

FCC FACT SHEET*

Broadband Connectivity and Maternal Health; Updating the Mapping Platform

Notice of Inquiry – GN Docket No. 23-309

Background: The United States faces a maternal health crisis. We are the only developed country with increasing maternal mortality and severe maternal morbidity rates. Furthermore, access to maternal health care remains a major challenge, especially for women in rural areas and from lower income households. More than 2.2 million women of childbearing age live in “maternity care deserts”—i.e., areas where there are no hospitals or birth centers offering obstetric care and no obstetric providers—and an additional 4.7 million women live in counties with limited access to maternity care. Studies, however, show that most pregnancy-related deaths are preventable, and that access to broadband-enabled health technologies, solutions, and services, such as telehealth, can be useful in preventing maternal deaths and improving maternal health.

In order to identify areas of the country where telehealth resources are critically needed—i.e., areas where maternal mortality rates and/or severe maternal morbidity rates are especially high and where broadband access and/or adoption are lower—the Commission, in June 2023, updated its [Mapping Broadband Health in America platform](#) to reflect certain maternal health data required under the Data Mapping to Save Moms’ Lives Act. The Commission, however, recognizes that more could be done to further improve the platform and maximize—to the extent feasible and practicable—its use by the variety of stakeholders, such as policymakers, health care providers, maternal care experts, broadband services providers, researchers, innovators, and consumer groups. Accordingly, the Commission proposes this Notice of Inquiry (NOI) to invite public comment on ways the Commission can further improve and enhance the mapping platform.

What the Notice of Inquiry Would Do:

- Seek comment on issues that will help guide the next phase of the Commission’s effort to improve and further enhance the mapping platform and complete associated data analytics work concerning the relationship between broadband and maternal health.
 - Seek comment on future plans to incorporate maternal health variables, data, and functionalities, including suggestions for any additional data, variables, and functionalities that the Commission should consider including.
 - Seek comment on how to address limitations with certain maternal health outcomes data while still protecting privacy and confidentiality.
 - Seek comment on ways the Commission can improve the user experience so that the platform is sufficiently responsive to the needs and preferences of its users.
- Seek information and comment on the variety and current uses of broadband-enabled health technologies, solutions, and services that are available and being used in the provision of maternal health care and the range of barriers that prevent access and utilization by childbearing women or women in postpartum care.
- Seek comment on potential actions or activities the Commission could pursue, within its authority, to help improve maternal health outcomes; to reduce maternal mortality and severe maternal morbidity rates; and to promote maternal health equity.

* This document is being released as part of an exempt proceeding under the Commission’s *ex parte* rules. See 47 C.F.R. § 1.1204(b)(1). Accordingly, *ex parte* presentations to or from Commission decision-making personnel are permissible and need not be disclosed with respect to this proceeding. Participants in this proceeding, however, may choose to submit written presentations or summaries for the record, consistent with the FCC’s filing requirements. All filings concerning this Notice of Inquiry must be filed in GN Docket No. 23-309.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
Broadband Connectivity and Maternal Health—) GN Docket No. 23-309
Implementation of the Data Mapping to Save)
Moms’ Lives Act)

NOTICE OF INQUIRY**

Adopted: []

Released: []

Comment Date: [30 days after release date]

Reply Comment Date: [60 days after release date]

By the Commission:

I. INTRODUCTION

1. Every year, hundreds of women in the United States die from complications related to pregnancy and childbirth.1 Remarkably, while maternal mortality has been declining worldwide over the past two decades, the United States is the only industrialized nation that continues to have a significant increase in maternal mortality rates while also spending more per person on health care than other industrialized nations.2 And data from the U.S. Centers for Disease Control and Prevention (CDC) show

** This document has been circulated for tentative consideration by the Commission at its October 19, 2023, open meeting. The issues referenced in this document and the Commission’s ultimate resolution of those issues remain under consideration and subject to change. This document does not constitute any official action by the Commission. However, the Chairwoman has determined that, in the interest of promoting the public’s ability to understand the nature and scope of issues under consideration, the public interest would be served by making this document publicly available. This document is being released as part of an exempt proceeding under the Commission’s ex parte rules. See 47 C.F.R. § 1.1204(b)(1). Accordingly, ex parte presentations to or from Commission decision-making personnel are permissible and need not be disclosed with respect to this proceeding. Participants in this proceeding, however, may choose to submit written presentations or summaries for the record, consistent with the FCC’s filing requirements. All filings concerning this Notice of Inquiry must be filed in GN Docket No. 23-309.

1 See U.S. Government Accountability Office, Maternal Mortality: Trends in Pregnancy-Related Deaths and Federal Efforts to Reduce Them (March 2020), https://www.gao.gov/assets/gao-20-248.pdf (reporting that hundreds of women die every year due to pregnancy-related complications); Donna L. Hoyert, Maternal Mortality Rates in the United States, 2021, NCHS Health E-Stats (March 2023), https://www.cdc.gov/nchs/data/hestat/maternal-mortality/2021/maternal-mortality-rates-2021.htm. In 2021, 1205 women died of maternal causes in the U.S. compared with 861 in 2020 and 754 in 2019. The maternal mortality rate for 2021 was 32.9 deaths per 100,000 live births, compared with a rate of 23.8 in 2020 and 20.1 in 2019. This data is based on the World Health Organization’s definition of “maternal death” as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.” Id.

2 See Munira Z. Gunja et al., U.S. Health Care from a Global Perspective, 2022: Accelerating Spending, Worsening Outcomes, The Commonwealth Fund Issue Briefs (Jan. 31, 2023), https://www.commonwealthfund.org/publications/issue-briefs/2023/jan/us-health-care-global-perspective-2022 (“Health care spending, both per person and as a share of GDP, continues to be far higher in the United States than

that maternal deaths increased during the COVID-19 pandemic.³ Studies, however, show that most pregnancy-related deaths are preventable and that access to broadband-enabled health technologies, solutions, and services, such as telehealth,⁴ can be useful in preventing maternal deaths and improving maternal health.⁵ Indeed, the Federal Communications Commission (FCC or Commission) has previously cited to numerous resources indicating that telehealth, remote patient monitoring, and other connected care devices and services have the potential to improve health outcomes.⁶

in other high-income countries.”); Eugene Declercq and Laurie C. Zephyrin, *Maternal Mortality in the United States: A Primer*, at 1-2, The Commonwealth Fund Issue Briefs (Dec. 16, 2020), available at <https://www.commonwealthfund.org/publications/issue-brief-report/2020/dec/maternal-mortality-united-states-primer>; Munira Z. Gunja et al., *Health and Health Care for Women of Reproductive Age: How the United States Compares with Other High-Income Countries*, The Commonwealth Fund Issue Briefs (Apr. 5, 2022), <https://www.commonwealthfund.org/publications/issue-briefs/2022/apr/health-and-health-care-women-reproductive-age> (“Among women of reproductive age in high-income countries, rates of death from avoidable causes, including pregnancy-related complications, are highest in the United States.”); Munira Z. Gunja et al., *The U.S. Maternal Mortality Crisis Continues to Worsen: An International Comparison*, The Commonwealth Fund Blog (Dec. 1, 2022), <https://www.commonwealthfund.org/blog/2022/us-maternal-mortality-crisis-continues-worsen-international-comparison> (“New international data show the maternal mortality rate in the U.S. continues to exceed the rate in other high-income countries.”). See also The World Bank, *Current Health Expenditures Per Capita (Current US\$)*, https://data.worldbank.org/indicator/SH.XPD.CHEX.PC.CD?most_recent_value_desc=true (last visited Sept. 25, 2023).

³ See U.S. Government Accountability Office, *Maternal Health: Outcomes Worsened and Disparities Persisted During the Pandemic* (Oct. 2022), <https://www.gao.gov/assets/gao-23-105871.pdf> (citing CDC data) (“GAO’s analysis of Centers for Disease Control and Prevention (CDC) data shows that maternal deaths increased during the COVID-19 pandemic. Further, the data show that COVID-19 was a contributing factor in one quarter of all maternal deaths in 2020 and 2021 combined.”).

⁴ Although there is no uniform definition of telehealth, for purposes of this Notice, we define “telehealth” broadly as health-related technologies, solutions, and services that utilize or rely on broadband Internet in the provision or receipt of health (such as non-clinical, public health, health education or other health support services, etc.) or health care (e.g., diagnostic, therapeutic or management) services. As examples, telehealth includes telemedicine; the exchange of electronic health records; the collection of data through Health Information Exchanges and other entities; the exchange of large image files (e.g., X-ray, MRIs, and CAT scans); remote patient monitoring; and the use of real-time and delayed video conferencing for a wide range of telemedicine, consultation, training, and other health care purposes. See *Rural Healthcare Support Mechanism*, Report and Order, WC Docket No. 02-60, 27 FCC Rcd 16678, 16680 n.1 (2012).

⁵ See CDC, Newsroom Releases, *Four in 5 Pregnancy-Related Deaths in the U.S. are Preventable* (Sept. 19, 2022), <https://www.cdc.gov/media/releases/2022/p0919-pregnancy-related-deaths.html> (last visited Sept. 12, 2023) (“More than 80% of pregnancy-related deaths were preventable, according to 2017-2019 data from Maternal Mortality Review Committees (MMRCs), which are representatives of diverse clinical and non-clinical backgrounds who review the circumstances around pregnancy-related deaths to identify recommendations to prevent future deaths.”).

⁶ See, e.g., *Promoting Telehealth to Low-Income Consumers; COVID-19 Telehealth Program*, WC Docket No. 18-213, 20-89, Report, DA 23-234 (Mar. 21, 2023), <https://www.fcc.gov/document/wcb-releases-interim-report-connected-care-and-covid-19-telehealth> (The Report analyzes how the Connected Care Pilot Program and the COVID-19 Telehealth Program impacted health care providers' use of telehealth services. According to the Report, “advances in technology and broadband connectivity are transforming health care from a service delivered solely through traditional brick and mortar health care facilities to include connected care options delivered via a broadband Internet access connection directly to the patient's home or mobile location”); *Promoting Telehealth for Low-Income Consumers*, WC Docket No. 18-213, Notice of Inquiry, 33 FCC Rcd 7825, 7825, 7827-29, para. 1, paras. 5-7 & n.15 (2018) (describing and citing various studies showing improved health outcomes and survivability for those patients using connected care devices, such as remote patient monitoring); *FCC Seeks Comment and Data on Actions to Accelerate Adoption and Accessibility of Broadband-Enabled Health Care Solutions and Advanced Technologies*, GN Docket No. 16-46, Public Notice, 32 FCC Rcd 3660 (2017) (providing numerous examples of broadband-enabled technologies and services used in health care and how critical they are in improving health

2. In order to identify areas of the country where telehealth resources are critically needed—i.e., areas where maternal mortality rates and/or severe maternal morbidity rates are especially high and where broadband access and/or adoption are lower—the Commission, in June 2023, updated its *Mapping Broadband Health in America* platform⁷ to reflect certain maternal health data.⁸ The Commission was directed to make this update pursuant to the Data Mapping to Save Moms’ Lives Act, which became effective on December 20, 2022.⁹ Today, the mapping platform can be used to generate customized maps and be able to view the intersection or relationship of broadband connectivity, maternal health outcomes, and selected risk factors in a number of ways, enabling more efficient, data-driven decisions.

3. The Commission, however, recognizes that more could be done to further improve the platform and maximize—to the extent feasible and practicable—its use by stakeholders, such as policymakers, health care providers, maternal care experts, broadband services providers, researchers, innovators, and consumer groups. Accordingly, the Commission is issuing this Notice of Inquiry (NOI) to invite public comment on ways the Commission can further improve and enhance the mapping platform. We want to ensure that our future efforts to further update and refine the mapping platform reflect input from interested parties, particularly from current and future users of the platform who are on the front lines of improving maternal health across the nation, including in rural and underserved areas.

II. BACKGROUND

4. The United States faces a maternal health crisis.¹⁰ We are the only developed country with increasing maternal mortality and severe maternal morbidity rates.¹¹ Furthermore, Black and American Indian/Alaska Native women are two to three times more susceptible to death during

outcomes) (*Broadband Health PN*). We note that prior and ongoing work by the FCC’s Connect2Health Task Force have shown that populations living in counties that have higher broadband access tend to have better health; and that Internet adoption appears to have an even stronger correlation to health outcomes, even after controlling statistically for other potentially confounding factors, such as education, income, and rurality. See FCC, Connect2HealthFCC, Studies and Data Analytics on Broadband and Health, <https://www.fcc.gov/health/sdoh/studies-and-data-analytics> (last visited Sept. 12, 2023). See also *infra* notes 22-24.

⁷ See FCC, Mapping Broadband Health in America, <https://www.fcc.gov/health/maps> (last visited Sept. 12, 2023). The 2023 release reflects an important expansion and update of the platform to include maternal health data and opioid mortality rates. Additionally, the platform now provides more advanced visualizations and analytic functionalities. A detailed description of the updates made to the platform is provided *infra*, in paragraphs 24-29.

⁸ See FCC Explores Role of Broadband Connectivity in Maternal Health Outcomes, News Release (June 20, 2023) (announcing release of updated *Mapping Broadband Health in America* platform that incorporates certain maternal health data required under the Data Mapping to Save Moms’ Lives Act, Pub. L No. 117-247), <https://www.fcc.gov/document/fcc-explores-broadband-connectivity-role-maternal-health-outcomes>.

⁹ See Data Mapping to Save Moms’ Lives Act, Pub. L No. 117-247, 136 Stat. 2347 (Data Mapping Act).

¹⁰ The White House, *White House Blueprint for Addressing the Maternal Health Crisis* (June 2022), at 3, <https://www.whitehouse.gov/wp-content/uploads/2022/06/Maternal-Health-Blueprint.pdf>. Accord Annalisa Merelli, *Why Maternal Mortality is so Hard to Measure—and Why the Problem May Get Worse*, STAT Reports (July 11, 2023), <https://www.statnews.com/2023/07/11/maternal-mortality-hard-to-measure-and-that-may-get-worse/> (“Every new data point or report appears to confirm it: The U.S. is in the midst of a mounting maternal mortality crisis. . . . A recent JAMA study lends fresh insight into the magnitude of the problem, showing that maternal mortality rates more than doubled in the U.S. during the two decades from 1999 to 2019.”); see Kathy Katella, *Maternal Mortality Is on the Rise: 8 Things to Know*, Yale Medicine (May 22, 2023), <https://www.yalemedicine.org/news/maternal-mortality-on-the-rise#:~:text=While%20many%20women%2035%20or.was%20138.5%20per%20100%2C000%20births>. We note that “maternal health” refers to the health of a woman during pregnancy, childbirth, and the postnatal periods. World Health Organization, Maternal Health, https://www.who.int/health-topics/maternal-health#tab=tab_1 (last visited Sept. 12, 2023).

¹¹ See Hoyert, *supra* note 1. See also *supra* note 2.

pregnancy.¹² In addition to race, other factors like socio-economic status and geography create barriers for pregnant patients across the country. Pregnant women living in rural areas, where access to maternal care is not as prevalent as in urban areas, are 60% more likely to die than women living in non-rural areas.¹³ For many women of reproductive age, issues around transportation, childcare, availability of employment leave, and access to continuity of care present additional critical challenges, which disproportionately impact underserved and low-income populations.¹⁴

5. In addition to increasing maternal deaths and significant and widening disparities in maternal health outcomes, the United States is facing an increasing prevalence of chronic diseases, worsening mental health, and substance use disorders among reproductive age and pregnant women—all of which are associated with poor maternal health.¹⁵ For example, the number of women with opioid-related diagnoses at delivery increased by 131% between 2010 and 2017.¹⁶ Women have also started having children later in life, with the mean age of mothers at first birth reaching a record high of 27.1 years.¹⁷ These pregnant women may also have chronic diseases and other health issues that put them at greater risk of poor maternal health outcomes. Significantly, access to maternal health care specialists remains a major challenge, especially for women in rural areas and from lower income households. This circumstance is predicted to only worsen, given the continued closure trends affecting rural hospitals across the nation.¹⁸ According to a study by the March of Dimes, more than 2.2 million women of childbearing age live in “maternity care deserts”—i.e., areas where there are no hospitals or birth centers

¹² See Latoya Hill, Samantha Artiga and Usha Ranji, *Racial Disparities in Maternal and Infant Health: Current Status and Efforts to Address Them*, KFF (Nov. 1, 2022), <https://www.kff.org/racial-equity-and-health-policy/issue-brief/racial-disparities-in-maternal-and-infant-health-current-status-and-efforts-to-address-them/> (“Black and American Indian and Alaska Native (AIAN) women have higher rates of pregnancy-related death compared to White women. Pregnancy-related mortality rates among Black and AIAN women are over three and two times higher, respectively, compared to the rate for White women (41.4 and 26.2 vs. 13.7 per 100,000).”). See also Hoyert, *supra* note 1; Elizabeth A. Howell, *Reducing Disparities in Severe Maternal Morbidity and Mortality*, *Clinical Obstetrics and Gynecology* (June 2018), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5915910/pdf/nihms927630.pdf>.

¹³ See *White House Blueprint for Addressing the Maternal Health Crisis*, *supra* note 10, at 1. See also Donna L. Hoyert, *Maternal Mortality Rates in the United States, 2020*, Health E-Stats (Feb. 2022), <https://www.cdc.gov/nchs/data/hestat/maternal-mortality/2020/E-stat-Maternal-Mortality-Rates-2022.pdf>; Katy B. Kozhimannil et al., *Rural-Urban Differences In Severe Maternal Morbidity And Mortality In The US, 2007–15*, *Health Affairs* (2019), <https://www.healthaffairs.org/doi/10.1377/hlthaff.2019.00805>.

¹⁴ See S. Rep. 117-65, at 2 (2022) (Comm. Rep.).

¹⁵ See Munira Z. Gunja et al., *Health and Health Care for Women of Reproductive Age*, The Commonwealth Fund Issue Briefs (Apr. 5, 2022), <https://www.commonwealthfund.org/publications/issue-briefs/2022/apr/health-and-health-care-women-reproductive-age>.

¹⁶ See CDC, *CDC Articles and Key Findings About Opioid Use During Pregnancy*, <https://www.cdc.gov/pregnancy/opioids/articles.html> (last visited Sept. 12, 2023).

¹⁷ See Michelle J.K. Osterman et al., *Births: Final Data for 2020*, CDC, National Vital Statistics Report, at 4 (Feb. 7, 2022), available at <https://www.cdc.gov/nchs/data/nvsr/nvsr70/nvsr70-17.pdf> (“In 2020, the mean age of mothers at first birth was 27.1 years, an increase from 27.0 in 2019, and another record high for the nation.”). See Katella, *supra* note 10 (“[O]lder women are more likely to have health conditions when they get pregnant,” and “in women over 35, there is an increased risk of health issues, such as gestational diabetes or preeclampsia, and complications, such as having a Cesarean section.” (internal citations omitted)).

¹⁸ See U.S. Government Accountability Office, *Maternal Health: Availability of Hospital-Based Obstetric Care in Rural Areas* (Oct. 19, 2022), <https://www.gao.gov/products/gao-23-105515> (“The number of hospitals providing obstetric services in rural areas has declined since 2014. Over half of rural counties didn't have a hospital that provided these services, as of 2018.”); Dennis Thompson, *Hundreds of Hospitals Could Close Across Rural America*, U.S. News and World Report (Jan. 16, 2023), <https://www.usnews.com/news/health-news/articles/2023-01-16/hundreds-of-hospitals-could-close-across-rural-america> (reporting that more than 600 rural hospitals—nearly 30% of rural hospitals nationwide—are at risk of closing in the near future).

offering obstetric care and no obstetric providers—and an additional 4.7 million women live in counties with limited access to maternity care.¹⁹

6. Furthermore, maternal deaths do not occur only during delivery. Recent data show that, among pregnancy-related deaths with information on timing, about 22% of deaths occurred during pregnancy, 25% occurred on the day of delivery or within a week after, and 53% occurred between seven days to one year after pregnancy.²⁰ As these data reveal, the challenges and risks associated with pregnancy do not end with delivery, but rather extend well into the postpartum period. According to maternal health experts, this is particularly concerning for patients who are quickly discharged after giving birth and then sent back to their regular health care providers without access to ongoing care, such as mental health care and postpartum support groups (e.g., lactation support or new mother support).²¹

7. While these statistics are concerning, there may be opportunities to leverage broadband connectivity to help bridge some of the gaps. Newly released data show that over 80% of maternal deaths could be prevented, and recent research shows that virtual care, like telehealth, can help.²² Experts

¹⁹ See March of Dimes, *Nowhere to Go: Maternity Care Deserts Across the U.S.*, 2022 Report, available at https://www.marchofdimes.org/sites/default/files/2022-10/2022_Maternity_Care_Report.pdf (March of Dimes 2022 Report). Nearly 2.2 million women live in maternity care deserts, according to March of Dimes data, and it has been getting worse over the years. Overall, 36% of U.S. counties are considered a maternity care desert, meaning there are no obstetric hospitals or birth centers and zero obstetric providers. That amounts to nearly 2.2 million women living in maternity care deserts and 146,000 babies born in maternity care deserts each year. Widening the net, the 2022 Report found that about 7 million women live in counties with limited or no maternity care access. Maternity care deserts disproportionately affect populations of color, the report added. One in four Native American babies are born in counties with limited or no maternity care access, while one in six Black babies experience the same. *Id.*

²⁰ See American Hospital Association, *CDC: Over 80% of Pregnancy-Related Deaths are Preventable* (Sept. 19, 2022), <https://www.aha.org/news/headline/2022-09-19-cdc-over-80-pregnancy-related-deaths-are-preventable>. The leading causes of pregnancy-related death include: mental health conditions (including deaths to suicide and overdose/poisoning related to substance use disorders) (23%); excessive bleeding (hemorrhage) (14%); cardiac and coronary conditions (13%); infection (9%); thrombotic embolism (a type of blood clot) (9%); cardiomyopathy (a disease of the heart muscle) (9%); and hypertensive disorders of pregnancy (7%). See CDC, *Four in 5 Pregnancy-Related Deaths in the U.S. are Preventable*, *supra* note 5.

²¹ See, e.g., Diorella M. Lopez-Gonzalez and Anil K. Koppurapu, *Postpartum Care of the New Mother*, National Library of Medicine (Dec. 11, 2022), <https://www.ncbi.nlm.nih.gov/books/NBK565875/> (“The weeks following birth lay the foundation of long-term health and well-being for both the woman and her infant. Therefore, it is critical to establish a reliable postpartum (afterbirth) period that should be tailored into on-going, continuous, comprehensive care. Most maternal and infant deaths occur in the first month after birth. Hence effective postpartum care is mandatory to improve both short-term and long-term health consequences of mother and newborn.”).

²² See CDC, *Four in 5 Pregnancy-Related Deaths in the U.S. are Preventable*, *supra* note 5. See also Susanna Trost et al., *Pregnancy-Related Deaths: Data from Maternal Mortality Review Committees in 36 US States, 2017–2019*, CDC, National Center for Chronic Disease Prevention and Health Promotion, Division of Reproductive Health (2022), <https://www.cdc.gov/reproductivehealth/maternal-mortality/docs/pdf/Pregnancy-Related-Deaths-Data-MMRCs-2017-2019-H.pdf>. See also Mark Melchionna, *Telehealth Bolsters Maternal Care Outcomes, Patient Satisfaction*, mHealth Intelligence, Telehealth News (July 29, 2022), <https://mhealthintelligence.com/news/telehealth-bolsters-maternal-care-outcomes-patient-satisfaction> (“New research shows that implementing telehealth, either in place of or as a supplement to in-person care, led to good clinical outcomes and high patient satisfaction in maternal care.”); Rachel Parsons and Michelle Althuis, *Promising Evidence for Telehealth Strategies for the Delivery of Maternal Health Care*, Patient-Centered Outcomes Research Institute (July 27, 2022), <https://www.pcori.org/blog/promising-evidence-telehealth-strategies-delivery-maternal-health-care>; Nicole Rideout, *Telehealth Could Improve Access to Health Care for Pregnant Mothers, Their Infants*, Ohio State University News (Aug. 4, 2022), <https://news.ohsu.edu/2022/08/04/telehealth-could-improve-access-to-health-care-for-pregnant-mothers-their-infants> (“An OHSU study finds that telehealth could be a strategy to expand and improve care, especially among underserved populations.”).

believe that advancements in technology and telehealth have the potential to transform traditional maternity care, improve mortality and morbidity rates, and address disparity issues.²³ As an example, “[i]n an effort to prevent maternal deaths, the CDC [recently] recommend[ed] providing telehealth technologies to health facilities lacking on-site obstetric services.”²⁴ The success of these solutions, however, relies on broadband connectivity—i.e., access to broadband to enable virtual care and other digital solutions—and broadband service providers offering Internet service at adequate speed and at an affordable price, especially in areas of the country where women of reproductive age who are at risk of poor maternal health reside. In addition, these solutions must continue to be available for women of reproductive age during all phases of pregnancy, including the postpartum period, to facilitate the identification of conditions that potentially could increase the risk for poor outcomes and to enable timely prevention or treatment. Unfortunately, there are still far too many areas of the country—and, in particular, many rural areas—that still lack broadband or where the cost of broadband service may be a barrier, thus preventing the widespread use of telehealth by both patients and healthcare providers.²⁵

8. Congress, in passing the Data Mapping to Save Moms’ Lives Act (the Act) last year, determined that “[b]roadband mapping could lead to better maternal health outcomes.”²⁶ In this regard, Congress found that it was important to identify areas of the country where maternal mortality and severe maternal morbidity rates are especially high and where critical telehealth resources are most needed.²⁷ They specifically identified the FCC’s *Mapping Broadband Health in America* platform—a mapping platform originally conceived and created by the agency’s Connect2Health Task Force (C2H Task Force or Task Force)²⁸—as a tool that can be used to incorporate maternal health data and, thereby, show the

²³ See ViTelNet, *Maternal Health in the U.S. – A Mounting Crisis: Augmenting Traditional Maternity Care with Virtual Care* (2022), available at https://www.vitelnet.com/wp-content/uploads/2022/06/ViTelNet_MaternalHealthFinal2.pdf. “Studies show that reduced-visit prenatal care models that are enhanced with remote monitoring can result in higher patient satisfaction and lower prenatal stress, while reducing the number of appointments with clinicians and maintaining care standards for pregnant women. In one study of three hundred pregnant women at less than 13 weeks of gestation, in an outpatient obstetric academic center in the Midwest United States, patients experienced a higher satisfaction level (93.9% for virtual care vs. 78.9% for the patients who used in-person care). Pregnancy-related stress was also reported to be lower at 36 weeks of gestation (0.32 for virtual patients vs. 0.41 for in-person patients). There was no statistical difference in perceived quality of care between the two groups, and maternal and fetal outcomes were similar between the groups.” *Id.* at 8 (internal citations omitted). See also *supra* note 22.

²⁴ S. Rep. 117-65, at 2. According to a Senate Committee Report accompanying the Data Mapping to Save Moms’ Lives Act, there are real-world examples supporting the CDC’s recommendations. “For example, telehealth is being successfully utilized to treat [severe maternal morbidity] in rural areas of America, including in Minnesota and South Dakota. Indeed, the National Institutes of Health reports that telehealth resource have become crucial to obstetric care during the COVID-19 pandemic.” *Id.*

²⁵ See *id.* at 2-3 (“The CDC also has documented various structural barriers to the adoption of telehealth to combat maternal health issues, pointing in particular both to broadband availability issues, as well as the cost of service and equipment. In addition, while some low-income Americans may have access to broadband, the cost of broadband service may pose a barrier.”) (internal citations omitted).

²⁶ See *id.* at 3.

²⁷ See *id.* See also H.R. Rep. 117-286, at 2 (Comm. Rep. 2022) (The maps may be used “to help direct resources to areas with ‘overlapping broadband and health needs.’”) (internal citations omitted).

²⁸ The FCC’s Connect2Health Task Force is a senior-level, multi-disciplinary internal team, housed in the Office of General Counsel, that was created in 2014 to help the agency move the needle on broadband and advanced health care technologies. Recognizing that technology innovations in clinical practice and care delivery are poised to fundamentally change the face of health care, the Task Force is charged with exploring the intersection of and relationship between broadband, advanced technology, and health. On behalf of the agency, the Task Force is focused on further charting the broadband future of health and care through its various projects and initiatives. The Task Force also serves to advise and provide recommendations to the Commission on matters concerning broadband

intersection of and relationship between maternal health outcomes and broadband availability; and that this could serve to aid policymakers, health professionals, state and local communities, and other stakeholders to “make more efficient, data-driven decisions” in their respective or collective effort to support and leverage telehealth solutions and to improve health outcomes and the quality of maternal care.²⁹

9. On December 20, 2022, President Biden signed the Act into law. The Act directed the Commission—“[n]ot later than 180 days after the date of enactment”—to “incorporate publicly available data on maternal mortality and severe maternal morbidity, including for not less than 1 year postpartum, into the Mapping Broadband Health in America platform of the Commission,” in consultation with the Director of the CDC.³⁰

10. In response, the Commission planned and implemented a multi-phase approach. During the first phase, the focus was to incorporate the maternal health outcomes data specified in the Act into the platform. This work included conducting significant research on maternal health; ongoing consultation with the CDC and other relevant agencies under the U.S. Department of Health and Human Services; and working with technical staff to prototype new functionalities for the updated platform. Based on this preliminary work, the agency developed an initial conceptual framework that was used to guide the incorporation of maternal health data and its intersection with broadband data for the next generation of the mapping platform. A detailed description and graphic representation of the framework is available on the FCC’s website.³¹

11. Under the conceptual framework developed in response to the Act, four maternal health outcomes were added to the mapping platform: maternal mortality rate, late maternal death, maternal deaths, and severe maternal morbidity rate. In addition, two demographic variables (i.e., race/ethnicity and rurality) and two maternal health risk factors (i.e., maternal age and health provider shortages) were added. The platform also now includes opioid-related mortality rates and opioid prescription data as a result of a separate Congressional request that the map overlay drug abuse statistics with the level of Internet access to help address the ongoing opioid epidemic in the country³²—an epidemic that, unfortunately, has also contributed to the increasing maternal mortality and severe maternal morbidity rates in the United States over the years. Finally, the current version of the platform also reflects updated chronic disease and access to care metrics, as well as updated broadband data.³³

12. As of June 2023, the *Mapping Broadband Health in America* platform—pursuant to work completed under Phase 1—now allows users, consistent with the requirements under the Act, to view the intersection of broadband connectivity and maternal health outcomes and, thereby, generate actionable insights for policies and programs about how broadband connectivity can be leveraged to improve

and health, including telehealth. For additional information about the C2H Task Force and its work, please visit their website at www.fcc.gov/health.

²⁹ S. Rep. 117-65, at 3.

³⁰ Data Mapping Act, §§ 2(a)-(b).

³¹ See FCC, Connect2HealthFCC, Focus on Maternal Health, <https://www.fcc.gov/reports-research/maps/connect2health/focus-on-maternal-health.html> (last visited Sept. 12, 2023) (describing and providing a graphic of the conceptual framework for integrating maternal health data to the mapping platform).

³² See Consolidated Appropriations Act of 2018, Pub. L. No. 115-141 div. E, tit. V, 132 Stat. 348, 562 (with accompanying House and Senate Explanatory Statements concerning “Measuring the Potential Impact of Broadband Access on the Opioid Crisis,” where the “FCC is directed to use the Connect2Health tool to create a map overlaying drug abuse statistics with the level of Internet access to help address challenges in rural areas”).

³³ See FCC, Connect2HealthFCC, Mapping Broadband Health in America—Methodology, <https://www.fcc.gov/health/maps/methodology> (last visited Sept. 12, 2023). See *infra* paras. 26-27 (explaining what broadband data were used in updating the platform; and noting that future iterations of the platform will reflect the Broadband Data Collection Program data).

maternal health outcomes and identify health disparities. More specifically, users can, among other things³⁴:

- Inquire about the status of Internet connectivity in areas where maternal mortality or severe maternal mortality are particularly high (i.e., where telehealth and other broadband-enabled solutions and services could make the greatest difference);
- Display selected data on broadband connectivity (e.g., access, Internet adoption, and download/upload speed) and maternal health outcomes with key variables to generate customized maps at the national, state, and county levels;
- View maternal mortality or severe maternal morbidity rates filtered by maternal age, race/ethnicity, and rurality to visualize patterns, possible disparity issues, and locations where broadband-enabled interventions may be impactful; and
- Determine the broadband picture in “maternity care deserts,” which include 1,119 counties in the United States, allowing users to quickly identify those counties where broadband access is limited or could be improved, making them priority areas for broadband funding and infrastructure development; or to identify counties in maternity care deserts that otherwise have a developed broadband infrastructure and available service providers, making such areas ripe for immediate connection to telehealth, remote patient monitoring and sensors, and other digital solutions to support the maternal health of the mothers residing in those areas.

Given the critical importance of leveraging broadband to help address the maternal health crisis, the Commission has a leading role in supporting the broadband needs of health providers, patients, and other supports that comprise the healthcare ecosystem, and in ensuring that important tools, such as the Commission’s *Mapping Broadband Health in America* platform, continue to be improved and updated.

III. DISCUSSION

13. To help guide our efforts to implement, refine, and expand the mapping platform, the Commission seeks broad public feedback and input. Such comments will also inform the data analytics work concerning the relationship between broadband and maternal health that we plan to conduct and help us to identify other ways in which the Commission can address the maternal health crisis. Along with our ongoing consultation with the CDC³⁵ and other relevant agencies, we believe that public input is critical to ensure that: (1) we have considered the range of possibilities for enhancing the platform, including incorporation of additional data elements and mapping functionalities; (2) the platform is sufficiently responsive to the needs and preferences of its users; and (3) we maximize the utility and usefulness of our mapping tool to the extent feasible and practicable, without compromising or adversely affecting individual privacy. In addition to making improvements to the platform, we also intend to promote and conduct important research and data analytics on the current and emerging role of broadband connectivity in maternal health; and, where appropriate, pursue additional projects to help support, advance, and inform the public (especially women of reproductive age, pregnant women, and new mothers) about the value of broadband connectivity in this area.³⁶ To inform this inquiry, in Section III.A

³⁴ See FCC, Connect2HealthFCC, Focus on Maternal Health, <https://www.fcc.gov/reports-research/maps/connect2health/focus-on-maternal-health.html> (last visited Sept. 12, 2023).

³⁵ See Letter from Jessica Rosenworcel, Chairwoman, FCC, to Dr. Rochelle P. Walensky, Director, Centers for Disease Control and Prevention (Apr. 11, 1023), available at <https://www.fcc.gov/document/chairwoman-letter-cdc-director-maternal-health-collaboration>.

³⁶ We note that the FCC’s Connect2Health Task Force, over the years, has been conducting various research concerning the relationship between broadband and health. As an example, in 2017, the Task Force commenced a study to explore the relationship between the level of connectivity in a community and that community’s health and whether increasing broadband connectivity in a community correlated with improved health outcomes at the community and population levels. The analysis used diabetes prevalence data and broadband data. Based on the study, the Task Force found that there was a significant correlation between increasing broadband access and

below, we seek to better understand the extent to which broadband-enabled technologies, solutions, and services are being used in maternal health care, and the range of issues that pregnant women face in accessing and using these digital tools. Thereafter, in Section III.B, we provide some historical information about the *Mapping Broadband Health in America* platform, including why it was developed and how it has evolved over the years since its initial launch in 2016.

A. Broadband-Enabled Technologies, Solutions, and Services for Maternal Health

14. Broadband is increasingly integral to health and healthcare—not just in terms of the provision of cutting-edge treatments but also overall cost savings and efficiencies. It is helping to address persistent physician shortages in rural and underserved communities; enables prevention and wellness initiatives to succeed at scale as observed during the COVID-19 pandemic; expedites natural disaster relief and recovery; realizes the common and critical aims of robust patient engagement and improved caregiver support; and, in the context of the Commission’s updated *Mapping Broadband Health in America* platform, helps to determine priorities and inform potential solutions about a national concern—in this case, the maternal health crisis.

15. With broadband-enabled technologies, solutions, and services becoming an increasingly important tool for improving maternal health and reducing mortality and morbidity rates, it is a laudable policy goal to ensure that pregnant women across the country have access to maternal support at their fingertips throughout their pregnancy and the postpartum period. In this section, we seek to identify and understand the breadth and variety of broadband-enabled health technologies, solutions, and services that are available and being used in the provision of maternal health care as part of a broader broadband-enabled ecosystem of maternity care, as well as future uses and possible use cases. We also seek information on the variety of issues and circumstances that are affecting the ability of child-bearing women or women in postpartum care to access and use such tools and services, and the barriers for providers to make those tools and services available as part of their healthcare system or clinical approach. Further, we are interested in learning about any innovative broadband-enabled health technologies on the horizon that could be used to improve maternal health outcomes. Public input on these issues will serve to inform future data analytics work, and also serve to inform the approach we take in improving the mapping platform.

16. Experts have found that “lack of access to care is one of the biggest barriers to safe, healthy pregnancies and is especially impacting rural areas and communities of color where families face economic strains in finding care.”³⁷ Understanding geographic access to technology as a barrier to telehealth is essential in providing equitable access across the country. In this regard, rural communities are known to have reduced access to broadband when compared to urban communities, and when assessed, the greatest reported challenge for attending telehealth/telemedicine visits in rural areas was

improved health outcomes and that Internet adoption appeared to have an even greater correlation to improved health outcomes. The data showed, using December 2015 broadband data, that counties in any quintile of broadband access had on average 9.6% lower diabetes prevalence than in those counties in the next lower quintile of access; and that this change in diabetes prevalence remained even after controlling for education (8.7%) and income (8.4%) separately or together with age (6.0%). See Connect2HealthFCC Task Force, *Broadband Connectivity: A “Super” Determinant of Health*, Staff Research Monograph, FCC (May 23, 2019), available at <https://www.fcc.gov/ecfs/document/109020780702729/1> (A copy of the study is associated with GN Docket No. 16-46) (C2H Task Force SDOH Study).

³⁷ Dave Muoio, *Over a Third of US Counties Are ‘Maternity Care Deserts,’ March of Dimes Study Finds*, Fierce Healthcare (Oct. 12, 2022), <https://www.fiercehealthcare.com/providers/over-third-us-counties-are-maternity-care-deserts-march-dimes-finds#:~:text=%E2%80%9COur%202022%20report%20confirms%20lack,interim%20chief%20medical%20and%20health> (internal quotations and citations omitted).

connectivity issues.³⁸ According to the 2022 Report from the March of Dimes, 36% of all U.S. counties (61.5% of which are rural counties) had no hospital or birth center offering obstetrics care or any other obstetrics providers, identified as maternity care deserts.³⁹ Experts believe that telehealth could be a key solution to eliminating maternity care deserts.⁴⁰ What, if anything, can the Commission do to help facilitate the availability of telehealth and other digital solutions in maternity care deserts? We also seek information and data on the variety of broadband connectivity issues that are affecting the provision of health care and support for pregnant women, including postpartum care. Please describe the specific access and/or adoption issues, as well as any issues concerning speed, latency, cost, subscribership, and use. In addition, are there any unique issues that are affecting the use and uptake of broadband in the context of maternal health?

17. According to many experts, telehealth and other broadband-enabled health technologies, solutions, and services provide opportunities to help address the maternal health crisis. Remote monitoring, teleultrasonography, self-operated ultrasound, and robotic sonography are all emerging broadband-enabled technologies that we understand show promise.⁴¹ Some examples of the ways in which broadband-enabled solutions and services are currently being used include the following:

- Providing preconception, prenatal, and postnatal care to reproductive age and pregnant women through telehealth, when appropriate;
- Providing telehealth services for mental health and substance use prior to, during, and following pregnancy;
- Remote monitoring of chronic conditions and other risk factors for women of reproductive age and pregnant women;
- Facilitating participation in childcare education classes, maternal health support groups, and community services or networks; and
- Enabling access to online information and resources on family planning, pregnancy, childbirth, and the postpartum period.⁴²

We seek information and comment on the extent to which telehealth, particularly the use of real-time and delayed video conferencing for a wide range of telemedicine services and remote patient monitoring, are being used in maternity care.⁴³ Are patients primarily accessing these services through fixed or mobile broadband service? What barriers prevent virtual care visits and remote patient monitoring services from being available to all pregnant patients, and also to patients during postpartum care? We also seek to learn about other broadband-enabled health technologies, solutions, and services that are currently

³⁸ See March of Dimes 2022 Report, *supra* note 19 at 26. See also *Communications Marketplace Report*, GN Docket No. 22-203, 2022 Communications Marketplace Report, FCC 22-103, at Fig. III.A.1.a-b and Fig. III.A.2a-c (Dec. 30, 2022), available at <https://docs.fcc.gov/public/attachments/FCC-22-103A1.pdf>.

³⁹ See March of Dimes 2022 Report, *supra* note 19 at 5.

⁴⁰ See generally *id.* See also Melchionna, *supra* note 22.

⁴¹ See generally Gabriela Weigel, Brittni Frederiksen and Usha Ranji, *Telemedicine and Pregnancy Care*, KFF (Feb. 26, 2020), <https://www.kff.org/womens-health-policy/issue-brief/telemedicine-and-pregnancy-care/>; National Institute of Biomedical Imaging and Bioengineering, Virtual Workshop: Technology to Improve Maternal Health (Jan. 18, 2022), Workshop Summary, National Institutes of Health, <https://www.nibib.nih.gov/virtual-workshop-technology-to-improve-maternal-health/summary-workshop-discussion>; Scott J. Adams et al., *Telerobotic Ultrasound to Provide Obstetrical Ultrasound Services Remotely During the COVID-19 Pandemic*, *Journal of Telemedicine and Telecare* (Oct. 20, 2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7576332/>.

⁴² See FCC, Connect2HealthFCC, Mapping Broadband Health in America—Methodology, <https://www.fcc.gov/health/maps/methodology> (last visited Sept. 13, 2023).

⁴³ See, e.g., The American College of Obstetricians and Gynecologists, *Telehealth and Remote Patient Monitoring for Pregnant and Postpartum Women*, May 2020, <https://www.acog.org/advocacy/-/media/a211a70996ab47a28c3a0afdb43d2f86.ashx>.

available and being used in the provision of maternity care beyond virtual care visits and remote patient monitoring services.⁴⁴ What other digital tools/solutions or connected care services are being used in maternity care, and what specifically are they being used for? Outside of traditional hospital settings, where else is maternal health care being provided or received? And to what extent are digital tools/solutions or connected care services being used in those non-hospital settings? Can digital tools/solutions or connected care services be used to improve communication and coordination across different types of maternal health care providers to improve maternal care and health outcomes? We also seek information and comment on ways in which digital tools/solutions and connected care services are being used specifically to enable community-based non-clinical prenatal and postnatal care services.

18. We also seek comment, information, studies, and data related to the efficacy of broadband-enabled technologies, solutions, and services used for maternal care. We seek information as to whether there exists completed or pending research or studies exploring the relationship between broadband connectivity (i.e., access, adoption, and use) and maternal health outcomes or specific maternal health variables. Is there, for example, any correlation or other relationship between access to or use of broadband-enabled health technologies and maternal health outcomes? Also, to what extent is the Commission’s mapping platform being used for any study or research in this area, and for what purpose? Are there other mapping platforms or other research or policy tools being used to study the relationship between broadband and maternal health?

19. Further, we seek comment on whether and how broadband-enabled health tools can be used to address the widening disparities—in terms of race, income levels, and rurality—in maternal health outcomes. We seek to identify broadband-enabled health technologies, solutions, and services that are being designed and developed for future use to improve maternal care and address health disparities. What, if anything, can the Commission do—within its statutory authority—to support such technological innovations or approaches?

B. Mapping Broadband Health in America and Future Enhancements

20. We seek input on our current plans, under Phase 2, for further improving the broadband health mapping platform. Specifically, we welcome suggestions for ways in which we can enhance the platform to maximize its utility for those involved in addressing the maternal health crisis. Before we discuss these two requests for comment in further detail, we first provide some historical information about the *Mapping Broadband Health in America* platform in general, in order to establish some contextual understanding of the platform’s original purpose, as well as a basic awareness of its capabilities and how the platform has evolved and gained interest among policymakers, clinicians, researchers, and other stakeholders over the years.

21. *Background: Creation of the Mapping Platform.* In 2016, the Commission, through its Connect2Health Task Force, created and launched the *Mapping Broadband Health in America* platform to better demonstrate the value proposition of broadband in health.⁴⁵ It is a customizable data visualization platform that depicts the intersection of broadband and health data for states and counties in the United States. The goal is to enable users to ask questions about both broadband and health in any county in the United States and to leverage a shared platform that can provide relevant data and help drive meaningful broadband and health policies and solutions.

22. With the aid of the platform, the Task Force has been able to make critical findings about the relationship between broadband (access and adoption) and health and health outcomes, observe possible trends, and identify counties that are “double burden,” a term coined by the Task Force to identify counties that have both a higher health need and below average broadband connectivity—

⁴⁴ We note that broadband-enabled health technologies, solutions, and services are sometimes referred to as digital health, digital tools, connected care, virtual care, etc. We are using these terms interchangeably in this document.

⁴⁵ See generally FCC, Connect2HealthFCC, Mapping Broadband Health in America, <https://www.fcc.gov/health/maps> (last visited Sept. 13, 2023).

offering a potential basis for prioritization.⁴⁶ Indeed, over the years, the platform has become a valuable resource for users—from both public and private sectors—to visualize, overlay, intersect, and analyze broadband and health data at the national, state, and county levels, providing compelling insights on opportunities and gaps in the connected health space. By using the mapping platform as a foundation for understanding the intersection of and relationship between broadband and health, policymakers, Internet service providers, innovators, researchers, clinicians, community organizations, and other interested parties can chart a concrete path to a more connected and healthier future for all Americans.⁴⁷

23. The initial platform included chronic disease, access to care, broadband, and other data. Since its creation, the platform has generated significant interest among policymakers, researchers, and innovators, resulting in directives from Congress and requests from other stakeholders to incorporate

⁴⁶ See FCC, Connect2HealthFCC, Studies and Data Analytics on Broadband and Health, <https://www.fcc.gov/health/sdoh/studies-and-data-analytics> (last visited Sept. 25, 2023); *Broadband Health PN*, *supra* note 6, 32 FCC Rcd at 3666-72 & n.40 (describing the Mapping Broadband Health in America platform and seeking input on how it can be improved; and also seeking comment on how the FCC could address the broadband needs of counties listed under the Task Force’s list of critical need counties (i.e., counties identified in the Task Force’s Priority 100 and Rural 100 lists, available at <https://www.fcc.gov/sites/default/files/Priority-100-Counties.pdf>; and <https://www.fcc.gov/sites/default/files/Rural-100-Counties.pdf>)). See also FCC, Connect2HealthFCC, *Mapping Broadband Health in America 2017, Key Findings* (2017), https://www.fcc.gov/sites/default/files/connect2health.key_findings.pdf (finding, among other things, that “the least connected counties generally have the highest rates of chronic disease”; and that “[m]ost of the counties with the worst access to primary care physicians are also the least connected”); FCC, Connect2HealthFCC, *Priority and Rural Priority 2017*, <https://www.fcc.gov/health/maps/priority-and-ruralpriority-2017>.

In addition, the mapping platform and the information and data that could be extracted provided a basis for the Connect2Health Task Force to conclude that broadband plays a more direct and consequential role in health—as a social determinant of health, if not as a “super” determinant of health. See FCC, Connect2HealthFCC, *Advancing Broadband Connectivity as a Social Determinant of Health*, <https://www.fcc.gov/health/SDOH> (last visited Sept. 13, 2023). Accord Yosselin Turcios, *Digital Access: A Super Determinant of Health*, Substance Abuse and Mental Health Services Administration (March 22, 2023), <https://www.samhsa.gov/blog/digital-access-super-determinant-health> (“Internet access is increasingly recognized as a “super determinant” of health. It plays a role in health care outcomes and influences more traditionally recognized social determinants of health, such as education, employment, and healthcare access.”). Social Determinants of Health (SDOH) are conditions in the places where people live, learn, work, worship, age, and play that affect a wide range of health, functioning, and quality-of-life outcomes and risks, including mortality rates. They represent non-medical factors (e.g., health care access, health insurance coverage, poverty, education level, access to healthy foods, access to transportation, neighborhood crime, etc.) that affect health. Experts have found SDOH factors to account for an estimated 80-90% of a person’s health status and that such factors are more likely to be major contributors to premature death, yet these factors underlie preventable disparities in health status and disease outcomes. The importance of the Task Force’s work in this area led to the formal development of an agency initiative to promote broadband connectivity as a social determinant of health and to have relevant organizations consider broadband connectivity as an independent domain in the SDOH framework. This topic is of direct relevance to the maternal health crisis, given that many experts agree that social determinants of health (e.g., income, education, transportation, health care access, etc.) are driving maternal health disparities and contributing to high mortality and severe maternal morbidity rates. See, e.g., Guillermina Girardi et al., *Social Determinants of Health in Pregnant Individuals from Underrepresented, Understudied, and Underreported Populations in the United States*, *International Journal for Equity in Health* (Sept. 6, 2023), <https://equityhealth.biomedcentral.com/articles/10.1186/s12939-023-01963-x>.

⁴⁷ The mapping platform can be used in various ways. Some examples include the ability to generate fully-customizable maps that can not only show different angles on broadband connectivity, including deployment and subscribership, but how those correspond to different metrics for health behaviors, outcomes and access in urban and rural areas. For the Commission and other agencies, the mapping platform can inform and improve policy decisions and facilitate coordination with other federal agencies, as well as state, local, and Tribal entities, in identifying solutions to persistent problems in rural and underserved areas. It can also be used to characterize regions and clusters and highlight areas that merit priority focus for funding. For the private sector, the tool can focus targeted and precise interventions in the areas of most need and identify opportunities for partnerships and collaborations.

other health topics and more advanced analytical functionalities. The platform was periodically updated to reflect the latest complete annual fixed broadband dataset from the Commission and updated health data from the Robert Wood Johnson Foundation’s County Health Rankings.⁴⁸ As explained in detail below, the latest expansion and updates to the platform—released in June 2023—reflect Congressional and other stakeholder requests, as well as needed changes to the methodology to better address data gaps and improvements in maternal health outcomes. The release was especially timely, given national concerns over the increasing maternal mortality and severe maternal morbidity rates, access to care issues facing women of reproductive age, the lingering impacts of the COVID-19 pandemic, and the opioid crisis.

24. *Implementation of the Act: Recent Updates to the Mapping Platform.* As summarized above, in response to the Data Mapping to Save Moms’ Lives Act, the Commission earlier this year incorporated data on maternal health outcomes as required under the Act.⁴⁹ Given the multifaceted and complex nature of the maternal health crisis, we believe that additional information incorporated into the platform can help shed light on the drivers or causes of poor maternal health outcomes and provide greater insight for action, including areas where telehealth and other broadband-enabled solutions can be leveraged to improve maternal health.

25. In addition, the recently released platform also now includes opioid-related mortality rates and opioid prescription data to overlay drug abuse statistics with the level of Internet access to help address the ongoing opioid epidemic in the country—an epidemic that is contributing to the maternal

⁴⁸ See FCC, *FCC’s Connect2Health Task Force Announces Data Update for Broadband Health Mapping Platform*, News Release (June 8, 2017), <https://www.fcc.gov/document/c2h-task-force-releases-data-update-broadband-health-map>. See generally *County Health Rankings and Roadmaps*, University of Wisconsin Population Health Institute and the Robert Wood Johnson Foundation, <https://www.countyhealthrankings.org/about-us> (last visited Sept. 13, 2023).

⁴⁹ In Phase 1, the approach to intersecting broadband and maternal health reflects an initial focus on two outcome variables: maternal mortality and severe maternal morbidity, including for not less than one year postpartum. Data on maternal mortality come from death certificates submitted to the National Vital Statistics System and is accessed through CDC WONDER—the Wide-ranging Online Data for Epidemiologic Research. The platform incorporates three measures related to maternal mortality. The first is the Maternal Mortality Rate, which is defined as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.” The second is the Late Maternal Death Rate, which includes deaths that occur after 42 days but up to one year postpartum. Both rates are calculated per 100,000 live births, also using data from CDC WONDER. The third is “Maternal Deaths,” which reflects counties reporting maternal deaths (up to 42 days postpartum) or no maternal deaths. The CDC does not report mortality data when there are between one and nine deaths in a given geographical location for privacy and confidentiality reasons; these counties are marked as “suppressed” in the platform. The CDC also does not report rates when there are fewer than 20 deaths due to statistical unreliability. See FCC, *Connect2HealthFCC, Mapping Broadband Health in America—Methodology*, <https://www.fcc.gov/health/maps/methodology> (last visited Sept. 13, 2023).

Data on severe maternal morbidity come from the Healthcare Cost and Utilization Project’s Fast Stats, which are sponsored by the Agency for Healthcare Research and Quality. They reflect the number of women experiencing unexpected outcomes of labor and delivery (21 indicators) per 10,000 in-hospital deliveries. For the initial effort, data for this measure are available at the state-level for intersection with broadband. This information on maternal mortality and severe maternal morbidity can be intersected with broadband to show areas where broadband can be leveraged through telehealth and other broadband-enabled solutions to improve health outcomes and address disparities. See *id.*

health crisis in the United States.⁵⁰ Finally, the current version of the platform also includes updated chronic disease and access to care metrics.⁵¹

26. With respect to broadband data, the current platform includes the most current, publicly available broadband data on both access and adoption that were complete at the time the platform was released in June 2023. The broadband data variables were chosen to provide insights on what can be enabled and delivered through the broadband health ecosystem of network, devices, and applications, and to identify exactly where gaps and opportunities exist. The selected variables include: broadband access, rural broadband access, Internet adoption, and upload and download speeds.⁵² The fixed broadband data in the platform come from the Commission's Form 477 data program that collects data on residential fixed broadband deployment and residential fixed Internet subscribership. The broadband data in the platform was released in September 2020 and covers data submissions as of June 2019.

27. We note that the Commission plans to update the mapping platform in the future to reflect the Broadband Data Collection Program data.⁵³ We seek comment on the integration of this data and whether there are considerations regarding future updates to the platform. For example, we sought to maintain some correspondence between the years of the broadband and health data. Is such synergy between available broadband and health datasets important to preserve, and if so, why? Further, we note that the platform now provides more advanced visualizations and analytic functionalities, including explicitly embedding a feature that categorizes counties based on broadband and health needs to enable prioritization. We anticipate that the updated architecture and methodology will allow users greater flexibility and control as the broadband health space evolves, and we seek comment on this belief.

28. As a complement to the maternal mortality and severe maternal morbidity data, the Task Force also reviewed the available literature to identify relevant risk factors and Social Determinants of Health that influence maternal health outcomes and where broadband-enabled interventions might help bridge the gaps.⁵⁴ During Phase 1, we included five such priority variables:

- Race/Ethnicity: disparities in maternal health outcomes continue to exist in communities across the country, regardless of other socioeconomic factors. Furthermore, people of color are most likely to face barriers to broadband access.⁵⁵
- Maternal Age: associated with a greater risk of obstetrical complications; maternal mortality rates are 6.8 times higher for women over 40 years old compared to women under 25. Telemedicine can be used to support high-risk pregnancies.⁵⁶

⁵⁰ See Consolidated Appropriations Act of 2018, *supra* note 32. See also Emilie Bruzelius and Sylvia S. Martins, *US Trends in Drug Overdose Mortality Among Pregnant and Postpartum Persons, 2017-2020*, JAMA, Vol. 328, Number 21 (Dec. 6, 2022), available at <https://jamanetwork.com/journals/jama/fullarticle/2799164> (“Among pregnant and postpartum persons, drug overdose mortality increased approximately 81% from 2017 to 2020, mirroring trends observed among persons of reproductive age overall.”).

⁵¹ See FCC, Connect2HealthFCC, Mapping Broadband Health in America, Data, <https://www.fcc.gov/reports-research/maps/connect2health/data.html> (last visited Sept. 13, 2023).

⁵² Internet speeds are measured in Megabits per second (Mbps) and the tiers correspond to a set of speed ranges (e.g., 0-1 Mbps, 1-3 Mbps, 3-4 Mbps, 4-6 Mbps, etc. up to >1000 Mbps).

⁵³ See FCC, Broadband Data Collection, <https://www.fcc.gov/BroadbandData> (last visited Sept. 21, 2023). See also *Establishing the Digital Opportunity Data Collection; Modernizing the FCC Form 477 Data Program*, WC Docket Nos. 19-195, 11-10, Order, FCC 92-93 (rel. Dec. 9, 2022), <https://www.fcc.gov/document/fcc-sunsets-form-477-broadband-data-collection>.

⁵⁴ See *supra* note 46 (discussing the importance of social determinants of health).

⁵⁵ See *supra* note 12.

⁵⁶ See *supra* note 17; Hoyert, *supra* note 1.

- Maternity Care Deserts: areas with little to no maternal care resources, which may also have lower access to broadband services.⁵⁷
- Mental Health Provider Shortage Areas⁵⁸: counties with limited mental health providers and resources. Maternal mental health conditions affect one in five women during or after pregnancy and are one of the most common causes of pregnancy-related deaths (22.7%). Broadband connectivity can enable digital capabilities such as navigating care, identifying risks, building community, and connecting to counseling as needed. Telehealth services can help connect patients and mental health providers.
- Rural Geographic Areas: associated with poorer maternal health outcomes compared to their non-rural counterparts, including higher pregnancy-related mortality.⁵⁹ The digital divide in rural areas means that these communities often have less access to broadband infrastructure than urban areas.

29. We note that, by design, the maternal health module reflects new and additional functionalities that reflect the evolution of thinking on the intersection of and relationship between broadband and health (i.e., the visualization of double burden counties that have higher health need and limited connectivity resources and other county categorizations); enhancements to the analytics of the mapping platform to better support policy and decision-making (i.e., tables that reflect the number of counties and population in each county group); and innovations to respond to data limitations when visualizing mortality data (i.e., new measures, expanded data years, and incorporation of data on risk factors for intersection with broadband connectivity). As such, the layout and features of the maternal health module may differ from those for opioids or chronic diseases.

30. *Proposed Next Steps and Request for Comment.* During Phase 2 of our effort to further improve and enhance the mapping platform, we plan to incorporate additional maternal health variables, data, and functionalities.⁶⁰ We seek comment on the data points we should consider including or if there are any other social determinants of health factors and data that we should consider. Prior work by the Connect2Health Task Force has shown that areas that are more connected tend to have better health, even after controlling for other characteristics of these areas.⁶¹ This groundbreaking research suggested that broadband itself may have a direct influence on health and health outcomes beyond its role as infrastructure for broadband-enabled solutions, like telehealth, although the mechanism is not well understood.⁶² The Task Force has also recognized the role of broadband as a “super” determinant of health, mediating the recognized ways in which other social determinants, like income and education,

⁵⁷ See *supra* note 19.

⁵⁸ See *Trost, supra* note 22; Kandyce Hylick, *CDC: Maternal Mental Health Disorders are the Leading Cause of Pregnancy-Related Deaths*, Policy Center for Maternal Mental Health (Sept. 26, 2022), <https://www.2020mom.org/blog/2022/9/26/maternal-mental-health-disorders-are-the-leading-cause-of-pregnancy-related-deaths> (noting that maternal mental health is one of the most frequent causes of pregnancy-related deaths and varies by rate and ethnicity with mental health being the leading underlying cause of death among Hispanic and non-Hispanic White persons). Mental health conditions include deaths of suicide, overdose/poisoning related to substance use disorder, and other deaths determined by the MMRC to be related to a mental health condition, including substance use disorders. See *id.*

⁵⁹ See *supra* note 13.

⁶⁰ Examples of data that could be included in future iterations of the platform are: gestational diabetes, obesity, opioid use disorders, postpartum depression and anxiety, preeclampsia, preterm birth, the location of labor and delivery facilities, and other measures related to Social Determinants of Health (e.g., income, education, and healthcare access).

⁶¹ See C2H Task Force SDOH Study, *supra* note 36.

⁶² See *id.*

influence health.⁶³ Given these key findings, it is critical to better understand and leverage the mapping platform to visualize these foundational relationships between broadband and health. We therefore also seek comment on approaches we might use to intersect broadband, maternal health outcomes, and social determinants of health data. We are particularly interested in approaches and frameworks that would produce relevant visualizations and insights, promote decision-making, and inform more targeted broadband and public health policies and programs. Similarly, what additional broadband metrics should we consider including to help futureproof the platform for the next iterations of cutting-edge broadband-enabled maternal health solutions and services? If any, please explain how the additional data or variables could be helpful; and please provide the potential data source(s) we should consider, as well as any information about costs or licensing requirements. To the extent we are not able to incorporate all the recommended variables and data during our Phase 2 work, how should we prioritize the inclusion of additional variables and data? Which are the most critical to incorporate and what insights might be gained from including the additional variable and data? In particular, what variables or data would be most helpful in helping stakeholders improve maternal health outcomes?

31. In addition, we are considering integrating new functionalities. For example, during Phase 2, we intend to assess whether it is technically feasible, with periodic data updates, for the platform to depict progress in the connected health space over time by, for instance, making available time-lapse maps to illustrate widening or shrinking gaps. We also plan to align the years of the broadband and health data as closely as possible, but we seek comment on considerations around the appropriate temporality of such data. We seek comment on these proposals and invite suggestions for additional functionalities that may be helpful to policymakers, clinicians, maternal health experts, researchers, and other stakeholders. We also seek comment on whether there are any existing datasets that we might consider intersecting or integrating with the data already in the mapping platform as a way to assess, for example, a particular program's efficacy in improving health access, health outcomes, broadband adoption generally, etc.

32. During Phase 2, we also seek to address, if possible, some of the limitations we encountered with certain maternal health outcome data and seek comment as to how we might overcome them while still protecting privacy and confidentiality.⁶⁴ During Phase 1, our focus was on incorporating the statutorily required maternal health outcomes data into the platform. An exploration of the data, however, highlighted that many counties—which is the primary geographical level used for the mapping platform—have low numbers, especially of maternal deaths. These low numbers, if published, can make it impossible to protect the privacy and confidentiality of individuals. This results in data not being released or publicly reported.⁶⁵ For example, in CDC WONDER (the data source of maternal mortality data), the CDC suppresses data based on low numbers or marks such data as statistically unreliable. For Phase 1, we used innovative approaches to help address some of the limitations of the data (e.g., by using

⁶³ See *id.* at 12 (“To simplify, the analysis shows that it is connectivity’s potential impact on health plus its status as a determinant of other determinants of health that necessitate its classification as a ‘super’ determinant of health.”). Given the broad policy implications of this determination, C2H has been working with strategic partners to advance broadband connectivity as a recognized social determinant of health. See FCC, Connect2HealthFCC, Advancing Broadband Connectivity as a Social Determinant of Health, <https://www.fcc.gov/health/SDOH> (last visited Sept. 26, 2023). See also FCC, Connect2HealthFCC, Digital Health Symposium: Advancing Broadband Connectivity as a Social Determinant of Health, <https://www.fcc.gov/news-events/events/2022/03/digital-health-symposium-advancing-broadband-connectivity-social> (The FCC hosted this virtual event which gathered public and private sector thought leaders from a variety of disciplines, including telecommunications and health care, to discuss issues around recognizing broadband connectivity as a “social determinant of health.”) (last visited Sept. 26, 2023).

⁶⁴ Much of the data on maternal mortality and severe maternal morbidity are not publicly released. Data on maternal mortality and pregnancy-related deaths are protected under the Public Health Service Act (42 U.S.C. § 242m(d)). Further, it may be subject to data use restrictions including suppression where numbers are low (practically considered less than 15-20), meaning the data may be unavailable, not reported, or not able to be visualized for most counties in the U.S. Data on severe maternal morbidity come from administrative hospital discharge data. This data may be subject to its own availability considerations (including cost) and data use restrictions.

⁶⁵ See *supra* note 49.

multiple years of data, aggregating to state-level, creating a variable to show areas reporting any deaths or no deaths, and incorporating priority risk factors). These strategies enabled the incorporation of the publicly-available maternal health outcomes data specified in the law, while also maintaining the granularity of the broadband data to facilitate meaningful visualizations and insights. Further, given the limitations of the maternal health outcomes data, the Task Force also incorporated select additional variables based on expert input and consultation with the CDC and other stakeholders. We seek comment on the approach we applied to address the recognized data gaps. Do commenters agree with the approach? If not, what adjustments would commenters recommend we make? We also seek suggestions for how we might address any data limitations—including data suppression and reliability issues—that we may encounter with other maternal health data that we might consider including. Is there a role for synthetic or modeled data? Do commenters have suggestions on other data sources related to maternal health that are publicly available and that could serve to address these limitations? Could a process for making restricted-use data available to certain platform users on a limited basis, such as that employed by the U.S. Census with respect to some of its microdata, improve the way that stakeholders can use the platform to address maternal health problems?⁶⁶ Are there other ways to overcome the limitations concerning privacy and confidentiality?

33. In addition to making improvements to the platform, we also intend to conduct important research and data analytics on the current and emerging role of broadband connectivity in maternal health. We welcome suggestions for any specific questions, data relationships, intersections, and/or mapping visualizations that we should consider developing and analyzing. Please explain why such information and analysis could be useful for improving maternal health outcomes.

34. Finally, we seek feedback on ways we can improve the user experience. For commenters that are current users of the mapping platform, please identify the organization or stakeholder group you represent; please tell us for what purpose(s) you are using the platform; and share with us your particular experience and suggestions—e.g., What did you like about the platform? What difficulties did you experience while using the platform? What else would you like the platform to be able to do? What other data points would be useful to display? Are there other changes in methodology that would be helpful and informative? What additional mapping functions should be added to the platform? Are there any important questions or insights about the intersection of and relationship between broadband and maternal health that would be useful to know but that the current mapping platform cannot answer?

C. Leveraging FCC Policies and Programs for Maternal Health

35. The Commission is committed to doing what it can to help mitigate the devastating impact of the maternal health crisis. Given the importance of broadband in the context of maternal health, we seek comment on potential actions or activities that we could pursue beyond our ongoing efforts to enhance and improve the mapping platform. What additional specific actions (within our authority) can the Commission take to help improve maternal health outcomes and help reduce maternal mortality and severe maternal morbidity rates in this country? Are there, for example, currently untapped connections between the mapping platform and Commission policies and programs that could be leveraged to help improve maternal health outcomes and reduce health disparities? Are there any new or novel programs and/or initiatives that the Commission or the Connect2Health Task Force might pursue to help improve maternal health outcomes? What sources of authority could enable the Commission to take particular actions or pursue particular efforts?

36. We also seek comment specifically on whether the Commission should consider pursuing any interagency collaborations; if so, with which agencies and what would be the suggested scope of these joint projects, research, and/or initiatives? Similarly, we seek comment on whether there would be

⁶⁶ See United States Census, *Apply for Access to Restricted-Use Census Bureau Microdata*, <https://www.census.gov/about/adrm/ced/apply-for-access.html> (last visited Sept. 21, 2023).

value in pursuing any public-private partnerships; if so, how would the joint partnership be constructed to address any potential legal or other concerns, and what joint projects might be appropriate to pursue?

37. Pursuant to our strategic plan, the Commission seeks to bring affordable, reliable, high-speed broadband to 100 percent of the country.⁶⁷ Furthermore, the Commission seeks to ensure that there is equitable and inclusive access to the benefits of digital technologies.⁶⁸ Given these strategic objectives, what else can the Commission do—beyond current policies and programs already in place—to address any access and adoption issues, especially in areas of the country that are categorized as “maternity care deserts”? Are there ways in which the Commission could better engage health care providers to increase awareness of and enrollment in the Commission’s broadband affordability programs among low-income consumers receiving maternal health services?⁶⁹

38. Finally, we seek comment on any other issues or circumstances—not yet identified or discussed above—that would be helpful for the Commission to consider in our efforts to improve the mapping platform or to ensure that broadband can be leveraged to the fullest extent in addressing the maternal health crisis and in promoting maternal health equity.

IV. PROCEDURAL MATTERS

39. *Ex Parte Rules.* This notice of inquiry will be treated as an exempt proceeding under the Commission’s *ex parte* rules. Accordingly, *ex parte* presentations to or from Commission decision-making personnel are permissible and need not be disclosed with respect to this proceeding.⁷⁰ We believe that this treatment will also serve to better accommodate broad and necessary participation from non-traditional stakeholders (e.g., maternal health specialists, public health specialists, clinicians, researchers, etc.), who likely are not familiar with the Commission’s notice requirements and will not have the benefit of communications counsel if this were designated as a permit-but-disclose proceeding. Nonetheless, parties discussing or providing information to Commission decision-making personnel, including the FCC’s Connect2Health Task Force, regarding issues raised in this Notice are strongly encouraged to file a memorandum in the docket (i.e., in GN Docket No. 23-309), summarizing their discussion and/or information as described in the next paragraph.⁷¹

40. *Comment and Filing Procedures.* Pursuant to sections 1.415 and 1.419 of the Commission’s rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission’s Electronic Comment Filing System (ECFS). See *Electronic Filing of Documents in*

⁶⁷ FCC, Strategic Plan, Fiscal Years 2022-2026, at 1, available at <https://docs.fcc.gov/public/attachments/DOC-381830A1.pdf>.

⁶⁸ *Id.*

⁶⁹ See FCC, Affordable Connectivity Program, <https://www.fcc.gov/acp> (last visited Sept. 25, 2023).

⁷⁰ See 47 CFR § 1.1204(b)(1). The Commission has recognized that exempt notice of inquiry proceedings facilitate the free exchange of ideas. See, e.g., *OET Changes Ex Parte Status from “Permit-But-Disclose” to “Exempt” for the National Security Threats to Communications Supply Chain Notice of Inquiry*, ET Docket No. 21-232, Public Notice, DA 23-486 (OET July 18, 2023), available at <https://docs.fcc.gov/public/attachments/DA-23-486A1.pdf>.

⁷¹ To the extent that the discussion or provision of information bears on other open proceedings, parties will need to comply with the applicable rules pertaining to those presentations. See 47 CFR §§ 1.1204-1.1208. We suggest that memoranda summarizing the presentation should (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter’s written comments, memoranda, or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum.

Rulemaking Proceedings, 63 FR 24121 (1998). All filings concerning this Notice of Inquiry must be filed in GN Docket No. 23-309.

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <https://www.fcc.gov/ecfs>.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing.
- Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
 - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis, MD 20701.
 - U.S. Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street, NE, Washington, DC 20554.
 - Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19.⁷²

41. *People with Disabilities.* To request materials in accessible formats (braille, large print, electronic files, audio format) for people with disabilities, send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice).

42. *Further Information.* For additional information on this proceeding, contact Ben Bartolome, Special Counsel, Connect2Health Task Force, in the Office of General Counsel at Ben.Bartolome@fcc.gov, or Brayden Parker, Attorney Advisor, Office of General Counsel, at Brayden.Parker@fcc.gov.

V. ORDERING CLAUSE

43. Accordingly, IT IS ORDERED, pursuant to the authority contained in sections 1, 4(i), 4(j), 254 and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 154(j), and 403, and the Data Mapping to Save Moms' Lives Act, Pub. L. No. 117-247, 136 Stat. 2347, that this Notice of Inquiry IS ADOPTED.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

⁷² See *FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy*, DA 20-304, Public Notice, 35 FCC Rcd 2788 (2020), <https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy>.