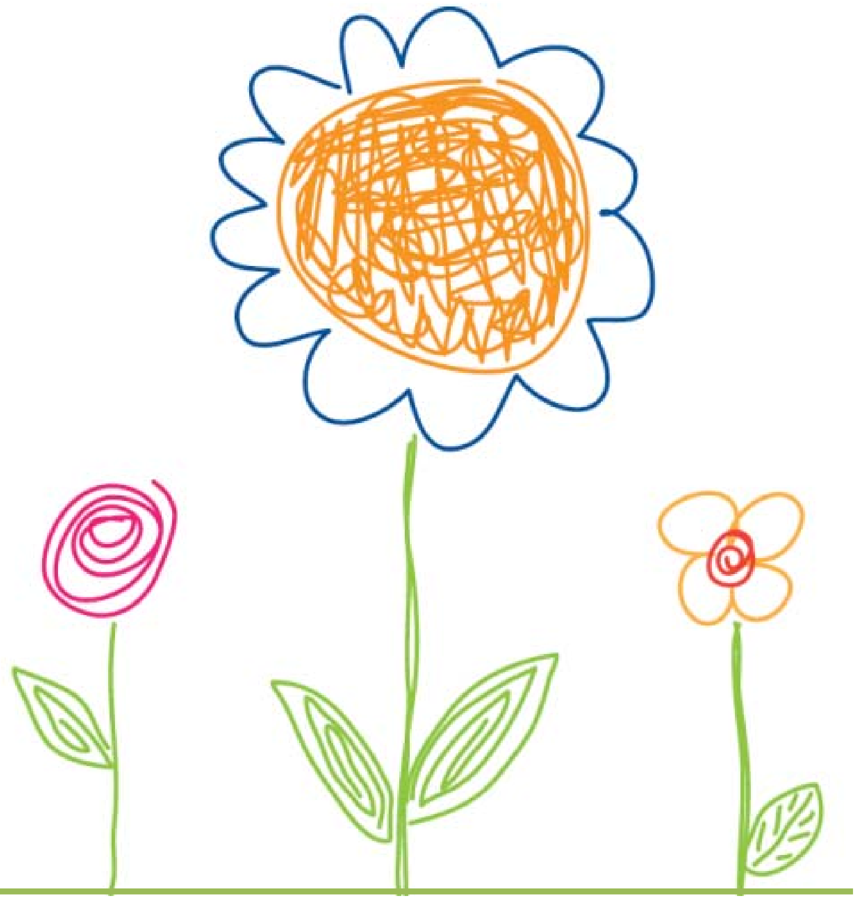
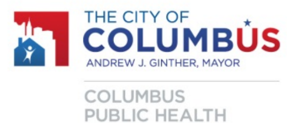


Franklin County
Fetal-Infant Mortality Review (FIMR)

Case Review Team Findings: 2018

(January–December 2018)

Kemhorn Gentes, BSN, RN, Franklin County FIMR Coordinator
Amanda Zabala, MPH, Epidemiologist
May 31, 2019



EXECUTIVE SUMMARY

To gain a better understanding of the factors contributing to local fetal and infant deaths, Columbus Public Health (CPH) established the Franklin County Fetal-Infant Mortality Review (FIMR) Program in January 2014. At its core, FIMR is an evidenced-based continuous quality improvement process. It is unique in its deep exploration of the contextual nature of a well-defined subset of fetal and infant deaths. Information about the FIMR process, including case selection, family interviews, and review preparation, as well as information about the Case Review Team (CRT) and Community Action Team (CAT) can be found in previous iterations of the Franklin County FIMR annual report.[1]

Between January and December 2018, the CRT met monthly to review a total of 48 cases (33 fetal, 15 infant). Of these 48 cases, 24 included a family interview. On average, the CRT spent 30-60 minutes discussing the themes and needs of each case. By design, cases with known risks were prioritized so FIMR could learn more about our community's service system gaps.

This year's report presents a brief summary of the significant social, economic, cultural, safety and health systems factors associated with 48 Franklin County-resident fetal and infant deaths reviewed by CRT in 2018, and proposed recommendations to support optimal birth outcomes. The CRT's recommendations are organized in the following sections according to broadly-encompassing social determinants of health categories: individual behavior, physical environment, health and social services, biological processes, and social circumstances. FIMR acknowledges that the factors impacting maternal child health outcomes are complex, and by presenting them in this way, the aim is to highlight opportunities to improve the conditions that contribute to fetal and infant mortality.

2018 FIMR RECOMMENDATIONS

- **Individual Behavior:** Approach drug use and addiction before, during and after pregnancy as a health problem instead of a justice issue.
- **Biological Processes:** Connect pregnant and postpartum women to culturally appropriate mental health assessments, as well as treatment programs with appropriate specialized training, as needed.
- **Health & Social Services:** Enhance women's ability to access quality prenatal care in the first trimester of pregnancy.
- **Physical Environment:** Increase accessibility to safe, quality, affordable housing.
- **Social Circumstances:** Enroll women and families with multiple stressors into evidence-based home visiting.
- **Black Fetal-Infant Mortality:** Understand the context of the Black/African American lived experience and contextualize the effects of institutional racism on fetal and infant mortality disparities.

FRANKLIN COUNTY FIMR CRT MEMBER AGENCIES IN 2018

- Catholic Social Services
- CelebrateOne
- Central Ohio Newborn Medicine
- Columbus Metropolitan Housing Authority
- Columbus Public Health
  - Alcohol & Drug Services
  - My Baby & Me
  - Women, Infants & Children (WIC)
- Columbus Urban League
- Franklin County Department of Job and Family Services
- Franklin County Public Health
- Mental Health America of Franklin County
  - Perinatal Outreach & Encouragement for Moms (POEM)
- Nationwide Children's Hospital
  - NICU/Bereavement Chaplain
  - The Center for Family Safety and Healing
- OhioHealth
  - Wellness on Wheels
  - Women's Chaplain
- Retired Physicians
- The Ohio State University Wexner Medical Center
  - Maternal Fetal Medicine
  - Moms2B

[1] Columbus Public Health. Fetal-Infant Mortality Review. Available: https://www.columbus.gov/FIMR/

INTRODUCTION

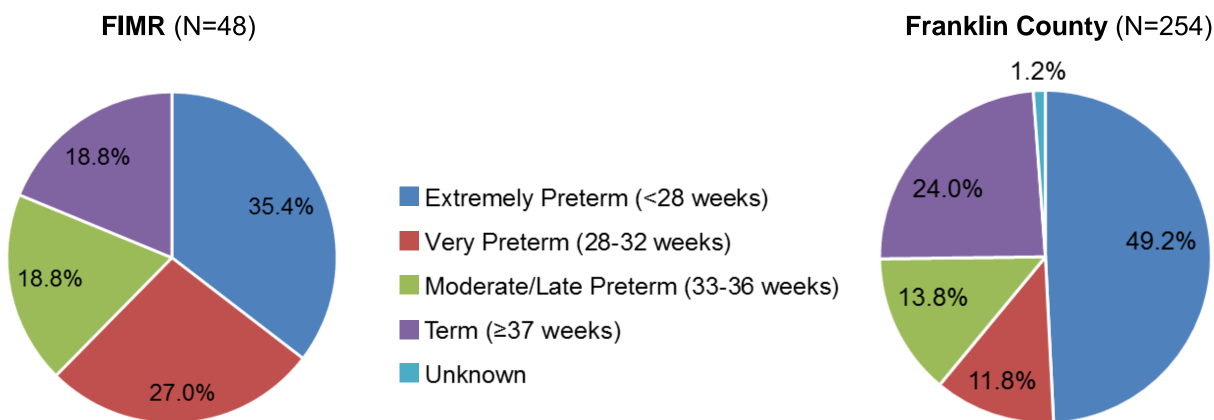
Every week approximately three babies die before their first birthday in Franklin County. In 2018, Franklin County's infant mortality rate was 7.5 per 1,000 live births. Fetal death—or the death of a fetus at or beyond 20 weeks gestation—is not included in this infant mortality rate, though on average, there are 130 fetal deaths reported in Franklin County each year. Fetal-infant mortality is a critical indicator of community health, as both are influenced by biological, social, cultural, economic and environmental factors. Community assets and liabilities, along with the conditions in which people are born, live, learn, work, play and age, are not evenly distributed throughout the community, contributing to racial disparities in these and other health outcomes. Non-Hispanic Black infants in Franklin County are more than twice as likely to die as non-Hispanic White infants, a fact that mirrors the national trend.

PROFILE OF CASES REVIEWED

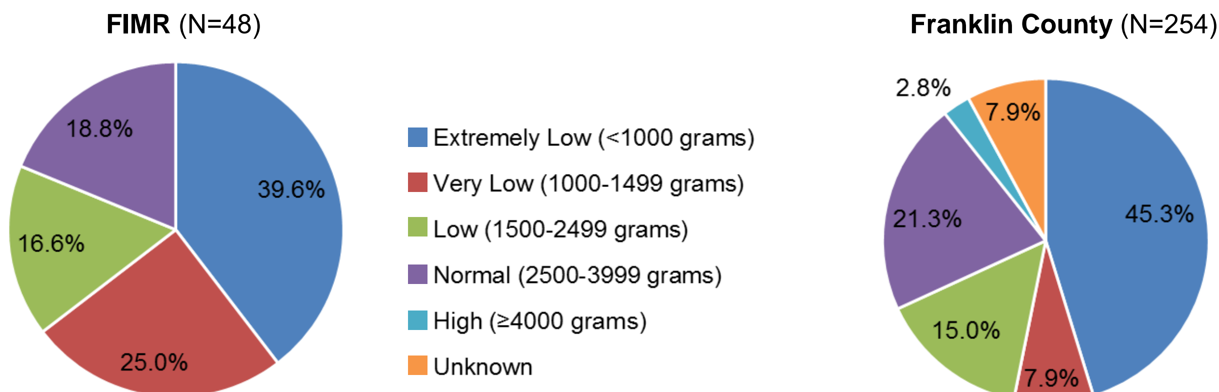
FIMR seeks to review all cases that meet selection criteria within a year of the decedent's death. Of the 48 cases reviewed in 2018, 39 deaths occurred in 2017 and nine occurred in 2018. On average, FIMR brought cases to the CRT nine months after the date of death.

FETAL/INFANT CHARACTERISTICS OF FIMR CASES REVIEWED IN 2018

Gestational Age --



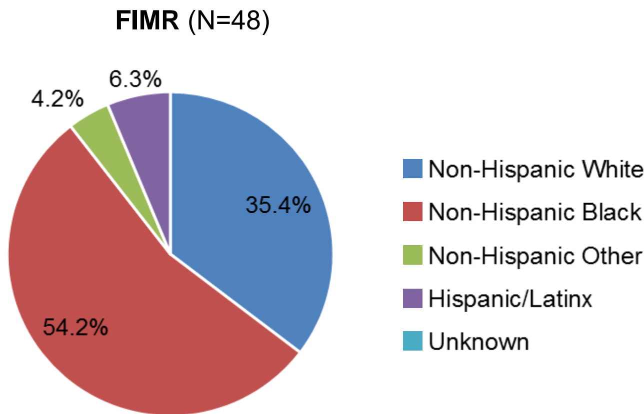
Birth Weight --



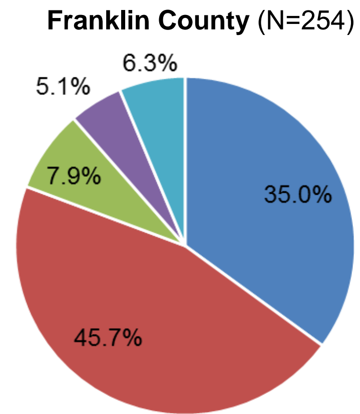
MATERNAL CHARACTERISTICS OF FIMR CASES REVIEWED IN 2018

Race/Ethnicity

FIMR (N=48)

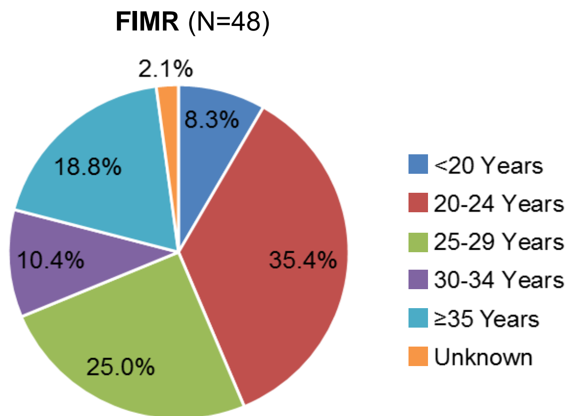


Franklin County (N=254)

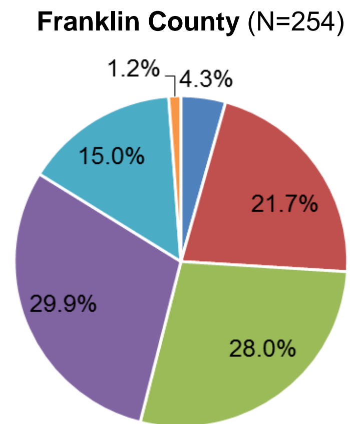


Age Group

FIMR (N=48)

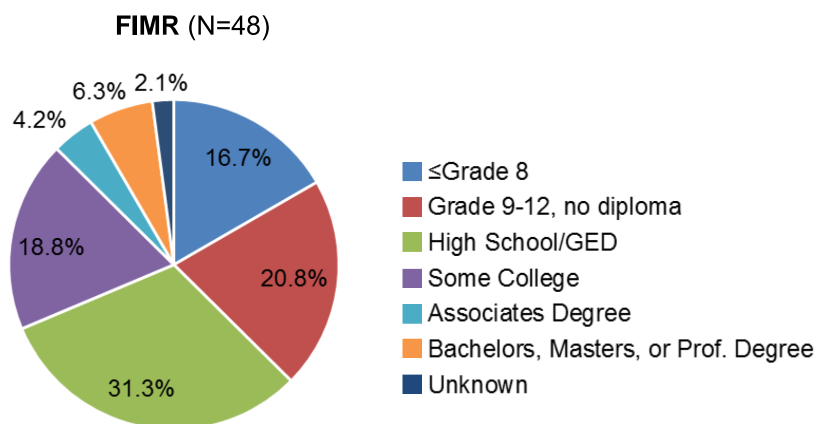


Franklin County (N=254)

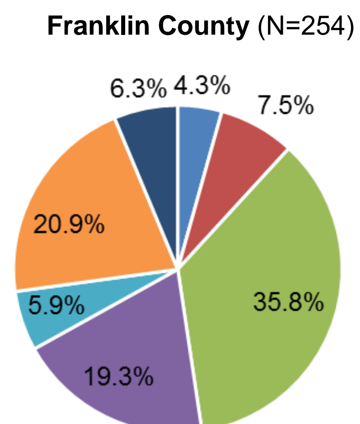


Education

FIMR (N=48)

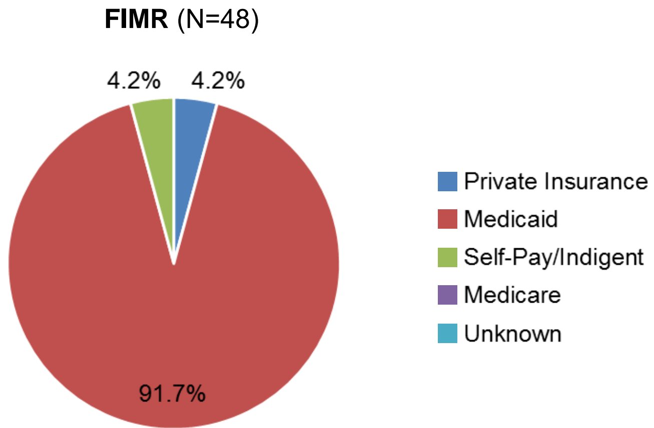


Franklin County (N=254)

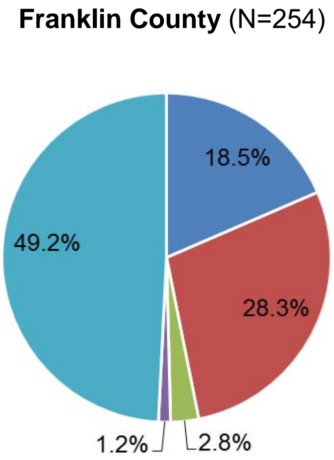


Primary Method of Payment for Delivery

FIMR (N=48)

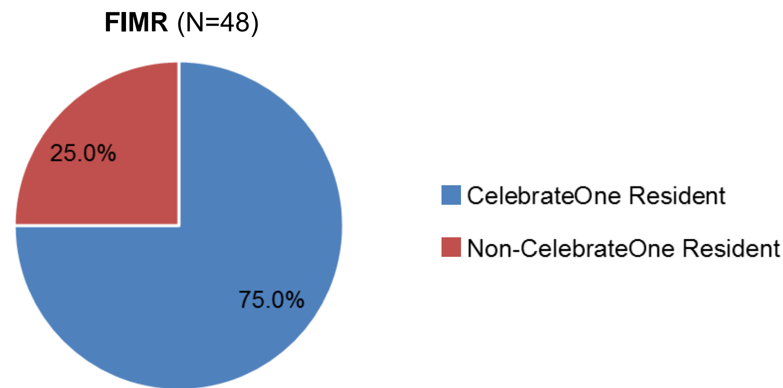


Franklin County (N=254)

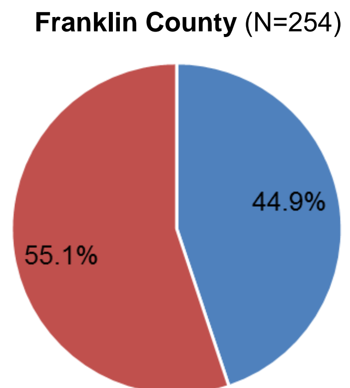


CelebrateOne Resident

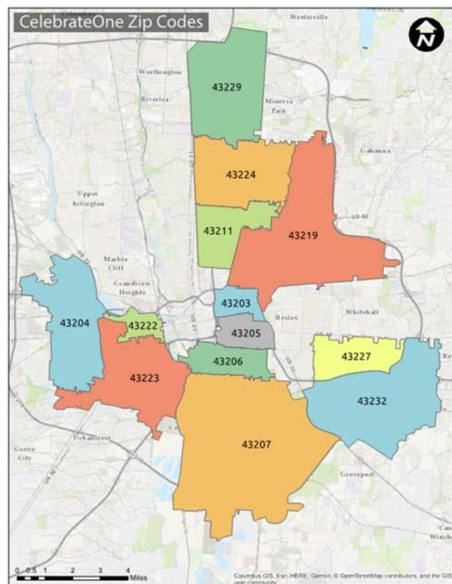
FIMR (N=48)



Franklin County (N=254)



CelebrateOne priority areas include Franklinton (43222,43223), Hilltop (43204), Linden (43211), Near East (43203,43205), Northeast (43219), Northland (43224,43229), South Side (43206,43207), and Southeast (43227,43232)

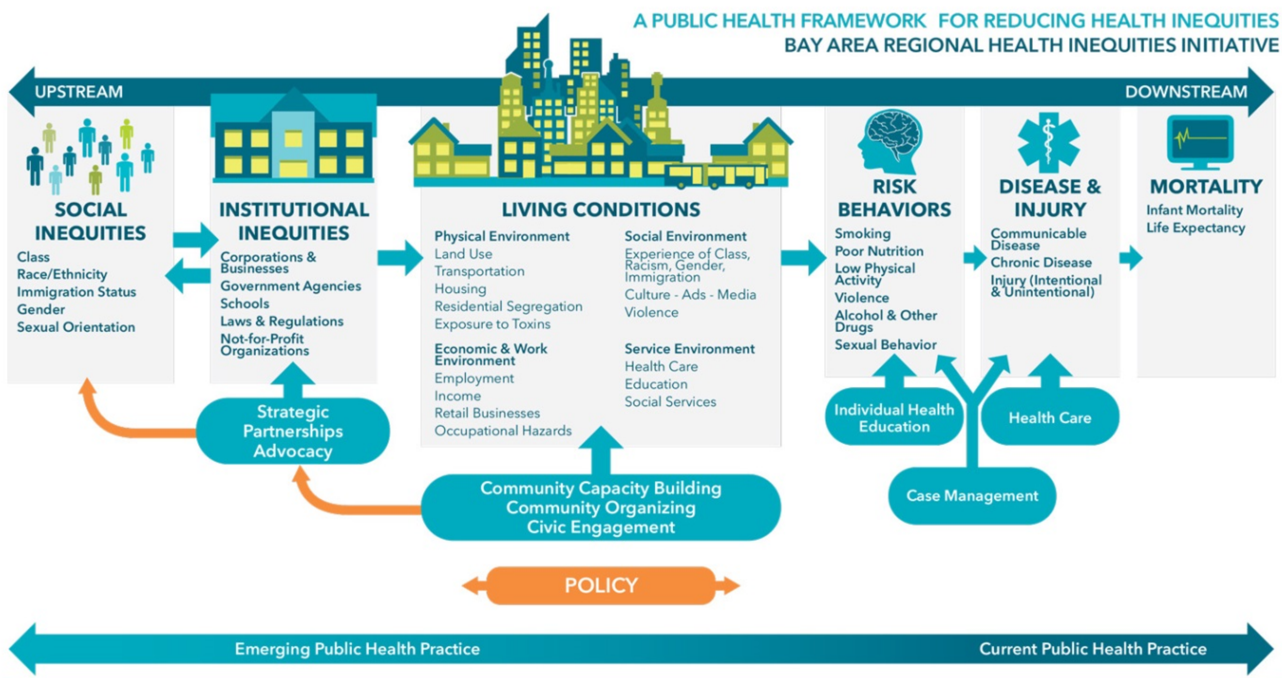


SOCIAL DETERMINANTS OF HEALTH

The social determinants of health are the conditions in which people are born, grow, live, learn, work, age and play. These include a broad range of circumstances that, according to the World Health Organization (WHO), are shaped by the distribution of money, power and resources at local, national and global levels.[2] Such circumstances include the quality of the physical and built environment; opportunities for employment, income, early childhood development and education; access to healthy foods, health insurance coverage, health care and social services; culturally and linguistically appropriate services in public and private sectors; interpersonal and community safety; protection against institutionalized systems of oppression; and public and private policies and programs that prioritize health.

These environmental, social and economic factors powerfully influence health outcomes for entire populations and are mostly responsible for health inequities—the unfair and avoidable differences in health status seen within and between communities. Understanding what creates or limits opportunities for health is essential for developing action steps to address and modify them. By addressing and improving the social determinants of health and promoting justice and equity for everyone, we can promote a culture that empowers everyone to live their healthiest lives, and achieve health at the individual, community and societal levels.[3]

Figure: A Public Health Framework for Reducing Health Inequities



Source: Let's Get Healthy California, Bay Area Regional Health Inequities Initiative: https://letsgethealthy.ca.gov/sdoh/

[2] World Health Organization (WHO). "About social determinants of health." Available: https://www.who.int/social_determinants/sdh_definition/en/

[3] Portrait of Promise: The California Statewide Plan to Promote Health and Mental Health Equity – Report to the Legislature and the People of California by the Office of Health Equity. Available: http://www.cdph.ca.gov/programs/Documents/CDPHOHEDisparityReportAug2015.pdf

SIGNIFICANT FINDINGS

INDIVIDUAL BEHAVIOR

According to data from the National Survey on Drug Use and Health, 8.5 percent of women in the U.S. used illicit drugs during pregnancy in 2017.[4] While Franklin County FIMR's sample size is far smaller and much more selective than that of this national survey, 2018 findings indicate that mothers in 20 of the 48 cases reviewed (41.7 percent) used illicit drugs during pregnancy. The majority of cases indicated marijuana use (55.0 percent); other substances used included opiates, amphetamine, cocaine, methamphetamine, oxycodone, heroin, prescription drugs or a combination of these. While the majority of cases were assessed for substance use at least once during their pregnancy, only two cases were known to have received treatment for substance use.

A 30-year-old father of a decedent described the situation with the mother of his child:

> *"She had a friend that was always torn up on [Xanax] bars— looking sloppy and stupid. I don't know if they did that together. She didn't act high. She played it off real cool. I couldn't tell nothing… I was locked up, couldn't go anywhere. She was just out there [in the neighborhood], doing what she does. At that time, she was using [opiates]. She said she quit, but I didn't really know… I know people out there and they talk. They say they found [opiates] in her system when she was pregnant. That's why children's services got involved…"*

Prenatal substance use has been linked with several harmful maternal and fetal consequences.[5] To address this issue, the American College of Obstetricians and Gynecologists (ACOG) states: "Every leading medical and public health organization that has addressed this issue…has concluded that the problem of drug and alcohol use during pregnancy is a health concern best addressed through education, prevention and community-based treatment, not through punitive drug laws or criminal prosecution." Franklin County FIMR therefore recommends the following: ***Approach drug use and addiction before, during, and after pregnancy as a health problem instead of a justice issue.***

Practical approaches for implementation of this recommendation include:

- Pair women at high risk for a substance exposed infant with peer advocates who help them navigate the health and social service system, identify resources, and prepare them for what to expect following birth.
- Enhance supports for women using tobacco and other drugs by increasing access to non-judgmental cessation education, treatment programs and vigorous follow-up.
- Eliminate criminal penalties, including incarceration and threats of incarceration, for women and their providers, as they are more likely to deter women from seeking health care than they are to protect children or reduce the use of harmful substances. They also drive a wedge into the patient-provider relationship, impinge on providers' ability to achieve the best medical outcomes for their patients, and may negatively affect appropriate treatment for pain or substance addiction.
- Strengthen the behavioral health workforce through increased reimbursement rates, equal insurance coverage for behavioral health services, student loan repayment programs, and by continuing to integrate with physical health care.

[4] SAMHSA. Center for Behavioral Health Statistics and Quality. National Survey on Drug Use and Health, 2016 and 2017.
[5] Forray A. Substance use during pregnancy. F1000Res. 2016; 5:F1000 Faculty Rev-887. doi:10.12688/f1000research.7645.1.

BIOLOGICAL PROCESSES

In Franklin County, nearly 1 in 3 women of reproductive age (18-44 years) has been diagnosed with a depressive disorder.[6] According to Perinatal Outreach & Encouragement for Moms (POEM), pregnancy and postpartum depression is the number one complication of childbirth, affecting nearly 1 million women in the U.S. each year.[7] In Franklin County, mothers in 24 of the 48 FIMR cases (50.0 percent) had a history of documented mental illness and/or demonstrated clinical symptoms of mental illness, suicidal attempts or gestures, hospitalization or supervised medication, or who experienced other indicators of mental illness during pregnancy or while the infant was alive. For these mothers, mental health conditions experienced during and after pregnancy included depression, anxiety, bipolar disorder, post-traumatic stress disorder, mood disorder, suicidal ideation and self-mutilation. In 20 FIMR cases (41.7 percent), maternal mental health was not assessed at all.

A 19-year-old mother described her experience with her mental health issues not being addressed in care:

> *"[The Community Clinic] would always tell me something different. They would never really explain nothing to us. We had a lot of questions and they would just leave us in the dark…I would bring up [my depression] and they would just let it go."*

A study that examined the effects of maternal mental illness on pregnancy outcomes indicates that "mental illness not only affects the mother's well-being but may also have significant effects on fetal outcomes…Prenatal disorders can affect infant health and behaviors long after birth, adult chronic diseases have been linked to events during pregnancy, and postpartum psychiatric disorders pose substantial risk for infants and mothers."[8] Franklin County FIMR therefore recommends the following: **Connect pregnant and postpartum women to culturally appropriate mental health assessments, as well as treatment programs with appropriate specialized training, as needed.**

Practical approaches for implementation of this recommendation include:

- Coordinate a system that effectively links prenatal and pediatric care to facilitate screening for postpartum mental health at 1-, 2-, 4- and 6-month well-child visits; referral to community resources for treatment of mental illness; and provision of support for the parent-child relationship, including breastfeeding support.
- Screen women at least once during the perinatal period for historical, familial and current depression, anxiety, and other mental illness symptoms using a standard tool; couple screening with appropriate follow-up and treatment when indicated (including medical therapy, referrals to appropriate care, or both).
- Make standardized mental health screening tools available in every clinical setting, and educate clinicians and office staff on their use and response protocol.
- Establish a collaborative care model for the management of perinatal mental health disorders using case managers to link primary care providers, obstetric providers, patients and mental health specialists.

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[6] CDC. Behavioral Risk Factor Surveillance System Data. Atlanta, Georgia: US Department of Health and Human Services, CDC, 2013-2017. Analysis by Office of Epidemiology, Columbus Public Health.

[7] Mental Health America of Franklin County. "About Pregnancy and Postpartum Depression." Available: http://mhafc.org/get-help/maternal-mental-health/about-ppd/

[8] Gold KJ, Marcus SM. Effect of maternal mental illness on pregnancy outcomes. *Expert Rev Obstet Gynecol.* 2008; 3(3): 391-401. doi: 10.1586/17474108.3.3.391.

HEALTH & SOCIAL SERVICES

Throughout the literature, women have reported multiple barriers to accessing prenatal care. Noted barriers include: negative feelings about the pregnancy; having a negative attitude towards prenatal care, its utility, health care providers or staff; long appointment wait times; non-inclusion of male partners in the prenatal experience; fear of medical examination or procedures; lacking health insurance coverage; being overwhelmed by personal issues; experiencing transportation challenges; problems with child care; and not having a regular provider before pregnancy.[9] Among Franklin County FIMR cases, accessing prenatal care was a notable challenge: 15 cases (31.3 percent) either received no prenatal care or started care after the first trimester of pregnancy; 17 cases (35.4 percent) missed multiple prenatal care appointments, resulting in sporadic care; and 20 cases (41.7 percent) delayed seeking care after the onset of a concerning symptom (e.g., lack of fetal movement, loss of fluid, etc.). The vast majority of cases with challenges accessing prenatal care also noted significant challenges with employment, income, transportation and housing.

A 20-year-old mother describes her issues accessing prenatal care:

> *"[Medicaid HMO transportation services are] why I missed some of my appointments. There were times I would schedule my cab and I would be waiting all day. I'd call people and they'd tell me they were on the way, and they would never show or they would show up an hour after my appointment had already started. I would have to reschedule."*

According to Canada's Chief Public Health Officer, "Ongoing prenatal care is important to achieving a healthy pregnancy and birth, and positively influencing the health of the child in the early years. It provides a pregnant woman with the opportunity to access health information and identify risks and underlying factors that can influence her health and the health of her fetus/child. Prenatal care can also include activities targeted at partners and can provide a means of identifying issues related to living in poverty or with mental health challenges followed by the provision of counselling, skills training, parenting programs, breastfeeding support and child care."[10] Franklin County FIMR therefore recommends the following: ***Enhance women's ability to access quality prenatal care in the first trimester of pregnancy.***

Practical approaches for implementation of this recommendation include:

- Invest in group prenatal care models, doula services, community health workers, and home visitors to optimize women's engagement in prenatal care and to teach self-advocacy.
- Establish prenatal care options with flexible scheduling, including evening and weekend clinic hours and drop-in prenatal care services, to improve access to care.
- Invest in and promote mobile units and telemedicine technologies to expand and improve prenatal care services, which may lower visit-related costs, reduce time away from work, lessen transportation and child care barriers, and improve patient satisfaction.
- Expand options for non-emergent medical transportation for pregnant women by providing bus passes, taxi vouchers or rideshare credits, or by using an alternate means of transportation to bring women to care.

[9] Heaman MI, et al. Barriers, motivators and facilitators related to prenatal care utilization among inner-city women in Winnipeg, Canada: a case-control study. *BMC Pregnancy Childbirth*. 2014; 14:227. doi:10.1186/1471-2393-14-227.
[10] The Chief Public Health Officer's Report on the State of Public Health in Canada, 2009 – Growing up well – priorities for a healthy future. Available: https://www.canada.ca/en/public-health/corporate/publications/chief-public-health-officer-reports-state-public-health-canada/report-on-state-public-health-canada-2009/chapter-5.html

PHYSICAL ENVIRONMENT

On a single night in 2018, roughly 10,249 people were experiencing homelessness in Ohio; approximately 32 percent of these were people in families with children.[11] In addition to homelessness, housing instability affects a number of people in Ohio and Franklin County. Challenges such as high housing costs can lead to overcrowding, substandard housing conditions, frequent moves, foreclosure or eviction, all of which may negatively affect the health of individuals and communities.[12] Families in 18 of Franklin County FIMR's 48 reviewed cases (37.5 percent) noted issues with housing; 15 of these exhibited a living situation that was substandard or unstable, resulting in frequent moves before, during or after the pregnancy. Housing status was not assessed in 27 FIMR cases (56.3 percent).

A 20-year-old mother describes her experience with unstable housing:

> *"After I had the baby, me and my best friend was staying with my aunt…It was more comfy at my aunt's because I had a bed there. But my aunt ended up having to move and she just kind of threw us to the wolves. She said we couldn't come with her because she just wanted to focus on her family. So I had to come back home to this…I don't have a bed. We kind of still struggle with bed bugs. We're stuck in this house until my mom has the money to move."*

One study that evaluated homelessness during pregnancy as a unique, time-dependent risk factor for adverse birth outcomes found that "homeless women are more likely than housed women to report violence exposure, substance use, low educational level, obesity or underweight, and chronic physical and mental health conditions—all potentially compounded by decreased access to health care services. Each of these conditions imposes an independent risk for poor pregnancy outcomes; frequently they occur together."[13] Franklin County FIMR therefore recommends the following: ***Increase accessibility to safe, quality, affordable housing.***

Practical approaches for implementation of this recommendation include:

- Prioritize measures to prevent homelessness during pregnancy and postpartum through enhanced access to housing assistance, housing relocation and stabilization services, and investments in rapid rehousing programs.
- Provide "prescriptions" for housing and/or housing-related costs (e.g., utilities) that link unstably housed pregnant women and families to housing options, community-based resources, education, and financial incentives.
- Increase investment in the Ohio Housing Trust Fund to increase the availability of safe, accessible, and affordable housing for low-income and other at-risk women and families.
- Increase funding for comprehensive prenatal housing programs, such as Healthy Beginnings at Home, as well as additional research directed to the prevention of homelessness for pregnant and newly-parenting families.

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[11] The U.S. Department of Housing and Urban Development. The 2018 Annual Homeless Assessment Report (AHAR) to Congress: Part 1: Point-in-Time Estimates of Homelessness. Available: https://files.hudexchange.info/resources/documents/2018-AHAR-Part-1.pdf

[12] Healthy People 2020. "Housing Instability." Available: https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/housing-instability

[13] Cutts DB, et al. Homelessness during pregnancy: a unique, time-dependent risk factor of birth outcomes. *Maternal Child Health J.* 2015; 19(6):1276-83. doi: 10.1007/s10995-014-1633-6.

SOCIAL CIRCUMSTANCES

A growing body of research shows that stress experienced during pregnancy can have significant negative effects on maternal and fetal health, pregnancy outcomes, and human development across the lifespan.[14] In Franklin County, 25 of the 48 reviewed FIMR cases (52.1 percent) reported experiencing multiple family, economic, environmental or other stressors during pregnancy or while the infant was alive. Families of decedents reported feeling stressed about money; employment; neighborhood conditions; housing; transportation; interpersonal or community violence; being hungry; having a chronic disease, addiction or disability; having conflicts with family or romantic partners; dealing with racism and communication barriers; and even the pregnancy itself.

A 20-year-old mother describes her stressors during pregnancy:

> *"When I was working, I was doing everything for myself.… Once I stopped working, a lot of things went down. It's not that [my family] didn't want to help me but everyone's in a struggle. My Grandma, my mom, [they] wasn't able to give me food and stuff like that…I was hungry sometimes. Honestly, I would throw up because I would be hungry. And I think people thought I was joking. But that kind of happened a lot...My best friend would help me as best she could. She would get us food until she stopped working."*

ZERO TO THREE, an organization that works to ensure that babies and toddlers benefit from family and community connections critical to their well-being and development, states: "Some of our nation's costliest social problems—like child abuse and neglect, school failure, poverty, unemployment, and crime—are rooted in early childhood. Voluntary home visiting matches parents with trained professionals to provide information and support during pregnancy and throughout their child's first years—a critical developmental period. Research shows home visiting can be an effective method of delivering family support and child development services."[15] Franklin County FIMR therefore recommends the following: ***Enroll women and families with multiple stressors into evidence-based home visiting.***

Practical approaches for implementation of this recommendation include:

- Coordinate agencies and health systems that serve pregnant women, young children and families to build an efficient and effective infrastructure for home-visiting programs.
- Develop culturally appropriate strategies to engage "difficult-to-reach" and "high-risk" communities in home-visiting programs, including immigrant families, families with low literacy/health literacy and limited English proficiency, families that are socially isolated and families living in poverty
- Continue to standardize and simplify home visiting referral processes to improve the coordination of care
- Ensure that home-visiting programs are culturally responsive, linguistically appropriate and family-centered, emphasizing collaboration and shared decision-making

[14] Coussons-Read ME. Effects of prenatal stress on pregnancy and human development: mechanisms and pathways. *Obstet Med.* 2013; 6(2):52–57. doi:10.1177/1753495X12473751.
[15] ZERO TO THREE. "The Research Case for Home Visiting." Available: https://www.zerotothree.org/resources/144-the-research-case-for-home-visiting.

HIGHLIGHTING BLACK FETAL AND INFANT MORTALITY

In Franklin County, as is true for the rest of the U.S., Black infants are more than twice as likely to die as White infants. This racial disparity has not only persisted over time, but is actually wider now than it was in 1850, 15 years before the end of slavery, when most Black women were considered property instead of people. In one year, this racial disparity equates to more than 4,000 Black babies lost across the nation. This crisis is also intimately intertwined with the issue of death and near death among Black mothers themselves. Across the U.S., Black women are 3-4 times as likely to die from pregnancy-related causes as their White counterparts.[16]

For Black women, exposure to discrimination and racialized stress throughout the lifespan has been noted as a contributor to poor birth outcomes. Structural racism, in one study defined as a composite variable consisting of inequities surrounding employment, education, incarceration and median household income, has been associated with increased rates of infant mortality for the Black community but not for the White community.[17]

Linda Goler Blount, president and CEO of the Washington-based Black Women's Health Imperative states:

> *"It's important to think about how we use language. It is very common for people to say 'race plays a factor,' and in fact it's not race so much as racism and the experience of being a black woman or a person of color in this society."*[18]

In the *Our Bodies, Our Lives, Our Voices: The State of Black Women and Reproductive Justice* report, authors quote the Black Mamas Matter Alliance's call to action, stating: "'To prevent pregnancy-related deaths and sustainably improve maternal health, states must make transformative investments in the health and well-being of Black women and girls throughout the life course, including in the areas of housing, nutrition, transportation, violence, environmental health and economic justice.'"[19] Franklin County FIMR therefore recommends the following: ***Understand the context of the Black/African American lived experience and contextualize the effects of institutional racism on fetal and infant mortality disparities.***

Practical approaches for implementation of this recommendation include:

- Expand the diversity of health care and social service providers and ensure that all providers have the education, training and professional development needed to recognize and eliminate bias, and to ensure the provision of person-focused information, counseling and services for culturally effective care.
- Design opportunities for people of color, especially women, femmes and girls, to lead through culturally relevant programs, trainings, workshops and experiences; opportunities should empower communities with the knowledge, skills and tools needed to safeguard their health throughout the life course.
- Invest explicitly in Black communities and enact policy that inhibits gentrification; support policies that eliminate barriers to accessing investment opportunities (including racial and gender-bias in accessing housing, education, employment or capital).
- Increase funding and support for research on racial, ethnic and gender-preference health disparities, to guide development and delivery of evidence-based health care and social services that meet the needs of diverse communities.

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[16] Latoya Ruby Frazler. "Why America's Black Mothers and Babies Are in a Life-or-Death Crisis." *New York Times*. April 2018. Available: https://www.nytimes.com/2018/04/11/magazine/black-mothers-babies-death-maternal-mortality.html

[17] Wallace M, et al. Separate and unequal: Structural racism and infant mortality in the US. *Health Place*. 2017; 45:140-144. doi: 10.1016/j.healthplace.2017.03.012.

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WHAT ARE WE DOING?

SUBSTANCE USE:

- Columbus Public Health's **Alcohol & Drug Services Program** initiated a medication-assisted treatment (MAT) program to treat individuals with substance use disorders. Outreach efforts have also been expanded to reach additional high-risk clients.

- The **Columbus and Franklin County Addiction Plan** was developed to prevent substance abuse and addiction, reduce the number of unintentional overdose deaths, expand access to treatment, and improve community safety.

MENTAL HEALTH:

- **POEM (Perinatal Outreach & Encouragement for Moms)** has initiated a new program (2BNurtured), which uses a peer support delivery model to close gaps in care for women of color with maternal mental health complications.

PRENATAL CARE:

- **Moms2B** received a $300,000 grant from OSU Physicians for a nurse-led navigator system to assure that program participants have access to postpartum care and are able to enroll in a primary care medical home. In 2018, Moms2B reached 492 pregnant women in the eight CelebrateOne priority neighborhoods; in the first quarter of 2019, Moms2B enrolled 148 new pregnant women and welcomed over 70 fathers in Dads2B.

- With funding from the U.S. Department of Transportation, **Smart Columbus** is developing an enhanced system to easily provide flexible, reliable, two-way transportation to expectant mothers using Medicaid-brokered transportation services. A study to examine non-emergency transportation services for pregnant women will launch in June 2019.

- The **Ohio Perinatal Quality Collaborative (OPQC)** has ongoing statewide quality improvement projects that address coordination of care for women with substance use disorders, smoking and prior preterm birth.

- With the statewide **Ohio Equity Institute (OEI)** grant, CelebrateOne hired five (5) additional community health workers in 2018 to connect pregnant women and their networks to needed services.

HOUSING:

- **Franklin County Department of Job and Family Services (FCDJFS)** partners with Franklin County Municipal Court, Community Mediation Services, and the Legal Aid Society of Columbus to work with landlords and the court to find solutions and resources to avoid eviction. FCDJFS is present at eviction court daily to expedite emergency assistance payments to families facing eviction through the Temporary Assistance for Needy Families (TANF)-funded Prevention, Retention and Contingency program (PRC). In 2018, 349 eligible families received up to $1,500 for assistance with rent and utilities through this initiative.

- With funding from the Ohio Housing Finance Agency (OHFA), CelebrateOne has implemented a comprehensive pilot program, known as **Healthy Beginnings at Home**, to provide rental assistance, health care and social services to low-income households at risk for infant mortality.

HOME VISITING:

- Columbus Public Health's **Maternal Child Health** programs have begun transitioning to an evidence-based home visiting model known as Healthy Families America.

- Columbus Public Health's **My Baby & Me Program** has developed the Fatherhood Fundamentals initiative to provide individual parenting education, group-based parenting education and case management to fathers associated with Healthy Start moms and babies.

- Columbus Public Health's **Women, Infants and Children (WIC) Program** has been working with additional community agencies to expand outreach and enrollment of eligible people into the program. They have also partnered with Mid-Ohio Food Bank to host produce markets at two WIC locations.

COMMUNITY ORGANIZATIONS & PROGRAMS

- **CelebrateOne** is Franklin County's collective impact initiative, formed in June 2014 to implement the Greater Columbus Infant Mortality Task Force's eight recommendations to reduce the community's alarming infant mortality rate by 40 percent and to cut the racial health disparity gap in half by 2020. https://celebrateone.info/

- **Columbus Public Health Maternal Child Health Home Visiting** provides evidence-based home visiting services to pregnant and parenting women. The focus of this program is to improve birth outcomes and reduce maternal morbidity and infant mortality by supporting women during pregnancy and postpartum, and fostering healthy parent and child relationships. https://www.columbus.gov/publichealth/programs/Home-Visiting-for-Pregnant-Women,-Mothers-and-Babies/

- **My Baby & Me**, Columbus Public Health's federal Healthy Start home visiting program, serves pregnant and parenting women in Franklin County through in-home support and education. https://www.columbus.gov/publichealth/programs/Newborn-Home-Visiting/My-Baby-and-Me/

- **Columbus Public Health's Alcohol and Drug Services** primarily serves clients who are mandated to treatment. Walk-in and scheduled assessments are available; outpatient, intensive outpatient, and mediation-assisted treatment are provided. https://www.columbus.gov/publichealth/programs/Alcohol-and-Drug-Abuse/

- **Franklin County Department of Job and Family Services** is a county, state and federally supported agency responsible for basic financial, medical and social services programs. This agency provides workforce development and family support programs that improve the quality of life for Franklin County residents. https://jfs.franklincountyohio.gov/

- The Franklin County Department of Job and Family Services' **Emergency Assistance (PRC) programs** are available to ensure that no one is forced to go without the basic essentials of food, clothing, shelter, medical care and necessary life-sustaining services because of a lack of resources. These programs ensure that many eligible children and adults receive assistance each month through in-house or contracted services. https://jfs.franklincountyohio.gov/emergency-assistance-(prc)

- **Franklin County Women, Infants and Children (WIC)** is a supplemental nutrition program that provides nutrition education, nutritious foods, breastfeeding support and referrals to eligible prenatal, postpartum, and breastfeeding women, infants and children up to age 5. https://www.columbus.gov/publichealth/programs/Women-Infants-and-Children-WIC/

- Columbus Public Health and CelebrateOne's **Infant Safe Sleep** efforts focus on distributing portable cribs to families that otherwise would not have a safe sleep place for their baby, facilitating Safe Sleep Ambassador trainings to teach community members the American Academy of Pediatrics' safe sleep recommendations, and implementing a media campaign. In 2018, over 1,650 cribs were distributed and 776 new Ambassadors were trained. https://www.columbus.gov/publichealth/programs/Infant-Safe-Sleep-Program/

- **The Legal Aid Society of Columbus (LASC)** provides civil legal aid and advocacy to combat unfairness and injustice and to help people rise out of poverty. https://www.columbuslegalaid.org/

- **Moms2B** is an Ohio State University Wexner Medical Center community group model for pregnant women that provides weekly education and support sessions to promote healthy lifestyle choices. It also works to address the social determinants of health, empowers and connects moms with support services, and teaches health care professionals to serve with respect and empathy. https://wexnermedical.osu.edu/obstetrics-gynecology/pregnancy/moms2b

- **Perinatal Outreach & Encouragement for Moms (POEM)** serves pregnant and parenting women with maternal mental health complications through direct access to specialized clinical services (including free counseling for uninsured/underinsured), mom-to-mom mentoring, support groups and collaboration with other programs to aid in housing, legal and case management needs. POEM also includes 2BNurtured, a program administered by and for African-American women. https://mhafc.org/get-help/maternal-mental-health/poem-services/

APPENDIX: PRESENT & CONTRIBUTING FACTORS

Each of these variables is from the detailed list of present and contributing factor codes, adapted from the National Fetal and Infant Mortality Review's "Present & Contributing Variables" document. Numbers represent the cases in which the factor was present. Note: Some variables may be underreported due to missing information in available records.

1. Preconception/Interconception Care

0	Preconception care
22	Postpartum visit kept
20	Pregnancy planning/BC education
3	Dental/oral care
10	Chronic disease control education
5	Weight management/dietician
42	Bereavement referral (includes referral for hospital chaplain at delivery)

2. Medical: Mother

15	Teen pregnancy (≤19)
9	Pregnancy > 35 years
11	Cord problem
10	Placental abruption
0	Placenta previa
7	Chorioamnionitis
5	Preexisting diabetes
1	Gestational diabetes
3	Incompetent cervix
4	Infection—bacterial vaginosis
12	Infection—STI: ___________
18	Infection—other: ___________
3	Multiple gestation
25	Weight pre-pregnancy (BMI <18.5 or >25)
14	Insufficient/excess weight gain
8	Poor nutrition
1	Pre-existing hypertension
7	Pregnancy induced hypertension: pre-eclampsia/eclampsia
8	Preterm labor
15*	Pregnancy <18 months apart
9	PROM/PPROM/prolonged rupture of membrane
7	Dental/oral issues
10*	Previous voluntary termination of pregnancy
12*	Previous spontaneous abortion
9	Oligohydramnios/polyhydramnios
3*	Previous fetal loss
1*	Previous infant loss
7*	Previous low-birth weight delivery
11*	Previous preterm delivery
8*	Previous C-section: #_____
1*	Previous ectopic pregnancy: #_____
28	First pregnancy <18 yrs. old
7	≥4 Live births
0	Assisted reproductive technology

3. Family Planning

13	Intended pregnancy
19	Unintended pregnancy
2	Unwanted pregnancy
36	No birth control
0	Failed contraceptive
0	Lack of knowledge: methods
0	Lack of resources

4. Substance Use

17	Positive drug test
9	No drug test
26	Tobacco use: history
24	Tobacco use: current
20	Alcohol use: history
13	Alcohol use: current
20	Illicit drug use: current—Type:
17	Illicit drug use: history—Type:
2	Use of unprescribed meds—Type:
1	Over the counter drug/prescription:

5. Prenatal Care/Delivery

6	Standard of care not met
5	Inadequate assessment
3	No prenatal care
9	Late entry to prenatal care
8	Lack of referrals
17	Missed appointments
1	Multiple providers/sites
6	Lack of dental care
12	Inappropriate use of ER: #_____

6. Medical: Fetal/Infant

0	Non-viable fetus
8	Low birth weight <2500 g
13	Very low birth weight <1500 g
16	Extremely low birth weight <750 g
3	Intrauterine growth restriction
6	Congenital anomaly
16^	Prematurity (excludes induced labors)
4^	Infection/sepsis
0^	Failure to thrive
0^	Birth injury
0^	Feeding problem
8^	Respiratory distress syndrome
0^	Developmental delay
0^	Inappropriate level of care
3^	Positive drug test

7. Pediatric Care

0^	Standard of care not met
0^	Inadequate assessment
0^	No pediatric care
0^	Lack of referrals
0^	Missed appointments/immunizations
1^	Multiple providers/sites
0^	Inappropriate use of ER

8. Environment

8	Unsafe neighborhood
11	Substandard housing
2	Overcrowding
15	Secondhand smoke
0^	Little/no breastfeeding
0^	Improper or no car seat use
0^	Unsafe sleep location
0^	Infant overheating
0^	Not back sleep positioning
0^	Apnea monitor misuse
0^	Lack of adult supervision

9. Injuries

0	Motor vehicle occupant
0	Abusive head trauma

10. Social Support

7	Lack of family support
5	Lack of neighbor/community support
11	Lack of partner/FOB support
3	Single parent
0	Living alone
18	≤12th grade education/no GED
2	Special education
3	Physical or cognitive disability

11. Partner/FOB/Caregivers

27	FOB Employed
2	History of mental illness
17	Substance/tob use/abuse: current
19	Substance/tob use/abuse: history

12. Family Transition

15	Frequent/recent moves
3	Living in a shelter/homeless
0	Concerns regarding citizenship
8	Divorce/separation
0	Multiple partners
1	MOB: prison/parole/probation
3	FOB: prison/parole/probation
4	Major illness/death in family

13. Maternal Mental Health/ Stress

21	History of mental illness
12	Depression/mental illness postpartum
25	Multiple stresses
6	Social chaos
43	MOB employed
24	Concern about enough money
10	Work/employment problems
3	Child/children with special needs
7	Problems with family/relatives
11	Lack of grief support

14. Family Violence/Neglect

16	History of abuse to MOB
8	Current abuse to MOB
1	History of abuse—decedent
5	History of abuse—other child
0	Current child abuse—decedent
3	Current child abuse—other child
0	History of child neglect—decedent
4	History of child neglect—other child
12	Multiple CPS referrals
15	Multiple police reports

15. Culture

6	Language barriers
2	Beliefs regarding pregnancy/health

16. Payment for Care

3	Private
0	Medicare
40	Medicaid
9	Self-pay/medically indigent

17. Services Provided

25	WIC
1	Mother/child not eligible
1	Poor provider communication
8	Client dissatisfaction—prenatal
11	Client dissatisfaction—hospital
0	Client dissatisfaction—pediatric
2	Dissatisfaction—support services
5	Lack of child care

18. Transportation

0	No public transportation
11	Inadequate/unreliable

19. Documentation

4	Inconsistent unclear information
4	Inconsistent vital records data
6	Missing data
0	No death scene investigation
0	No doll reenactment

20. Added Variables

8	History of homeless as a child (includes displacement to a refugee camp)
7	History of neglect as a child
4	Declined/not engaged in needed mental health services
32	Inadequate assessment of non-medical needs
2	No placental pathology
1	Lack of referrals for known lethal condition
1	Inflexible/ineffective prenatal education
19	History of trauma
9	Declined social services: ___________
0	Delivery outside hospital
32	No autopsy
13	History of other chronic disease
2	Tried but unable to follow med. advice
3	No domestic violence screening
20	MOB did not seek timely medical care
3	Cultural barriers
3	Possible un-dx mental illness
33	No postpartum birth control
0	Impact of racism
5	Poor relations or communication
2	Inadequate coordination of care
22	Declined recommended course of care
4	History of pre-e
1	Abnormal uterine cavity
1	Carcinoma in situ
1	E-cigarettes "Vaping"

All cases are out of 48 unless otherwise noted (i.e., the full sample)
**Indicates a denominator of 30 (i.e., cases with known previous pregnancy)*
^Indicates a denominator of 15 (i.e., all infant deaths)