

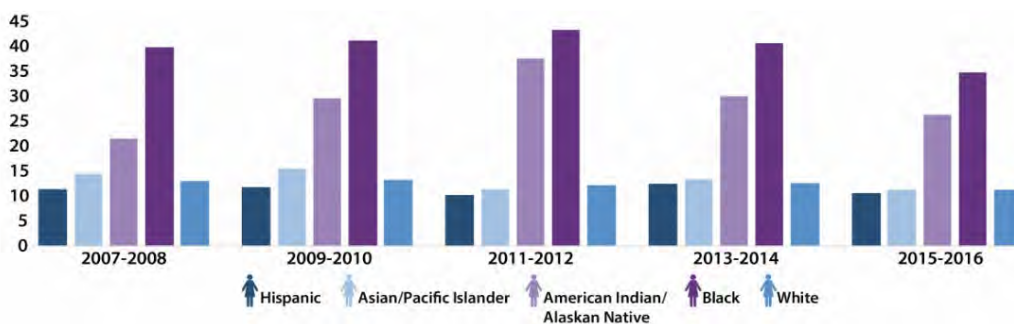


In Partnership with the United Health Foundation
2nd Quarterly Report (April 1, 2021- June 30, 2021)

Project Summary

The pandemic resulting from the novel coronavirus forced healthcare providers to rethink and quickly reinvent the delivery of care to patients, particularly in rural settings. Fear of COVID-19 and the lack of definitive and timely information caused many patients to be no-shows at clinic appointments, and, as a result, not receive the care they needed. This posed an especially critical challenge for the maternal fetal and newborn population in the 29-county area that East Carolina University (ECU) serves. ECU, the safety net provider for 1.4 million people in eastern North Carolina, is the only source for high-risk prenatal care in the region. COVID-19 exacerbated an already dire situation for the health of expectant and new mothers in our region. In our previous quarterly report, we summarized data related to healthcare disparities from the 37 North Carolina counties along or east of the I-95 corridor. We also summarized data regarding workforce shortage, access to health care, poverty, and other socioeconomic factors in the region that limit access to transportation, adequate nutrition and basic necessities in the maternal population.

Nationally, more than 700 women a year die of complications related to pregnancy in the U.S., and two-thirds of these deaths are preventable.¹ As of 2016, the U.S. pregnancy-related mortality ratio was 16.9 per 100,000 live births.² However, there are significant racial disparities within this calculated statistic, as the following figure shows:



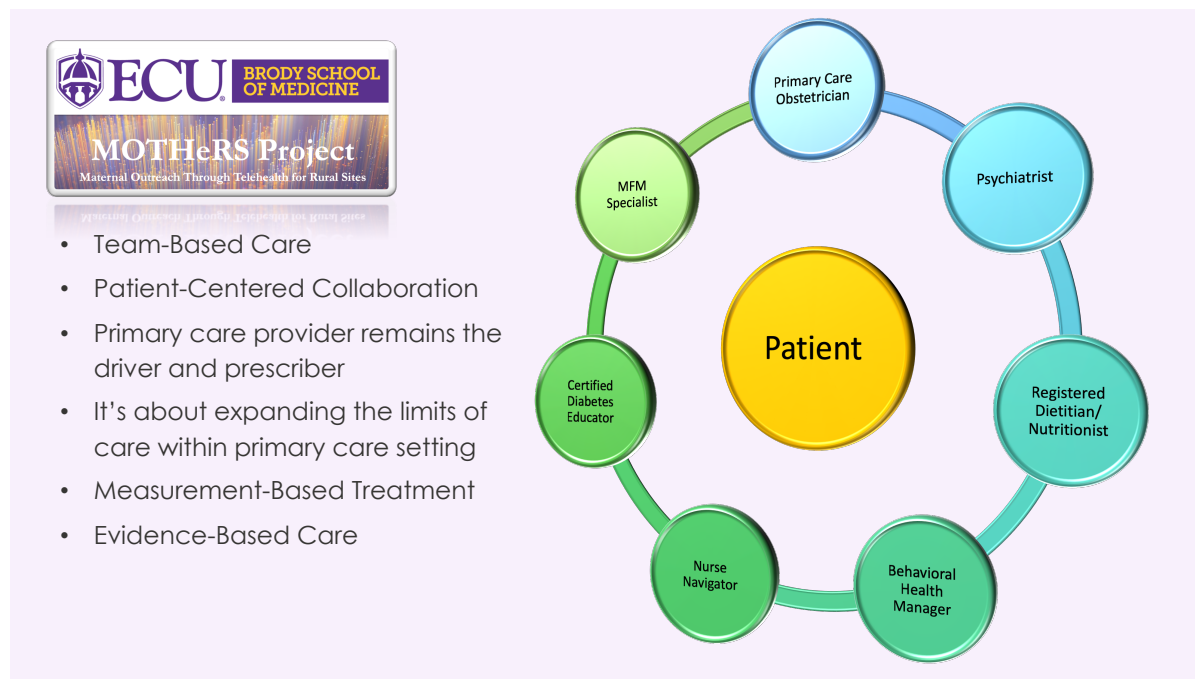
Trends in pregnancy-related mortality ratios among race from 2007-2016.³

This figure demonstrates that maternal mortality disproportionately affects black and American Indian/Alaska Native women in the U.S. Additionally, there are disparities between rural and urban populations. According to publicly available data from the U.S Centers for Disease Control and Prevention (CDC) and analyzed by *Scientific American*, rural areas had a pregnancy-related mortality ratio of 29.4 per 100,000 live births versus 18.2 in urban areas in 2015.⁴

MOTHeRS Project: Outreach through Telehealth

In July 2020, ECU proposed to expand NC-STeP—a statewide telepsychiatry program founded by ECU’s Dr. Sy Saeed—to bring multidisciplinary care to three community-based primary care obstetric clinics in Carteret, Duplin, and Chowan counties.⁵⁻⁷ The MOTHeRS (Maternal Outreach through Telehealth for Rural Sites) Project was funded through a generous investment from the United Health Foundation. Through this collaborative care model that encompasses patient, nurse navigator, diabetes educator, behavioral health manager, primary obstetrician, maternal fetal medicine (MFM) specialist, and psychiatrist, the MOTHeRS’ Project provides much-needed support and the insights of specialty physicians to these identified practices. The following components of the MOTHeRS Project address both the physical and mental well-being of these high-risk pregnant women.

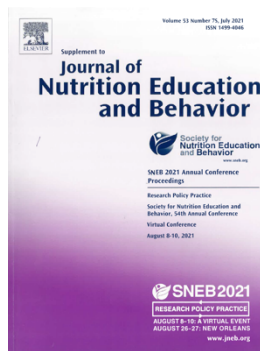
Key Components of the MOTHeRS Project Collaborative Care Model



Telehealth consultations bring experts to these communities, saving patients and families the time and inconvenience of travel. Such telehealth services also provide a valuable way to offer patients follow-up care after a procedure, eliminating the need for them to travel to the academic medical center in Greenville to see a specialist. High-risk pregnancies can also

exacerbate depression and anxiety, and hospitalization can further increase the stress of a high-risk pregnancy. Women hospitalized for high-risk pregnancies may therefore be at increased risk of depression and the subsequent adverse neonatal outcomes.

The association of food insecurity and diet quality with mental health, and with poor outcomes in high-risk pregnancies, has been established. The MOTHeRS Project screens all patients at its clinical sites for food insecurity. The project has developed a medically-tailored emergency food bag for high-risk pregnant women identified as food insecure in the clinical setting. Those who screen positive are provided this medically-tailored food bag, nutrition education, and links to existing community resources. This approach promotes effective nutrition education and healthy behavior. This approach recently was presented at the annual meeting of the Society for Nutrition Education and Behavior. The following abstract was published in the August issue of the Journal of Nutrition Education and Behavior:



P57 MOTHeRS' Project: Acceptability of a Medically Tailored Food Bag Treating Food Insecurity of High-Risk Pregnant Patients

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Objective: To develop a medically tailored emergency food bag and nutrition education handouts treating food insecurity (FIS) identified in clinical settings of rural, high- risk pregnant women.

Use of Theory: Grounded in the socio-ecological model Target Audience: High-risk pregnant women who screen positive for FIS during an appointment.

Program Description: The MOTHeRS' Project is a pilot to provide mental health and maternal-fetal services via telehealth to women with high-risk pregnancies in rural OB-GYN practices where FIS rates of 18-24% exceed the state average (15%). The funder requested FIS be addressed but the timeline precluded us from interacting with the target audience or reviewing clinic records. An extensive literature review identified 9 nutrients critical but commonly under consumed in pregnancy. Published food lists from USDA and NIH were used to select foods high in the target nutrients. An online local grocery store was used to select 31 foods within the budget. Three complementary handouts were developed (eg, healthy eating, recipes, food safety) in English and Spanish. The bag and educational materials were designed to complement WIC benefits, expecting women may also receive WIC. The food bag and handouts were evaluated by 18 practitioners and/or researchers with expertise with rural, under-served pregnant women, and/or FIS. Bags were provided to patients who screened positive for FIS via the Hunger Vital Sign screener validated for clinical settings.

Evaluation Methods: Process evaluation was via a semi- structured telephone interview with content validated for MOTHeRS'. Interviews were audio-recorded, transcribed verbatim and analyzed using deductive content analysis to identify themes. Transcripts were reviewed independently by the research team (n = 4) using a codebook and consensus was reached regarding themes.

Results: Preliminary themes suggest high satisfaction, acceptance and utilization of the food. Most participants reported limited access to other food resources and sharing food with other household members.

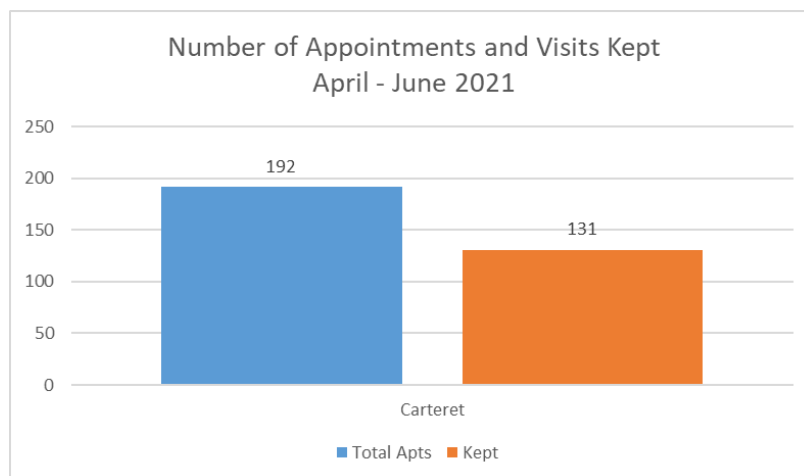
Conclusion: Our findings align with previous studies further suggesting medically tailored food resources provided in clinical settings are acceptable, and potentially associated with reduced social stigma. Contents of food bag and handouts will be shared.

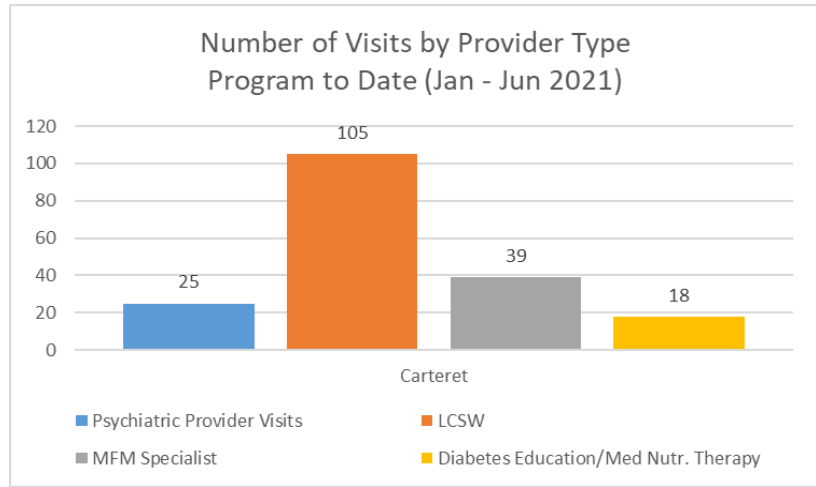
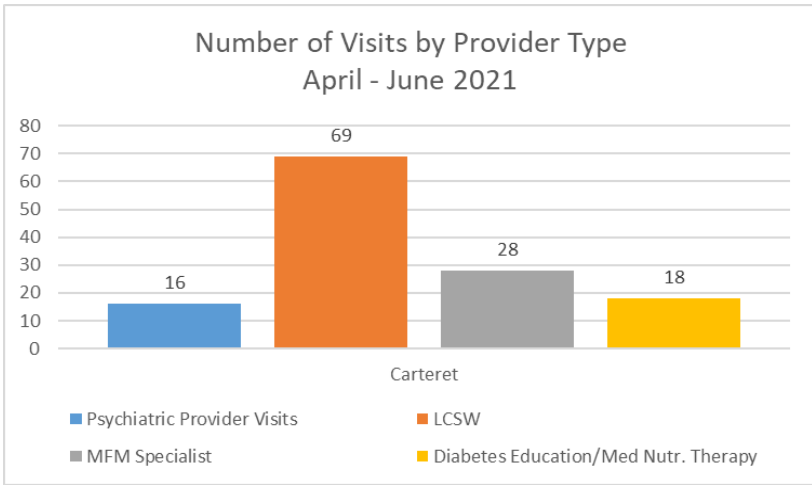
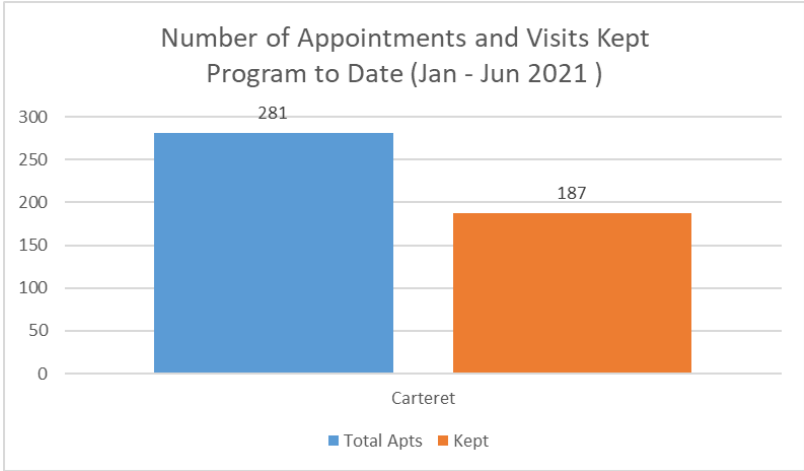
Funding: United Health Foundation.

Through our formalized partnerships at the clinical sites, patients in the practices are cared for by both an MFM specialist and their local physician through a combination of telehealth and face-to-face visits. This model helps manage patients in clinics closer to their homes and minimizes travel to the remote specialty clinics for high-risk patients – such as those with diabetes, chronic hypertension, opioid/substance use and/or psychiatric needs. Aside from enhancing access to services, this model helps to reduce geographic health disparities, enhances patient convenience, and improves patient adherence to treatment. By bringing specialists to the primary care sites, this model also reduces professional isolation, enhances recruiting and retention of health professionals in underserved areas, and improves coordination of care across the health care system.

Second Quarter MOTHeRS Project Data

This second quarterly report covers the time period from April 1 to June 30, 2021. These data pertain to our first clinical site, Carteret Ob-Gyn Associates, that has been operational since mid-January 2021. Since the compilation of this second quarter data, two additional sites in Chowan and Duplin counties went live in July 2021. With all three sites live, we anticipate the third quarterly report to show a significant increase in the number of patients served.



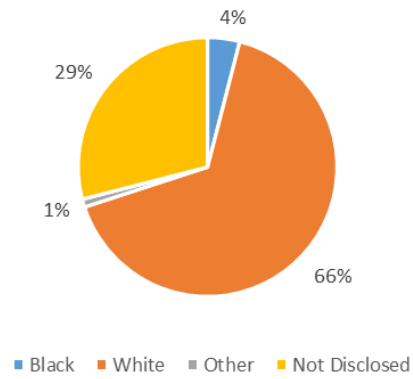


MOTHeRS Project RESULTS APRIL - JUNE 2021

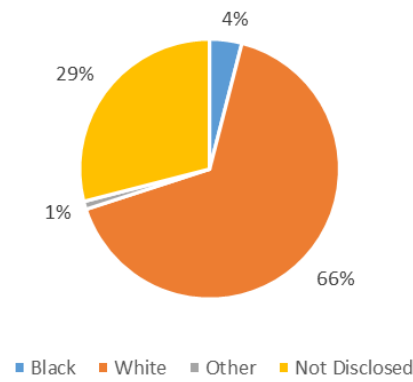
	April- June 2021	Program Total Jan- Jun 2021	
Impact on Patient Access			
Number of perinatal visits with MFM specialist	28	39	
Number of missed appointments for high-risk patients (MFM visits not kept)	1	7	
Number of patient visits with Certified Diabetes Educator or Registered Nutritionist	18	18	
Number of women served for mental health reasons	LCSW visits:	69	105
	Psychiatrist visits:	16	25
	total Mental Health visits:	85	130
Impact on health disparities as measured by percent of patients served from underserved and diverse backgrounds	% of visits by Race:		
	White	66%	66%
	Black	4%	4%
	American Indian/Alaskan Native		
	Asian		
	Native Hawaiian and Other Pacific Islander		
	Some Other Race	1%	1%
	Declined/Not Disclosed/Not Available	29%	29%
	% of visits by Ethnicity:		
	Hispanic	4%	4%
	Not Hispanic	66%	66%
	Unknown/Not Disclosed/Not Available	30%	30%
	% of visits by Insurance Type:		
	Medicaid	41%	41%
	Medicare	2%	2%
Commercial	27%	27%	
Tricare	6%	6%	
Self Pay	2%	2%	
Other	6%	6%	
Unknown/Not Available	16%	16%	
Food Security	Number of Food Bag Sent to Clinics	60	180
	Number of Patients Screened for Food Insecurity	Data Pending	Data Pending
	Number of Food Bags Distributed	Data Pending	Data Pending

Note: Demographic percent for Jan-Mar 2021 and Apr-Jun 2021 are based on a combined demographic dataset for the 2 quarters.

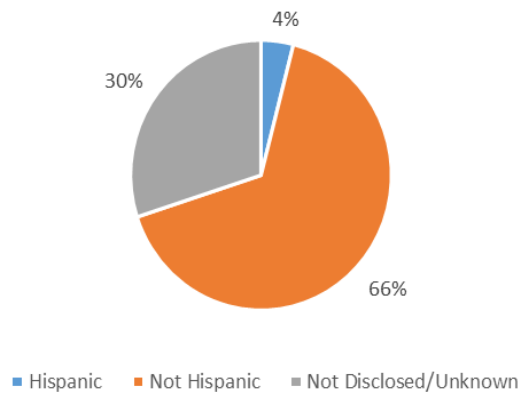
Percent of Visits by Race
April - June 2021



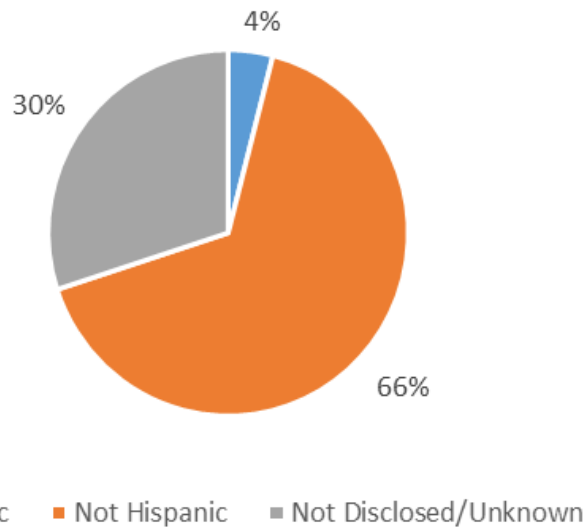
Percent of Visits by Race
Program to Date (Jan - Jun 2021)



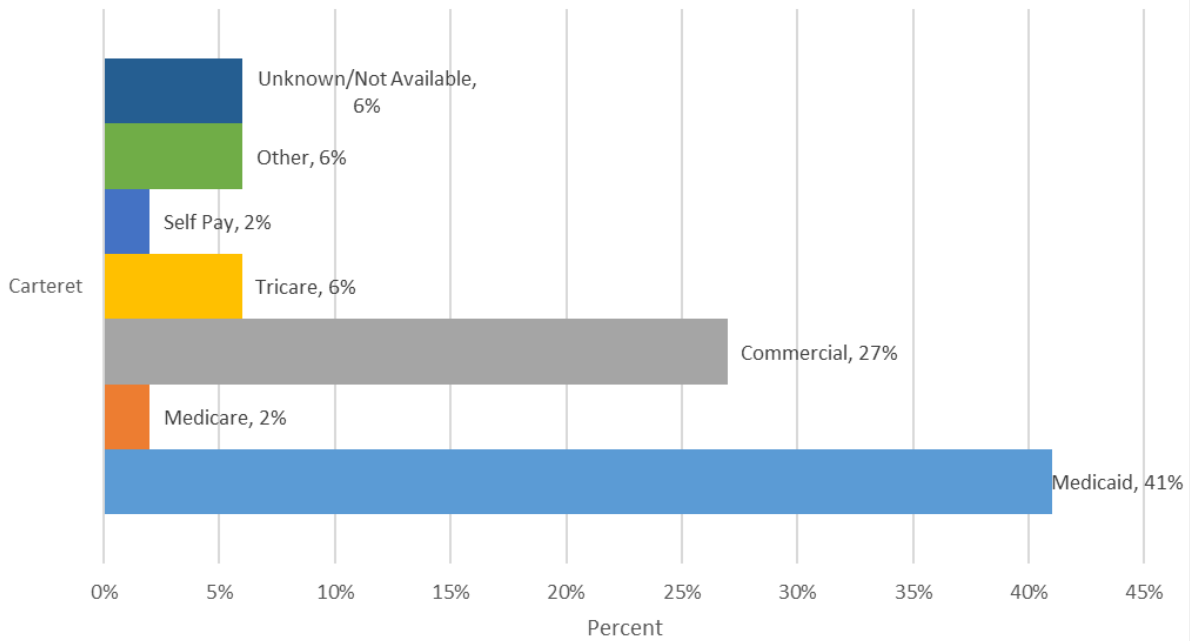
Percent of Visits by Ethnicity
Program to Date (Jan - Jun 2021)

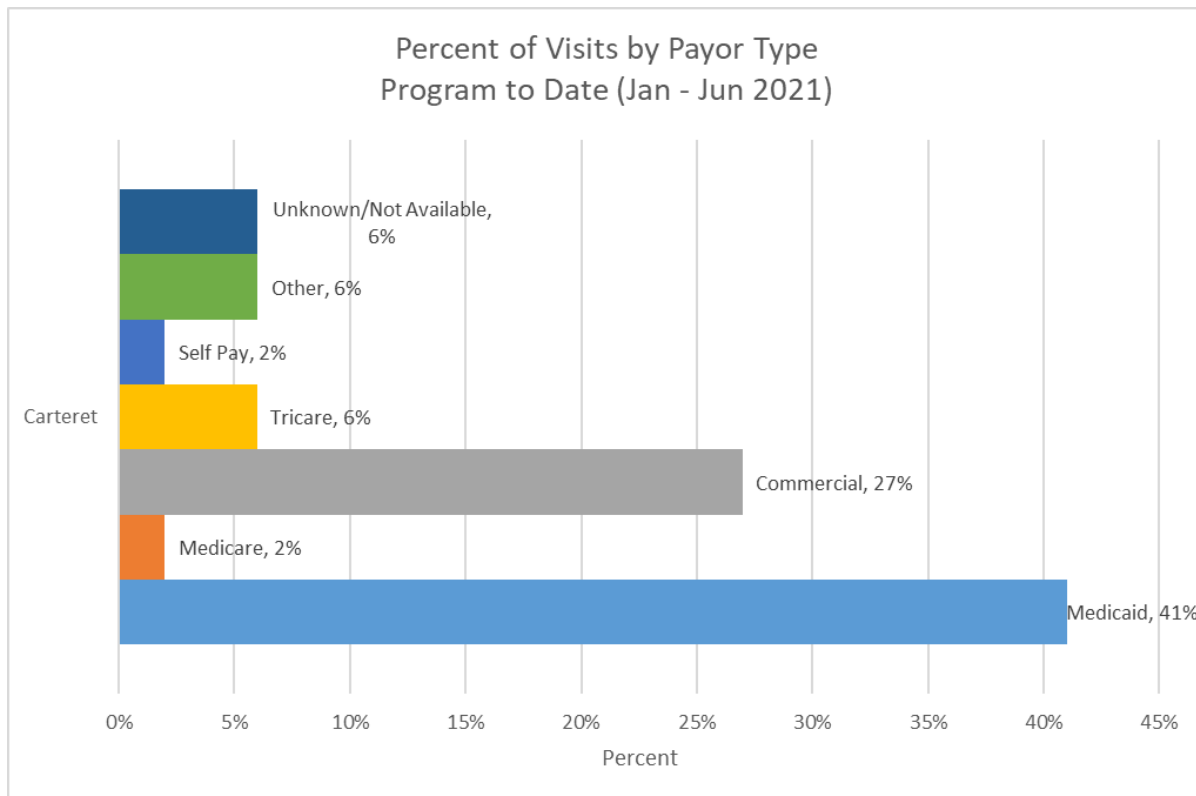


Percent of Visits by Ethnicity
April - June 2021



Percent of Visits by Payor Type
April - June 2021





The collaborative co-management model creates a patient-centered team approach to care delivery and results in both improved patient experiences and a positive impact on maternal fetal health. The model also has the flexibility of providing telehealth services directly to patients' homes from their tablets, computers, or smart phones, if clinically indicated. Additionally, ECU can facilitate shared patient information via electronic health records (EHRs). NC-STeP has developed a Web portal that connects participating hospital emergency departments, community-based providers, and remote psychiatric providers, allowing them to share secure electronic health information regarding patient encounters across different EHRs.^{8, 9}

The US has the highest maternal mortality rate out of all developed countries in the world.¹⁰ Evidence points toward significantly high maternal deaths of black and other minority women, especially those in rural areas. There are significant challenges facing rural women in accessing comprehensive, affordable, quality health, maternal health, and mental health care. Given the scale and scope of the issue, we believe that programs like the MOTHeRS Project are very much needed and timely. The project emphasizes the importance of strengthening care coordination and health care delivery, investing in human service programs, and addressing various workforce issues. Although there are numerous programs that have been developed to improve maternal health outcomes, barriers such as persistent poverty, transportation

challenges, lack of affordable quality health insurance, chronic health conditions, and workforce shortages have made it difficult to address a complex issue such as rural maternal health care. Through its ongoing work, the MOTHeRS Project expects not only to provide care to those who need it at its clinical sites, but also to generate new knowledge regarding how these barriers can be better addressed to ensure that every woman in rural America has a safe and healthy pregnancy, delivery, and post-natal outcome.

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REFERENCES

1. Pregnancy-Related Deaths. (2019, February 26). Retrieved from <https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pregnancy-relatedmortality.htm>.
2. Pregnancy Mortality Surveillance System. (2019, October 10). Retrieved from <https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm>.
3. Infographic: Racial/Ethnic Disparities in Pregnancy-Related Deaths -United States, 2007–2016. (2019, September 4). Retrieved from <https://www.cdc.gov/reproductivehealth/maternal-mortality/disparities-pregnancy-relateddeaths/infographic.html>.
4. Maron, DF. Maternal Health Care Is Disappearing in Rural America. Scientific American. (2017). Retrieved from: <https://www.scientificamerican.com/article/maternal-health-care-is-disappearing-in-rural-america/>.
5. East Carolina University. North Carolina Statewide Telepsychiatry Program (NC-STeP). Available at <https://www.ecu.edu/cs-dhs/ncstep/>. Accessed June 22, 2021.
6. Statewide Telepsychiatry Program. Retrieved from: <https://www.ncdhhs.gov/divisions/office-rural-health/office-rural-health-programs/statewide-telepsychiatry-program>. Accessed June 22, 2021.
7. Summary Report on SFY 2020 North Carolina Statewide Telepsychiatry Program (NC-STeP) Funds General Statute 143B-139.4B. Report to the Joint Legislative Oversight Committee on Health and Human Services and Fiscal Research Division by the North Carolina Department of Health and Human Services, October 30, 2020. Retrieved from <https://files.nc.gov/ncdhhs/Telepsychiatry-Report--Annual-NC-STeP-Report--2020--Final-.pdf>.
8. Saeed, SA. (2018). Successfully Navigating Multiple Electronic Health Records When Using Telepsychiatry: The NC-STeP Experience. *Psychiatr Serv.* 2018 Sep 1; 69 (9): 948-951. [Epub 2018 May 15].
9. Saeed SA (2018). Tower of Babel Problem in Telehealth: Addressing the Health Information Exchange Needs of the North Carolina Statewide Telepsychiatry Program (NC-STeP). *Psychiatric Q.* 2018 Jun;89 (2):489-495.
10. Maternal mortality ratio (modeled estimate, per 100,000 live births) -Finland, Venezuela, RB. (n.d.). Retrieved from https://data.worldbank.org/indicator/SH.STA.MMRT?locations=FI-VE&year_high_desc=false