

## Unseen Effects of COVID-19 on Children and Le Bonheur Children's Hospital's Response

As the COVID-19 pandemic evolved, it became clear that the disease was not nearly as deadly or easily spread among children as adults. While Le Bonheur Children's Hospital has still seen a number of COVID-19 cases in the hospital and outpatient settings, outcomes have consistently been better for children than their adult counterparts.

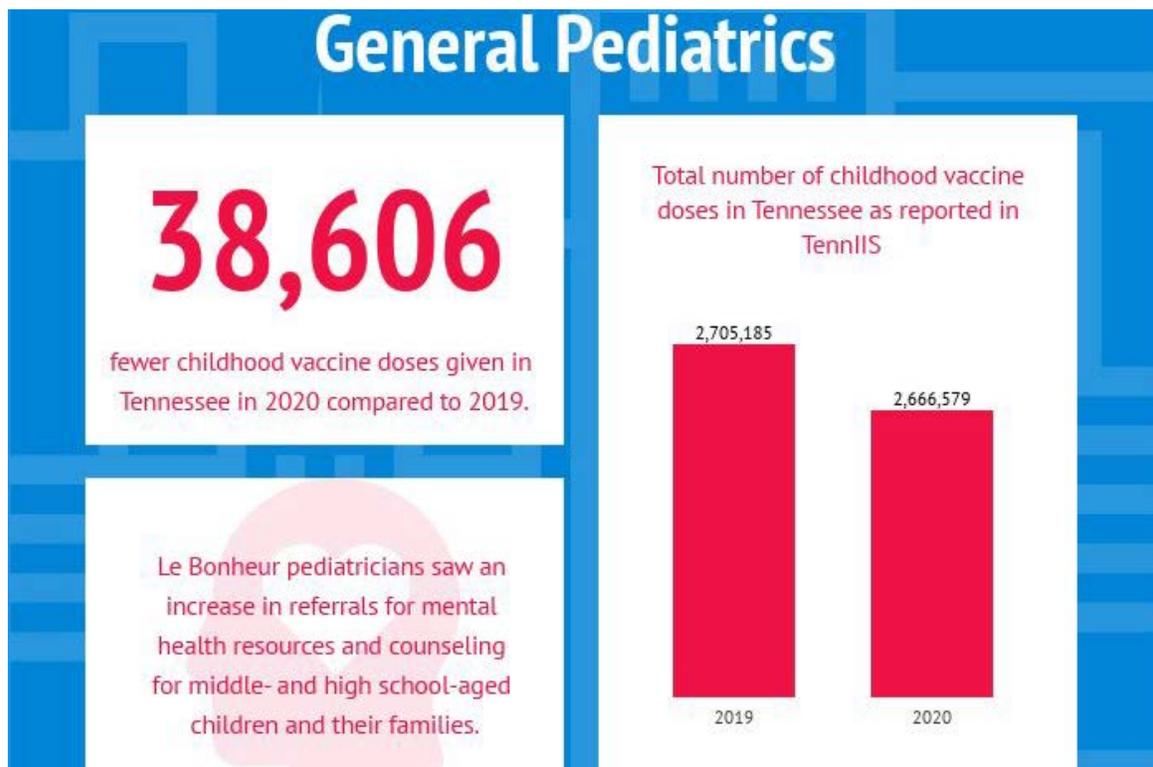
What has gone unaccounted for are the myriad other ways that children's health has been affected as a result of various factors of the pandemic beyond the disease itself. These negative health outcomes arise from social isolation, quarantine and extended time at home. Le Bonheur pediatricians have seen well child visits and vaccinations decline, educational difficulties for children with developmental disabilities participating in virtual school and the potential for increased psychopathology. They have also reported access delays to critical rehabilitation services needed for development and an uptick in trauma cases.

Le Bonheur pediatricians continue to work to draw attention to these negative and unseen effects and mitigate their impact on the vulnerable pediatric populations in our community.

### General Pediatric Health: Well-Child Visits and Vaccinations

In the early days of the pandemic, general pediatrician's offices – including Le Bonheur's – drastically reduced the number of well-child appointments until more was known about COVID-19. But once proper precautions were established and doctors' offices reopened to a more normal capacity, Le Bonheur pediatricians continued to see parents hesitant to bring in their child, for fear of the virus. This hesitancy has led to a portion of children falling behind on well-child visits and vaccinations. The long-term impacts are unknown but have the potential to affect health and development for years to come.

#### The Numbers:

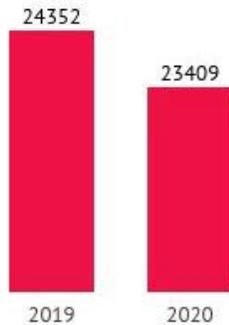


# 1,800

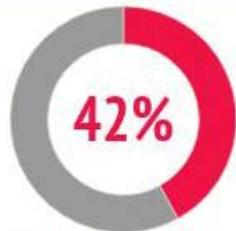
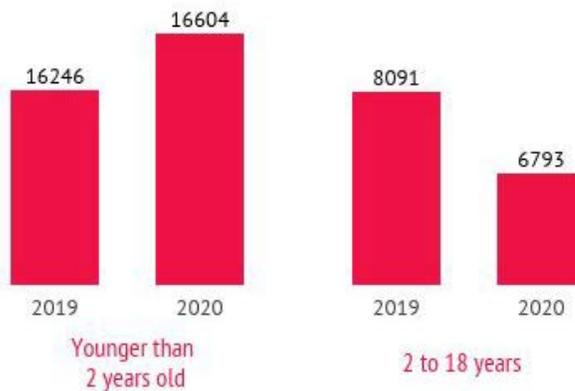


Children who potentially lost insurance coverage due to the pandemic. Of children seen four or more times at a Le Bonheur Pediatrics Clinic between Jan. 1, 2019 and March 31, 2020, 1,800 were not seen in clinic after March 31.

Total Number of Childhood Vaccine Doses at Le Bonheur's General Pediatrics Clinic



Childhood Vaccine Doses at Le Bonheur's General Pediatrics Clinic



42% of children in Tennessee had no preventive medical and dental care in the past year.

Source: [childrenshospitals.org](http://childrenshospitals.org)

# 44

clinics held in West Tennessee by Le Bonheur's mobile unit



**Impact:**

- While volumes returned closer to normal levels at Le Bonheur general pediatric clinics at the end of 2020, pediatricians have seen little to no catch up on missed visits from the early days of the pandemic.

- Older children are not returning for optional vaccines such as HPV or meningitis, which may have long-term impacts in the future.
- Missed well child visits means that children with developmental needs may be overlooked or caught late leading to potential developmental delays.
- Pediatricians have seen an exacerbation of pre-existing inequalities due to the pandemic.
- Mental health issues are on the rise in middle- and high school-aged children. This is a result of isolation, community violence and loss of loved ones from COVID-19.

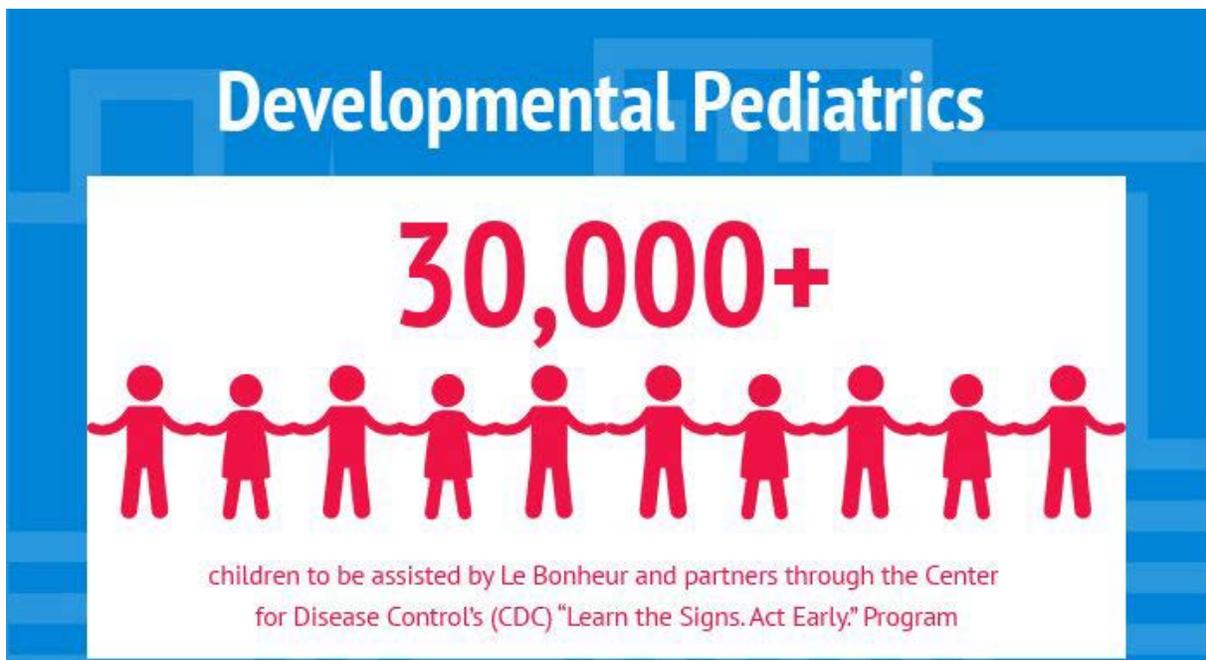
**Response:**

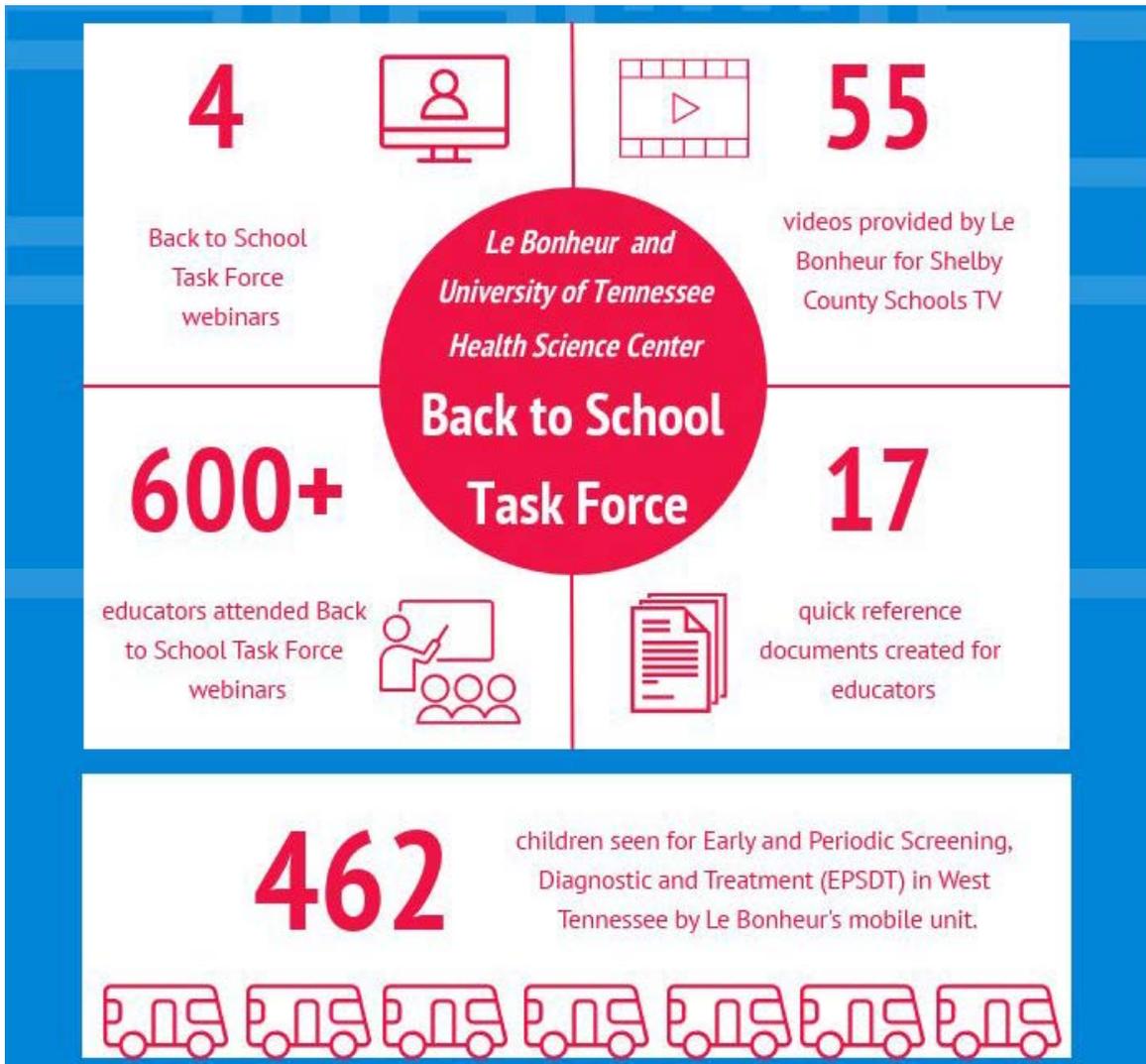
- Le Bonheur’s General Pediatrics division set up a community clinic in order to vaccinate and conduct well-child visits. 77 children were served through this community effort.
- To begin covering the gap of missed vaccinations, Le Bonheur has focused vaccination efforts on children in need of the required vaccines for entering kindergarten or 7<sup>th</sup> grade.
- Le Bonheur’s mobile unit, Le Bonheur on the Move (LOM), held 44 clinics in West Tennessee. The mobile unit travels to schools and community sites to provide affordable, accessible health care services for children who don’t have pediatricians.
- Patients and families are connected with community counseling and therapy when mental health needs arise.

**Developmental Health: Virtual School and Special Needs**

Schools are facing many challenges during the COVID-19 pandemic, not the least of which is the question of how to keep students and teachers safe from the spread of COVID-19 while also meeting the unique learning needs of kids, especially those with developmental disabilities. Many schools have gone virtual for the safety of children and teachers, including Memphis’s Shelby County Schools system. But Le Bonheur’s developmental pediatricians are concerned as to what the long-term impacts of virtual school will be on younger children and children with developmental disabilities both of whom learn at a slower rate and require hands-on guidance and immediate feedback to learn most effectively. The impact of education and development will unfold over time as educators and pediatricians can observe and study the long-term effects of virtual school on these populations of children.

**The Numbers:**





**Impact:**

- Younger children and children with developmental delays and special needs have a great potential to fall behind in a virtual school setting as they require more hands on attention to learn than virtual school can provide.
- When children don't have school instruction, such as the summer, they lose progress but can often regain it with intensive instruction. The effect of being out of school for this extended period to time, particularly for children with developmental delays or special needs, is unknown and unprecedented.
- As schools go virtual, some therapies needed for children with special needs have become difficult to continue in a virtual setting.

- Children with Individualized Education Programs (IEPs) needed revision to these plans to account for the lack of hands on attention available through a virtual setting. Parents visiting Le Bonheur’s Developmental Pediatrics Clinic have often described reduced quantity and quality of individualized special education services during the pandemic despite the school’s best efforts.
- Autism and other developmental disabilities are not as easily identified when children are not having in-person instruction and developmental evaluations are halted or slowed. Programs such as the Tennessee Early Intervention System (TEIS) have needed to alter or reduce developmental evaluations and services in a child’s home due to safety restrictions imposed during the pandemic.

***Response:***

- Le Bonheur formed the Back to School Task Force with the University of Tennessee Health Science Center to provide guidance and information for safe return to in-person school. The Task Force provided webinars for educators, as well as documents guiding safe return to school and the best ways to prevent the spread of COVID-19 in the school setting.
- A subgroup of the Back to School Task Force on the unique needs of children with developmental disabilities and special needs was led by Le Bonheur Developmental Pediatrician Toni Whitaker, MD. This subgroup’s goal was to provide pandemic-related information and support for educators, school administrators and families as they sought the best learning experiences possible for children, particularly those in vulnerable populations.
- The Le Bonheur’s mobile unit, Le Bonheur On the Move, saw 462 children in West Tennessee for Early and Periodic Screening, Diagnostic and Treatment. Children were referred to health education and behavioral health programs where needed.
- Partnering with state service agencies, Le Bonheur physicians will use grant funding from the Centers for Disease Control’s (CDC) “Learn the Signs. Act Early.” Program to train providers and distribute more than 30,000 free developmental monitoring and developmental promotion resources to families with young children.

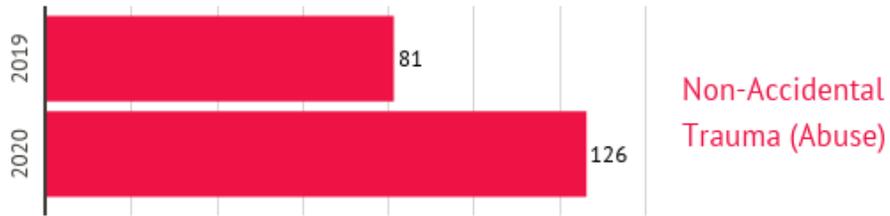
**Trauma Services: Rising Trauma Occurrences among Children**

When children spend more time at home, trauma cases rise, as demonstrated by the rise in trauma cases Le Bonheur sees each summer. The COVID-19 pandemic has greatly increased the amount of time children are home as a result of quarantine, virtual school and other pandemic restrictions. As a result, Le Bonheur has seen trauma cases rise since the pandemic began in four major categories – non-accidental trauma (abuse), all-terrain vehicle (ATV) accidents, gunshot wounds and motor vehicle collisions. According to Le Bonheur’s initial data, trauma injuries will continue to rise or stay elevated until children are no longer spending extended periods of time at home.

By the Numbers:

# Trauma Services

## Trauma Injuries Pre-pandemic vs. Pandemic



**Impact:**

- Trauma cases have risen in the areas of non-accidental trauma (abuse), ATV accidents, gunshot wounds and motor vehicle collisions since the pandemic began.
- Gunshot wounds are of particular concern. Gun violence has devastating long-term effects on children. Children who are victims of violent crime are more likely to end up in jail, be a victim again or be a perpetrator of violent crime. Concerns have arisen about the impact rising gun violence during the pandemic will have in the next two to five years.
- Trauma injuries are categorized as an adverse childhood experience (ACE), which can lead to a negative impact on a child's mental health. Le Bonheur sees a significantly higher number of ACEs in the population seen for trauma injuries compared to the normal population.
- Mental health has come to the forefront of trauma services in two ways. First, a need has come to the forefront to mitigate the impact of a traumatic injury on a child's mental health for the future. Second, a need also exists to intervene in mental health of adults to prevent traumatic injuries to children – particularly non-accidental trauma and gunshot wounds.

**Response:**

- Le Bonheur worked with the Shelby County Crime Commission who organizes Walk Against Violence events to speak out against the gunshot violence in the city.
- Le Bonheur's Trauma Services is part of the Memphis Group Violence Intervention Program. This effort plans to reduce violence in the city through five specific program areas – suppression, intervention, prevention, community mobilization and organizational change.
- Le Bonheur recently partnered with the BRAIN CENTER at the University of Memphis so that all children treated at Le Bonheur's Pediatric Trauma Center can be eligible for free mental health counseling services.
- The Le Bonheur and UTHSC Back to School Task Force continues to work with local schools to assist in paving the way for safe, in-person instruction to have children spend less time at home and reduce social isolation.

**Psychiatry: Immediate and Long-Term Mental Health Effects of Pandemic and Isolation**

According to a wide variety of studies conducted in the wake of large scale negative events, psychopathology in children always follows, including natural disasters, terrorist attacks or a deadly pandemic. On the whole children are resilient, but Le Bonheur psychiatrists believe that certain populations are far more at risk to develop psychopathology as a result of the pandemic and its myriad effects. The individual stressors caused by the pandemic, from social isolation to sleep problems, are historically noted as leading to mental illness in children. In the wake of COVID-19, these individual stressors are combined in previously unseen ways.

**The Numbers:**

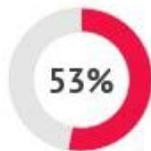
# Psychiatry

**22%**

of children in Tennessee had two or more adverse childhood experiences (ACEs) in the last 12 months.\*



## Survey of American high school students<sup>+</sup>



were "moderately," "very," or "extremely" worried about their mental health



experienced anxiety since the beginning of the pandemic



experienced depression since the beginning of the pandemic



knew of someone with suicidal thoughts since the beginning of the pandemic

\*Source: [childrenshospitals.org](http://childrenshospitals.org)

<sup>+</sup>Source: Survey by Chegg.org in partnership with the Ad Council's Seize the Awkward, the JED Foundation, the American Foundation for Suicide Prevention, and the Born This Way Foundation

**Impact:**

- For youth who are already vulnerable to psychopathology, the COVID-19 pandemic has amplified stressors in addition to what they already tackle every day. Children and families already struggling with economic difficulties, family dysfunction or domestic violence, which have increased during the pandemic, are more likely to have mental health trouble in the future.
- The greatest areas of concern are for youth who are already vulnerable, such as adolescents with prior mental health problems and special needs students falling behind in school.
- Stressors that individually would lead to psychopathology in children are combined in new ways during the COVID-19 pandemic. Social isolation increases risk of depression or anxiety for years after. Disrupted schooling leads young children to deviate from normal developmental milestones. Quarantine and isolation can also lead to sleep problems, inactivity and increased screen time, which have been shown to make children more vulnerable to psychological distress.
- The virus also poses potential neurobiological effects. Coronaviruses are associated with the onset of mood and psychotic disorders. Inflammatory markers following COVID-19 illness predict depression and anxiety. Inflammation that clears the virus may also put those infected at risk for psychopathology.

**Response:**

- Le Bonheur Psychiatrist Andres Ramos, MD, is planning to conduct a study on psychopathology in Memphis' Shelby County School System youth in the COVID-19 pandemic. The study will screen for PTSD and serious emotional disturbances (SED) and connect children and families with community mental health resources.
- Using survey results to determine which COVID-related stressors are most impactful to psychopathology, psychiatrists can lead targeted mental health interventions in children.
- Children and families are screened in Le Bonheur General Pediatrics Clinic for mental health needs. Physicians connect families with therapy and counseling when applicable.

**Rehabilitation Services: Barriers in Access to Care**

Virtual school has limited access for children and families who rely on the school system for rehab services. Hundreds of children who could have long-term consequences to their development without rehab intervention. Many of these children are covered by TennCare, Tennessee's Medicaid program for children. A large number of physicians refer to Le Bonheur's rehab services because it is difficult for families to find alternative rehab centers where TennCare is accepted. The pandemic shines a spotlight on the barriers that families and children have to access to care particularly in the area of much-needed rehab services.

**Impact:**

- Virtual school means a loss of access to rehab services for many children. Although the school system provides telehealth therapy, many children are seen and helped hands-on in the classroom, which is not possible in a virtual school model.

- Due to a spike in trauma cases as a result of the pandemic, the increase in rehab services for these children limits the spaces available help children who would typically be seen in school.
- Certain children with special needs are at risk for a loss of function if they are unable to have hands-on work.
- Developmental red flags are missed. Childcare centers, which act as a safety net, are closed and therefore not catching some of these potential issues. In addition, the decrease in well-child visits is another missed opportunity to identify developmental issues. The long-term impacts are unknown as these children may not catch developmental issues during an essential time to learn critical skills.

***Response:***

- Because of the virtual school model which has limited some therapy services, Le Bonheur’s rehab services has stepped in when possible to provide the needed therapies for children – especially those who require in-person, hands-on therapy.
- At the onset of the pandemic, Le Bonheur’s rehab services pivoted to offer telehealth services whenever possible. This allows families to use what they have in the home to conduct therapy.
- Le Bonheur’s rehab services is considering how rehab needs to look at the whole family when caring for the needs of children. This includes identifying inequities and barriers to care.

**School Nursing Pilot Program: Preventive Care and Safe Return to School**

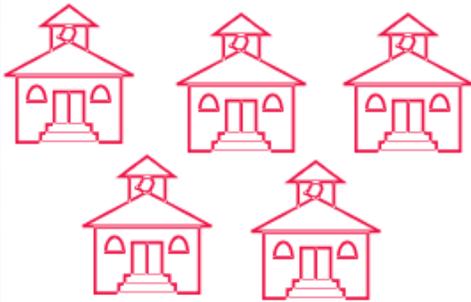
Recognizing the link between health and learning, Le Bonheur and the Urban Child Institute (UCI) in Memphis collaborated with Shelby County Schools (SCS) to implement a three year pilot school nursing program in five high-risk schools. The goal is simple – to improve access to convenient primary health care for vulnerable children. The hope of the program is that healthier children will learn better, evidenced by higher school attendance, improved reading, better test scores and more high school graduates. The pilot program brings nurses into five high-risk schools in the SCS. A full-time nurse is on site at each school with a dedicated social worker and nurse practitioner rotating through the five schools. With the onset of COVID-19, a dedicated school nurse has become even more vital because of their ability to assist in medical evaluations and provide measures to prevent the spread of COVID-19.

The Numbers:

# School Nursing Pilot Program

5

schools in the Shelby County Schools system were chosen for Le Bonheur's school nursing pilot program.



Initial results of the program were taken before the COVID-19 pandemic via a survey of teachers at the pilot schools.

88%

of educators responded to the survey evaluating the program.

95.7%

agree that the program has improved the health of their students.



90.6%

agree that having the nurse in the school allowed them to spend more time teaching.



95.3%

agree that the nurse had a positive impact on well-being of students with chronic conditions.



86.8%

agree that the nurses had a positive impact on improving academic performance for students.



85.7%

of students seen by the school nurse returned to class.



***Impact:***

- COVID-19 brought a halt to the school nurse program as SCS moved to a virtual-only school model for more than a year. This discontinuation of the program meant limited access to primary health care for these children.
- Virtual school means that children with chronic conditions no longer have access to consistent support from school nurses. Interruptions to education can occur for these children if they do not have access to a health care provider.
- The pandemic highlights the need for this program in schools so that teachers are able to focus on teaching and not on student health needs.

***Response:***

- The pilot program school nurses were able to assist with questions and education at the beginning of the COVID-19 pandemic.
- Le Bonheur and the University of Tennessee Back to School Task Force provided guidance and documents for these school nurses and educators upon resumption of in-person school. This includes school nurse screening algorithms and documents for school nurses to refer to for protection, screening and cleaning processes.
- As SCS returns to in-person school, school nurses can play a vital role in implementing health and safety measures, including daily screening and contact tracing. They can tend to ill individuals with appropriate PPE instead of teachers. School nurses can safely conduct aerosolizing procedures that risk the spread of COVID-19 with the proper PPE.

**Legal Ramifications: Housing and Supplemental Security Income**

The COVID-19 pandemic has unequally impacted vulnerable communities in Shelby County particularly minority and low income populations. The legal ramifications continue to grow and what impacts a family adversely impacts a child as well. Le Bonheur's medical-legal partnership, Memphis Children's Health Law Directive (Memphis CHiLD) works with families who enter Le Bonheur's doors who need assistance navigating the legal system to provide better support for their child from resolving housing issues to obtaining supplemental security income (SSI) for their child.

**The Numbers:**



**Impact:**

- Supplemental Security Income (SSI), disability for children, has been more difficult to obtain. Children who do not go to the doctors as often, as seen in the wake of the pandemic, do not have sufficient medical evidence to support a finding of disability.
- In order to win a case for SSI for a child with a behavioral diagnosis, social security administration heavily weights if a child is seen regularly by a doctor, receiving therapy services and have an updated individualized education program (IEP) at school. The pandemic has curtailed families' abilities to access these services. Memphis CHiLD attorneys fear a growing number of deserving children denied disability from lack of documented proof.
- Because of virtual school and closed day cares, lack of child care means many people, especially women with children and people of color, have found maintaining steady employment difficult. As a result, many have fallen behind on rent.

***Response:***

- Memphis CHiLD, a collaboration among the University of Memphis Cecil C. Humphreys School of Law, Memphis Area Legal Services (MALS), the University of Tennessee Health Science Center (UTHSC) and Le Bonheur, continue working to gather evidence needed for families to obtain SSI for children. The program assists families with navigating the legal system to the benefit of the child and family.