among infants born with very low birth weight (<1,500 g) followed by those weighing between 1,500g-2,500g and over 2,500g in Montgomery County and Maryland. The average cost of hospitalization among infants is lower in Montgomery County compared to Maryland (Fig. 40).

Figure 39. Average Length of Stay (LOS) by Birth Weight in Montgomery County and Maryland, 2020-2022

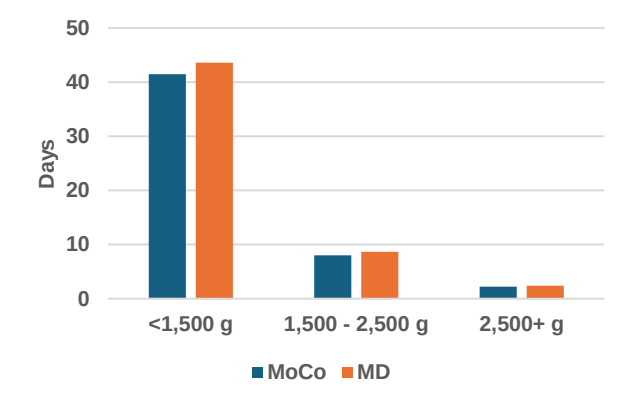
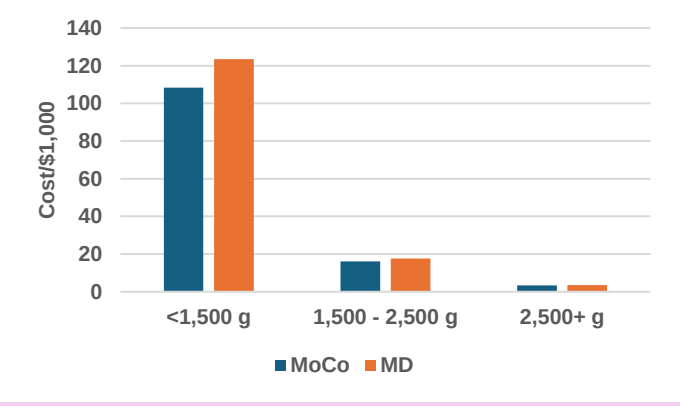


Figure 40. Average Cost of Hospitalization by Birth Weight in Montgomery County and Maryland, 2020-2022



Congenital Anomalies

The risk of developing congenital anomalies is associated with maternal characteristics such as age and maternal risk behaviors such as substance abuse. Major congenital anomalies such as cleft lip, spina bifida, and congenital heart defect are defects that are present at birth and have surgical, medical and serious cosmetic significance[41]. Minor congenital anomalies do not have as much surgical, medical or cosmetic significance; however, they are helpful in understanding maternal exposures and may help in diagnosis of more severe conditions such as Down syndrome[41]. The data collected on congenital anomalies is subject to bias as different methods of identification are used at varying times after birth[41].

Table 6. Rate of Congenital Anomaly in Montgomery County from 2012-2021, and Maryland from 2016-2020

Congenital Anomaly	MoCo (2012-21) n (rate per 10,000)	^MD (2016-20) n (rate per 10,000)
Anencephaly	6 (0.5)	10 (0.3)
Spinal bifida/ Meningocele	13 (1.0)	71*(2.0) *
Heart Malformations	65 (5.2)	
Cleft lip/ Palate	56 (4.5)	73 (2.1)
Diaphragmatic hernia	15 (1.2)	71 (2.0)
Down's Syndrome	67 (5.3)	310 (8.7)
Other Chromosomal Anomalies	31 (2.5)	

^ Data for Montgomery County are based on those evident and recorded in birth certificates for 2012-2021, which may not be comparable to those in Maryland obtained from the National Birth Defects Prevention Network based on different mechanism of case reporting for 2016-2020. Interpret and use these data with caution.

* Spinal bifida without anencephaly

Infant Mortality

Infant mortality – which is defined as death within one year of birth - remains an important public health indicator. The rate of infant mortality in the US is higher than other peer countries. It is linked to maternal characteristics and public health practices. Socio-economic disparities among different races/ethnicities may explain some of the high infant mortality rate as socio-economic status is linked to access to nutrition, health care and education[42]. Sudden Infant Death Syndrome (SIDS), sudden unexpected infant deaths (SUIDs) and infant respiratory distress syndrome (IRDS) are some of the major causes of infant mortality[42].

- Infant mortality rates in Montgomery County fluctuated over time during 2017-2021, with an increase up to 2016, increasing again between 2019 and 2020. The trend of infant mortality in the County is consistently lower than that of Maryland and the U.S. (Fig. 41).
- Among population subgroups, NH-Black has the highest infant mortality rate, followed by Hispanic, and NH-White (Fig. 42).

Figure 41. Infant Mortality Rate, Montgomery County, Maryland, and US, 2012-2021

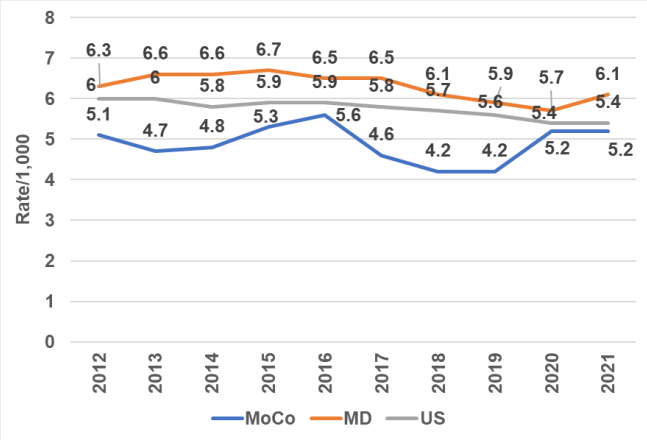
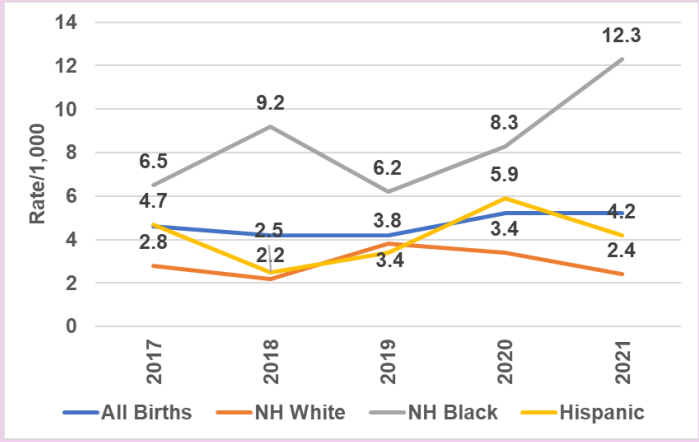


Figure 42. Infant Mortality Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021

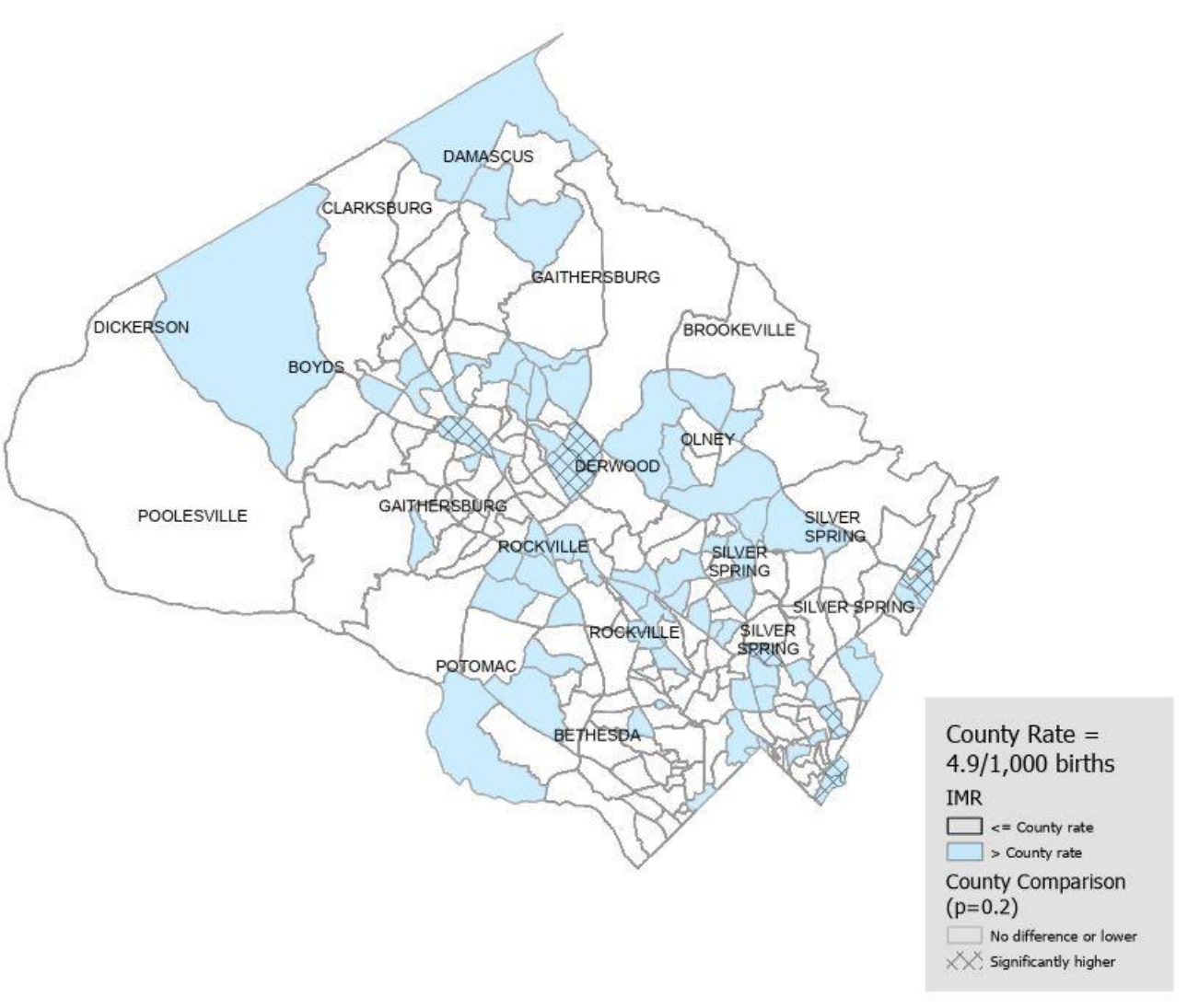


Note: Data are not provided for Asian/PI infants because the number of events is too low to calculate a rate.

Healthy People 2030

5 Infant deaths per 1,000 live births

Map 2. Infant Mortality Rate by Census Tract, Montgomery County, 2015-2021



Neonatal Mortality

The vast majority of deaths under the age of one occur during the first 28 days of life – the neonatal period[43]. Deaths in this category may result from infections, birth defects, birth injuries, sexually transmitted infections, nutritional deficiencies, and risky maternal behaviors[43]. Preterm and low birth weight infants are more likely to experience adverse events during the neonatal period. Access to adequate health care and preventive measures such as immunization and breastfeeding can reduce the associated mortality.

- Neonatal mortality rates in Montgomery County fluctuated during 2012-2021, with a decrease between 2015-2019. The trend of neonatal mortality in the County is consistently lower than that of Maryland. (Fig. 43).
- Among population subgroups, NH-Black has the highest neonatal mortality rate, followed by Hispanic, and NH-White (Fig. 44).

Figure 43. Neonatal Mortality Rate, Montgomery County, Maryland, and US, 2012-2021

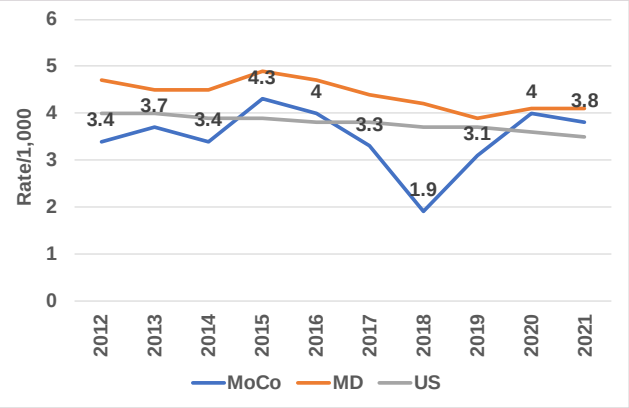
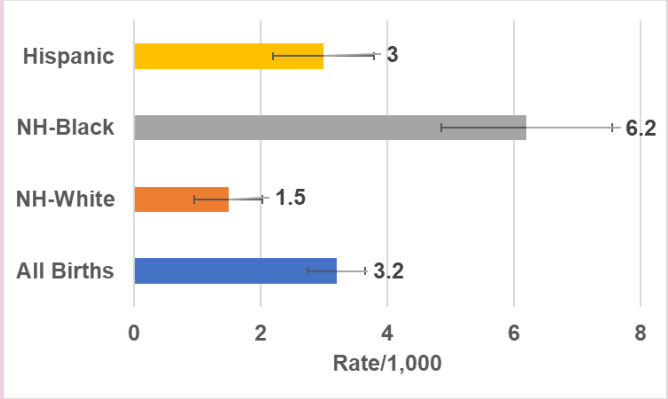


Figure 44. Neonatal Mortality Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021



Post-Neonatal Mortality

The most common cause of death for infants during the post-neonatal period, defined as 28 days to 11 months after birth, is sudden infant death syndrome (SIDS)[44]. Safer sleeping practices and a safer environment for infants can help reduce the risk of death during the post-neonatal period.

- Post-neonatal mortality rates in Montgomery County fluctuated overall from 2012 to 2021, with a significant decrease in 2018, similar to Maryland's. However, the County's trend is consistently lower than that of Maryland and the U.S. (Fig. 45).
- Among population subgroups, NH-Black has the highest neonatal mortality rate, followed by Hispanic, and NH-White (Fig. 46).

Figure 45. Post-neonatal Mortality Rate, Montgomery County, Maryland, and US, 2012-2021

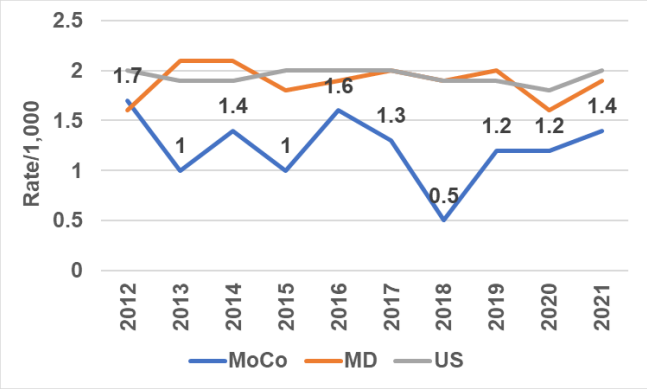
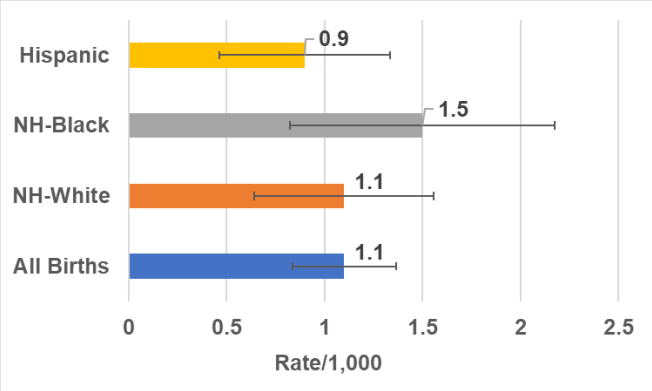


Figure 46. Post-neonatal Mortality Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021



Fetal Deaths

Maternal age, obesity, smoking, prior fetal death and maternal morbidities are risk factors for experiencing fetal loss[45]. Genetic disorders, infectious diseases and placental aberrations are among some of the causes of fetal loss[45]. Loss of pregnancy can be reduced if timely care for conditions such as diabetes and preeclampsia are available.

- Fetal death rates in Montgomery County fluctuated over time during 2012-2021. The trend of fetal death rate in the County is consistently lower than that of Maryland (Fig. 47).
- Among population subgroups, NH-Blacks has the highest fetal death rate followed by Hispanics, NH-Whites and Asian/PI (Fig. 48).

Figure 47. Fetal Death Rate, Montgomery County, Maryland, and US, 2012-2021

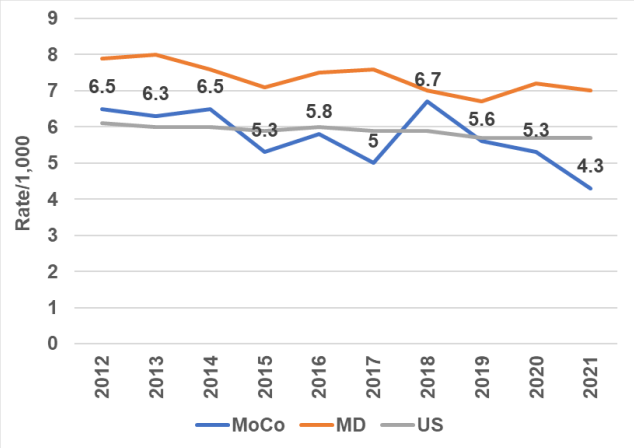
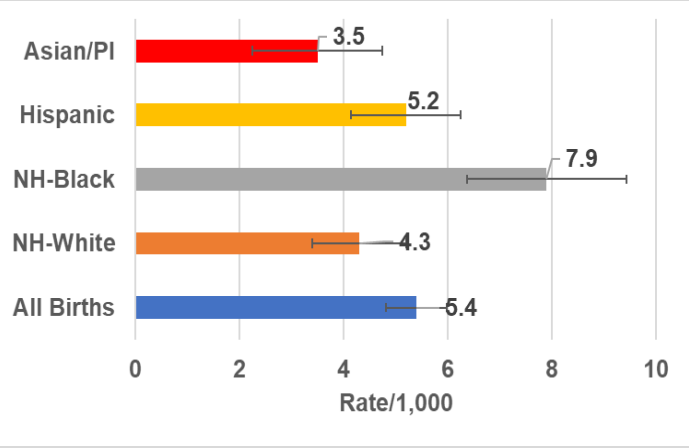


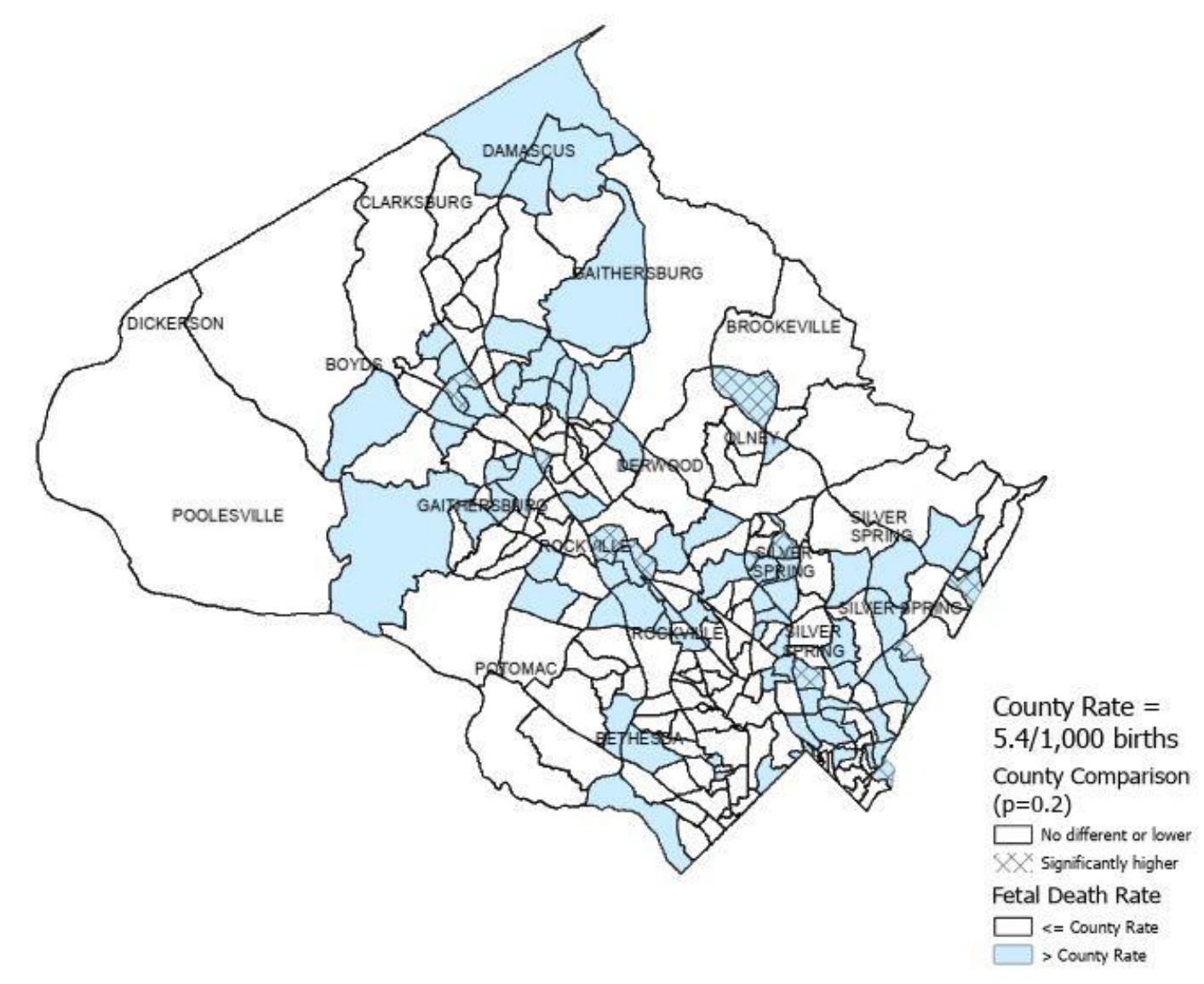
Figure 48. Fetal Death Rate by Race/Ethnicity, Montgomery County, MD, 2017-2021



Healthy People 2030

5.7 fetal deaths per 1,000 live births plus fetal deaths

Map 3. Fetal Death Rate by Census Tract, Montgomery County, 2012-2021



Neonatal Intensive Care Unit Admissions

Infants who are not healthy are admitted to neonatal intensive care units (NICU) after birth. This provides a safe and controlled environment to promote the development of the child as they transition from the mother's womb to the external environment. Due to compromised prenatal development, premature and low birth weight infants are often admitted to NICUs. Similarly, infections, respiratory difficulties, and low blood sugar may require intensive care for the newborn.

- Montgomery County has a decreasing trend of NICU admissions until 2018, when the trend began to increase (Fig. 49).
- Among population subgroups, the NH-Black has the highest percentage of NICU admissions followed by Hispanics, Asian/PI and NH-White (Fig. 50).

Figure 49. Percent NICU Admissions in Montgomery County, MD, 2017-2021

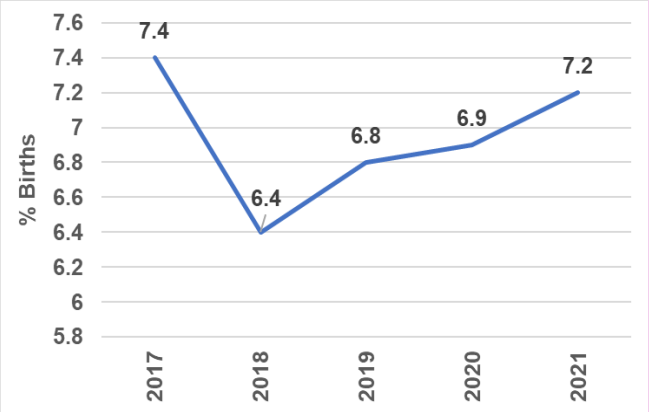
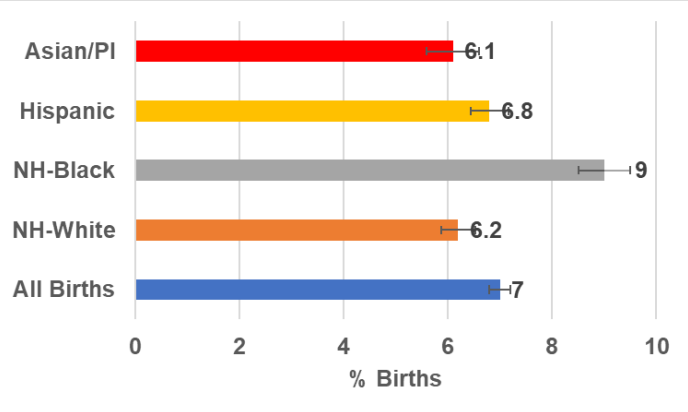


Figure 50. Percent NICU Admissions by Race/Ethnicity, Montgomery County, MD, 2017-2021



Apgar Score

Apgar scores provides a quick and concise evaluation of a newborn's health at one and five minutes after birth. The Apgar score evaluates a child's activity/muscle tone, pulse/heart rate, grimace, appearance, and respiration/breathing, assigning a score of 1 for fair activity and 2 for good. Typically, scores over 7 indicate no immediate medical emergency while scores lower than 7 require closer evaluation of the child for any adverse outcomes.

- Montgomery County has an overall low percentage of births with low Apgar 5 min score ranging between 0 and 6 (Fig. 51).
- Among population subgroups, the NH-Black has the highest percentage of births with low Apgar 5 min score ranging between 0 and 6 followed by NH-White, Hispanics, and Asian/PI (Fig. 52).

Figure 51. Percent Births with Low Apgar 5 min Score (0-6), Montgomery County, MD, 2017-2021

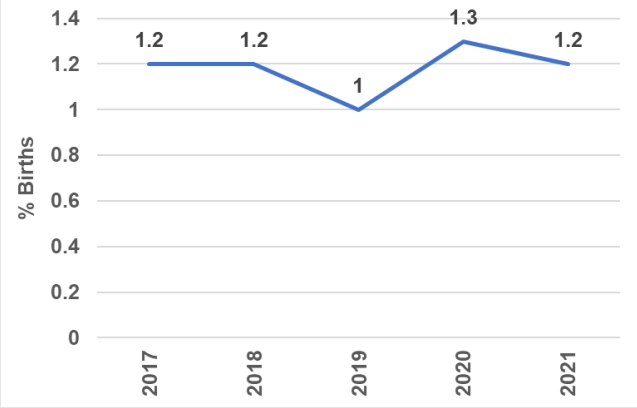
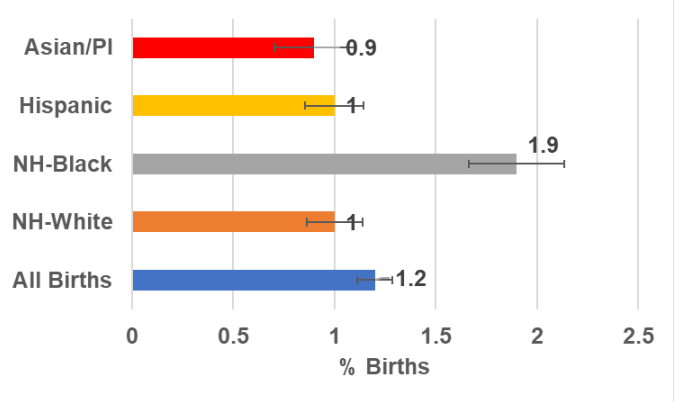


Figure 52. Percent Births with Low Apgar 5 min Score (0-6) by Race/Ethnicity, Montgomery County, MD, 2017-2021



Maternal Mortality

Maternal mortality is defined as death of a woman “while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes”[48]. 99% of worldwide maternal mortality occurs in developing countries due to inequity in access to health care, lower socioeconomic status, adolescent pregnancy, advanced maternal age, and the higher number of pregnancies a woman goes through in her lifetime[49,48]. Since 1990, there has been a decrease in worldwide maternal death by 44%, and an increase in U.S. maternal mortality by 80%[50]. These statistics indicate an unfavorable trend against the Healthy People 2020 goal of reducing maternal mortality by 10%[51].

Although the US is ranked as the 12th wealthiest nation in the world, it ranks as the 45th country in maternal mortality rates[52,53]. Maryland has a maternal mortality rate of 27.8 deaths per 100,000 live births, which is higher than the national average of 22.3 deaths per 100,000 live births[54]. The number of pregnancy related deaths varies from county to county in Maryland. Baltimore City has the highest number of maternal deaths - 8 deaths in 2019, followed by Montgomery County with 3 deaths[55].

Maternal mortality disproportionately impacts certain racial and ethnic groups, and Montgomery County follows these trends. For the past eight decades, Black/African American women have consistently had much higher maternal mortality rates than White women[56].. These rates are driven by inequities in socioeconomic indicators, barriers to care, discrimination, and structural and systemic racism. In 2022, the Centers for Disease Control estimated that over 80% of maternal mortality cases were preventable. In addition, 53% of maternal deaths occurred between 7 days to 1 year postpartum, underscoring urgent need to intervene during the postpartum period to prevent maternal deaths.

The most common contributing factors to maternal death in the U.S. include: lack of knowledge of warning signs and when to seek help, provider misdiagnosis or ineffective treatment, and lack of cordination between providers[57].15.2% of all cases of maternal mortality are associated with cardiac disease, 14.7% are associated with non-cardiac vascular diseases, followed by 12.8% from an infection or sepsis, 11.5% from hemorrhage, 10.3% from cardiomyopathy, 9.1% from thrombotic pulmonary embolism, 7.4% from cerebrovascular accidents, and 6.8% from hypertensive disorders of pregnancy[58].

Figure 53. Number of Pregnancy-Associated Deaths by Jurisdiction, Maryland, 2019*

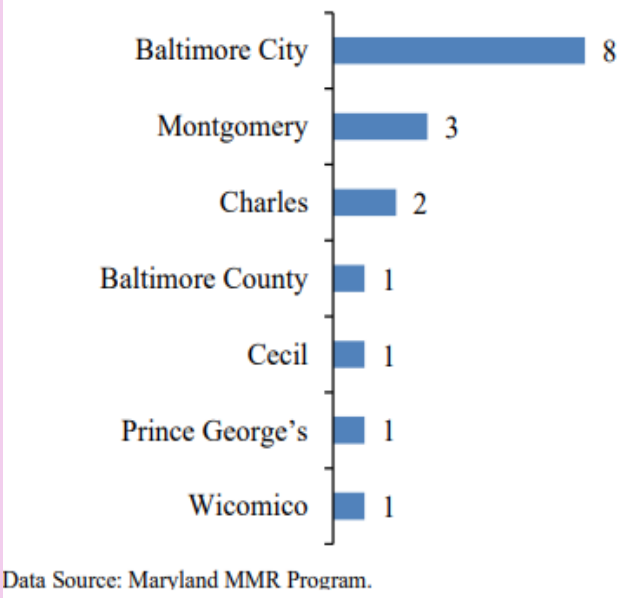
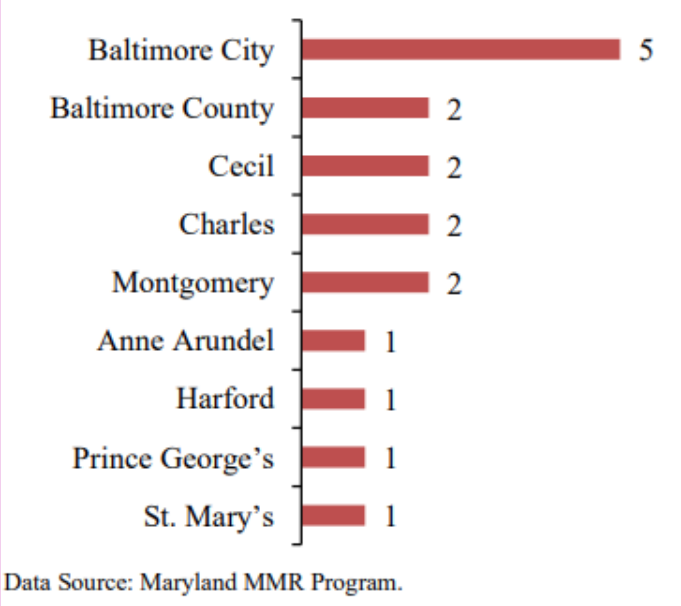


Figure 54. Number of Pregnancy-Related Deaths Rate by Jurisdiction, Maryland, 2019*



*Source: MDH 2021 Maternal Mortality Report: https://health.maryland.gov/phpa/mch/Documents/MMR/2021%20MMR%20Report.pdf

Severe Maternal Morbidity

Severe Maternal Morbidity (SMM) is defined as the "unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman's health"[59]. Women who experience SMM may experience life-threatening conditions, such as "acute myocardial infarction, pulmonary embolism, or sespsis" which could lead to maternal mortality[60]. Similar to maternal mortality, SMM is also increasing in the US[59]. Based on 2014 data, as many as 60,000 women are affected every year. However, there are no clear reasons to what is causing this increase. Some contributing factors are "maternal age, pre-pregnancy obesity, pre-existing chronic medical conditions, and cesarean delivery" [59].

There are currently 19 indicators that identify SMM[61]. Some of these indicators include events such as blood transfusions, acute cardiovascular conditions, organ failure or dysfunciton, and procedures such has hysterectomy and ventilation[61]. Severe maternal morbidity can cause illness for up to a year after birth, result in chronic disease, disability, and even dealth[62]. For women between the ages of 15 to 44, SMM ranks in the top 10 caues of women's death in the U.S.[63]. Prevention of maternal morbidity in developing countries is very different than developed countries like the U.S. The Maryland Maternal Review Board recommended "early recognition of high risk pregnancies, communication and collaboration between care providers through preconception, peripartum, and postpartum" as well as "continuity of care in transition from pregnancy care to ongoing management of medical issues" to prevent severe maternal morbidity[56].

SMM also burdens the mother with longer hospital stays and thus, higher medical costs[59]. The cost of delivery and hospitaliztion for mothers with SMM are 2.2 times higher than mothers without any SMM[64]. The cost of hospitalization and delivery increases as the number of observed SMM indicators increase. The cost of hospitalization and delivery of someone indicating five symptoms of SMM is about 10.3 times higher than a person without any SMM[64]. SMM is not only burdensome to the mother's health, but can also affect fetal health and lead to adverse birth outcomes. Women with SMM have higher frequencies of adverse delivery outcomes[65].

The rate of SMM has increased by 200% since 1993, mainly due to blood transfusion[59]. Once blood transfusion is excluded as an indicator for SMM, the U.S. has increased SMM by only 20% over the years[59]. In Montgomery County, our non-Hispanic Black and Hispanic populations are densely affected by maternal morbidity[56].

Figure 55. Percentage of Delivery Hospitalizations with Severe Maternal Morbidity, Montgomery County, MD, 2019-2022

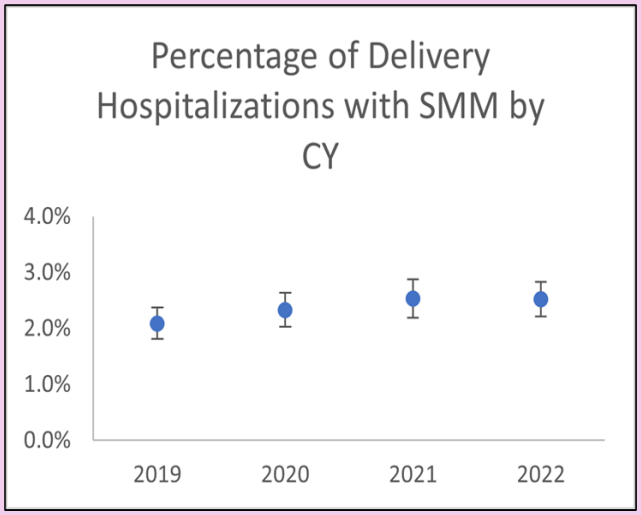


Figure 56. Percent of Severe Maternal Morbidity by Race/Ethnicity, Montgomery County, MD, 2020-2022

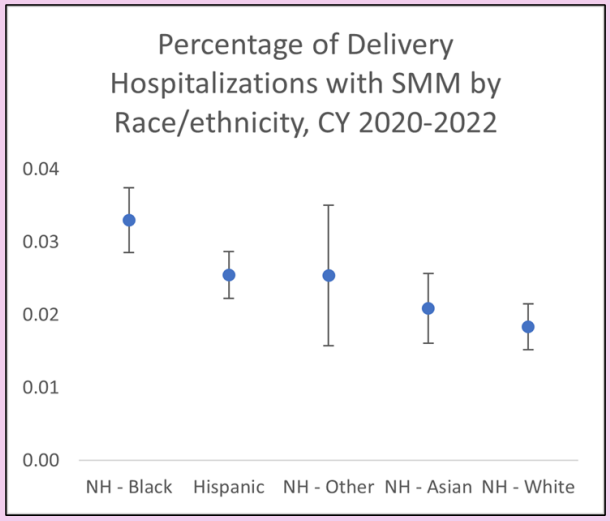


Figure 57. Percent of Severe Maternal Morbidity by Maternal Age, Montgomery County, MD, 2020-2022

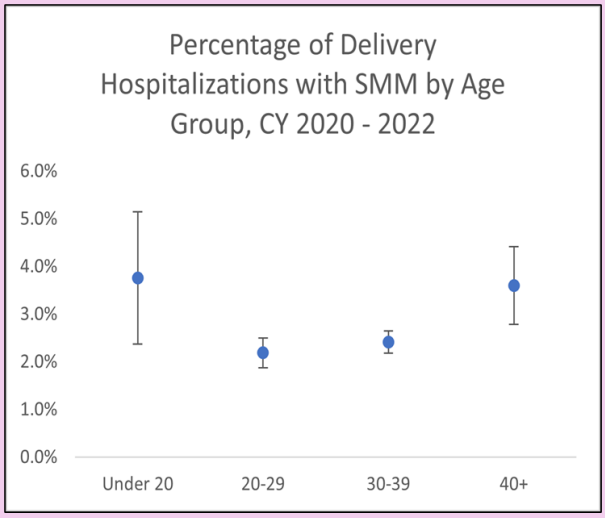
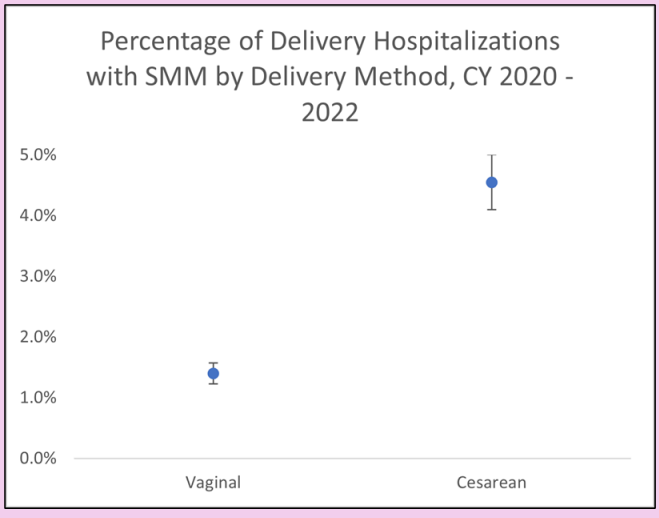


Figure 58. Percent of Severe Maternal Morbidity by Delivery Method, Montgomery County, MD, 2020-2022



Adverse Birth Outcomes

Severe maternal morbidity (SMM) is significantly associated with adverse birth outcomes, and is mostly preventable. SMM also has a significant association with lower birth weight and shorter gestation age – the two most common factors leading to adverse birth outcomes[65]. The gestation period (pregnancy length) and birth weight can have a significant impact on the infant's health as well as the family's emotional and economic status[66]. After birth defects, conditions that follow children who were born preterm or low birth weight are the leading cause of infant mortality[65].

- The county's trend for the percentage of infants with low birth weight is similar to that of Maryland and the U.S.; percent low weight births in the County has been consistently lower than that of Maryland and the U.S. (Fig. 59)
- Among population subgroups, the NH-Black has the highest percentage of low weight births compared to other groups, and NH-White has the lowest percentage (Fig. 60).
- Similar to the trend for low birth weight, the percentage of infants with very low birth weight is highest among NH-Black, and the lowest for NH-White (Fig. 60).

Figure 59. Percent Low Birth Weight, Montgomery County, Maryland, and US, 2017-2021

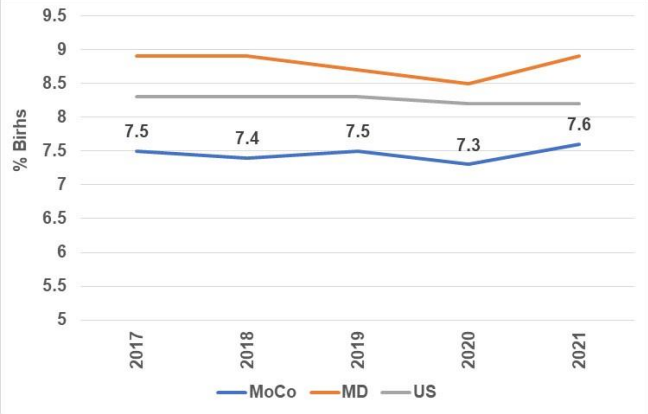
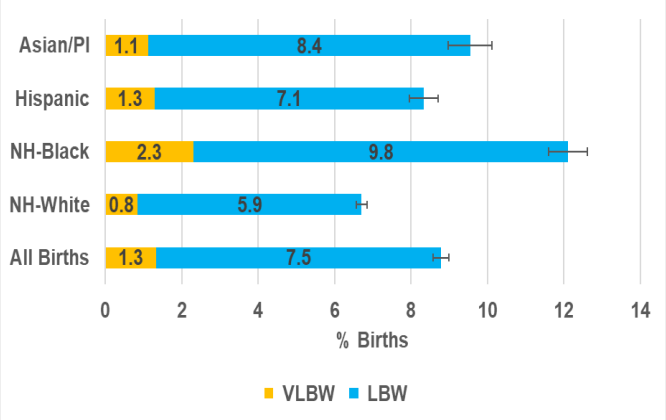


Figure 60. Percent Low and Very Low Weight Births by Race/Ethnicity, Montgomery County, MD, 2017-2021



Maternal Postpartum Depression and Mental Health

Up to one in five women is affected by postpartum depression[67]. Postpartum depression is associated with significant neonatal and maternal morbidity. The Maryland Pregnancy Risk Assessment Monitoring System (PRAMS) reports that in 2020 nearly 17.8 percent reported symptoms of postpartum depression. The rates of postpartum depression were highest among Black non-Hispanic, young (less than 25 years of age), non-college educated and single mothers. Approximately 20 percent of mothers who delivered between 2009 and 2013 reported symptoms of perinatal anxiety in Maryland.

The Maryland Department of Health convened the Maryland Maternal Health Task Force in 2015[68]. Since then, the task force identified gaps in state maternal health data, delivery of and access to quality perinatal health services, and health policies for pregnant and postpartum women; developed a 5-year strategic plan to improve maternal health in Maryland, building on the 2020 Maryland Title V Needs Assessment; engage, support, and monitor implementation of maternal health programs in Maryland; assist with dissemination of maternal health program findings and lessons learned in Maryland and beyond; and develop a sustainability plan to ensure continuity of work towards improving maternal health in Maryland. Maryland Maternal Health Innovation Program areas include the hospital equity initiative, maternal morbidity surveillance, telehealth initiatives, and warning signs education.

All participants in the DHHS MCH Home Visiting Programs receive depression screening both during pregnancy and postpartum. In FY24, 13% of all Montgomery Perinatal Program participants were screen positive for depression, yet the program was only able to successfully link 20% of those participants with a behavioral health specialist. Not only are the participants sometimes hesitant to seek mental health services but there is a tragic shortage of mental health providers at this time.

DHHS MATERNAL CHILD HEALTH PROGRAMS & SERVICES

Overview

The Maternal Child Health Program Goals:

1. Reduce infant morbidity and mortality through home-based case management and educational services
2. Reduce maternal morbidity and mortality through home-based case management and educational services

How the Goals are Achieved:

- Provide Universal Screening and Care Coordination to all pregnant women newly enrolled in Medicaid
- Provide home-based case management services to all families assessed to be high risk
- Provide in-person and virtual education opportunities to all families assessed to be high risk
- Provide targeted and culturally congruent care coordination services to Black/African American pregnant people to decrease disparities in birth outcomes.
- Provide home-based case management services to all pregnant teens
- Provide home-based case management services to all families determined to be “Infants at Risk” by the birthing hospital.
- Host community-wide fetal and child mortality review boards and take action when needed to prevent further preventable fetal, infant and child deaths.
- Provide Vaccines for Children

The majority of the work done by the Maternal Child Health Team (MCH) centers around home-based case management. Providing case management during home visits can help build trusting relationships between home visitors and families providing the optimal environment to support young families. The home visitor can provide in-person education on topics such as how to have a safe pregnancy, signs and symptoms of labor, breastfeeding, infant safe sleep, and the warning signs of postpartum among many others. All of the education issues are helped with role modeling, demonstrations and an “eyes-on” viewpoint of the home, the mom and the infant. Additionally, a home visitor can help families feel less isolated. Having a home visitor in the home also can help cultivate safe home, giving the home visitor the opportunity help the family reduce unintentional injuries by teaching infant safety, especially safe infant sleep. Home Visiting programs have seen positive results in improving the use of prenatal care, improving birth outcomes such as low birth weight and prematurity, decreasing incidence of maternal morbidity and promoting positive health and wellness outcomes for not only the newborn, but the other children in the household as well.

In addition to home visitation services Montgomery County's MCH Programs also provide Medicaid Care Coordination, Triage and Screening of Pregnant People, Reviews of Infant and Child Deaths, Home Birth Verifications and Immunizations.

The following are the DHHS MCH Program's Home Visiting Programs

- Adolescent Pregnancy Coordinated Care Program
- Babies Born Healthy
- Childhood Lead Poisoning and Asthma Prevention Home Visiting Program
- Infant at Risk Program
- Montgomery Perinatal Program (Formally known as the Maternity Partnership Program)
- S.M.I.L.E Program

Other MCH Programs

- Administrative Care Coordination Unit
- Child Mortality Review Board
- Community Action Team of the Fetal Mortality Review Board
- Fetal Mortality Review Board
- Home Birth Verification
- Perinatal Administrative Care Team
- Vaccine for Children Program

Montgomery County DHHS Maternal Child Health Program Descriptions

Since 1989, the largest program within Montgomery County's MCH Programs was the Maternity Partnership Program, a public/private partnership between Montgomery County Government, Holy Cross Hospital, Adventist Hospital and Mary's Center. The Partnership aimed at providing prenatal care and other health services to low-income, uninsured pregnant people residing in Montgomery County. DHHS provided the enrollment services, home based case management services, in-person prenatal classes, and dental care, while the hospitals and clinics provided comprehensive prenatal care. The program served approximately 1,700 pregnant and postpartum people each year for over 35 years and saw great successes for the families it served.

On July 1, 2024, the Maryland State Health Babies Equity Act came into effect, allowing all pregnant people at 250% Federal Poverty Level and below to enroll in Medicaid regardless of their immigration status. This groundbreaking law has helped thousands of pregnant women enroll in Medicaid and provides not only prenatal care, but comprehensive medical care including behavioral health services, dental services, hospitalization and specialty medical services. All of the people enrolled in the Maternity Partnership Program were encouraged to unenrolled in the County program and enrolled in Medicaid, rendering the Maternity Partnership Program redundant and no longer needed.

In order to pivot and ensure that at-risk families in Montgomery County would continue to receive home visiting services, the MCH Programs Team developed the Perinatal Care Coordination Unit to screen, triage, and refer to home visiting, all eligible pregnant Medicaid recipients.

Perinatal Administrative Care Coordination Team (PACCT)

The Montgomery County Maternal Child Health's Perinatal Administrative Care Coordination Team (PACCT) ensures that Medicaid-eligible birthing persons receive early access to medical care and equitable access to Montgomery County's Maternal Child Health home visiting services.

Primary Functions of PACCT:

- The PACCT Team contacts all newly pregnant people who are enrolled in Medicaid to screen, educate, and triage them for DHHS MCH Programs. Patient encounters include:
  - Client Education and Care Coordination: PACCT works closely with the Administrative Care Coordination – Ombudsman Program staff to educate clients about Medicaid benefits and provide care coordination services. This includes assisting the birthing person in selecting an OB provider and Managed Care Organization (MCO), ensuring timely access to care, linking to local health-related services, and navigating the Medicaid HealthChoice system
  - Screening and Referral Services: PACCT conducts screenings to identify at-risk birthing persons and refers them to appropriate DHHS and community perinatal health and home visiting program, including Montgomery Perinatal Program, Babies Born Healthy and S.M.I.L.E. Program. This proactive approach supports vulnerable populations during pregnancy and postpartum. Screenings are provided for depression, intimate partner violence, social determinants of health and at-risk medical concerns that can impact a pregnancy.

PACCT's Role in Legislative Adaptation:

The PACCT team is integral in adapting DHHS's Maternal Child Health Programs to legislative changes in Maryland Medicaid eligibility, implemented in July 2023. These changes expanded comprehensive coverage to non-citizen pregnant Marylanders with incomes up to 250% of the federal poverty level (FPL), and their children up to one year old, who would otherwise be eligible for Medicaid or the Maryland Children's Health Program but for their immigration status. This expansion is expected to add an additional 1,000-1,500 eligible pregnant individuals to Montgomery County's Medicaid rolls.

Table 7. PACCT Screening Dispositions in FY24

Montgomery Perinatal Program n=2102	%
Nurse Case Management	34%
Community Health Worker Case Management	23%
Babies Born Healthy	6%
S.M.I.L.E.	5%
Already Known to Case Management	35%
Client Declined Referral/Unable to Contact	32%

Montgomery Perinatal Program (MPP)

The Montgomery Perinatal Program is the home-visiting program that replaced the Maternity Partnership Program after the Healthy Babies Equity Act was enacted. The MPP provides home-based case management and prenatal classes for 1,604 at-risk pregnant women in Fiscal Year 2024. Services start at any point during pregnancy and end at approximately 6 months postpartum.

The Montgomery Perinatal Program's **Case Management Services** include:

- Helping families access Prenatal Care, Postpartum Care, Primary Care
- Helping ensure baby and mom are enrolled in Medicaid
- Assessments: Depression, Intimate Partner Violence, Substance Abuse, Social Determinants of Health,
- Referrals: WIC, dental, behavioral health, food, housing, substance abuse services, crisis services
- Teaching: nutrition, maintaining a healthy pregnancy, warning signs, signs of labor, warning signs during pregnancy and postpartum, infant care, breastfeeding, infant safe sleep, parenting, family planning/safe child spacing
- Helping family prepare for baby
- Providing Safe Sleep Pack-n-Play if needed
- Providing Breastfeeding support
- Teaching Danger Signs of Postpartum/when to call your doctor/when to go to the Emergency Room
- Support Return to work/Returning to School
- Helping mom and newborn access Primary Care
- Teaching Danger Signs of Postpartum/when to call your doctor/when to go to the Emergency Room
- Staff work closely with prenatal providers throughout the pregnancy to coordinate care. Area Health Center nurses participate in the weekly "High Risk Rounds" to keep up to date on the medical conditions impacting the mom and baby.

MPP strives to accomplish the following goals before discharging the mom and baby from the caseload:

1. The infant is established with a primary care provider (pediatrician) and is up to date on their immunization
2. The mother attended her postpartum check-ups and is established with a primary care provider and has established

3. The mother is prepared to follow a reproductive life plan ensuring that she will not have a subsequent pregnancy until it is safe, and she is ready.

Table 8. Maternity Partnership Program and Montgomery Perinatal Program Enrollment FY 2014 - FY 2024

Year	# Patients Enrolled in the MPP
2014	1,635
2015	1,771
2016	1,905
2017	1,749
2018	1,605
2019	1,529
2020	1,472
2021	1,546
2022	1,793
2023	1,693
2024*	1,624

**Year One of Healthy Babies Equity Act*

Babies Born Health Program

The Babies Born Healthy Program in Montgomery County was initiated by the Maryland Department of Health in response to the County's high disparities in infant mortality rates. Babies Born Healthy is a comprehensive program utilizing Public Health Nurses, Community Health Workers, and Lactation Consultants to deliver targeted care coordination services to pregnant African American people receiving Medicaid, and who reside in one of eight of the County's zip codes where the population is at highest risk for adverse pregnancy outcomes. Components of the program include community outreach, care coordination, screening, community education, and ensuring that program participants are receiving prenatal care and other needed health and social service resources. The program works with pregnant people, starting at any stage in their pregnancy and ending when the baby is six months old. With the goal of helping maintain healthy pregnancies and babies, the program has a strong referral network with local agencies and addresses social determinants of health with all program participants. The program strives to break down barriers to receiving medical and social service care by providing support with transportation and childcare while also providing cribs and car seats to ensure infant safety after birth. The program integrates data to continually refine and improve its approach and meet evaluation requirements.

Priority Population: The priority population for the Montgomery County Babies Born Healthy Program is pregnant or postpartum Black/African American women, enrolled in

Medicaid, who reside in one of the following high-risk zip-codes: 20901, 20902, 20903, 20904, 20905, 20906, 20910, 20912.

Assessments and Screening: All cases referred to the program will receive their first encounter with a Public Health Nurse who meets with the patient, screens for depression, substance abuse, intimate partner violence, smoking and social determinants of health.

Care Planning: The Nurse and the patient work together to create a care plan. Following the completion of the Care Plan the Nurse assigns the case to one of the Community Health Workers (CHW) who, following the care plan. The Community Health Worker and the Nurse hold Case Rounds weekly and revise the Care Plan as needed.

Linkages to Care: The program makes multiple linkages to care for the for the pregnant and postpartum BBH participants. Many of the needs are identified by the "Social Determinants of Health Screen" completed upon admission to the program.

Patient Engagement and Retention: The Babies Born Healthy Program employs the following engagement and retention strategies:

- **Childbirth Education-** A series of classes to help pregnant women and their support person to understand the changes that may happen during pregnancy, to prepare for labor and delivery, and to understand the postpartum period.
- **Educational Workshops**: The program provides informative workshops on topics of interest to parents, such as child development, resume writing, and parenting skills, CPR trainings. These offerings are valuable knowledge can be a strong incentive for parents to attend.
- **Family-Friendly Activities**: BBH organizes fun and engaging family activities like games, arts and crafts sessions, or show and tell nights. These events create a sense of bonding and enjoyment for both parents and children.
- **Parent Support Groups**: The BBH parent support groups are networks where parents can connect with others who share similar experiences and challenges. Helps women make valuable connections that empower her to continue with the program. This sense of community encourages regular attendance.
- **Transportation The program provides** vouchers for medical appointments and BBH events
- Visa Gift Cards for **childcare support** are provided during prenatal care appointments
- **Also provides are** Cribs and car seats to ensure infant safety
- **Breastfeeding supplies** are provided to women who breastfeed their infant.
- **Diapers** and other needed **baby items** are provided for keeping prenatal appointments and attending program activities.

Outreach and Referral: Now in Year 7 of the Babies Born Healthy Grant, the Montgomery County program has the capacity to provide Care Coordination services to

approximately 170 women with combined funds from two grants, the Babies Born Healthy Grant and the Home Visiting Expansion Grant, both from the Maryland Department of Health.

African American Health Program: Start More Infants Living Equally (SMILE) Program

The African American Health Program has a Maternal and Child Health focus area that seeks to decrease the high rate of Black infant mortality and improve the likelihood of good pregnancy outcomes among Black women in Montgomery County, through the S.M.I.L.E. (Start More Infants Living Equally) Program.

S.M.I.L.E. provides the tools and support that aim to improve the likelihood of healthy birth outcomes. The program is administered by registered nurse case managers who are passionate, loyal, and highly committed to partnering with mothers from pregnancy to a baby's first birthday. The care provided includes:

- Childbirth and Breastfeeding Education classes.
- Case management of mothers and infants, including home visits and telephone consultations.
- Ongoing breastfeeding support after delivery.
- Customized referrals to public and private community resources.
- Support groups and networking opportunities.

Figure 61. Participant Enrollment and Referrals by Year, SMILE Program, Montgomery County, MD, 2018-2023

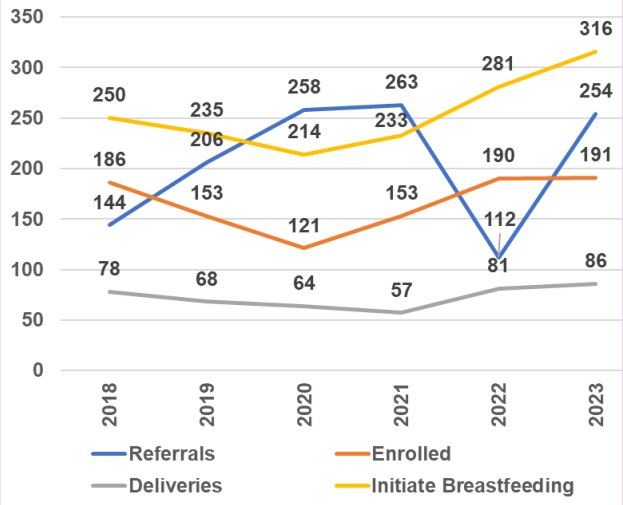


Table 9. FY24 Birth Outcomes

	MPP	BBH	Montgomery County, 2016-2020	Healthy People 2030 Target
YTD Total Deliveries	904	122	~8.5% of all MoCo births are enrolled in the MPP Program	n/a
Cesarean Births	**30.2%**	**33**	**33.2%**	**23.90%**
Preterm Birth 37 weeks and below	15.4%	17%	9.4%	9.40%
LBW Birth less than 2500 grams	**8.3%**	**12%**	**7.3%**	**N.A.**
VLW Birth less than 1500 grams	1.8%	**N.A.**	1.3%	N.A.
Fetal Mortality	7.74/ 1,000 births	**N.A.**	5.3/ 1,000 live births	5.7/ 1,000 live births
Baby admitted into NICU	**6%**	**1%**	**7.4%**	**N.A.**
Severe Maternal Morbidity*	199/10,000 live births	500/10,000 live births	127/10,000 live births	64.4/10,000 live births
# Maternal Mortality	**0%**	**0%**	**26/100,000 live births**	**15.7 per 100,000 live births**

Table 10. FY24 MPP Case Management Outcomes

	MPP	BBH	National Data		Healthy People 2030 Target
Screen for Perinatal Depression	100%	100%	Less than 20% (CDC)		N.A.
Screened Positive for Perinatal Depression	16%	N.A.	20% (APHA)		N.A.
Linked to BH Specialist if needed yes	12%	30%	N.A.		N.A.
Pregnant/Postpartum Person linked to Dental Care	61%	N.A.	46% (NIH)		N.A.
Pregnant Person linked to Primary Care at Discharge	64%	N.A.	N.A.		N.A.
Infant WIC appointment	39%	N.A.	In the US, less than 50% of WIC eligible Medicaid recipients do not participate in WIC. (USDA)		
Infant's Immunizations up to date	72%	90%	72% (CDC)		90%
Infant linked with a Pediatrician	75%	N.A.	N.A.		N.A.
# Teens served in MPP Program	3%	N.A.	N.A.		N.A.

Teen still in school or graduated from High School	34%	N.A.	*1/2 of all parenting teens in the U.S. do not graduate from high school*		
Breast Feeding Status at 6 months n=425 Breast Milk Only	26%	20%	25.8% (NIH)		42.40%
Breast Feeding Status at 6 months: Formula Only	33%	38%	N.A.		N.A.
Breast Feeding Status at 6 months: Breast and Formula	40%	42%	55.8		54.1% (at one year)
Positively linked to Family Planning	49%	100%	65% (CDC)		65%

Race/Ethnicity Break Down: As previously discussed, the Maternity Partnership Program ran from 1989 to 2024 and provided prenatal care, case management and dental care to low income, uninsured pregnant persons, around 95% of whom were Latino immigrants from Central America who came to the area for the employment opportunities that the Metropolitan DC community provides.

When the State of Maryland enacted the Healthy Babies Equity Act, all pregnant persons who would have been in the Maternity Partnership Program, were now eligible for Medicaid and no longer needed County funds to pay for their prenatal and dental care. This allowed all low income, pregnant persons to receive the same perinatal services, regardless of immigration status. Therefore, on July 1, 2024, the MCH Team changed their program model and created a Triage Team to universally screen all pregnant persons newly enrolled in Medicaid and refer as needed, to one of the MCH Home Visiting programs available in Montgomery County. This change allowed for any at-risk person to receive home visiting/case management services regardless of race/ethnicity/immigration status.

Due to the change, the race/ethnic status of the program participants is slowly changing to include all at-risk families. The program went from having a participant population that was 95% Latina in FY23 to one that is 83% in FY24 and expects that the percentages will continue to even out to better match the Medicaid population as a whole. And, as indicated above, the referrals to the SMILE and Babies Born Healthy have increased exponentially as the triage team is identifying pregnant persons who are eligible for those programs, who were not identified in past years.

Table 11. Patient Race

	% Asian	% Black or African American	% White (includes Latinos)	% Other (includes Latinos/Hispanics)	% Unknown	% American Indian or Alaskan Native
FY23	0.6%	2.9%	67.6%	0.5%	27.3%	0.9%
FY24	1.6%	7.4%	52%	0.4%	37%	1.6%

Table 12. Patient Ethnicity

	% Hispanic or Latino	% Not Hispanic or Latino	% Unknown
FY23	95.1%	4.3%	0.6%
FY24	83%	8.3%	8.7%

Care Coordination for Pregnant and Parenting Teens

Although the teen birth rate has steadily decreased over the past years in Montgomery County as well as the rest of the US, we continue to have pregnant teens enrolled in Montgomery County Public schools. The Montgomery County MCH Program ***Care Coordination for Pregnant Teen Program*** is a collaborative effort between the Department's School Health Services and the Area Health Centers to provide coordinated school-based and home-based case management to all pregnant teens enrolled in Montgomery County Public Schools.

When a teen is identified as pregnant by school personnel, the teen is referred to the School Health Nurse for school-based case management. The School Health Nurse also makes an immediate referral to a Community Health Nurse in the MPP Program for home-based case management. In tandem, the two nurses work to ensure, that the teen has health insurance; is receiving prenatal care; is in a safe home; and has the necessary resources for the baby - including but not limited to crib and car seat; is prepared for the baby's arrival; is prepared to return to school and has the plan in place to delay subsequent pregnancies. With the nurses' assessments and eyes in both the home and the school, the duo can learn a great deal about the teen, her health and her social situation.

All pregnant and parenting teens residing in the County and enrolled in Montgomery County Public Schools are eligible for the program. If a teen is not enrolled in school, the Area Health Centers provide home-based case management only.

Regardless of the decrease in teen pregnancy rates, it is as important as ever to provide intensive case management services to all pregnant teens to improve the outcomes for the baby and the teen mother. Montgomery County's two-pronged case management program is a novel approach to working with teens, both in the school and in the home.

Table 13. Number of Pregnant/Parenting Teen receiving Home Based Case Management

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
# of Teens	214	216	253	208	213	224	187	171	261	216	188

Infant at Risk Program

The Infant at Risk Program is a program of the Maryland Department of Health. The State requests that all Delivering hospitals refer high risk infants and mothers to their local health department for community-based services using the *Postpartum Infant and Maternal Referral* (PIMR) form. The Area Health Centers receive approximately 150 Infant at Risk referrals each year from local hospitals.

Background: The Maryland Department of Health instituted the use of the PIMR in April 2011. This form is intended for Maryland hospitals to refer high-risk infants and mothers at hospital discharge to their local health department for community-based services. The form is used throughout the State.

Program Eligibility: The form is submitted at the discretion of the hospital staff but is suggested to be used for the following:

- Teen Mother;
- No prenatal care;
- Substance Abuse;
- Mental health issue;
- Domestic Violence;
- Unstable housing/homelessness;
- Previous infant death;
- Previous preterm birth;
- Very low birthweight (<1500gm); and
- Any other circumstance deemed to be a serious risk for mother or infant.

When the MCH Programs received the referral form, the Nurse Manager immediately assigns a Nurse to the case. The nurse immediately tries to contact the family and arrange a home visit. In FY24 there were 130 Infant at Risk/PIMR referrals received and 92% of those cases received a home visit within 10 days of discharge from the hospital. At the first home visit the nurse and the family work together to assess the need for ongoing home visits. The nurse may make only one home visit and determine that the family is doing well, and no further visits are needed, or she may follow the family for six months to a year,

depending on the circumstances. Home Visits are not mandatory, and the program does find that some families refuse care or are never located.

Table 14. Infant at Risk Referrals by Fiscal Year, 2014-2024

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
# of Infant at Risk Referrals Received	198	204	217	153	191	176	168	178	88	122	130

Immunization Program

The Area Health Centers partner with the DHHS Dennis Avenue Immunization Program and the Maryland Department of Health's Vaccine for Children (VFC) Program to provide vaccinations to eligible children ages 0-18 years. The Vaccine for Children Program is administered at the national level by CDC and the National Center for Immunization and Respiratory Diseases. The program was established by an act of Congress in 1994.

The Maryland program is administered by the Department of Health and, to date, has more than 750 providers enrolled who practice at 1,000 public and private practice vaccine delivery sites throughout the State. CDC contracts with vaccine manufacturers to buy vaccines at reduced rates. Participating providers, such as Montgomery County DHHS, order federally funded vaccines through the MD state VFC Program and receive routine vaccines at no cost.

The Area Health Centers offer Immunization Clinics weekly by appointment only. VFC providers agree to order and provide all age-appropriate ACIP-recommended vaccines to VFC-eligible patient populations. In exchange for federally funded vaccines, enrolled providers agree to partner with the VFC Program to ensure that program requirements are met in order to protect the integrity of the program as well as the provider's vaccines and patients.

Children must meet federal VFC eligibility criteria to receive public vaccines to ensure vaccines are going to the intended populations. Children from birth through 18 years of age must meet at least one of these criteria at each immunization visit to be eligible to receive VFC-supplied vaccines:

- are Maryland Medicaid eligible;
- are uninsured; or
- are Native American or Alaskan Native; or
- are underinsured (children who have health insurance that does not cover immunization).

Additionally, the Area Health Centers offer Back to School Clinics in collaboration with School Health Services during Spring Break and summer months to assist the DHHS Immunization Program to have full compliance with children vaccinated in time for school.

In FY24 alone, the Area Health Centers administered vaccines to 720 children between the ages of zero to eighteen.

Pregnancy Tests

The Area Health Center Pregnancy Test Program offers free pregnancy tests to any female county resident needing to diagnose her pregnancy. The program provides women with the information and support needed to make an informed decision in a private, safe and non-judgmental environment regarding their reproductive health care. There is no fee for the test and patients are accepted on a walk-in basis.

A clinic staff member meets with the patient and reviews pregnancy symptoms, contraceptive status, last normal menstrual cycle, menstrual regularity, medication, or drug use. Clinic staff performs the hCG qualitative urine test, which detects the presence of hCG hormone if the patient is pregnant. Results are given privately to the patient, and options are discussed in an unbiased manner. Information on all options are provided to each patient so that she will have relevant resources to review.

Home Birth Validation

Maryland law requires that all births that occur within the State be registered with the Department of Health. Registration of the child's birth establishes the facts of birth and will be used throughout the child's lifetime for a variety of legal purposes. When a baby is born outside of an institution and without a licensed provider, the local health department of the jurisdiction where the birth occurred is required to attempt to verify the facts regarding the birth. This requires a public health nurse to conduct a home visit to verify the live birth and to complete a verification of birth worksheet.

After the infant is born, the parents should notify the DHHS Office of Vital Records, which then notifies the MCH Program. A Community Health Nurse will contact the family and sets up a home visit. At the home visit, each of the following types of documentation may be provided to verify the facts of birth so it can be registered. These include:

- Proof of Identity of Parent(s)
- Evidence of Pregnancy
- Evidence that a Live Birth Occurred
- Evidence of Mother’s Presence in Maryland on the Date of the Live Birth

Birth certificates are signed at the discretion of the health officer. If the facts of birth cannot be verified, families may seek a court order from the Circuit Court for Montgomery County that lists the facts about the birth and orders the Secretary of the Department of Health and Mental Hygiene to create the birth record. The Area Health Centers verify approximately 5 Home Births per year.

Lead Poisoning and Asthma Prevention and Environmental Case Management Program

The Childhood Lead Poisoning Prevention and Asthma Case Management Program delivers home-based case management services to families of children with blood lead levels above 3.5mcg/dL and/or children with an established diagnosis of moderate to severe asthma. Program 1 (Healthy Homes for Healthy Kids) specifically addresses environmental hazards related to lead exposure in residential properties where eligible children are living or spending 10 or more hours each week. When lead is identified in the eligible property, the program can assist families in applying for lead abatement services through Maryland Department of Housing and Community Development. Program 2 (Childhood Lead Poisoning Prevention and Environmental Case Management) provides environmental case management and in-home education programs with the aim of reducing the impact of lead poisoning and asthma on low-income children.

Through in home visits, the program provides the following services:

- Comprehensive environmental investigation to identify all potential sources of lead exposure or asthma causing irritants.
- Recommendations for lead hazard remediation and abatement services
- Parent education on recognizing lead hazards and practicing lead-safe cleaning.
- Green cleaning supplies as needed.
- Encouragement for follow-up blood lead testing to ensure the child's levels decrease over time.
- Education on the scope of asthma, addressing specific asthma symptoms and triggers in the home.
- Education on medication management and usage, and trigger remediation.

It is recommended that all children in Maryland receive lead blood level testing at ages 12 and 24 months. Laboratories are mandated to report any level of 3.5 µg/dL to the Maryland Department of the Environment. The Maryland Department of the Environment, Childhood Lead Registry performs childhood blood lead surveillance for Maryland. The registry provides blood lead test data to the Maryland Department of Health, including Medicaid, ImmuNet, and local health departments as needed for case management. In Montgomery County, the percentage of children 0-72 Months old being tested for lead has increased by 5.5% between 2017 and 2021, from 26.7% in 2017 to 32.2% in 2021.
There was a statewide decrease in the number of children 0-72 months tested for lead in 2021 compared to 2020 (105,143 vs. 110,158) and is the lowest since 2015. The decrease results from the impact of COVID-19 closures and the reduced in-person health services such as blood lead testing.

Table 15. Number and Percentage of Children 0-72 Months Old Tested for Lead with Number and Percentage of New (Incident) and Existing (Prevalent) Cases of High Blood Lead Levels in Montgomery County, 2017-2021

Calendar Year	Population of Children	Children Tested	Blood Lead Level 5-9 µg/dL

	0-72 Months	Number	Percent	Prevalent Cases		Incident Cases	
				Number	Percent	Number	Percent
2017	95,846	25,594	26.7	22	0.1	137	0.5
2018	96,294	25,808	26.8	20	0.1	112	0.4
2019	97,486	24,880	25.5	105	0.4	125	0.5
2020	98,107	20,695	21.1	84	0.4	99	0.5
2021	60,861	19,591	32.2				

Source: Maryland Department of the Environment, Lead Poisoning Prevention Program. June 2024. Childhood Blood Lead Surveillance in Maryland: Annual Report Calendar Year 2017-2021.
https://mde.maryland.gov/programs/land/leadpoisoningprevention/pages/healthcare.aspx

Calendar Year	Population of Children 0-72 Months	Children Tested		Blood Lead Level ≥ 10 µg/dL			
		Number	Percent	Prevalent Cases		Incident Cases	
				Number	Percent	Number	Percent
2017	95,846	25,594	26.7	4	0	28	0.1
2018	96,294	25,808	26.8	3	0	32	0.1
2019	97,486	24,880	25.5	35	0.1	39	0.2
2020	98,107	20,695	21.1	21	0.1	28	0.1
2021	60,861	19,591	32.2				

**definitions of SMM are not consistent among MPP, MoCo and MD*

Administrative Care Coordination – Ombudsman Program (ACCU)

The Maryland Department of Health, Managed Care Administration funds and oversees the Administrative Care Coordination Program – Ombudsman Programs in each of the 24 local health departments. The Program is operationally called the Administrative Care Coordination Unit (ACCU).

The purpose of the ACCU is to have local staff available to fulfill Ombudsman functions and assist Medicaid/HealthChoice eligible participants in accessing and appropriately using their Medicaid benefits, thus improving the effectiveness and efficiency of the Medicaid program.

The ACCU functions as the local resource to assist participants proactively with navigating the Medicaid/HealthChoice Program, link participants with Managed Care Organizations (MCOs) and providers and respond to referrals from the Managed Care Administration and other sources. The Ombudsman investigates disputes between enrollees and MCOs acting to clarify issues and advocate on behalf of the enrollee throughout the MCO internal grievance process. The ACCU also receives and forwards the Maryland Prenatal Risk Assessment to the MCO or MCA and provides local resources and linkage to services for pregnant Medicaid/HealthChoice participants.

Table 16. ACCU Program Statistics, FY2023

FY23 MONTGOMERY COUNTY ACCU	
Referrals Received	**Total**
I. MCA Referrals:	
• Community Liaison and Care Coordination Division (CLCC)	244
• Complaint Resolution Unit (CRU)	224
II. Pregnant Individuals:	
• Internal Referrals from OESS	215
• Prenatal Eligibility Report	384
III. Newborns	
• Newborn Eligibility Report	1,152
IV. Maryland Prenatal Risk Assessments	
• Sent to MCA (no MA/MCO)	32
• Sent to MCOs	1,240
IV. Local Health Services Requests Received	
• Aetna Better Health	0
• Amerigroup Community Care	1
• JAI Medical Systems	0
• Kaiser Permanente	20
• Maryland Physicians Care	3
• Medstar Family Choice	10
• Priority Partners	11
• United Health Care	67
• University of Maryland Health Partners	34
IV. Other Referrals Sources: Other Referral Sources (OESS, Walk-in, self-referrals and from other Counties).	28
Total (Cumulative) Referrals Received in FY23	3,665

Collaborations:
The ACCU participates in quarterly meetings with the Maryland Dept. of Health, Managed Care Administration, at which technical assistance and policy updates are provided.

In addition, the Montgomery County ACCU collaborates with its counterparts in Prince George's, Howard, and Anne Arundel counties. They also organize quarterly joint meetings with each MCO's Special Needs Coordinators to address the needs of vulnerable populations, including the homeless. The ACCU meets with MCO Obstetrician case managers to share and update information about their Maternity Case Management Program. This program is designed to assist high risk pregnant women in improving birth outcomes. Representatives from each MCO, OPTUM Mental Health, and the Healthy Smile Dental Program are invited to share their work processes and provide feedback on

resolving issues affecting MA beneficiaries. Program staff attend MCO Consumer Advisory Board Meetings to work to improve services and care coordination of the MCO members.

The ACCU participates as part of the Interagency Coalition on Adolescent Pregnancy (ICAP) by attending monthly meetings and providing Medical Assistance (MA) updates and changes from the MCOs to ICAP members. The ACCU partners with School Health Services, Health Centers, and ICAP members to provide HealthChoice education to pregnant and parenting teens and link them to appropriate services such as Nutritional Support Services, Childbirth classes, Healthy Smiles Dental Program, mental health services, and maternity resources.

Program staff work with Montgomery County Public Schools to provide MA/HealthChoice education to diverse immigrant parent groups and link them to local resources. ACCU continues to collaborate with the Montgomery County Fetal and Infant Mortality Review (FIMR) and Community Action Team (CAT) by attending their meetings and providing input during case review after a fetal demise or infant death has occurred. Information gathered during the meetings helps to determine if timely referral to the MCO for case management could have potentially prevented a loss.

Fetal and Infant Mortality Review (FIMR) Board and Community Action Team (CAT)

The Montgomery County Improved Pregnancy Outcomes Program, which consists of the Fetal and Infant Mortality Review (FIMR) Board & Community Action Team (CAT), was created to assess systems of care surrounding pregnancy, childbirth and infancy, and develop an action-oriented process for change. FIMR Boards were established in 1988 by the U.S. Department of Health and Human Services, Health Resources & Services Administration in five states to identify factors that contribute to fetal or infant loss and improve local healthcare delivery systems. And Community Action Teams (CATs) were developed to prioritizes and carry-out FIMR recommendations by identifying the do-able, community-based actions that can put changes in place to ensure prevention of infant mortality with the goal of ensuring that mothers and infants receive high quality health care. It is responsible for devising the most effective ways to make changes in the community.

Maryland obtained federal funding to begin a FIMR Program in 1997, and Montgomery County established its FIMR Board & CAT the following year. Maryland's FIMR Program is supported by Title V – Maternal Child Health Block Grant funds, and the State is responsible for disbursing funds to individual counties. Since 2009, every county in Maryland has been represented by a FIMR Board. Fewer than half of all Maryland counties have a separate Community Action Team.

The overall goals of the Improved Pregnancy Outcomes Program are to:

- Reduce fetal and infant mortality overall;
- Address racial disparities in pregnancy outcomes; and
- Promote good preconception health.

The FIMR Board is responsible for conducting detailed, de-identified reviews of fetal or infant losses among county residents and identifying possible factors that contributed to a poor pregnancy outcome. Each year, FIMR carefully reviews approximately 100 to 130 fetal demise and infant deaths. The FIMR Board meets four times yearly. For each case review, the Board looks at factors beyond the immediate cause of death.

Reviews include:

- Whether the mother was able to access health care, and any barriers she faced;
- Whether she had other children and / or previous losses;
- Chronic health issues prior to becoming pregnant, including mental health issues;
- Role of the father in this pregnancy and / or whether the mother had support from other family
- Type of work the mother did if she worked outside the home & whether there were schedule or transportation issues.

Systems Successes involve aspects of the pregnancy or postpartum period that went well. This may include:

- Pregnancy was identified as high risk, where appropriate;
- Early prenatal care;
- Good social support for the mother;
- Culturally appropriate services;
- Excellent hospital care; and
- Postpartum visit and referral to primary care physician.

Systems Failures are also noted, and may include:

- Lack of programs to meet specific needs;
- Language and cultural barriers
- Poor communication with healthcare providers; and
- Failure to address chronic health conditions that impact pregnancy.

FIMR board recommendations are forwarded to the Community Action Team (CAT), an advisory / advocacy team that prioritizes and carries out FIMR recommendations by identifying the best ways to put changes in place “on the ground” to ensure that mothers and infants receive high quality health care. It is responsible for devising the most effective ways to make changes in the community.

FIMR Board Members currently include:

- Holy Cross Hospital (Silver Spring & Germantown locations) – Obstetrician; High Risk Perinatal Manager; Perinatal Educator
- Shady Grove Medical Center – Clinical Nurse Manager
- Washington Adventist Hospital – Chief Medical Officer; Director of Women’s Services
- Capital Women’s Care – Obstetrician
- Community Advocate, Health Officer, Ret.
- Family Medicine Physician and Clinical Investigator
- HHS Health Resources & Services Administration, Div. of Healthy Start & Perinatal Services – Director, Ret.; Senior Nurse Consultant

- Johns Hopkins HealthCare – Maternity Case Manager
- United Health Care – Maternal Child Health Coordinator
- Montgomery County League of Women Voters, SAMHSA, Ret.
- Montgomery County Health Officer
- Montgomery County Chief of Public Health Services
- Montgomery County Dept. of Health and Human Services (DHHS), Communicable Disease & Epidemiology, Ret.
- Montgomery County DHHS – Nurse Manager, Germantown Health Center
- Montgomery County DHHS - Nurse Manager, Silver Spring Health Center
- Montgomery County African American Health Program - Clinical Director
- Montgomery County DHHS – Coordinator, Administrative Care Coordination
- Montgomery County DHHS –School Health Services

Community Action Team Members currently include:

- Holy Cross Hospital (Silver Spring location) - Perinatal Educator; Perinatal Education Manager
- Family Health Care – Physician, Family Medicine
- Adventist HealthCare, Center for Health Equity & Wellness – Physician Internal Consultant; Parent Education Coordinator
- Washington Adventist Hospital – Chief Medical Officer, Director of Women's Services
- MedStar Montgomery Hospital – Manager, Maternal Newborn Center; Maternal Nurse
- Community Advocate, Health Officer, Ret.
- Family Medicine Physician and Clinical Investigator
- HHS Health Resources & Services Administration - Director of Healthy Start & Perinatal Services, Ret.
- United Health Care – Maternal Child Health Coordinator
- Montgomery County League of Women Voters, SAMHSA, Ret.
- Primary Care Coalition – Program Director
- Community Clinic, Inc. – WIC Services Coordinator
- University of Maryland – Program Director, Expanded Food & Nutrition Education Program (EFNEP); Professor, School of Public Health
- By Your Side Doula Services – Director
- Montgomery County Health Officer & Chief of Public Health Services
- Montgomery County Dept. of Health and Human Services (DHHS), Communicable Disease & Epidemiology, Ret.
- Montgomery County DHHS - Nurse Administrator, Germantown Health Center
- Montgomery County DHHS - Nurse Administrator, Silver Spring Health Center
- Montgomery County African American Health Program – Program Manager; SMILE Program Nurse Case Manager; Program Specialist
- Montgomery County DHHS – Consultant, School Health Services
- Montgomery County DHHS – Coordinator, Administrative Care Coordination Unit
- Montgomery County DHHS – Special Projects Program Manager
- Montgomery County DHHS Dept. of Correction & Rehabilitation – Social Worker

Records for fetal death and infant birth/death for Montgomery County residents are provided by the Maryland Vital Statistics Administration. Approximately 100-130 records are received annually, and each record is reviewed and entered into an Excel spreadsheet created to track losses and identify emerging trends. Cases are selected for review based on State priorities and identified trends. For example, a significant increase in teen mothers or women of advanced maternal age, women who began pregnancy with untreated health conditions, or women who experienced third trimester fetal loss indicates a need to review cases that include one or more of these factors.

Collecting information for FIMR cases also involves a full review of the mother's prenatal and postpartum medical records, along with reports on services received. Reviews contain data about the neighborhood where the mother lived during the pregnancy, and include information related to the proximity of public transportation, grocery stores, and medical facilities. Maternal interviews conducted in-person are another key element of FIMR case review. Interviews allow the bereaved mother to share her story and express any concerns she had before, during or after her pregnancy. Comments from the father or other immediate relatives are included, where appropriate. Bereavement materials and information about grief support groups are also provided.

The Maryland Department of Health (MDH) requires that at least 50% of all cases reviewed by FIMR involve Black / African American mothers. FIMR Board reviews in Montgomery County involve Black / African Americans mothers in approximately 75% of cases reviewed.

The most frequently made FIMR Board recommendations include:

- Refer Black / African American women to Babies Born Healthy or SMILE Program nurse case management in any future pregnancy.
- Increase awareness among physicians & Black / AA women of their higher risk for fetal / infant loss.
- Use community health workers to educate pregnant & postpartum women.
- Summarize patient condition in writing and check for understanding.
- Provide referrals to nutritionist.
- Review "kicks count" fetal movements at every PNC appointment.
- Increase awareness of family planning services.
- Encourage women to wait at least 18 months before starting new pregnancy after loss.

Community Action Team (CAT) initiatives are based on Board recommendations and incorporate new research and resources. During, and after the COVID-19 pandemic, FIMR/CAT programs focused on the effect of COVID-19 on pregnancy outcomes. While data collection is ongoing, the COVID-19 pandemic impacted pregnant Black/African American women at disproportionate rates, compared to other races. The information continues to highlight the racial disparity and health inequity in the Black/African American population.

Family Planning

As of October 2018, the Board of Education developed an agreement with DHHS to make latex condoms and sexual health education available in all high school health rooms. Montgomery County Public Schools (MCPS) collaborates with DHHS to strengthen the MCPS comprehensive health education curriculum, especially in the content area standard of disease prevention and control.

The Health Care for the Uninsured Program of Montgomery County DHHS helps support a network of safety net clinics that provide primary health care to uninsured adults residing in Montgomery County. This County support, as well as Federal Title X funding, allows local clinics to provide some family planning services to low-income residents of the County. Clinics in Montgomery County providing family planning services include Community Clinic, Inc., Mansfield Kaseman Health Clinic, Mary's Center, Mobile Medical Care, Planned Parenthood – Gaithersburg Center, Proyecto Salud, and Mercy Health Clinic.

However, there remains a critical need for additional family planning services in Montgomery County. Montgomery County DHHS offers no direct family planning services and subsidized family planning services for low income residents are not always readily available.

DHHS Program and Services Contact Information

African American Health Program – SMILE Program
14015 New Hampshire Avenue, Silver Spring, MD 20904
Phone: 240-777-1833

Area Health Centers

- Germantown Health Center
  12900 Middlebrook Rd, 2nd Floor, Germantown, MD 20874
  Phone: 240-777-0311
- Silver Spring Health Center
  8630 Fenton Street, Silver Spring 20910
  Phone: 240-777-3160

Babies Born Healthy Program
8630 Fenton Street, 10th Floor, Silver Spring, MD 20910
Phone: 240-777-3118

Montgomery County Fetal & Infant Mortality (FIMR) Board & Community Action Team
12900 Middlebrook Rd, 2nd Floor, Germantown, MD 20874
Phone: 240-777-3967

Medicaid Resource Center DHHS Offices
1401 Rockville Pike, 1st Floor, Rockville MD 20852
Phone: 240-777-1815

Montgomery County Maryland Health Connection, 240-777-1815
Get Health Insurance online at www.MarylandHealthConnection.gov

Mental Health/Substance Abuse Screening and Referral
255 Rockville Pike, First Floor, Rockville, MD 20850
Phone: 240-777-1770

Silver Spring Services Center
8818 Georgia Avenue, Silver Spring, MD 20910
Phone: 240-777-0311

Dental Services

- Silver Spring Health Center
  8630 Fenton Street, Silver Spring, MD 20910
- DHHS Colesville Center
  14015 New Hampshire Avenue, Silver Spring, MD 20904
- UpCounty Regional Services Center
  12900 Middlebrook Road, Germantown, MD 20874
- DHHS Offices at 1401 Rockville Pike
  1401 Rockville Pike, Rockville, MD 20852
  Phone: 240-777-1875

CONCLUSION

Overall, Montgomery County had lower adverse pregnancy-related conditions when compared to Maryland and the U.S. nationally. However, disparities exist among population subgroups by race/ethnicity, maternal age, and geographic area. Montgomery County has the most diverse population in Maryland and is becoming more diverse over time. The maternal and infant health, as well as health care utilization and costs associated with changing demography, social determinants, health care access are expected to be impacted exponentially. It is therefore critical to monitor and evaluate population health and services provided by DHHS programs on an ongoing basis to anticipate ongoing and future challenges. Efforts and resources should be targeted and allocated to address the findings of this report.

Though consistently lower than the Maryland and the U.S., infant mortality rates among NH-Blacks are three times or higher than NH-Whites.

Race/Ethnicity

Hispanics have the highest adolescent birth rates, percentage births to unmarried women, and percentage births to women without high school education, as compared to other groups.
NH-Whites and Asians have highest percentages of women aged 35-44 years giving births, followed by NH-Blacks and Hispanics.
NH-Blacks have the highest percentage of tobacco use during pregnancy, births with delayed/no prenatal care, preterm births, low weight births, infant mortality rates, neonatal mortality rates, fetal deaths, and severe maternal morbidity than other groups.

Maternal Age

Younger (<20 years old) and older (40+ years old) mothers have increased risks of severe maternal morbidity.

Geographic Variations

Geographic variations of infant and fetal deaths are presented by census tract, based on information available in the respective data.

The risks of adverse pregnancy-related conditions vary by race/ethnicity, maternal age, and geography. Information presented in this report can be used to target intervention efforts for population subgroups at high risk of adverse pregnancy-related conditions, to evaluate services provided by DHHS programs, and to better plan and allocate resources. An important use of surveillance data is to monitor trends following the initiation of prevention programs in order to evaluate their effectiveness.

This report is strengthened by the use of data from multiple sources that provide a more comprehensive picture of disease burden and population health than would a single source, as well as by examining the disease burden in the County by population

subgroups, circumstances in which people are born, grown up, live and age, and services provided by DHHS programs for better allocating resources and targeting intervention. Ongoing efforts are being made to further enhance data variety and quality for population health surveillance. Consumer and provider education are critical components of disease prevention and health promotion. This can be accomplished through the dissemination of population health statistics and prevention information at professional meetings and conferences. Pamphlets and brochures with information on disease prevention and health promotion can be provided to patients and clients at providers' offices. This information can also be made available through traditional and online media.

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APPENDIX A: TERMS AND DEFINITIONS

Term	Definition
Age-specific birth rate	Number of births to mothers of a specific age per 1,000 females in that age group
Age-specific death rate	Number of deaths in a specific age group per 1,000 or 100,000 population in the same age group
Apgar score	A score that provides a quick and concise evaluation of a newborn's health at one and five minutes after birth. It evaluates a child's activity/muscle tone, pulse/heart rate, grimace, appearance, and respiration/breathing, assigning a score of 1 for fair activity and 2 for good. Typically, scores over 7 indicate no immediate medical emergency while scores lower than 7 require closer evaluation of the child for any adverse outcomes.
Congenital anomaly	Defects present at birth such as cleft lip, spina bifida, and congenital heart defect that have surgical, medical and serious cosmetic significance
Crude birth rate	Number of live births per 1,000 population
Crude death rate	Number of deaths from all causes per 1,000 or per 100,000 population. Death rates for specific causes are per 100,000 population
General fertility rate	Total number of births per 1,000 females aged 15-44
Fetal death[1]	The death of a product of human conception, before its complete expulsion or extraction from the mother, regardless of the duration of the pregnancy, as indicated by the fact that, after the expulsion or extraction, the fetus does not breathe or show any other evidence of life, such as heartbeat, pulsation of the umbilical cord, or definite movement of voluntary muscle
Fetal mortality rate	Number of reportable[1] fetal deaths per 1,000 total births. Total births include live births plus fetal deaths of twenty or more weeks' gestation
Infant death	Death occurring to a person under one year of age
Infant mortality rate	Number of infant deaths per 1,000 live births. Length of pregnancy: A measure of the duration of gestation in completed weeks as estimated by the attending physician

[1] The definitions of live birth and fetal death are set by law in Section 14 (a) of Article 43 of the Maryland Code, 1957 Edition – Supplement. Fetal deaths are reportable for filing purposes only if the death occurs after a period of gestation of twenty or more completed weeks (Section 21 (a) of Article 43 supra). Therefore, the fetal deaths included in this report are only those of twenty or more weeks gestation.

Live birth	The complete expulsion or extraction of a product of human conception from the mother, regardless of the period of gestation, if, after the expulsion or extraction, it breathes or shows any other evidence of life, such as heartbeat, pulsation of the umbilical cord, or definite movement of voluntary muscle, whether or not the umbilical cord is cut, or the placenta is attached
Life expectancy	The average number of years of life remaining for an individual of a particular age group
Low birth weight	A live birth weighing less than 2,500 grams (5.5 pounds)
Maternal death	Deaths due to pregnancy, childbirth and the puerperium (ICD-10 codes O00-O95, O98-O99, A34) occurring either during pregnancy or within 42 days of delivery or termination of pregnancy
Maternal morbidity rate	Any health condition attributed to and/or aggravated by pregnancy and childbirth that has negative outcomes to the woman's well-being.
Maternal mortality rate	Number of maternal deaths per 100,000 live births. Neonatal death: Death occurring to an infant under 28 days of age
Neonatal mortality rate	Number of neonatal deaths per 1,000 live births
Perinatal death	The death of a fetus of 28 or more weeks' gestation or of an infant less than 7 days of age. Other commonly used definitions for perinatal death range from 20 to 28 weeks' gestation through seven to 28 days of life.
Perinatal death rate	The number of perinatal deaths divided by the number of fetal deaths of 28 or more weeks' gestation plus the number of live births times 1,000
Postneonatal death	Death occurring to an infant between 28 days and one year of Age
Postneonatal mortality rate	Number of postneonatal deaths per 1,000 live births
Severe Maternal Morbidity	Unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman's health. Delivery hospitalizations with severe maternal morbidity is identified using administrative hospital discharge data and the International Classification of Disease (ICD) diagnosis and procedure codes.
Very low birth weight	A live birth weighing less than 1,500 grams (3.3 pounds)

Source: Maryland Department of Health Vital Statistics Administration. Maryland Vital Statistics Annual Report 2017. https://health.maryland.gov/vsa/Pages/reports.aspx

Centers for Disease Control and Prevention. Severe Maternal Morbidity in the United States.https://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html

APPENDIX B: TECHNICAL NOTES

1. **Data Sources**
   The Office of Planning and Epidemiology uses various data sources to compile information on disease burden and population health, including vital records, inpatient and outpatient hospitalization, disease registry, surveys, area health resources file, and Census. Data on births and deaths are provided by Vital Statistics Administration of Maryland Department of Health. Pregnancy Risk Assessment Monitoring System (PRAMS) data are provided by Maternal and Child Health Bureau of Maryland Department of Health. Data on population estimates are derived from the American Community Survey (ACS) of U.S. Census Bureau.

   In addition, Office of Planning and Epidemiology uses other data sources such as program data collected in electronic medical records and electronic integrated case management system to conduct surveillance and program evaluation. These datasets are used to produce statistical information for health care professionals, researchers, and policy makers as part of surveillance activities.

2. **Data Quality and Confidentiality**
   Data quality is assessed on a routine basis, in terms of completeness, timeliness and accuracy, and is documented to help interpret results from analyzing these population datasets. All data collected and housed by the Office of Planning and Epidemiology complies with the state and federal privacy and confidentiality regulations. Data or data analysis may be requested through the Office of Planning and Epidemiology.

3. **Disparities on Race and Ethnicity**
   The Office of Planning and Epidemiology follows the recommendation of the National Center for Health Statistics of classifying health conditions according to the self-reported race/ethnicity of the individual. Information on race/ethnicity recorded in each data source is used to illustrate disease burdens for population subgroups. There are variations of data quality on race/ethnicity recorded in each population dataset, in terms of completeness and accuracy, thus interpretations of results are to take this into consideration. Though this information can be used to address important topic such as health equity, race/ethnicity is a self-reported item and is subject to the usual limitations of this type of information.

4. **Rate**

The rates provided in this report are estimations of the proportion of population with specific health conditions. This rate is usually expressed as per 1000 population and is calculated by the formula:

$$\text{Rate} = \frac{\text{Number of Persons with Specific Conditions}}{\text{Total Population at Risk}} * 1{,}000$$

5. **Graphs**
   Graphs have varying scales depending on the range of the data displayed. Therefore, cautions should be exercised when comparing such graphs.

6. **Standard Errors**
   The standard errors (S.E.) of the rates were calculated using the following formula:

$$\text{S.E.} = \sqrt{\frac{w_j^2 n_j}{p_j^2}}$$

where,
- w_j = fraction of the standard population in age category
- n_j = number of cases in that age category
- p = person-years denominator

7. **Confidence Intervals (CI)**
   The confidence interval is a method of assessing the magnitude and stability of a rate or ratio. The 95% CI represents a range of values that has a 95% probability of including the true rate or ratio. Observed rates are subject to statistical variation. Thus, even if the underlying risk of specific health condition is identical in two subpopulations, the observed rates for the subpopulations may differ because of random variation. The confidence interval describes the precision of the observed rate as an estimate of the underlying risk of having a specific health condition, with a wider interval indicating less certainty about this estimate. The

width of the interval reflects the size of the subpopulation and the number of cases with specific health conditions. Smaller subpopulations with fewer health conditions lead to wider confidence intervals. The 95% confidence intervals used in the report are based on the Poisson distribution.

The standard error can be used to calculate the confidence interval. If the interval produced for one rate does not overlap the interval for another, the probability that the rates are statistically different is 95% or higher.
(This test can be inaccurate for rates based on fewer than 10 events.) The formula used is:

$R \pm z\ (SE)$

where,

- R=age-adjusted rate of one population
- z = 1.96 for 95% confidence limits
- SE= standard error as calculated above

APPENDIX C: SOURCES OF ADDITIONAL INFORMATION

For more information on maternal and infant health, please refer to the following resources:

- Maternal/ Infant Health Programs, Montgomery County Department of Health and Human Services

https://www.montgomerycountymd.gov/HHS/ProgramIndex/MaternalIndex.html

- 2022 Fetal & Infant Mortality Review Board Annual Report

https://www.montgomerycountymd.gov/HHS/Resources/Files/Reports/FIMR%20CAT%202022%20Annual%20Report.pdf

- Montgomery County African American Health Program

http://aahpmontgomerycounty.org/

- Montgomery County Latino Health Initiative

https://www.lhiinfo.org/

- 2023 Community Health Needs Assessment

https://www.montgomerycountymd.gov/healthymontgomery/Resources/Files/HM-Resources/Publications/Montgomery-County-2023-CHNA.pdf

- Montgomery County, Maryland Interagency Coalition on Adolescent Pregnancy

http://www.mcicap.org/

- Maryland Department of the Environment, Lead Poisoning Prevention Program

https://mde.maryland.gov/programs/land/leadpoisoningprevention/Pages/index.aspx

- Healthy New Moms: Maryland’s Maternal Mental Health Campaign

https://healthynewmoms.org/

- Pregnancy and Childbirth, Healthy People 2030

https://health.gov/healthypeople/objectives-and-data/browse-objectives/pregnancy-and-childbirth

- Maternal & Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services

https://mchb.hrsa.gov/

- Peristats, March of Dimes

https://www.marchofdimes.org/peristats/Peristats.aspx

Peristats provides national, state, and local perinatal data by maternal characteristics (age, race/ethnicity, plurality, health insurance, poverty), behavioral risks (tobacco, alcohol and illicit drug use), and pregnancy-related risks (infections, obesity).

- The Pregnancy Risk Assessment Monitoring System (PRAMS), Centers for Disease Control and Prevention

https://www.cdc.gov/prams/index.htm

The Maryland PRAMS is a surveillance project supported by the Centers for Disease Control and Prevention. The Maternal and Child Health Bureau (MCHB), Vital Statistics Administration, and Maryland Department of Health and Mental Hygiene (DHMH) have a cooperative agreement with the CDC to participate in PRAMS. The project surveys new mothers randomly about their behaviors and experiences before, during and shortly after pregnancy. PRAMS findings may be used to guide recommendations for developing or modifying intervention programs or for securing resources for program changes.

- Report on Infectious Disease, 2013-2017, Montgomery County, Maryland

https://www.montgomerycountymd.gov/HHS/Resources/Files/Infectious%20Disease%20Report_10-15-18_FINAL.pdf

- Health in Montgomery County, 2010-2019, A Surveillance Report on Population Health, Montgomery County, Maryland

https://www.montgomerycountymd.gov/healthymontgomery/Resources/Files/Reports/Health-in-Montgomery-County-2010-19%20Final.pdf

- Montgomery County Self-Sufficiency Standard: Interactive Update 2023

https://www.montgomerycountymd.gov/HHS-Program/OCA/CommunityAction/interactiveSelfSufficiency.html