Child Behavioral Health Dashboard
Data Appendix

NCDHHS is committed to improving the lives of children and families in North Carolina. A key part of NCDHHS' commitment to children and families is addressing their growing behavioral health needs. To glean the insights needed to address these needs, NCDHHS has developed the Child Behavioral Health Dashboard to enable partners to better track progress in the child behavioral health space on needs, outcomes, and services to ensure all children in North Carolina have the services they need to thrive.

Overview of Indicators and Calculations

This section of the Data Appendix includes a high-level overview of the types of indicators included in the Child Behavioral Health Dashboard. The dashboard includes three sections of indicators:

1. **Behavioral Health Indicators:** Indicators about clinical diagnoses of behavioral health disorders among children insured by Medicaid. Please note that rates of diagnoses differ from prevalence estimates for disorders. For example, the actual prevalence of depression among all children is likely much higher than this dashboard shows because not all children who experience depression are seen by a healthcare professional who can provide a diagnosis. Additionally, Medicaid only covers approximately half of children in North Carolina. Therefore, the dashboard provides a clear picture of how many children insured by Medicaid have been diagnosed over time and who may need treatment, but does not provide this information for the entire North Carolina child population.
2. **Utilization Indicators:** Indicators about use of health systems and services for behavioral health needs. The dashboard focuses on more restrictive and costly forms of care, such as emergency department utilization and psychiatric residential treatment facility use.
3. **Risk Factors:** Indicators about factors that precede and are associated with behavioral health conditions or outcomes. This includes survey and birth outcomes data.

Data for each indicator reflects the percent and count of the target population that have been diagnosed with a particular condition, utilized a particular service or health system, or experienced a particular risk factor. For example, percentages for the *Depression* indicator represent the number of Medicaid-insured children and adolescents ages 5 – 18 who were diagnosed with clinical depression out of all Medicaid-insured children and adolescents ages 5 – 18 in North Carolina. Rates are also calculated within sub-groups for charts that display information by geography, race, ethnicity, age group, and gender. For example, percentages for the *Depression* indicator for the Hispanic or Latino sub-population represent the number of Medicaid-insured Hispanic or Latino children and adolescents ages 5 – 18 who were diagnosed with clinical depression out of all Hispanic or Latino Medicaid-insured children and adolescents ages 5 – 18 in North Carolina.
Where possible, data display has been standardized for common demographic variables included on the dashboard. For data by geography, data are displayed by NC DETECT regions to maintain consistency across indicators, other than for the *Low Birth Weight* indicator, where county-level data are displayed. Data are displayed separately for Race and Ethnicity using common sub-populations, other than for indicators on the *Risk Factors* section of the dashboard, where Race and Ethnicity values are combined due to the format in which data were available for these indicators.

Data Sources

Data sources used to gather the information presented on this dashboard are described below.

NC Medicaid

Data from the NC Medicaid program is used for the following indicators: *Depression*, *ADHD*, *Substance Use Disorders*, *Emergency Dept. Use – Behavioral Health*, *Mobile Crisis Utilization*, and *Psychiatric Residential Treatment Facilities*. Data were analyzed by the UNC Sheps Center using Medicaid enrollment and claims information. The Carolina Cost and Quality Initiative (CCQI) is a collaborative partnership between the Cecil G. Sheps Center for Health Services Research and UNC's Gillings School of Global Public Health. Its mission is to promote population-based research on the incidence and prevalence of disease in insured populations, patterns of utilization and treatment, and cost of care in North Carolina in order to improve the delivery and quality of care for its residents. CCQI currently maintains claims data from North Carolina Medicaid, Blue Cross Blue Shield of North Carolina, and the NC State Health Plan. Additional information about indicators from NC Medicaid and specific criteria used to analyze these data can be found in the Technical Notes section of the Data Appendix.

NC DETECT

Data for the indicator *Emergency Dept. Use – Suicide Attempt* comes from the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT). NC DETECT is an advanced, statewide public health surveillance system. NC DETECT is funded with federal funds by North Carolina Division of Public Health (NC DPH), Public Health Emergency Preparedness Grant (PHEP), and managed through a collaboration between NC DPH and the University of North Carolina at Chapel Hill Department of Emergency Medicine's Carolina Center for Health Informatics (UNC CCHI). The NC DETECT Data Oversight Committee does not take responsibility for the scientific validity or accuracy of methodology, results, statistical analyses, or conclusions presented. The NC DETECT Data Oversight Committee (DOC) includes representatives from the NC DPH, UNC NC DETECT Team and the NC Hospital Association. For additional information about NC DETECT, please visit the NC DETECT FAQ website.

Title V Office/North Carolina State Center for Health Statistics

Data for the *Low Birth Weight* indicator are calculated by the NC Title V Office, based on live birth certificate data maintained by the North Carolina State Center for Health Statistics. The Title V Maternal and Child Health (MCH) Block Grant is a federal-state partnership administered by the Health Resources and Services Administration (HRSA) and is the only federal program devoted to improving the health of all women, children, and families. For additional information about the NC Title V Office, please visit the Title V Maternal and Child Health Block Grant Program website.

Youth Risk Behavior Surveillance System (YRBSS)

Data for the indicators *Feel Good About Yourself* and *Feeling Sad or Hopeless* come from the Youth Risk Behavior Surveillance System (YRBSS). The YRBSS is a national set of surveys that track behaviors that can lead to poor health in students grades 9 through 12. In addition to grades 9 through 12, North Carolina collects data for students in grades 6 through 8 as well. Surveys are administered every other year and monitor a range of health-related behaviors and experiences, including behaviors related to mental health. For additional information about the YRBSS, please visit the YRBSS website.

Indicators

This section of the Data Appendix includes a brief description of the indicators included in the Child Behavioral Health Dashboard.

Depression

This indicator shows the proportion of Medicaid-insured children and adolescents ages 5 – 18 years old diagnosed with clinical depression, according to Medicaid claims data. When children feel persistent sadness and hopelessness, they may be diagnosed with depression. According to the Centers for Disease Control and Prevention (2023), examples of behaviors often seen in children with depression include:

- Feeling sad, hopeless, or irritable a lot of the time
- Not wanting to do or enjoy doing fun things
- Showing changes in eating patterns – eating a lot more or a lot less than usual
- Showing changes in sleep patterns – sleeping a lot more or a lot less than normal
- Showing changes in energy – being tired and sluggish or tense and restless a lot of the time
- Having a hard time paying attention
- Feeling worthless, useless, or guilty
  Showing self-injury and self-destructive behavior

ADHD

This indicator shows the number of Medicaid-insured children and adolescents ages 5 – 18 years old diagnosed with attention-deficit/hyperactivity disorder (ADHD), according to Medicaid claims data. ADHD can make life difficult for children. According to the Mayo Clinic (2019), children with ADHD:

- Often struggle in the classroom, which can lead to academic failure and judgment by other children and adults
- Tend to have more accidents and injuries of all kinds than do children who don't have ADHD
- Tend to have poor self-esteem
- Are more likely to have trouble interacting with and being accepted by peers and adults
- Are at increased risk of alcohol and drug abuse and other delinquent behavior

Additional information on specific logic used to analyze Medicaid data for this indicator can be found in the Technical Notes section of the Data Appendix.

Substance Use Disorders

This indicator shows the number of Medicaid-insured children and adolescents ages 5 – 18 years old diagnosed with substance use disorder (SUD), according to Medicaid claims data. Substance use disorder is a mental health condition in which kids or teenagers use drugs or alcohol in unhealthy ways. This can include addiction, using substances in ways that interfere with normal life, and doing dangerous things while under the influence of the substance. Kids with substance use disorder have trouble in school, work or relationships because of their use of drugs or alcohol. They also develop tolerance to substances, which means that they need to use more of the substance in order to feel drunk or high (Child Mind Institute, 2023).

Additional information on specific logic used to analyze Medicaid data for this indicator can be found in the Technical Notes section of the Data Appendix.

Emergency Department Use – Behavioral Health

This indicator shows the percent of Medicaid-insured children and adolescents ages 5 – 18 years old that used the Emergency Department and received a diagnosis for a behavioral health disorder, according to Medicaid claims. Additional information on specific logic used to analyze Medicaid data for this indicator can be found in the Technical Notes section of the Data Appendix.

Emergency Department Use – Suicide Attempt

This indicator shows the number of total child emergency department visits that were for suicide attempt or self-harm, according to data from the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT). For additional information about case definitions used for this indicator, please visit NC DETECT's Emergency Department Syndrome & Custom Event Definitions website.

Mobile Crisis Utilization

This indicator shows the number of Medicaid-insured children and adolescents ages 5 – 18 years old that used a mobile crisis unit during a behavioral health crisis. Mobile Crisis Management services are available 24/7 for crisis prevention or if individuals are experiencing a crisis related to mental health, substance use or developmental disabilities. Mobile Crisis teams can meet individuals in a safe location, including their home, school, or workplace. Additional information on Mobile Crisis Management services is available at this link, and specific logic used to analyze Medicaid data for this indicator can be found in the Technical Notes section of the Data Appendix.

Psychiatric Residential Treatment Facilities

This indicator shows the number of Medicaid-insured children and adolescents ages 5 – 18 years old that used a psychiatric residential treatment facility (PRTF). A PRTF provides non-acute inpatient facility care for individuals with a mental illness or substance abuse/dependency, and who need 24-hour supervision and specialized interventions. Additional information on PRTF's is available at this link, and specific logic used to analyze Medicaid data for this indicator can be found in the Technical Notes section of the Data Appendix.

Feel Good About Yourself

This is a state-specific indicator from the Youth Risk Behavior Surveillance System (YRBSS) data source that presents the weighted percentage of high school students or middle school students who strongly agree or agree that they feel good about themselves.

Separation of race and ethnicity is not possible given how the racial/ethnic identity variable was constructed and used for summary reporting. As a result, the racial/ethnic categories presented might differ from other indicators provided in the dashboard, including those from the national YRBSS data source. For additional information about the YRBSS, please visit the YRBSS website.

Feeling Sad or Hopeless

This is a national indicator from the Youth Risk Behavior Surveillance System (YRBSS) data source that presents the weighted percentage of high school students who indicate that they felt sad or hopeless in the last 12 months (almost every day for 2 or more weeks in a row so that they stopped doing some usual activities). This item was not available in the middle school YRBSS data source. For additional information about the YRBSS, please visit the YRBSS website.

Low Birth Weight

This indicator shows the percentage of infants born with low birthweight, according to live birth certificate data for North Carolina residents. Numerators comprise North Carolina resident live born infants weighing 2,500 grams (*5 lbs 8 ozs*) or less, regardless of the gestation period. The low birthweight percentage is calculated by dividing the number of resident infants born at a low birthweight by the total live births to residents of North Carolina. A live birth is defined as: *the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord or any definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached* (definition adopted by World Health Organization, 1950). A substantial body of research indicates a strong association between infant birthweight and behavioral/social emotional issues in young children, particularly for very low birthweight (American Psychological Association, 2017).

Technical Notes

Data Not Shown for Privacy

Counts for any strata that are less than small cell suppression thresholds (e.g., a count of 5 for the age group 5-12 Year Olds) are not displayed and are instead labeled as “Data not shown for privacy” on the dashboard.

Medicaid Data Source Methods

Medicaid data for the NC Child Behavioral Health Dashboard was analyzed by the UNC Sheps Center’s Jake Hyman, Melissa Sandahl, and Paul Lanier. Methods described below are current as of December 4, 2023.

Denominator Criteria

1. Medicaid enrollees (of any enrollment type)
2. Must have continuous enrollment for the full year (no gaps in coverage of > 1 day in the measurement year)
3. Age range: At least 5 on January 1st and no more than 18 on December 31st of the measurement year

Numerator Criteria

Of individuals in the denominator, identify those with at least one claim during the year that meets the listed criteria. For diagnoses, both primary and secondary diagnosis codes were used.

1. **Mobile Crisis Events**
   - Procedure code ’H2011’

2. **Emergency Department (ED) visits** (for Mental, Behavioral and Neurodevelopmental disorder diagnoses)
   - Revenue code = ‘045’ **AND**
   - Diagnosis code in F01 – F99

3. **Pediatric residential treatment facility (PRTF) visits**
   - Revenue code in (’0911’, ’0919’)

4. **Depression diagnosis**
   - Primary or secondary diagnosis code in ("F320", "F321", "F322", "F323", "F324", "F325", "F328", "F329", "F330", "F331", "F332", "F333", "F3340", "F3341", "F3342", "F338", "F339")

5. **ADHD diagnosis**
   - Primary or secondary diagnosis code in ("F909", "F900", "F901", "F902", "F90", "F908", "79951", "R41840")

6. **Substance use disorder diagnosis**
   - Primary or secondary diagnosis code in (see Appendix for full list of possible ICD-10 codes)

Stratification

Counts for any strata less than 11 are suppressed per CMS Cell Size Suppression Policy.
For this reason, counts were stratified twice, and both counts are included in the file. These are:

- By gender, race, ethnicity, age category, foster care status, and geographic region
- By gender, race, ethnicity, age category, foster care status, and geographic state

Counts for region and state should be analyzed separately. All member-years are included in both; summing region and state counts will result in all members counted twice.

1. **Ethnicity categories:** Any member with Hispanic ethnicity is categorized as Hispanic or Latino. All others are non-Hispanic or Latino.
2. **Race categories:** Determined using all race columns to generate a single category for each member. Individuals with a single racial category are counted in categories a – e below. Individuals with multiple races are categorized as Multiple Race. The categories are:
    a. White
    b. Black
    c. Asian/Pacific Islander
    d. American Indian
    e. Other race
    f. Multiple race

3. **Geographic Region:** Determined using member county with the greatest number of days of enrollment that year.
4. **Geographic State:** Determined using member state with the greatest number of days of enrollment that year.
5. **Age category:** Assigned based on age on January 1st of that year. Categories are:
    a. 5 – 12
    b. 13 – 18

Methods of Assigning Race and Hispanic Origin to Births

Race Collection on Birth Certificates

Since 2011, when North Carolina adopted the revised US standards for reporting, birth certificates have included the following self-reported racial categories which allow for multi-race selection based on federal standards issued by the Office of Management and Budget (OMB). The race of the newborn is *not* collected on birth certificates and cannot be derived from combining maternal and paternal race fields due to a high level of missing paternal race information. For this reason, both federal and state birth data are typically reported **based on maternal race alone**. More detailed disaggregated race categories are available but are not presented here to protect the confidentiality of these births.

21. MOTHER'S RACE *(Check one or more races to indicate what the mother considers herself to be)*

☐ White	☐ Asian Indian	☐ Vietnamese	☐ Samoan
☐ Black or African American	☐ Chinese	☐ Other Asian	☐ Other Pacific Islander
☐ American Indian or Alaska Native	☐ Filipino	(Specify) ________	(Specify) ________
(Name of the enrolled or principal tribe)	☐ Japanese	☐ Native Hawaiian	☐ Other
________	☐ Korean	☐ Guamanian or Chamorro	(Specify) ________

Ethnicity Collection on Birth Certificates

Since 2011, when North Carolina adopted the revised US standards for reporting, birth certificates have included the following self-reported ethnicity categories, which allow for multi-ethnicity selection based on federal standards issued by the Office of Management and Budget (OMB). The ethnicity of the newborn is *not* collected on birth certificates and cannot be derived from combining maternal and paternal ethnicity fields due to a high level of missing paternal race information. For this reason, both federal and state birth data are typically reported **based on maternal ethnicity alone**. More detailed disaggregated ethnicity categories are available but are not presented here to protect the confidentiality of these births.

28. MOTHER OF HISPANIC ORIGIN? *(Check the box that best describes whether the mother is Spanish/Hispanic/Latina. Check the "No" box if mother is not Spanish/Hispanic/Latina)*

☐ No, not Spanish/Hispanic/Latina
☐ Yes, Mexican, Mexican American, Chicana
☐ Yes, Puerto Rican
☐ Yes, Cuban
☐ Yes, other Spanish/Hispanic/Latina
(Specify) ________

Importance of Combining Race/Ethnicity

Data users should be aware that the Hispanic/Latino population may not identify with the race categories provided in public health surveillance systems, such as the birth certificate. Individuals who identify as Hispanic/Latino may identify their race as something non-classifiable in the *Other (Specify)* category. As a result, tabulations of data based on race alone may result in a high proportion of other and unknown races that are not suitable for comparative analysis. This issue can be addressed by the best practice of combining the race and ethnicity fields together (Pew Research Center, 2021; Urban Institute, 2019).

References

American Psychological Association. (2017). *Low Birth Weight May Up Mental Health Risks in Adulthood*. APA News. https://www.apa.org/news/press/releases/2017/02/low-birth-weight

Centers for Disease Control and Prevention. (2023). *Anxiety and Depression in Children*. CDC: Children's Mental Health. https://www.cdc.gov/childrensmentalhealth/depression.html

Centers for Disease Control and Prevention. (2023, October). *Revisions of the U.S. Standard Certificates and Reports. National Center for Health Statistics*. https://www.cdc.gov/nchs/nvss/revisions-of-the-us-standard-certificates-and-reports.htm

Centers for Disease Control and Prevention. (2023). *Youth Risk Behavior Surveillance System (YRBSS)*. https://www.cdc.gov/healthyyouth/data/yrbs/index.htm

Child Mind Institute. (2023). *Quick Guide to Substance Use Disorder*. Child Mind Institute. https://childmind.org/guide/quick-guide-to-substance-use-disorder/

Mayo Clinic. (2019). *Attention-deficit/hyperactivity disorder (ADHD) in children*. https://www.mayoclinic.org/diseases-conditions/adhd/symptoms-causes/syc-20350889

North Carolina Department of Health and Human Services. *Crisis Services*. https://www.ncdhhs.gov/divisions/mental-health-developmental-disabilities-and-substance-use-services/crisis-services#MobileCrisisTeams-5249

North Carolina Department of Health and Human Services. *Psychiatric Residential Treatment Facility Services*. Medicaid Program. https://medicaid.ncdhhs.gov/providers/programs-and-services/behavioral-health-idd/psychiatric-residential-treatment-facility-services

North Carolina Department of Health and Human Services. (2023). *Title V Maternal and Child Health Block Grant Program*. https://www.dph.ncdhhs.gov/programs/title-v-maternal-and-child-health-block-grant-program

North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT). (2024). *Emergency Department Syndrome & Custom Event Definitions*. https://ncdetect.org/case-definitions/

North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT). (2024). *FAQ*. https://ncdetect.org/faq/

North Carolina State Center for Health Statistics. (2024). https://schs.dph.ncdhhs.gov/

North Carolina State Center for Health Statistics. (2020). *Definitions and Formulas*. https://schs.dph.ncdhhs.gov/data/vital/volume1/2020/Volume1-2020-DefinitionsFormulas.pdf

Office of Management and Budget. (1997, October). *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity*. Obama White House Archives. https://obamawhitehouse.archives.gov/omb/fedreg_1997standards

Pew Research Center. (2021, November 4). *Measuring the Racial Identity of Latinos*. https://www.pewresearch.org/hispanic/2021/11/04/measuring-the-racial-identity-of-latinos/

Urban Institute. (2019). *Separating Race and Ethnicity in Surveys Risks an Inaccurate Picture of the Latinx Community*. Urban Wire. https://www.urban.org/urban-wire/separating-race-ethnicity-surveys-risks-inaccurate-picture-latinx-community