

# KY-MOMS MATERNAL ASSISTANCE TOWARDS RECOVERY (MATR)

2023 ANNUAL OUTCOME REPORT



## Project Acknowledgments

### Presented by

Kentucky Department for Behavioral Health, Developmental, and Intellectual Disabilities, Division of Behavioral Health  
275 E. Main Street 4W-F  
Frankfort, KY 40621  
(502) 564-4527

#### **WENDY MORRIS**

Commissioner, Department for Behavioral Health, Developmental and Intellectual Disabilities

#### **KOLEEN SLUSHER**

Director, Division of Behavioral Health

#### **MAGGIE SCHROEDER**

Program Manager,  
Substance Use Treatment and Recovery Services

#### **KATIE STRATTON**

KY-Moms MATR Program Administrator,  
Substance Use Treatment and Recovery Services

### Presented by

University of Kentucky Center on Drug and Alcohol Research  
333 Waller Ave, Suite 480  
Lexington, KY 40504

Postnatal assessments completed between July 2019 and June 2020 for women who gave birth between December 2018 and December 2019.

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## Executive Summary

*KY-Moms MATR is a state-funded prevention and case management program aimed at reducing substance use and increasing positive birth outcomes for Kentucky women who are at risk for negative birth outcomes.*

### Evaluation Methods

The KY-Moms MATR outcome evaluation includes a face-to-face evidence-based assessment by program staff from Community Mental Health Centers (CMHCs) to assess substance use, mental health symptoms, intimate partner abuse, and other factors such as education, employment status, and living situation prior to pregnancy and while involved in the program.<sup>1</sup>

This report presents: (1) demographic and targeted factors of both women who participated in the KY-Moms MATR program prior to the birth of their babies, and were eligible for a postnatal follow-up interview between July 2021 and June 2022, (2) self-reported birth and infant outcomes for KY-Moms MATR clients are

described for women who participated in the KY-Moms MATR program before their babies were born, and (3) changes in targeted risk factors for 37 women who participated in the KY-Moms MATR program before their babies were born, completed a face-to-face evidence-based baseline interview with program staff, and completed a postnatal follow-up interview between July 2021 and June 2022. In addition, this report examines client satisfaction with their program experience. Finally, demographic and targeted factors are described for women who participated in the KY-Moms MATR program *after* their babies were born and were eligible for a postnatal follow-up interview between July 2021 and June 2022.

### Who Does the KY-Moms MATR Program Serve?

Overall, 80 pregnant women participated in the

KY-Moms MATR program and completed a pre-birth baseline assessment for this report.<sup>2</sup> The majority of pregnant clients coming into the program were White (91.3%), about 28 years old, and either never married (42.5%) or married or cohabiting with a partner (36.3%). Of the clients who were married or cohabiting (n = 29), the majority (96.6%) reported that their current partner was the father of the baby. Over 1 in 4 clients had less than a high school diploma/GED and the majority (66.3%) were not currently employed.

Most clients (73.9%) were referred to KY-Moms MATR through an outside agency such as a CHMC, health care provider, or Health Access Nurturing Development Services (HANDS). A small

<sup>2</sup> Clients who completed a pre-birth baseline (n = 80) entered the KY-Moms MATR program between June 2020 and November 2021 and were eligible for follow-up between July 2021 and June 2022. There was an average of 12.4 days between when the client entered the program and when the baseline assessment was completed.

<sup>1</sup> For more information, see: Scrivner, A., Logan, T., Cole, J., & Miller, J. (2020). *Evidence Base for the KY-Moms MATR Evaluation Assessment and Methods*. Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research.

proportion (1.3%) were referred to the KY-Moms MATR program through the KY-Moms MATR prevention program. The remaining clients were self-referred (5.5%), referred by the justice system (2.5%), or referred by friends or family (2.5%). Overall, clients were an average of 25 weeks pregnant when they completed a prenatal baseline assessment and 82.5% reported that they had been pregnant before. Clients reported an average of 6.3 prenatal visits with a health care professional. Over half of clients (55.8%) were planning to breastfeed their babies.

KY-Moms MATR clients reported on several specific behavioral health risks associated with negative birth outcomes before becoming involved in the program. In the six months before pregnancy, 80.3% of clients reported illegal drug use, 39.5% reported alcohol use, and 72.4% reported smoking tobacco. In the past 30 days at baseline (while pregnant), none of the clients reported illegal drug use, 5.0% reported alcohol use, and 65.0% reported smoking tobacco.

At baseline, clients were asked sixteen items measuring ten types

of adverse childhood experiences from the Adverse Childhood Experiences (ACE). Results indicated that only 7.5% of clients reported no ACE while 32.5% reported experiencing between 4-6 ACE. Specifically, 46.3% experienced emotional maltreatment, 43.8% reported that they had experienced emotional neglect, 43.8% of clients reported sexual abuse as a child, 32.5% of clients reported experiencing physical maltreatment, and 28.7% experienced physical neglect before the age of 18. Less than two-thirds of clients reported their parents were divorced or separated (63.7%) and 47.5% reported they had a household member with a mental illness or had attempted suicide. Over one-third (37.5%) witnessed intimate partner abuse of a parent before the age of 18 and 67.5% reported they had a household member with a substance abuse problem and that. Over one-quarter of clients reported a household member had been incarcerated.

At pre-birth baseline, clients were also asked about situations in which the client may have ever been the victim of a crime, harmed by someone else, or felt unsafe by someone

## Clients Who Gave Birth to Their Babies Prior to Entering KY-MOMS MATR

Clients who had already had their baby when they entered the program and completed a post-birth baseline (n = 19) reported an average of 12.4 visits with a healthcare professional during pregnancy and 2.3 visits since the baby was born. Close to 16% reported that had breastfed their baby and 47.4% had been told by a doctor of any special health care needs since the baby was born. The majority of clients reported illegal drug use (72.2%) and cigarette use (88.9%) during pregnancy. In addition, all clients reported at least one type of adverse childhood experience and almost half of clients reported experiencing physical neglect, physical maltreatment, emotional maltreatment, and sexual abuse in childhood. Over half of clients (52.6%) who already had their baby met study criteria for depression and/or anxiety during pregnancy and 21.1% screened positive for PTSD in the past 6 months. About 47% of clients in the 6 months before pregnancy and 31.6% of clients during pregnancy reported experiencing any type of partner abuse.

other than a parent or guardian. Over two-thirds of clients (63.7%) had ever been abused by a dating or intimate partner, 60.0% reported they had ever been attacked or assaulted, 53.8% reported they had ever been sexually assaulted/raped, and 37.5% reported they had ever been stalked by someone who scared them.

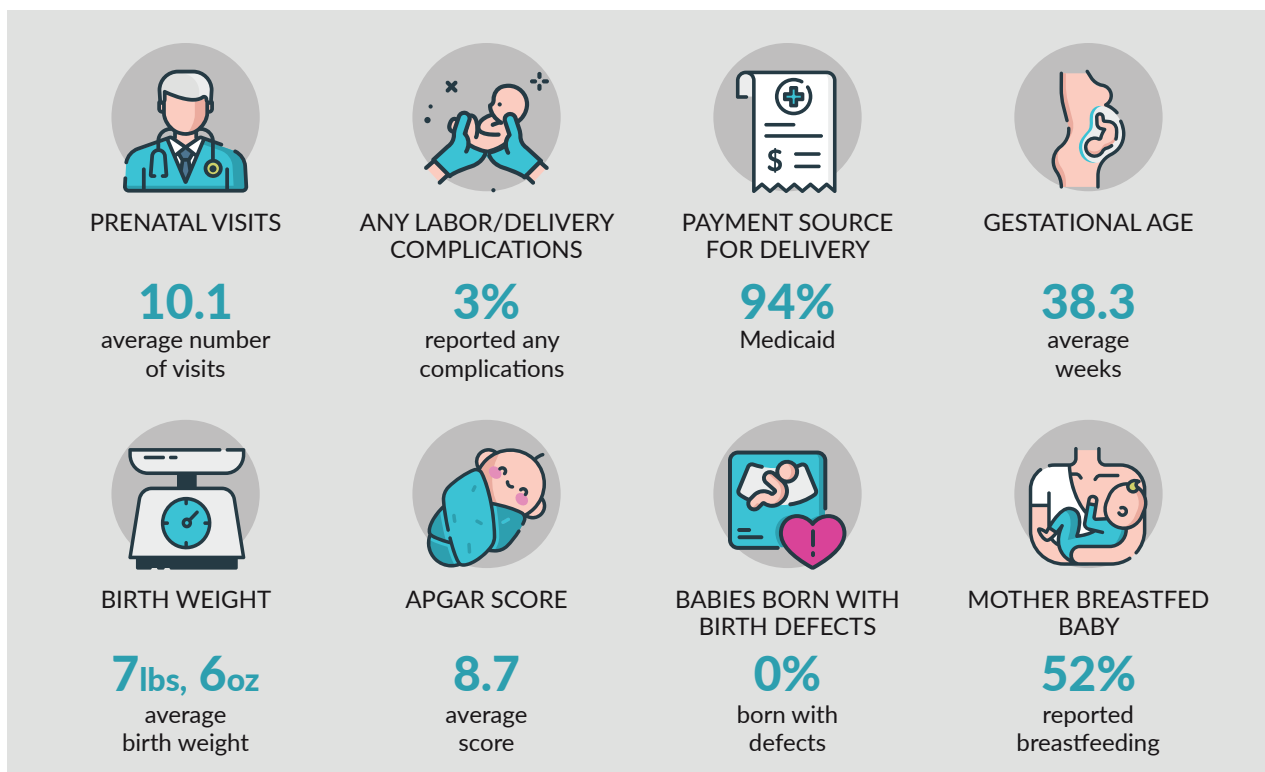
In the six months before pregnancy, 60.0% of clients met study criteria for depression and/or anxiety and 28.7% met study criteria for co-morbid depression and anxiety. In addition, 30.0% screened positive for post-traumatic stress disorder (PTSD) in the 6 months before

pregnancy. Further, 42.5% of clients reported in the 6 months before pregnancy and 11.3% reported in the past 30 days that they had experienced any intimate partner abuse (including psychological abuse, control, physical abuse, and sexual abuse) perpetrated by a current or ex-partner.

### Birth Events and Outcomes of KY-Moms MATR Clients

Even with increased risk factors for negative birth outcomes before participating in the program, women who participated in the KY-Moms MATR program prior to the birth of their babies

had birth outcomes that were very positive overall. Only 3% of clients reported any labor and delivery complications such as premature rupture of membranes, short and fast labor, or prolonged labor. A little less than 40% of KY-Moms MATR mothers reported experiencing at least one maternal health condition such as gestational diabetes (6.3%), hypertension (3.1%), gestational hypertension (15.6%), previous preterm pregnancy (12.5%), or a previous C-section (12.5%). Less than 10% of clients reported a sexually transmitted infection (6.3%) and 18.8% reported hepatitis B or C. Only 9.1% of the babies were born prematurely and 12.1% of



babies were born with low birthweight (less than 5lbs, 8oz). Babies were born with an average APGAR score of 8.7 and none of the babies were born with birth defects. According to the birth event data set, 51.5% of KY-Moms MATR clients either did, or intended to, breastfeed their baby during the period from birth to hospital discharge.

### Change in Targeted Factors from Baseline to Follow-up for Women Who Had Not Had Their Babies Prior to Entering KY-Moms MATR

At baseline, clients are given the opportunity to participate in the follow-up portion of the study and to be contacted by the University of Kentucky Center on Drug and Alcohol Research (UK CDAR) for a follow-up assessment approximately 6 months after the birth of the baby. When UK CDAR staff contact KY-Moms MATR clients, the client must not be living in a jail or a controlled environment. During FY22, the follow-up analysis includes 37 postnatal follow-up assessments with clients who had not had their babies prior to

entering the program.<sup>3</sup>

Clients were asked how their baby was doing at postnatal follow-up and all the mothers indicated the baby was “great” or “good.” Of the women who reported planning on breastfeeding at baseline (n = 14), 78.6% reported having breastfed their baby at postnatal follow-up. Of the clients who reported at prenatal baseline they were not planning on breastfeeding or had not decided yet (n = 10), 30.0% reported having breastfed at follow-up, though none were still breastfeeding.

### Substance Use

Overall, in the six months before the follow-up interview, significantly fewer clients reported using illegal drugs and/or alcohol compared to the 6 months before pregnancy (29.4% and 85.3%, respectively). A trend analysis from report year 2015 to the present shows a steady increase in clients reporting illegal drug use in the 6 months before pregnancy, suggesting the program is increasingly reaching high risk pregnant women with regard to

<sup>3</sup> Clients who completed a postnatal follow-up assessment (n = 37) were admitted to the KY-Moms MATR program and completed baseline assessments between July 2020 and September 2021.

substance use disorder.

Smoking rates also decreased, but not significantly, (from 67.6% of clients in the 6 months prior to pregnancy to 58.8% of clients in the past 6 months at follow-up) as did the number of cigarettes smoked among those who did smoke in the 30 days before pregnancy. About 18% of clients reported using e-cigarettes in the 6 months before pregnancy compared to 30.3% of clients in the past 6 months at follow-up which was not a significant increase, but still a noteworthy increase.

### Mental Health

The percent of women who met study criteria for depression decreased from 48.6% in the 6 months before pregnancy to 24.3% in the 6 months since the birth of the baby. Among mothers with any mental health symptoms, there was a reduction in the number of reported depression symptoms after participation in the KY-Moms MATR program. Specifically, among women who met study criteria for depression in the 6 months before pregnancy (n = 18), they reported an average of 6.8 symptoms at baseline and 2.5 symptoms

in the past 6 months at postnatal follow-up. In addition, the number of clients who met study criteria for depression and/or generalized anxiety in the past 6 months decreased significantly from baseline to follow-up. A trend analysis of mental health shows that rates of depression and/or anxiety at baseline were fairly consistent from 2015 to 2018, and increased after 2019.

In addition, 32.4% of client screened positive for post-traumatic stress disorder (PTSD) in the six months before pregnancy. At follow-up, 38.2% of clients screened positive for PTSD.

### Intimate Partner Abuse and Victimization

The percent of mothers who reported experiencing any form of intimate

*There's not a lot of programs built to help new mothers or expecting mothers going through recovery. [It] gave me good resources and skills that I wouldn't have had otherwise. They were very respectful and open to helping new mothers.*

KY-MOMS MATR FOLLOW-UP CLIENT

partner abuse perpetrated by a current or ex-partner significantly decreased from the 6 months before pregnancy (37.8%) to 16.2% in the past 6 months at postnatal follow-up. Trends show that the percent of clients who reported any partner abuse at prenatal baseline was fairly consistent from 2015 to 2019. In 2020, however, the percent of clients who reported any partner abuse was higher compared to report year 2019 and remained higher in 2022 and 2023. Around one-quarter to over two-fifths of clients reported any form of intimate partner abuse each year in the six months before pregnancy. Overall, the number of clients who reported intimate partner abuse in the 6 months since the birth of the baby was also fairly consistent over the previous 7 years but decreased slightly in 2022 before increasing again in 2023.

The percent of clients who reported experiencing any recent victimization (i.e., any harassment or any assault) decreased significantly from 32.4% the 6 months before pregnancy to 10.8% the past 6 months at follow-up.

### Physical Health

Almost one-third of clients (32.4%) reported having chronic health problems at prenatal baseline. Only 11% of clients reported experiencing chronic pain in the 6 months before pregnancy compared to 5.4% of clients at postnatal follow-up. The average number of days clients reported their mental health was not good decreased significantly from 7.8 days at prenatal baseline to 5.4 days at postnatal follow-up. The number of days clients reported their physical health was not good decreased from 4.2 days in the past 30 days at prenatal baseline to 1.0 days in the past 30 days at postnatal follow-up. Trend analysis shows that each year, the average number of days clients reported their physical health was not good decreased from baseline to follow-up. While the average number of days of their mental health was not good at baseline has been relatively steady over the past 9 years, the average number of days at follow-up has gradually increased.



## Economic Hardship, Living Situation, and Criminal Justice Involvement

Women in the KY-Moms MATR program reported improved economic conditions; significantly fewer clients reporting they had difficulty meeting basic living needs (such as food, shelter, utilities, and telephone) in the past 6 months at follow-up (24.3%) compared to the 6 months before pregnancy (59.5%). Close to one-quarter of clients (24.3%) reported their household had difficulty meeting health care needs (such as not going to the doctor, not having a prescription filled, or not going to the dentist because of financial reasons) in the 6 months before pregnancy. At follow-up, 5.4% of clients reported they had difficulty meeting health care needs in the 6 months since the baby was born. While there was no significant change in living situation at follow-up, the majority of clients at prenatal baseline (69.4%) and postnatal follow-up (83.8%) reported living in a private residence (i.e., their own or someone else's home or apartment). Close to 24% of clients at baseline and 5.4% of clients at follow-up reported being arrested in the past 6 months. Less

than one-quarter of clients (21.6%) reported spending at least one night in jail or prison in the 6 months before pregnancy and 5.4% of clients spent at least one night in jail at follow-up.

## Quality of Life and Emotional Support

On a scale of 1 = 'Worst imaginable' to 10 = 'Best imaginable', clients reported a significantly higher quality of life after the program (8.8) compared to prenatal baseline (7.1). In addition, clients reported they could count on significantly more people for emotional support in the past 30 days at follow-up (8.8 people on average) compared to the past 30 days at baseline (6.5 people on average). The majority of women at both baseline and follow-up were fairly or extremely satisfied with the level of emotional support they received from others.

## Multidimensional Recovery

The multidimensional recovery measure encompasses multiple dimensions of individuals' lives and functioning uses targeted items from the prebirth baseline and postnatal follow-up surveys to classify women who have all positive

*Overall, evaluation results indicate that the KY-Moms MATR case management program has been successful in facilitating positive changes in clients in a variety of inter-related risk factors including:*



REPORTED ANY  
ILLEGAL DRUG USE\*\*\*

**79%** **18%**

at baseline at follow-up



MET STUDY CRITERIA FOR  
DEPRESSION AND/OR  
GENERALIZED ANXIETY\*\*\*

**60%** **24%**

at baseline at follow-up



AVERAGE NUMBER OF  
DAYS MENTAL HEALTH  
WAS NOT GOOD\*\*

**7.8** **5.4**

at baseline at follow-up



REPORTED ANY  
INTIMATE PARTNER  
ABUSE\*\*

**38%** **16%**

at baseline at follow-up

dimensions of recovery. About 3% of clients had all positive dimensions of recovery at baseline. By follow-up, 32.4% of clients had all positive dimensions of recovery, which was a significant increase.

### Client Satisfaction with Program Experience

On a scale of 0 = “not at all right for me” to 10 = “exactly right for me”, clients rated their overall KY-Moms MATR experience, on average, as 8.9 with 83.8% rating the program between 8 and 10. In addition, the majority of clients (94.6%) reported that the KY-Moms MATR program worked pretty well or extremely well for them and that they would refer a friend or family member to their treatment provider (89.2%). Clients the program approach and method were a good fit for them (89.2%) and 86.5% reported they felt the program staff cared about them and their treatment progress and that the program staff believed in them and that the treatment would work. Close to 43% of clients reported that the program and the client mutually agreed that the client was ready to leave the program.

## Areas of Concern

Despite significant improvements in many areas of clients’ lives, there was a minority of clients who had not had their babies before entering the KY-Moms MATR program who continued to struggle with targeted risk factors at follow-up.

### Illegal Drug Use

Almost 18% of clients reported still using illegal drugs in the 6 months since having the baby. Of those clients who reported illegal drug use at follow-up (n = 6), 33.3% reported using marijuana, 33.3% reported using stimulants or cocaine, 16.7% reported opioid use, and 16.7% report other illicit drugs such as inhalants, hallucinogens, or synthetic drugs).

### Tobacco Use

The majority of clients smoked during pregnancy (61.8% in the past 30 days at prenatal baseline and 52.9% in the 30 days before the baby was born), both of which are considerably higher than the 15.3% of pregnant women in Kentucky who reported smoking cigarettes or the 8.7% of women in the U.S. Additionally, a high

percentage of KY Moms-MATR mothers reported smoking tobacco in the 30 days before pregnancy (70.6%), and in the 30 days before postnatal follow-up (58.8%). These percentages were considerably higher than either the national estimate of 17.2% of non-pregnant women aged 15-44 who are self-reported smokers or the state estimate of women who report smoking (28.8%). In addition, in the 6 months since the baby was born, 30.3% of clients reported e-cigarette use, which was an increase (though not significant) compared to the 6 months before pregnancy (18.2%).

### Mental Health and PTSD

In addition, 24.3% of KY-Moms MATR clients reported meeting study criteria for depression and/or anxiety in the six months after the baby was born. Further, 38.2% of clients screened positive for post-traumatic stress disorder in the in the 6 months since the birth of the baby which was slightly higher compared to the 6 months before pregnancy.

### Intimate Partner Abuse

At baseline, 8.1% of clients reported any form of intimate partner abuse in the 6 months before

they found out they were pregnant. At follow-up, 18.9% of KY-Moms MATR clients reported experiencing intimate partner abuse in the 30 days before their baby was born and 16.2% reported experiencing intimate partner abuse in the 6 months since the baby was born, which suggests that the intimate partner abuse is an ongoing concern through the pregnancy and after the baby is born.

### Financial Issues

With 51.4% of KY-Moms MATR women reporting being currently unemployed and 24.3% of women reporting difficulty meeting basic needs because of financial reasons in the past 6 months at follow-up, economic hardship is a continuing problem for many of these new mothers.

### Multidimensional Recovery Status

Even though there were significantly more clients who had all positive dimensions of recovery at follow-up when compared to baseline, over two-thirds of KY-Moms MATR clients were still classified as not having all eight positive dimensions of recovery.

### Program Issues

While clients were largely satisfied with their program experience, over one-quarter of clients reported that there were things they did not fully discuss with their counselor/program staff. In addition, 56.8% of clients reported that they would warn their friend or family member about certain things or tell them who to work with or who to avoid. Twenty-seven percent of clients reported that the length of the program was too short and 5.4% of clients reported that the length of the program was too long. Even though 59.5% of clients met study criteria for either depression or anxiety (or both) and 85.3% of clients reported using illegal drugs and/or alcohol in the 6 months before pregnancy, close to 22% of clients reported they did not receive either substance abuse or mental health treatment while in the KY-Moms MATR program.

### Summary

Overall, evaluation results indicate that the KY-Moms MATR program has been successful in facilitating positive changes in clients in a variety of inter-related risk factors including substance use, mental

health symptoms, and intimate partner abuse. Results also indicate clients appreciate their experiences in the program and have a better quality of life after participation. These changes suggest there would be significant benefit in sustaining and expanding the KY-Moms MATR program to serve more high-risk pregnant women across the state.

## Overview of the Report

*This report presents the results of an outcome evaluation of the KY-Moms MATR program. This outcome evaluation was conducted by the Behavioral Health Outcome Study team at the University of Kentucky Center on Drug and Alcohol Research (UK CDAR) in collaboration with the Division of Behavioral Health in the Department for Behavioral Health, Developmental and Intellectual Disabilities. The evaluation results are organized into 6 main sections as outlined below.*

**Section I: Introduction and Evaluation Method.** This section briefly describes the KY-Moms MATR program and how cases are selected into the analysis for the outcome evaluation.

**Section II: Who is Served by the KY-Moms MATR Program?** This section describes the KY-Moms MATR client characteristics for 80 women who participated in the KY-Moms MATR program before the baby was born, completed a baseline assessment between July 2020 and November 2021, and were eligible for follow-up in FY 2022. Characteristics examined include: (1) demographics, (2) self-referral status, (3) information about the pregnancy, (4) risk status, (5) substance use, (6) adverse childhood experiences and victimization, (7) mental health, stress, and sleep difficulty, and (8) intimate partner abuse. Clients who entered the program (n = 19) after the birth of their child are also described separately in this section.

**Section III: Birth Events and Outcomes.** This section uses the Kentucky Vital Statistics birth data to examine: (1) maternal behavior and health characteristics, and (2) infant health characteristics for 33 KY-Moms MATR case management clients who entered the program before the baby was born and who had intakes and follow-ups as well as data in the vital statistics dataset.

**Section IV: Change in Targeted Factors from Baseline to Follow-up for Pre-Birth Clients in the Postnatal Follow-up Sample.** This section examines change among women with a pre-birth baseline and a completed postnatal follow-up interview (n=37) for FY22<sup>4</sup> in: (1) information about the baby, (2) substance use, (3) mental health, sleep, and stress, (4) intimate partner abuse and victimization experiences, (5) economic and living circumstances, economic hardship, and criminal justice involvement, (6) physical health, (7) quality of life and emotional support, and (8) multidimensional recovery status. Past-30-day and past-6-month measures are examined separately where applicable.

**Section V: Client Experience and Satisfaction with KY-Moms MATR Case Management.** This section describes the experience of the KY-Moms MATR case management program assessed by clients who completed a postnatal follow-up (n = 37): (1) manner in which the client left the program, and (2) satisfaction with KY-Moms MATR case management.

**Section VI: Conclusion and Study Limitations.** This section summarizes the report findings, discusses limitations, and describes implications of the main findings.

<sup>4</sup> Post-birth follow-up interviews are now being collected as requested by the state. However, because there are so few post-birth follow-ups completed this fiscal year (n = 4), they will not be analyzed as a part of this report.

## Section I: Introduction and Evaluation Method

*This section briefly describes the KY-Moms MATR program and the program evaluation methodology.*

KY-Moms: Maternal Assistance Towards Recovery (MATR) is a state-funded prevention, outreach, and case management program aimed at reducing substance use risk during pregnancy. Alcohol, tobacco, and illicit drug use during pregnancy have been shown to negatively influence fetal development (including significantly decreased birth weight and shorter gestational age) and women's health.<sup>5, 6, 7, 8, 9</sup> In addition, substance use is often related to mental health problems and an increased risk of partner abuse and sexual assault.<sup>10, 11</sup> All three of these interrelated risk factors increase the likelihood of negative birth outcomes.<sup>12, 13</sup> Additionally, risks of negative birth outcomes are increased when women who use alcohol and illegal drugs avoid obtaining prenatal care due to lack of access, fear of losing custody of their babies, or fear of being arrested.<sup>14</sup>

The KY-Moms MATR program is set within the state of Kentucky. Kentucky has one of the highest rates in the nation for women experiencing intimate partner violence in their lifetime (ranked 50th) with 45.3% of women reporting psychological, physical, and sexual violence.<sup>15</sup> Kentucky also ranks 33th in the nation for adverse childhood experiences with 16.9% of children experiencing two or more adverse conditions.<sup>16</sup> In 2017, 2018, and 2019, Kentucky had the highest number of child victims in the U.S. according to the National Child Abuse and

<sup>5</sup> Bailey, B. A., McCook, J. G., Hodge, A., & McGrady, L. (2012). Infant birth outcomes among substance using women: why quitting smoking during pregnancy is just as important as quitting illicit drug use. *Maternal and Child Health Journal*, 16(2), 414-422.

<sup>6</sup> Gouin, K., Murphy, K., & Shah, P. S. (2011). Effects of cocaine use during pregnancy on low birth weight and preterm birth: systematic review and metaanalyses. *American Journal of Obstetrics and Gynecology*, 204(4), 340-e1-12.

<sup>7</sup> Behnke, M., Smith, V. C., Levy, S., Ammerman, S. D., Gonzalez, P. K., Ryan, S. A., ... & Watterberg, K. L. (2013). Prenatal substance abuse: short-and long-term effects on the exposed fetus. *Pediatrics*, 131(3), e1009-e1024.

<sup>8</sup> Pinto, S. M., Dodd, S., Walkinshaw, S. A., Siney, C., Kakkar, P., & Mousa, H. A. (2010). Substance abuse during pregnancy: effect on pregnancy outcomes. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 150(2), 137-141.

<sup>9</sup> Young, N.K., Gardner, S., Otero, C., Dennis, K., Chang, R., Earle, K., & Amatetti, S. (2007). *Substance-Exposed Infants: State Responses to the Problem*. National Center on Substance Abuse and Child Welfare.

<sup>10</sup> Logan, T., Walker, R., Jordan, C. & Leukefeld, C. (2006). *Women and victimization: contributing factors, interventions, and implications*. Washington, DC: American Psychological Association Press.

<sup>11</sup> Kessler, R., McGonagle, K., Zhao, S., Nelson, C. Hughes, M., Eshleman, S., Wittchen, H., & Kendler, K. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey. *Archives of General Psychiatry*, 51, 8-19.

<sup>12</sup> Shah, P. S., & Shah, J. (2010). Maternal exposure to domestic violence and pregnancy and birth outcomes: a systematic review and meta-analyses. *Journal of Women's Health*, 19(11), 2017-2031.

<sup>13</sup> Schetter, C. D., & Tanner, L. (2012). Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Current Opinion in Psychiatry*, 25(2), 141-148.

<sup>14</sup> Roberts, S.C & Nuru-Jeter, A. (2010). Women's perspectives on screening for alcohol and drug use in prenatal care. *Women's Health Issues*, 3, 193-200.

<sup>15</sup> United Health Foundation. (2019). *America's health rankings health of women and children, State findings: Kentucky, 2019*. Minnetonka, MN: United Health Foundation. Retrieved on September 17, 2020 from <https://www.americashealthrankings.org/explore/annual/measure/Overall/state/KY>.

<sup>16</sup> United Health Foundation. (2022). *America's health rankings health of women and children, State findings: Kentucky, 2021*. Minnetonka, MN: United Health Foundation. Retrieved on September 23, 2021 from <https://www.americashealthrankings.org/learn/reports/2020-health-of-women-and-children/state-summaries-kentucky>

Neglect Data System: 22.2, 23.6, and 20.0 per 1,000 children.<sup>17</sup> Moreover, Kentucky had the third highest rate of child victims with caregivers' drug abuse as a risk factor (50.0%).<sup>17</sup> Kentucky ranks 46th in mortality rate for women, 33rd in the nation for infant mortality, and 32nd in the nation for babies born with low birthweight.<sup>6</sup> It also has one of the lowest rates in the nation for breastfeeding.<sup>6</sup> Further, Kentucky is one of the highest in the nation for rates of tobacco use during pregnancy (49th), drug deaths among females (45th), and frequent mental distress (48th).<sup>6</sup> In 2021 Kentucky had a ranking of 50th for overall health for women and a ranking of 41st for overall children's health.<sup>6</sup>

The overall goal of the KY-Moms MATR program is to increase positive birth outcomes for pregnant women in Kentucky who are at risk because of substance use, poor mental health status, and victimization that negatively impact the health of the pregnant mother, and fetal and birth outcomes. The program is administered by the Division of Behavioral Health in the Department for Behavioral Health, Developmental and Intellectual Disabilities.<sup>18</sup> The program has two components including providing: (1) substance abuse prevention education to pregnant women at all risk levels, and (2) client-centered intensive case management services to pregnant and parenting women who are diagnosed with a substance use disorder (referred to in this report as KY-Moms MATR program). This report focuses on outcomes for mothers who are involved with the intensive case management services component of the program.

The KY-Moms MATR program case managers provide support, referrals, information, and other needed services (e.g., transportation) in a client-centered format. More specifically, this intervention focuses on meeting clients' needs as they evolve over time, as different risks manifest, and needs change as the pregnancy progresses.<sup>19</sup> By focusing on clients' needs, client-centered intensive case management encourages continued engagement in clinical services and helps with a variety of practical needs.<sup>20, 21</sup> KY-Moms MATR case managers use evidence-based practices, including Motivational Interviewing, to promote engagement in vital services such as substance abuse and mental health treatment, partner violence services, and to encourage consistent prenatal care.<sup>22, 23</sup> Further, the curriculum has been standardized across the sites as of 2017 with updates to the curriculum in 2020.

Pregnant women who are referred to the KY-Moms MATR program are first screened

<sup>17</sup> U.S. Department of Health & Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2022). *Child Maltreatment 2020*. Available from <https://www.acf.hhs.gov/cb/report/child-maltreatment-2020>

<sup>18</sup> Since 2015, all of Kentucky's regional community mental health centers except Bluegrass participate in the KY-Moms MATR program.

<sup>19</sup> Austin, L. (2013). Treatment Planning and Case Management in Community. *The Praeger Handbook of Community Mental Health Practice: Working in the local community*, 1, 83.

<sup>20</sup> Center for Substance Abuse Treatment. Comprehensive Case Management for Substance Abuse Treatment. Rockville (MD): Substance Abuse and McLaughlin, C. P., & Kaluzny, A. D. (2000). Building client centered systems of care: choosing a process direction for the next century. *Health Care Management Review*, 25(1), 73-82

<sup>21</sup> Sheedy C. K., and Whitter M. (2009). *Guiding Principles and Elements of Recovery-Oriented Systems of Care: What Do We Know from the Research?* HHS Publication No. (SMA) 09-4439. Rockville, MD: Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration.

<sup>22</sup> Ingersoll, K. S., Ceperich, S. D., Hettema, J. E., Farrell-Carnahan, L., & Penberthy, J. K. (2013). Preconceptional motivational interviewing interventions to reduce alcohol-exposed pregnancy risk. *Journal of Substance Abuse Treatment*, 44(4), 407-416.

<sup>23</sup> May, P. A., Marais, A. S., Gossage, J. P., Barnard, R., Joubert, B., Cloete, M., et al. (2013). Case management reduces drinking during pregnancy among high-risk women. *The International Journal of Alcohol and Drug Research*, 2(3), 61-70.

for eligibility. Typically, women are referred by community organizations such as health departments, private OB/GYN providers, child welfare caseworkers, pregnancy crisis centers, domestic violence shelters and community mental health center clinicians. The screening tool used by KY-Moms MATR referral sources is the “Pregnancy Behavioral Health Risk Assessment Screening” tool, which assesses a variety of risks including substance use, mental health, and intimate partner abuse, any of which make a woman eligible for prevention education services. Women that screen in for substance use risk factors are referred to a therapist for a substance use assessment for a diagnosis. Once a diagnosis is reached (mild, moderate, or severe substance use disorder), the women would be eligible for case management services. Adolescents (under age 18) are also eligible regardless of other risk factors.

## Evaluation Method

The KY-Moms MATR outcome evaluation includes a face-to-face evidence-based assessment by program staff from CMHCs to assess substance use, mental health symptoms, intimate partner abuse, and other factors such as education, employment status, and living situation prior to pregnancy and while involved in the program.<sup>24</sup> Overall, a total of 80 pre-birth baselines were completed between July 2020 and November 2021 with women who had due dates that would result in target months for a follow-up interview between July 2021 and June 2022. In addition, there were 19 women who gave birth to their babies prior to entering the KY-Moms MATR program, completed a post-birth baseline, and who were targeted for follow-up in FY22.

At baseline, clients are offered the opportunity to be contacted for a postnatal follow-up interview. KY-Moms MATR clients are eligible to be included in the sample to be followed up if: (1) the client consents to be contacted by UK CDAR BHOS staff, (2) the baseline is submitted to UK CDAR within 30 days of completion, (3) the client is in the program at least 30 days before the birth of the baby, and (4) adequate contact information is provided for follow-up staff to use to attempt to locate and contact them for the follow-up interview. If any of these criteria are not met, the client is not included in the sample to be followed up.<sup>25</sup> If the client who entered KY-Moms MATR prior to the birth of her baby is included in the follow-up sample, an interviewer at UK CDAR contacts the client about 6 months after the birth of their baby (based upon estimated due date reported by the client at prenatal baseline). If this client entered KY-Moms MATR after the birth of their baby, clients eligible for follow-up are contacted approximately 6 months after baseline.

The UK CDAR team begins their efforts to locate and conduct follow-up interviews with women who are eligible for follow-up one month before their target month (i.e., six months after the due date of their baby) and continues their efforts until the women have completed the follow-up interview or for two months after the target month, whichever comes first. When the follow-up team contacts women, the client must not be living in a jail or controlled environment. UK CDAR interviewers obtain verbal consent to complete the follow-up interview. Client responses to the follow-up interviews are kept confidential to facilitate accurate reporting of client outcomes and satisfaction with program services. During FY22, 37 postnatal follow-up

<sup>24</sup> For more information, see: Scrivner, A., Logan, T., Cole, J., & Miller, J. (2020). *Evidence Base for the KY-Moms MATR Evaluation Assessment and Methods*. Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research.

<sup>25</sup> As a result of the prenatal baseline criteria, 33 clients were not eligible for the follow-up sample. See Appendix C for information on each category of ineligibility.

assessments were completed (an 80.4% follow-up rate) on women who entered the program before giving birth.<sup>26, 27</sup> See Appendix A for more details about follow-up methods and eligibility.

To be included in the analysis for the birth event outcome section of this report, however, clients had to have given permission to the research team to access and to have had matching information from the Kentucky Vital Statistics birth event data set in order to compare birth outcomes. With this criterion in mind, although 37 pre-birth clients completed a postnatal follow-up assessment, four clients could not be matched to their birth event data. This left a final sample for the birth event data of 33 women who met analysis criteria, gave birth between January 2021 and November 2021, and completed a postnatal follow-up assessment between July 2021 and June 2022 (an average of 6.9 months after their self-reported due date).

### *A Closer Look at Pre-birth Clients Who Did Not Have a Postnatal Follow-up Interview*

When those with a postnatal follow-up interview (n = 37) were compared with those who did not have a postnatal follow-up interview (n = 43)<sup>28</sup> on a variety of prenatal baseline variables, there were a couple of significant differences. Clients who completed a follow-up interview reported smoking significantly more cigarettes, on average, compared to clients who did not complete a follow-up. Clients who were not followed up reported significantly more symptoms of depression in the 6 months before pregnancy compared to clients who completed a follow-up interview (see Appendix B).

	Not followed up (n = 37)	Followed up (n = 43)
Demographics.....		No difference
Living situation .....		No difference
Employment .....		No difference
Physical health.....		No difference
Illegal drug use.....		No difference
Alcohol use.....		No difference
Tobacco use.....		More cigarettes smoked per day in the past 30 days at baseline
Mental health.....	More symptoms of depression in the 6 months before pregnancy	
Intimate partner abuse .....		No difference

<sup>26</sup> Clients who completed a postnatal follow-up assessment (n = 37) were admitted to the KY-Moms MATR program and completed baseline assessments between July 2020 and September 2021.

<sup>27</sup> Of the 19 women who gave birth to their babies prior to entering the KY-Moms MATR program, 11 did not consent to being contacted for follow-up, 2 clients did not provide enough contact information, one passed away prior to follow-up, and one person could not be located during the targeted window. As a result, only 4 post-birth clients completed a follow-up.

<sup>28</sup> See Appendix C for details reasons why client did not complete a follow-up interview



## Section II: Who is Served by the KY-Moms MATR Program? A Description of All KY-Moms MATR Clients at Baseline

The KY-Moms MATR outcome evaluation includes a face-to-face baseline interview by program staff to assess targeted factors such as substance use, mental health symptoms, intimate partner abuse, and other factors such as education, employment status, and living situation prior to pregnancy and while involved in the program. Between July 2020 and November 2021, 80 pregnant women completed a prenatal baseline interview and 19 women who gave birth prior to entering KY-Moms MATR and were eligible for a six-month postnatal follow-up within FY 22 completed baseline interviews.<sup>29, 30</sup>

### Clients Who Entered the Program Before the Birth of Their Child

#### Demographics

Table II.1 shows that the majority of clients were White (91.3%) and were an average of 27.9 years old. In addition, 42.5% had never been married and were not living with an intimate partner at baseline. Of those clients who were living with an intimate partner (n = 29), 96.6% reported this partner was the father of the baby. Twenty percent of the KY-Moms MATR mothers reported at prenatal baseline they were currently homeless. Of those who indicated they were homeless (n = 16), 50.0% were staying temporarily with friends/family, 31.3% considered themselves homeless because they were in a treatment facility, 6.3% were staying on the street or living in their car, and 12.5% considered themselves homeless for other reasons.

*It was a really good program. They helped me out with a lot. I didn't have much for him before he was born and they went far and beyond to help me get those things I needed. I highly recommend it, very kind, helpful and informational.*

KY-MOMS MATR FOLLOW-UP CLIENT

<sup>29</sup> Clients who completed a prenatal baseline (n = 80) entered the KY-Moms MATR program between June 2019 and November 2020 and were eligible for follow-up between July 2020 and September 2021. There was an average of 7.4 days between when the client entered the program and when the baseline assessment was completed.

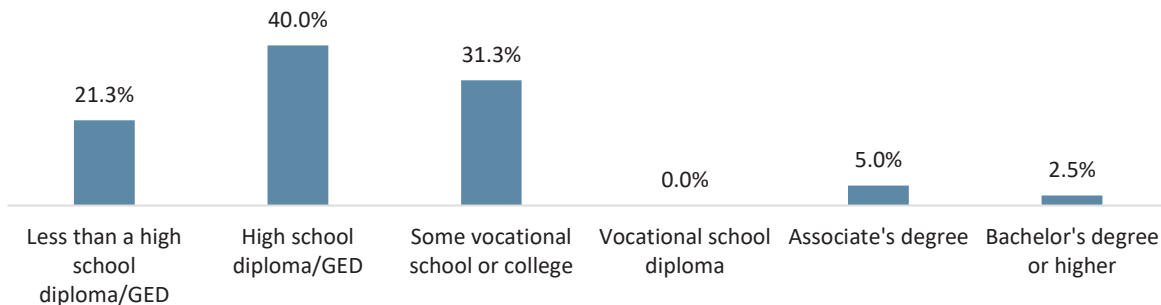
<sup>30</sup> Because the KY-Moms MATR evaluation only analyzes clients who completed a baseline, it is not known how many women were served by the KY-Moms MATR program but did not complete a baseline assessment.

TABLE II.1. DEMOGRAPHICS FOR ALL KY-MOMS MATR CLIENTS AT BASELINE (N = 80)

<b>Age</b> <sup>31</sup> .....	27.9 years (range of 19-40)
<b>Race</b> .....	
White .....	91.3%
African American.....	6.3%
Mexican.....	1.3%
Puerto Rican.....	0.0%
Other Hispanic.....	1.3%
<b>Marital status</b> .....	
Married or cohabiting .....	36.3%
Never married .....	42.5%
Separated or divorced.....	20.0%
Widowed .....	1.3%
Of those married or cohabiting .....	(n = 29)
Partner is the father of baby.....	96.6%
<b>Homeless</b> .....	20.0%
Of those homeless.....	(n = 16)
Staying temporarily with friends/family .....	50.0%
Staying on the street or living in your car.....	6.3%
In treatment or sober living environment.....	31.3%
Other.....	12.5%

About 21% of clients had less than a high school diploma or GED at baseline (see Figure II.1). Forty percent of clients reported their highest level of education was a high school diploma or GED. Close to 1 in 3 of clients had completed some vocational/technical school or college. A small minority of clients had completed an associate’s degree (5.0%), or a bachelor’s degree (2.5%).

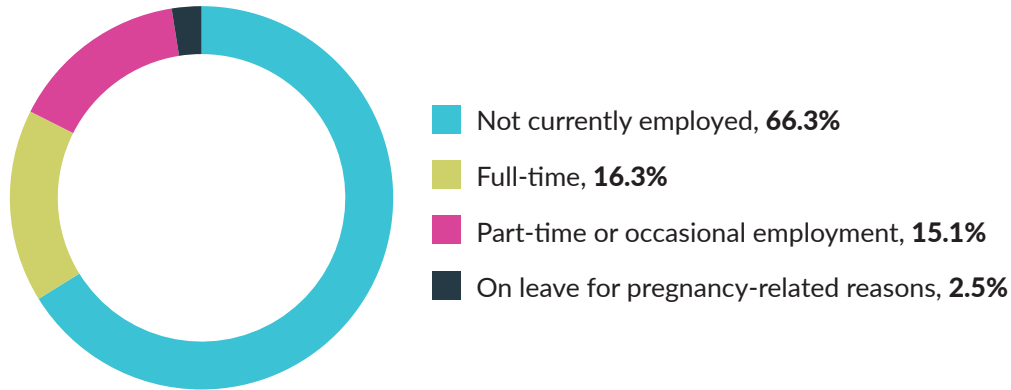
FIGURE II.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT BASELINE (N = 80)



<sup>31</sup>One client had an incorrect birthdate; therefore, age could not be calculated.

The majority of women in KY-Moms MATR case management were unemployed (66.3%) at the time of the pre-birth baseline interview. Only 16.3% of clients were employed full-time and 15.1% either worked part-time or had occasional/seasonal work. Close to 3% reported they were currently on leave from their job due to pregnancy-related reasons.

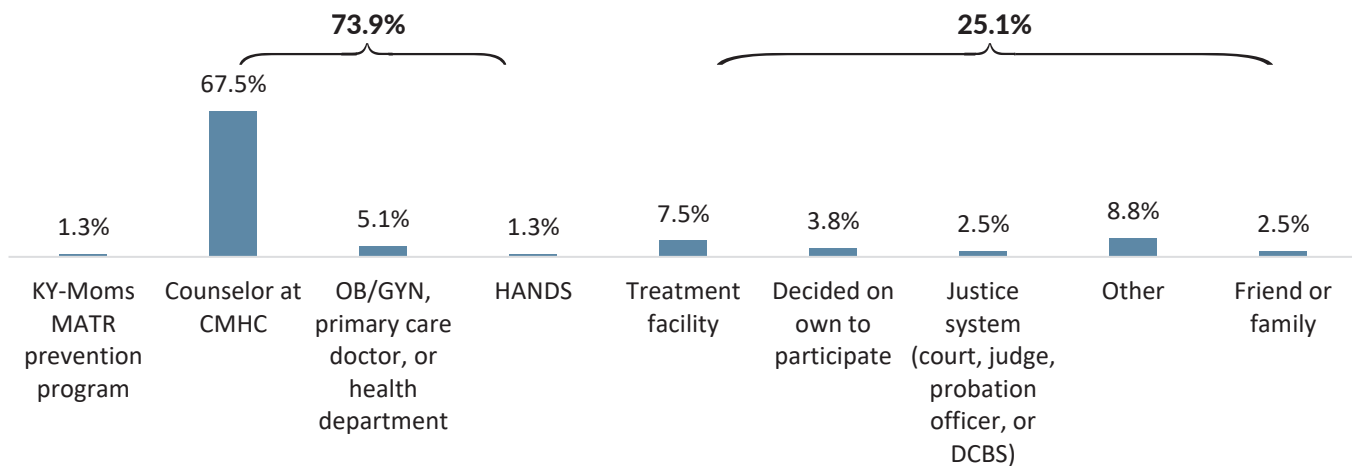
FIGURE II.2. CURRENT EMPLOYMENT STATUS AT BASELINE (N = 80)



### Self-reported Referral Status

Figure II.3 shows the self-reported referral source for all KY-Moms MATR clients at baseline. Close to three-quarters of clients (73.9%) were referred by outside agencies such as a counselor at one of the community mental health centers (67.5%), a health care provider (5.1%), or HANDS (1.3%). A small portion (1.3%) of clients were referred to the KY-Moms MATR program by the prevention program. One-quarter of clients (25.1%) were referred to the program in other ways such as deciding on their own to participate (3.8%), the justice system (e.g., judge, court, probation officer, or DCBS; 5.5%), residential treatment facility (7.5%), and a family member or friend (2.5%).

FIGURE II.3. SELF-REPORTED REFERRAL SOURCE FOR ALL KY-MOMS MATR CLIENTS AT BASELINE (N = 80)



## Information About the Pregnancy

Overall, at the time clients completed the prenatal baseline, they were an average of 25 weeks into their pregnancy (ranging 5 weeks to 39 weeks). The majority of clients (93.8%) reported they were going to maintain custody of the baby.

At the time of prenatal baseline, clients had been to an average of 6.3 visits (range of 0-25 visits) with their prenatal health care provider and 55.8% reported they were planning on breastfeeding. Overall, 82.5% of clients reported they had been pregnant before.

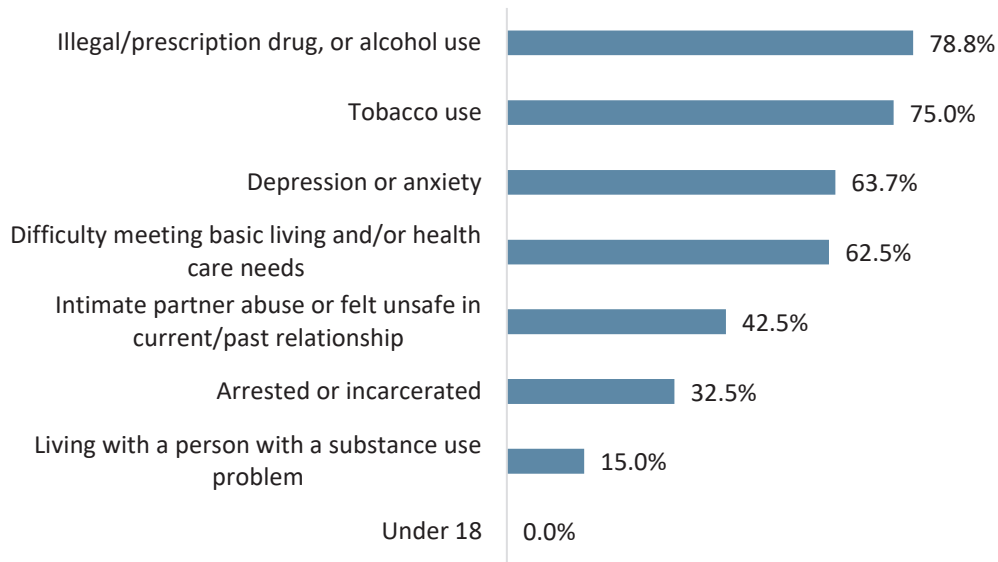
TABLE II.2. PREGNANCY STATUS FOR ALL KY-MOMS MATR CLIENTS AT BASELINE (N = 80)

Average weeks pregnant.....	24.8 weeks (range of 5-39)
Plan to keep the baby .....	93.8%
Average number of visits with a healthcare professional.....	6.3 (range 0-25)
Plan to breastfeed.....	55.8%
Been pregnant previously .....	82.5%

## Risk Status

Figure II.4 shows that of the 80 clients who completed a KY-Moms MATR prenatal baseline, 98.8% (n = 79 clients) fit into at least one of the major risk factor categories assessed in the baseline interview. Overall, 78.8% reported drug or alcohol use at baseline (in the 6 months before pregnancy, in the 30 days before pregnancy, or in the past 30 days) and 75.0% of clients reported tobacco use (cigarettes, e-cigarettes, or smokeless tobacco). Less than two-thirds of clients (63.7%) reported they had symptoms of depression or anxiety for at least two weeks in a row at baseline (in the 6 months before pregnancy or in the past 30 days). About 63% of clients reported difficulty meeting basic living and/or health care needs and 42.5% reported intimate partner abuse and/or feeling unsafe in either their current relationship or because of a partner from a previous relationship in the 6 months before pregnancy or in the past 30 days. Almost one-third of clients (32.5%) reported having been arrested and/or incarcerated in the 6 months before pregnancy. Fifteen percent of clients reported currently living with someone who had drug or alcohol problems, and none were under the age of 18 at the time of the baseline interview.

FIGURE II.4. PERCENT OF CLIENTS FALLING INTO AT LEAST ONE TARGETED RISK FACTOR IN THE 6 MONTHS BEFORE PREGNANCY OR IN THE PAST 30 DAYS AT BASELINE (N = 80)



### Substance Use

Of the 76 clients who were not incarcerated or in a controlled environment all 6 months before pregnancy,<sup>32</sup> the majority reported using alcohol and/or illegal drugs (82.9%) in the 6 months before pregnancy. Overall, a higher percentage of individuals reported using illegal drugs (80.3%) compared to the percent of individuals who reported using alcohol (39.5%) in the 6 months before pregnancy. The majority of clients reported smoking tobacco (72.4%) in the 6 months before pregnancy.

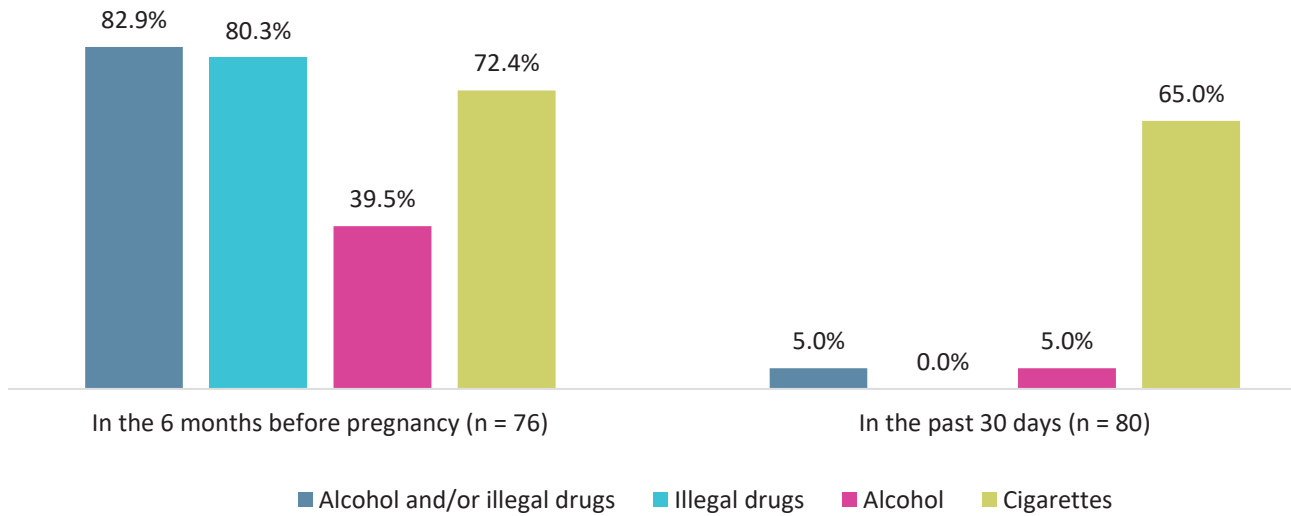
Of the 80 clients who were not in a controlled environment<sup>33</sup> all 30 days before baseline, 5.0% reported using alcohol and/or illegal drugs.<sup>34</sup> Specifically, none reported illegal drug use and 5.0% reported alcohol use. Also, 65.0% reported smoking tobacco in the 30 days before baseline (see Figure II.5).

<sup>32</sup> Four clients were incarcerated or in a controlled environment all 180 days before pregnancy.

<sup>33</sup> A controlled environment is one where the client was not able to come and go as they pleased including a hospital, jail, or residential treatment.

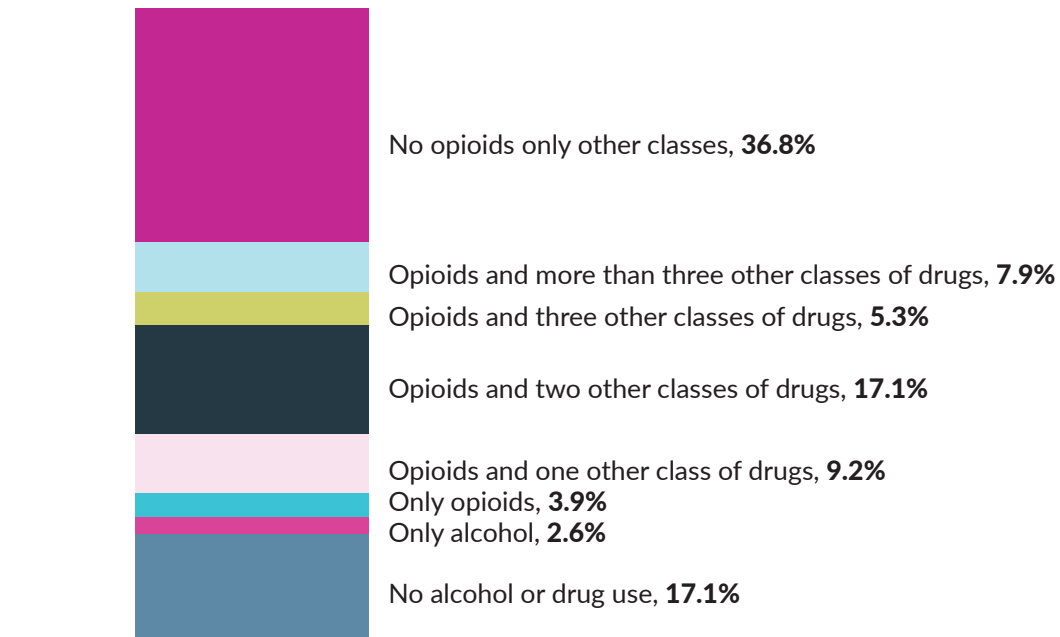
<sup>34</sup> This period includes while they were pregnant, but may not have known they were pregnant yet.

FIGURE II.5. PERCENT OF CLIENTS REPORTING ILLEGAL DRUGS, ALCOHOL, AND SMOKING TOBACCO AT BASELINE<sup>35</sup>



Among the individuals who were not incarcerated or in a controlled environment all 180 days before they were pregnant, Figure II.6 shows the percent of clients who used no alcohol and or illegal drugs (17.1%), alcohol only (2.6%), no opioids and other drug classes only (36.8%), and opioids only (3.9%). Additionally, Figure II.6 shows the percent of clients who reported using opioids with one other drug class (9.2%), opioids with two other drug classes (17.1%), opioids with three other drug classes (5.3%), and opioids with three or more other drug classes (7.9%).

FIGURE II.6. OPIOID AND OTHER DRUG CLASS USE IN THE 6 MONTHS BEFORE PREGNANCY (N = 76)<sup>36</sup>



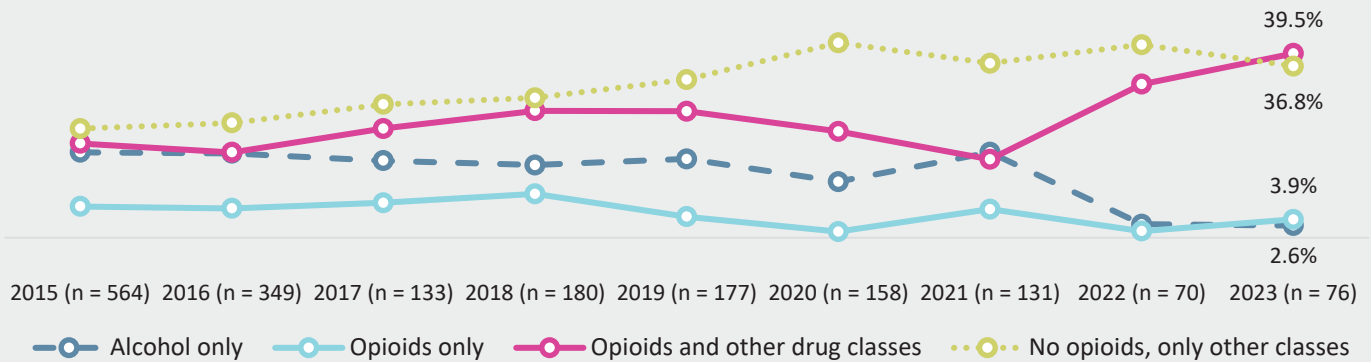
<sup>35</sup> Because being in a controlled environment decreases opportunities for substance use, individuals who were incarcerated all 180 days in the 6 months before pregnancy (n = 4), or in a controlled environment/incarcerated all 30 days before entering the program (n = 0) are not included in the analysis of substance use in the corresponding period.

<sup>36</sup> The broad drug classes examined were (1) Marijuana/cannabis, (2) Opioids including heroin, (3) CNS depressants, (4) Cocaine and stimulants, and (5) Other drugs (hallucinogens, inhalants, synthetic drugs).

### Trends in Alcohol and Drug Use Classes<sup>37</sup> in the 6 Months Before Pregnancy at Baseline

In all but the 2023 report year, more clients who were not incarcerated all 180 days before pregnancy reported not using opioids, but reported using other classes of drugs in the 6 months before pregnancy. The percent of clients reporting using classes of drugs other than opioids in the 6 months before pregnancy almost doubled from 23.4% in the 2015 report to 41.8% in 2020. In 2023, 36.8% of clients reported using classes of drugs other than opioids in the 6 months before pregnancy while 39.5% reported using opioids and other drug classes.

FIGURE II.7. TRENDS IN CLASSES OF SUBSTANCES USED IN THE SIX MONTHS BEFORE PREGNANCY, 2015-2023



In the current report (2023), of those clients who reported using only classes of drugs other than opioids in the six months before pregnancy (n = 28), 71.4% reported marijuana use, 50.0% reported stimulant use, and 3.6% reported tranquilizer/sedative use.

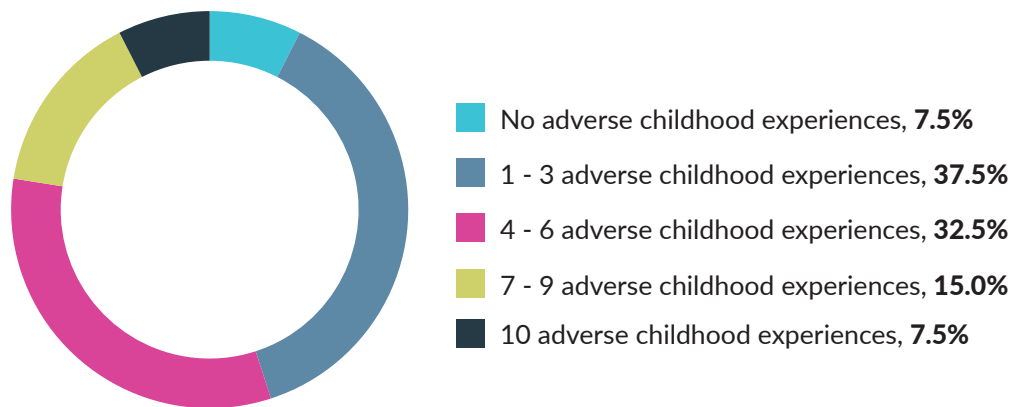
In addition, 28.9% of clients reported having ever overdosed on drugs (which required intervention by someone to recover, including suicide attempts) in their lifetime. In the 6 months before pregnancy, 3.8% of clients reported overdosing on drugs.

<sup>37</sup> Five classes: 1. Cannabis/marijuana, 2. Opioids (prescription opiates, Suboxone, heroin, methadone), 3. Stimulants (amphetamines, methamphetamine, prescription stimulants, cocaine), 4. CNS depressants (barbiturates, tranquilizers), 5. Other illegal drugs (inhalants, hallucinogens, synthetic drugs).

## Adverse Childhood Experiences and Victimization

At baseline, clients were asked sixteen items about ten types of adverse childhood experiences from the Adverse Childhood Experiences (ACE).<sup>38, 39, 40</sup> In addition to providing the percent of women who reported each of the ten types of adverse childhood experiences before the age of 18 years old captured in ACE, the number of types of experiences was computed such that the number of items clients answered affirmatively to were added to create a score equivalent to the ACE score. A score of 0 means the client answered “No” to the five abuse and neglect items and the five household dysfunction items in the baseline interview. A score of 10 means the client reported all five forms of child maltreatment and neglect, and all 5 types of household dysfunction before the age of 18. Figure II.8 shows that only 7.5% reported they did not experience any of the ACE included in the baseline assessment, which means 92.5% of clients reported at least one type of ACE. Specifically, 37.5% reported experiencing 1 to 3 ACE, 32.5% reported experiencing 4 – 6 ACE, and 15.0% reported experiencing 7 – 9 ACE. Almost 8% of clients reported experiencing all 10 types of adverse childhood experiences. Overall, clients reported an average of 4.4 adverse childhood experiences.

FIGURE II.8. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES REPORTED AT BASELINE (N = 80)



About 44% of clients reported that they had experienced emotional neglect (e.g., felt that no one in the family loved them, or they weren’t special/important, or did not feel close to each other or supported) and 46.3% experienced emotional maltreatment (e.g., insults, put down, humiliation, parent acted in a way that made the child believe they would be physically hurt). About one-third of clients reported experiencing physical maltreatment (e.g., being pushed/grabbed/slapped, or being hit so hard that it left marks) and 28.7% experienced physical neglect

<sup>38</sup> Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14(4), 245-258.

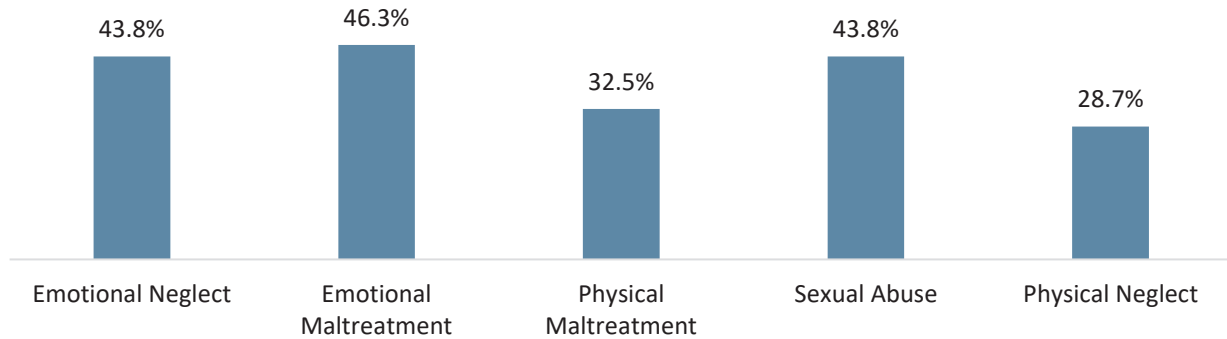
<sup>39</sup> Centers for Disease Control and Prevention. (2014). *Prevalence of individual adverse childhood experiences*. Atlanta, GA: National Center for Injury Prevention and Control, Division of Violence Prevention. <http://www.cdc.gov/violenceprevention/acestudy/prevalence.html>.

<sup>40</sup> The baseline assessment asked about 10 major categories of adverse childhood experiences: (a) three types of abuse (e.g., emotional maltreatment, physical maltreatment, and sexual abuse), (b) two types of neglect (e.g., emotional neglect, physical neglect), and (c) five types of family risks (e.g., witnessing partner violence victimization of parent, household member who was an alcoholic or drug user, a household member who was incarcerated, a household member who was diagnosed with a mental disorder or had committed suicide, and parents who were divorced/separated).



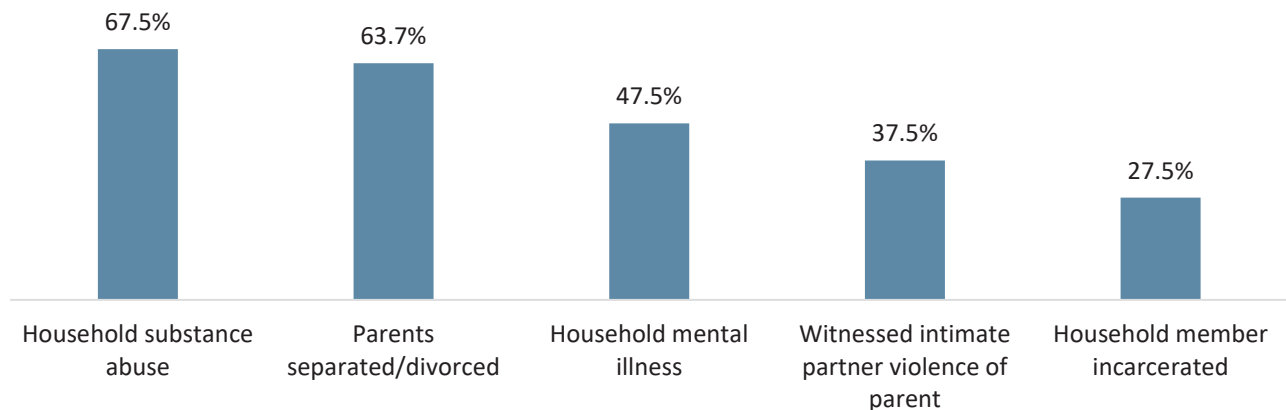
(e.g., didn't have enough to eat as a child, had no one to protect them, parents too high/drunk to take care of them) before the age of 18. Almost 44% of clients reported sexual abuse as a child (e.g., touched inappropriately by someone at least 5 years or older, or someone 5 years or older tried to or actually had sex with client).

FIGURE II.9. SPECIFIC MALTREATMENT AND ABUSE EXPERIENCES IN CHILDHOOD (N = 80)



Over two-thirds of clients (67.5%) had a household member with a substance abuse problem and 63.7% of clients reported their parents were divorced or lived separately and (see Figure II.10). Almost half of clients (47.5%) reported they had a household member with a mental illness or had attempted suicide, 37.5% witnessed intimate partner abuse of a parent before the age of 18, and 27.5% reported a household member who had been incarcerated.

FIGURE II.10. HOUSEHOLD RISKS IN CHILDHOOD (N = 80)



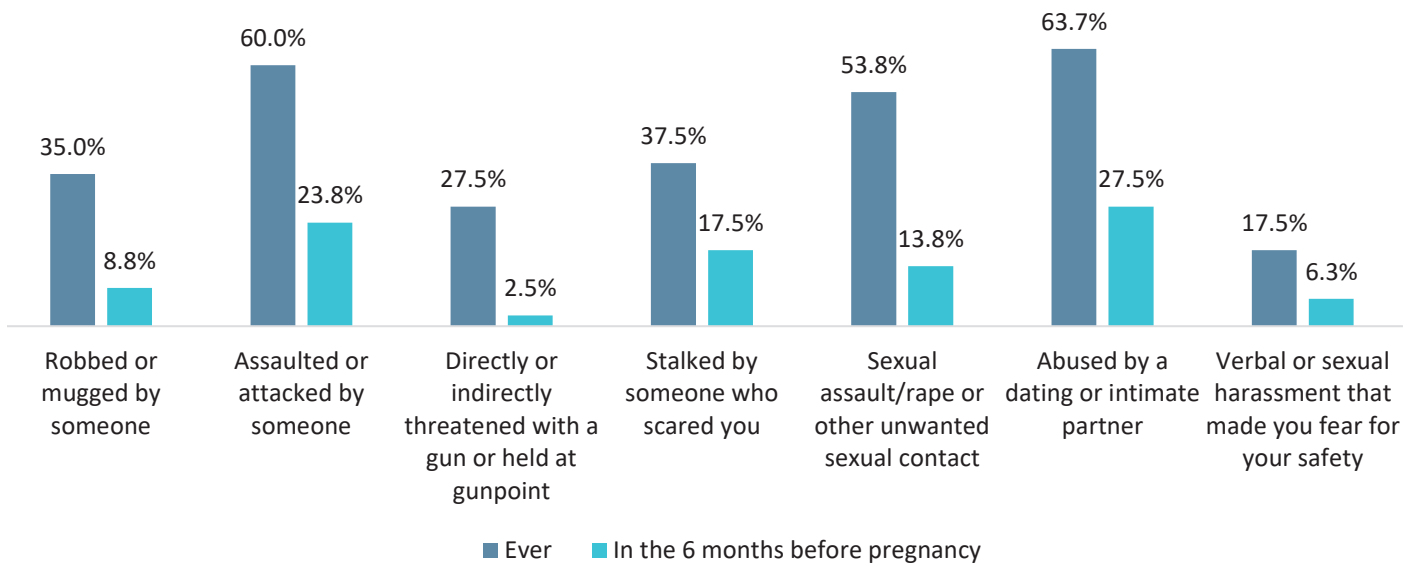
## Victimization Experiences

At prenatal baseline, clients were also asked about situations in which they may have been the victim of a crime, harmed by someone else, or made to feel unsafe by someone other than a parent or guardian in their lifetime (including adulthood). Overall, 87.5% of clients reported ever experiencing any type of victimization. Figure II.11 shows that, specifically, 35.0% of clients reported having ever been robbed or mugged. Sixty percent of clients reported having ever been assaulted or attacked by someone and 27.5% of clients reported they had been directly or indirectly threatened with a gun or held at gunpoint. Over one-third of clients (37.5%) reported

having ever been stalked by someone who scared them. About 54% reported having ever been a victim of sexual assault, rape, or other unwanted sexual contact and 63.7% reported having ever been abused by a dating or intimate partner (partner physically assaulted, controlled, or emotionally abused the client). Close to 18% of clients reported they were ever verbally, sexually, or otherwise harassed in some way that made them afraid for their safety.

In the 6 months before pregnancy, 38.8% reported any victimization. Specifically, 27.5% of clients reported being abused by a dating or intimate partner and 17.5% reported they were stalked by someone who scared them.

FIGURE II.11. PERCENT OF CLIENTS HAVING EXPERIENCED VICTIMIZATION (N = 80)

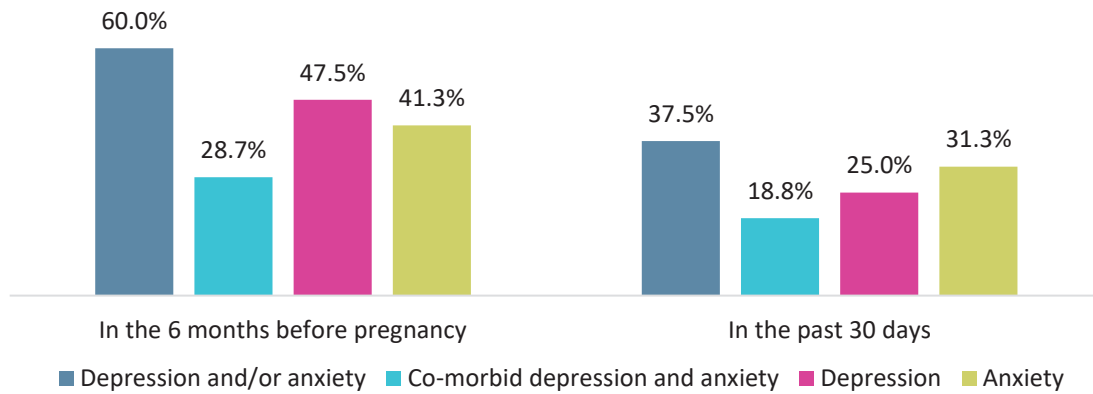


### Mental Health, Stress, and Sleep Difficulty

In the 6 months before pregnancy, 60.0% of clients met study criteria for depression and/or anxiety and 28.7% of clients met criteria for co-morbid depression and anxiety. About 48% of clients met study criteria for depression and 41.3% met criteria for anxiety (see Figure II.12).

In the past 30 days at baseline, over one-third of clients (37.5%) met criteria for depression and/or anxiety and 18.8% met criteria for both depression and anxiety.

FIGURE II.12. PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION AND/OR ANXIETY AT BASELINE (N = 80)



Thirty percent of clients screened positive for post-traumatic stress disorder (PTSD) in the 6 months before pregnancy (not represented in a figure).

### Stress

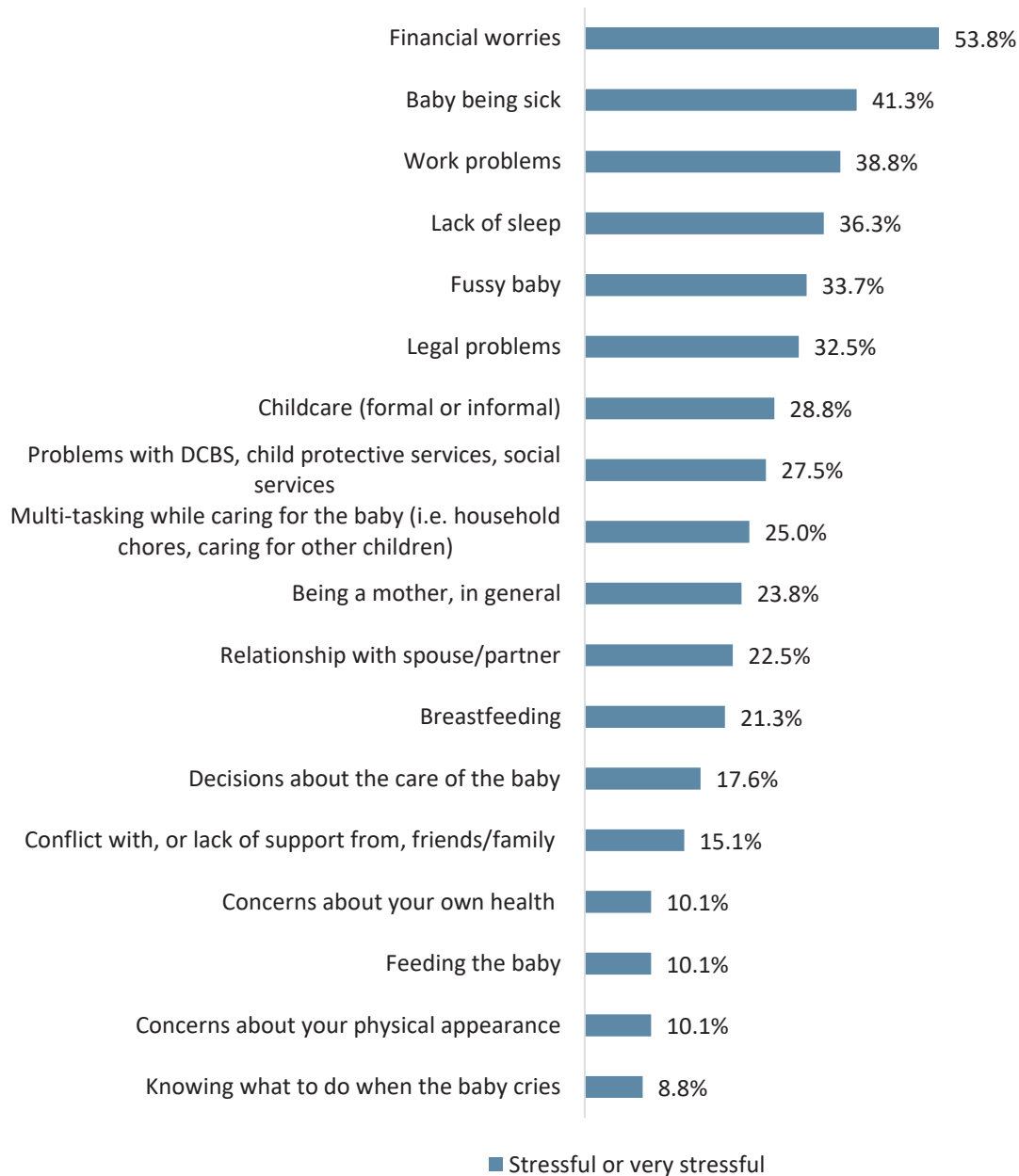
At baseline, clients were asked a series of questions regarding their expectations about how stressful certain events will be after they have their baby.<sup>41</sup> Responses ranged from a score of 1 (not at all stressful) to 4 (very stressful). The majority of clients (82.5%) rated at least one item as stressful or very stressful. Specifically, the three items most reported as being stressful or very stressful were financial worries (53.8%), baby being sick (41.3%), and work problems (38.8%).

*The goals was great, they was great with my baby, and case worker was amazing*

KY-MOMS MATR FOLLOW-UP CLIENT

<sup>41</sup> Questions regarding stress are adapted from the Postpartum Stressor Scale, which includes a 9-item scale highlighting baby care, well-being, and work problems. Park, E. R., Psaros, C., Traeger, L., Stagg, A., Jacquart, J., Willett, J., Alert, M. D., LaRoche, K. L., & Ecker, J. L. (2015). Development of a postpartum stressor measure. *Maternal and Child Health Journal*, 19(10), 2094-2101. <https://doi.org/10.1007/s10995-015-1731-0>.

FIGURE II.13. RATING OF EVENTS AFTER THE BIRTH OF THE BABY AS STRESSFUL/VERY STRESSFUL (N = 80)



### Sleep Difficulty

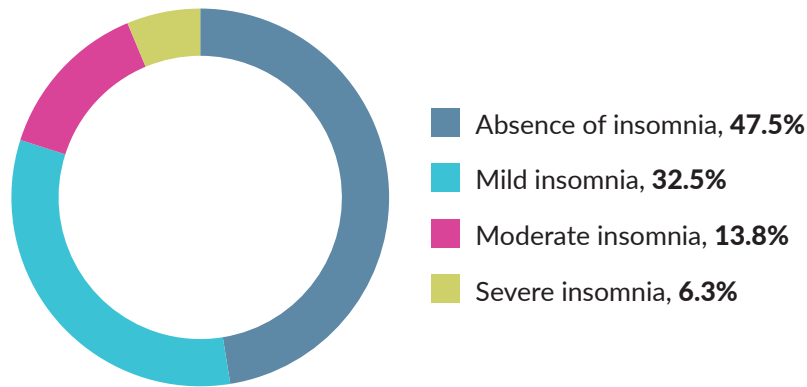
Sleep difficulty in KY-Moms MATR assessments is measured using the Insomnia Severity Index (ISI).<sup>42, 43</sup> The ISI consists of 7 self-reported items that measure the nature, severity, and impact of insomnia using the current time period. A 5-point Likert scale is used to rate each question on a scale of 0 (no problem) to 4 (very severe problem) where the total score can range from 0 to 28. A total score of 0-7 indicates an absence of insomnia, 8-14 indicates mild insomnia, 15-21

<sup>42</sup>Bastien, C. H., Vallières, A., & Morin, C. M. (2001). Validation of the Insomnia Severity Index as an outcome measure for insomnia research. *Sleep Medicine*, 2(4), 297-307. [https://doi.org/10.1016/s1389-9457\(00\)00065-4](https://doi.org/10.1016/s1389-9457(00)00065-4).

<sup>43</sup>Morin, C., Belleville, G., Belanger, L., and Ivers, H. (2011). The Insomnia Severity Index: Psychometric indicators to detect insomnia cases and evaluate treatment response. *Sleep*, 24(5), 601-608.

indicates moderate insomnia, and a score total of 22-28 indicates severe insomnia. Figure II.14 shows that 47.5% of clients were classified as having an absence of insomnia. In addition, 32.5% of clients were classified as having mild insomnia and 13.8% of clients were classified as having moderate insomnia. Only 6.3% of clients (5 clients) were classified as having severe insomnia. Overall, clients scored an average of 9.1 on the ISI.

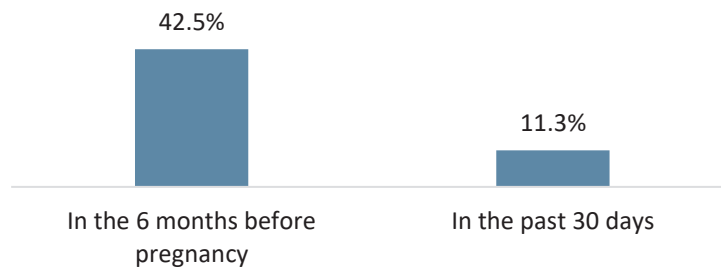
FIGURE II.14. NUMBER OF TYPES SLEEP DIFFICULTIES REPORTED AT BASELINE (N = 80)



### Any Intimate Partner Abuse

Figure II.15 shows that in the 6 months before pregnancy, 42.5% of clients reported experiencing any type of partner abuse (including psychological abuse, control, physical abuse, and sexual abuse)<sup>44</sup> perpetrated by a current or ex-partner and 11.3% of clients reported experiencing abuse in the past 30 days.

FIGURE II.15. ANY TYPE OF ABUSE IN THE 6 MONTHS BEFORE PREGNANCY AND IN THE PAST 30 DAYS (N = 80)



<sup>44</sup> Any abuse was defined in this study as a client indicating “yes” to any of the partner abuse questions asked in the survey (e.g., verbal and psychological abuse, extreme jealousy and control, threats of violence towards client and others close to them, physical violence, stalking, partner purposely damaging or destroying property, sexual assault/threats of assault) at each period.

## Clients Who Entered the Program After the Birth of Their Child

### Demographics

Table II.B.1 shows that the majority of clients who entered KY-Moms MATR after the birth of their baby were White (84.2%) and were an average of 30.0 years old. In addition, less than half were married or cohabiting at baseline (47.3%) and 52.6% had never been married. Of those clients who were living with an intimate partner (n = 9), 88.9% reported this partner was the father of the baby. About 37% of the KY-Moms MATR mothers reported at post-birth baseline they were currently homeless. Of those who indicated they were homeless (n = 4), 75.0% were staying temporarily with friends/family, and 25.0% considered themselves homeless because they were staying in a shelter.

TABLE II.B.1. DEMOGRAPHICS FOR CLIENTS WHO ENTERED KY-MOMS MATR AFTER THE BIRTH OF THE BABY (N = 19)

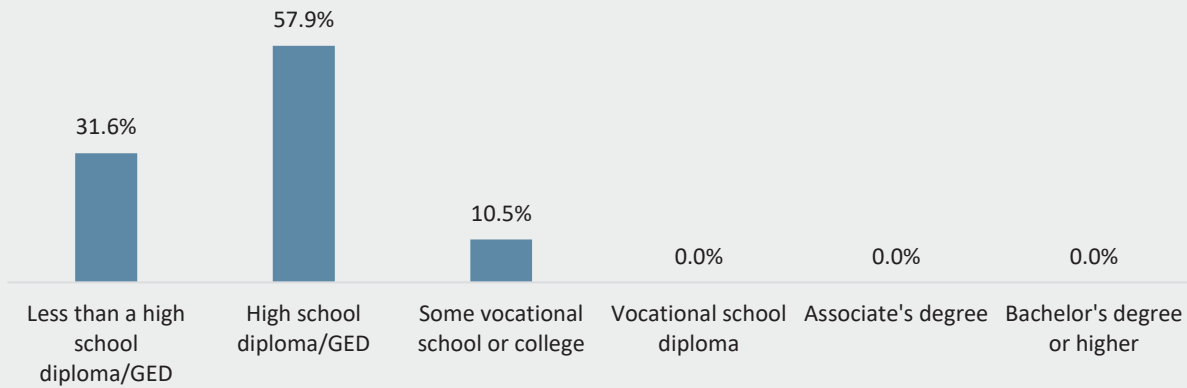
<b>Age</b> .....	30.0 years (range of 19-42)
<b>Race</b> .....	
White .....	84.2%
African American.....	5.3%
Mexican.....	0.0%
Puerto Rican.....	0.0%
Other Hispanic.....	10.5%
<b>Marital status</b> .....	
Married or cohabiting .....	47.3%
Never married .....	52.6%
Separated or divorced.....	0.0%
Widowed .....	0.0%
Of those married or cohabiting .....	(n = 9)
Partner is the father of baby.....	88.9%
<b>Homeless</b> .....	36.8%
Of those homeless <sup>45</sup> .....	(n = 7)
Staying in a shelter.....	25.0%
Staying temporarily with friends/family.....	50.0%

Close to one-third of clients (31.6%) had less than a high school diploma or GED at baseline (see Figure II.B.1). Almost 58% of clients reported their highest level of education was a high school diploma or GED. Close to 11% of clients had completed some vocational/technical school or college. None of the clients had completed vocational/technical school, an associate’s degree, or

<sup>45</sup>Three clients were missing the reason for why they considered themselves homeless.

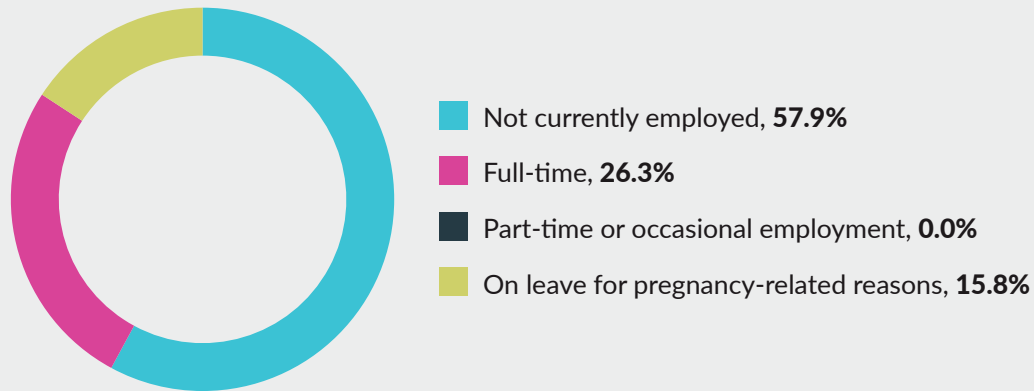
a bachelor's degree.

FIGURE II.B.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT BASELINE FOR CLIENTS WHO ENTERED KY-MOMS MATR AFTER THE BIRTH OF THE BABY (N = 19)



The majority of women in KY-Moms MATR case management were unemployed (57.9%) at the time of the post-birth baseline interview. Over one-quarter of clients (26.3%) were employed full-time and none worked part-time or had occasional/seasonal work. Close to 16% reported they were currently on leave from their job due to pregnancy-related reasons.

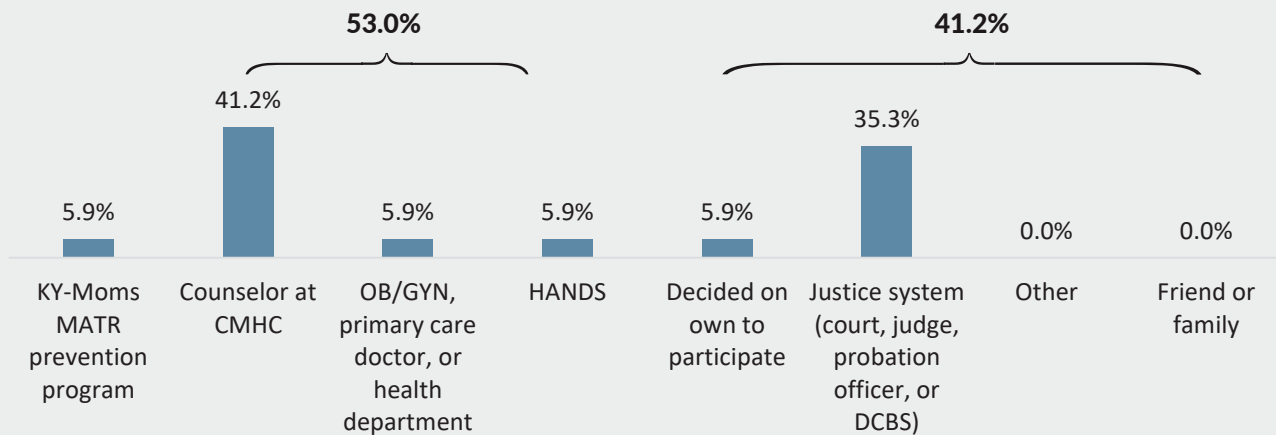
FIGURE II.B.2. CURRENT EMPLOYMENT STATUS AT BASELINE FOR CLIENTS WHO ENTERED KY-MOMS MATR AFTER THE BIRTH OF THE BABY (N = 19)



### Self-reported Referral Status

Figure II.B.3 shows the self-reported referral source for KY-Moms MATR clients who entered the program after the birth of their baby. Fifty-three percent of clients were referred by outside agencies such as a counselor at one of the community mental health centers (41.2%), a health care provider (5.9%), or HANDS (5.9%). A smaller proportion (5.9%) of clients were referred to the KY-Moms MATR program by the prevention program. Close to 41% of clients were referred to the program in other ways such as deciding on their own to participate (5.9%), and the justice system (e.g., judge, court, probation officer, or DCBS; 35.3%).

FIGURE II.B.3. SELF-REPORTED REFERRAL SOURCE FOR KY-MOMS MATR CLIENTS WHO ENTERED THE PROGRAM AFTER THE BIRTH OF THEIR BABY (N = 19)<sup>46</sup>



### Information About the Pregnancy/baby

Clients reported they were an average of 37.6 weeks pregnant when the baby was born. At the time of post-birth baseline, 89.5% of clients had a regular OB/GYN and had been to an average of 12.4 visits (range of 3-35 visits) with their prenatal health care provider during pregnancy and an average of 2.3 times (range of 0-7 visits) since the birth of the baby (see Table II.B.2). About 16% of clients reported they had breastfed and, of those clients (n = 3), 33.3% were still breastfeeding. Less than half of clients (47.4%) reported that they had been told by a doctor that there were special health care needs that directly impacted their pregnancy or the baby while pregnant such as heart issues, methadone use, diabetes, and high blood pressure. Since the baby was born, 47.4% of clients reported that they had been told by a doctor of any special health care needs such as feeding issues with the baby and substance exposure/withdrawal. Overall, 84.2% of clients reported they had been pregnant before.

<sup>46</sup>Two clients were missing their referral status at baseline.



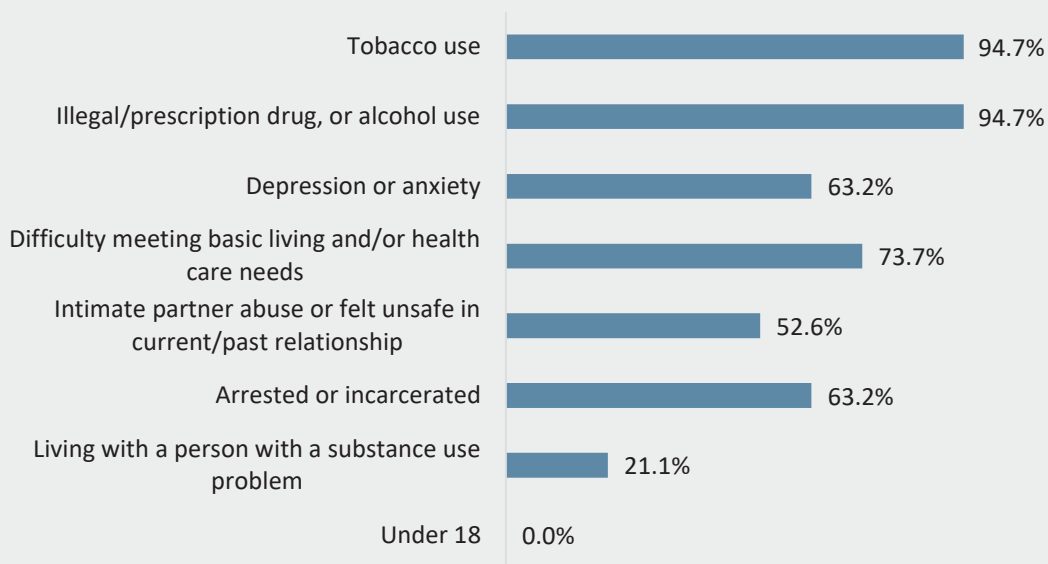
TABLE II.B.2. PREGNANCY STATUS FOR KY-MOMS MATR CLIENTS WHO ENTERED THE PROGRAM POST-BIRTH (N = 19)

Average weeks pregnancy when the baby was born.....	37.6 (range 35 - 40)
Have a regular OB/GYN.....	89.5%
Average number of visits with a healthcare professional during pregnancy .....	12.4 (range 3-35)
Average number of visits with a healthcare professional since baby was born .....	2.3 (range 0-7)
Have breastfed baby .....	15.8%
Of those clients who reported breastfeeding	(n = 3)
Still breastfeeding .....	33.3%
Been pregnant previously .....	84.2%
Been told by a doctor of any special health care needs that directly impacted pregnancy or baby while pregnant ..	47.4%
Been told by a doctor of any special health care needs since the baby was born.....	47.4%
Been to the ER for your baby since the baby was born .....	15.8%

### Risk Status

Figure II.B.4 shows that all clients who completed a KY-Moms MATR post-birth baseline fit into at least one of the major risk factor categories assessed in the baseline interview. Overall, 94.7% of clients reported tobacco use (cigarettes, e-cigarettes, or smokeless tobacco) and 94.7% reported drug or alcohol use at baseline (in the 6 months before pregnancy, during pregnancy, or in the past 30 days). Close to 63% of clients reported they had symptoms of depression or anxiety for at least two weeks in a row at baseline (in the 6 months before pregnancy, during pregnancy, or in the past 30 days). Almost three-quarter of clients (73.7%) reported difficulty meeting basic living and/or health care needs and 52.6% reported intimate partner abuse and/or feeling unsafe in either their current relationship or because of a partner from a previous relationship in the 6 months before pregnancy, during pregnancy, or in the past 30 days. About 63% of clients reported having been arrested and/or incarcerated in the 6 months before entering the program. Approximately 21% of clients reported currently living with someone who had drug or alcohol problems, and none were under the age of 18 at the time of the baseline interview.

FIGURE II.B.4. PERCENT OF CLIENTS FALLING INTO AT LEAST ONE TARGETED RISK FACTOR AT POST-BIRTH BASELINE (N = 19)



## Substance Use

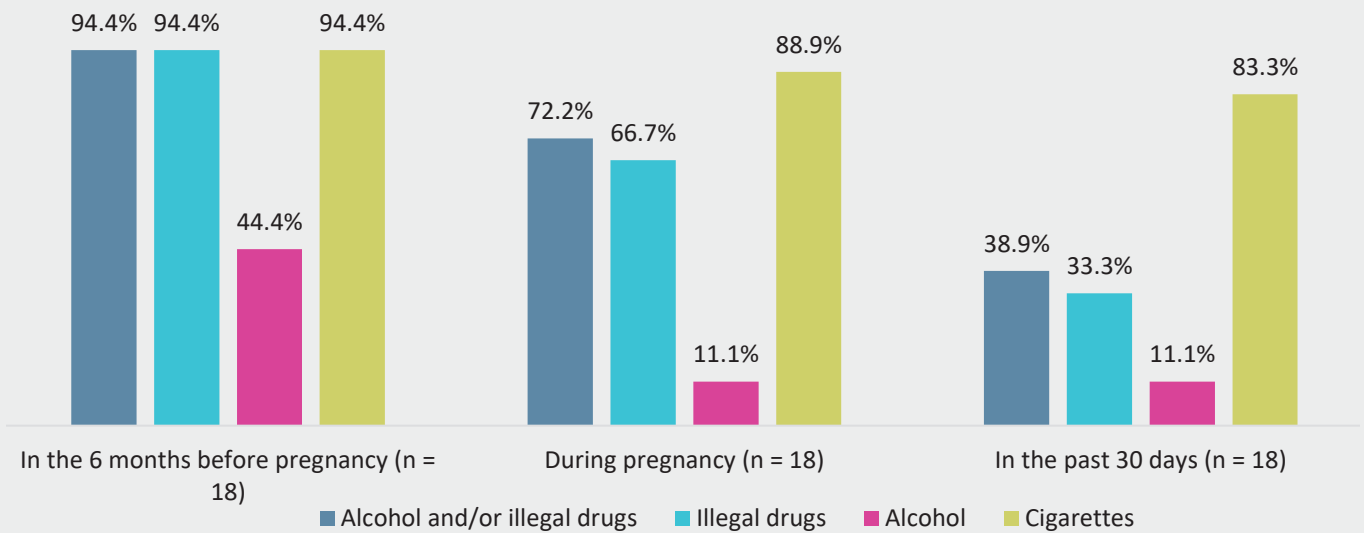
The majority reported using alcohol and/or illegal drugs (94.4%) in the 6 months before pregnancy. Overall, a higher percentage of individuals reported using illegal drugs (94.4%) compared to the percent of individuals who reported using alcohol (44.4%) in the 6 months before pregnancy. The majority of clients reported smoking tobacco (94.4%) in the 6 months before pregnancy.

Almost three-quarters of clients (72.2%) reported using alcohol and/or illegal drugs during pregnancy. Specifically, close to two-thirds (66.7%) reported they used illegal drugs and 11.1% reported alcohol use during pregnancy. The majority of clients (88.9%) reported smoking tobacco during pregnancy.

Of the 18 clients who were not in a controlled environment or incarcerated all 30 days before baseline, 38.9% reported using alcohol and/or illegal drugs.<sup>47</sup> Specifically, 33.3% reported illegal drug use and 11.1% reported alcohol use. Also, 83.3% reported smoking tobacco in the 30 days before baseline (see Figure II.B.5).

<sup>47</sup>This period includes while they may or may not have still been pregnant.

FIGURE II.B.5. PERCENT OF CLIENTS REPORTING ILLEGAL DRUGS, ALCOHOL, AND SMOKING TOBACCO AT POST-BIRTH BASELINE<sup>48</sup>

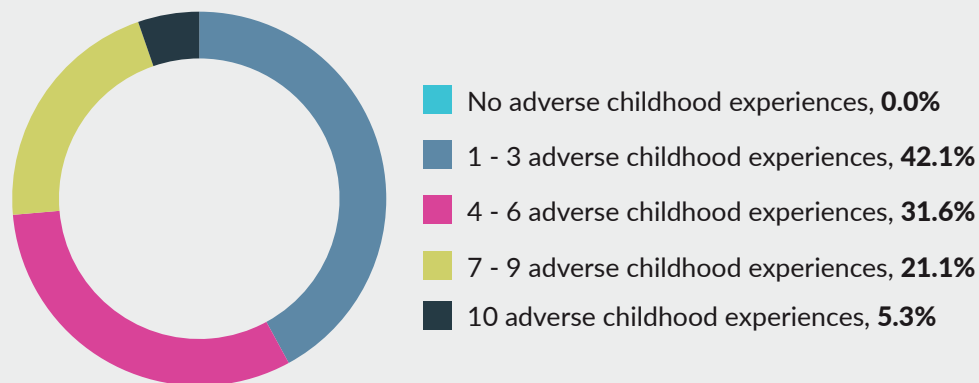


*Of those clients who reported using illegal drugs during pregnancy (n = 12), 41.7% reported marijuana use, 50.0% reported stimulant use, 8.3% reported tranquilizer/sedative use, and 25.0% reported cocaine use.*

### Adverse Childhood Experiences and Victimization

Figure II.B.6 shows that clients who entered the program after the birth of their baby reported at least one type of ACE included in the assessment. Specifically, 42.1% reported experiencing 1 to 3 ACE, 31.6% reported experiencing 4 – 6 ACE, and 21.1% reported experiencing 7 – 9 ACE. About 5% of clients reported experiencing all 10 types of adverse childhood experiences. Overall, clients reported an average of 4.8 adverse childhood experiences.

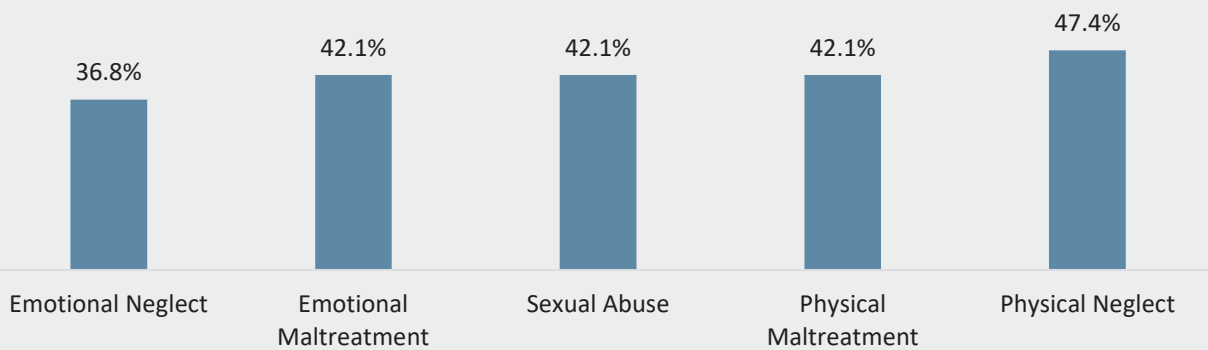
FIGURE II.B.6. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES REPORTED AT POST-BIRTH BASELINE (N = 19)



<sup>48</sup> Because being in a controlled environment (one where the client was not able to come and go as they pleased including a hospital, jail, or residential treatment) decreases opportunities for substance use, individuals who were in a controlled environment all 180 days in the 6 months before entering the program (n = 1), or in incarcerated all 30 days before entering the program (n = 1) are not included in the analysis of substance use for the corresponding period.

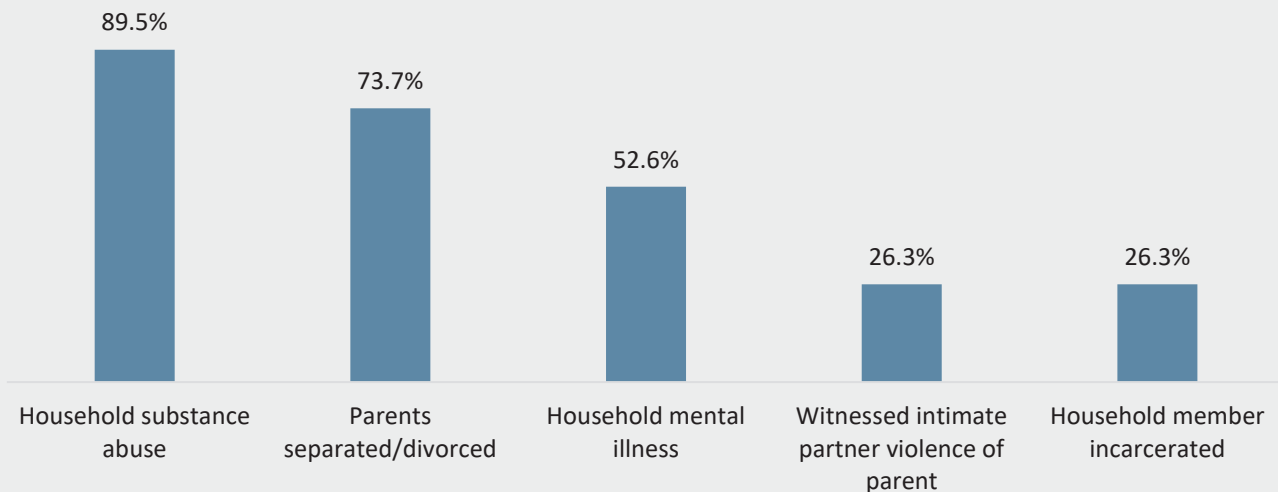
Figure II.B.7 shows that 36.8% of clients reported that they had experienced emotional neglect (e.g., felt that no one in the family loved them, or they weren't special/important, or did not feel close to each other or supported) and 42.1% experienced emotional maltreatment (e.g., insults, put down, humiliation, parent acted in a way that made the child believe they would be physically hurt). About 42% of clients reported experiencing physical maltreatment (e.g., being pushed/grabbed/slapped, or being hit so hard that it left marks) and 47.4% experienced physical neglect (e.g., didn't have enough to eat as a child, had no one to protect them, parents too high / drunk to take care of them) before the age of 18. About 42% of clients reported sexual abuse as a child (e.g., touched inappropriately by someone at least 5 years or older, or someone 5 years or older tried to or actually had sex with client).

FIGURE II.B.7. SPECIFIC MALTREATMENT AND ABUSE EXPERIENCES IN CHILDHOOD FOR KY-MOMS MATR CLIENTS CLIENTS WHO ENTERED THE PROGRAM POST-BIRTH (N = 19)



The majority of clients (89.5%) had a household member with a substance abuse problem and 73.7% of clients reported their parents were divorced or lived separately and (see Figure II.B.8). Over half of clients (52.6%) reported they had a household member with a mental illness or had attempted suicide, 26.3% witnessed intimate partner abuse of a parent before the age of 18, and 26.3% reported a household member had been incarcerated.

FIGURE II.B.8. HOUSEHOLD RISKS IN CHILDHOOD FOR KY-MOMS MATR CLIENTS CLIENTS WHO ENTERED THE PROGRAM POST-BIRTH (N = 19)

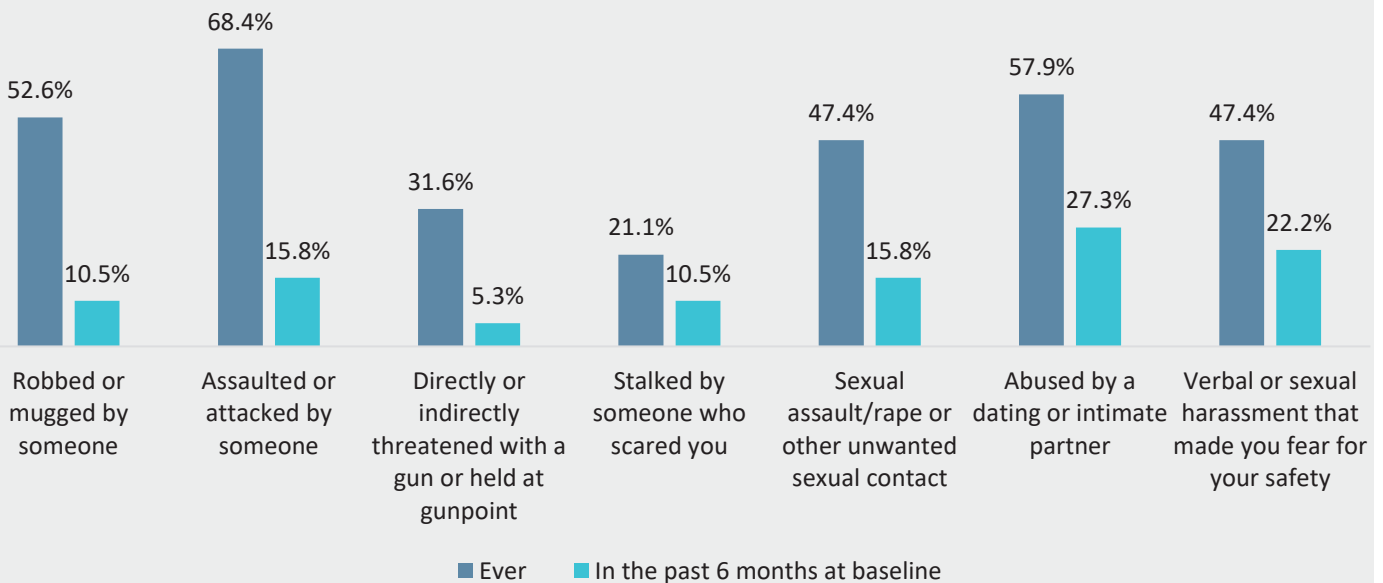


## Victimization Experiences

At post-birth baseline, clients were also asked about situations in which they may have been the victim of a crime, harmed by someone else, or made to feel unsafe by someone other than a parent or guardian in their lifetime. Overall, 84.2% of clients reported ever experiencing any type of victimization. Figure II.B.9 shows that, specifically, 52.6% of clients reported having ever been robbed or mugged. Over two-thirds of clients (68.4%) reported having ever been assaulted or attacked by someone and 31.6% of clients reported they had been directly or indirectly threatened with a gun or held at gunpoint. About 21% of clients reported having ever been stalked by someone who scared them. Almost half (47.4%) reported having ever been a victim of sexual assault, rape, or other unwanted sexual contact and 57.9% reported having ever been abused by a dating or intimate partner (partner physically assaulted, controlled, or emotionally abused the client). About 47% of clients reported they were ever verbally, sexually, or otherwise harassed in some way that made them afraid for their safety.

In the past 6 months, 26.3% reported any victimization. Specifically, 27.3% of clients reported being abused by a dating or intimate partner and 22.2% reported being verbally, sexually, or otherwise harassed.

FIGURE II.B.9. PERCENT OF CLIENTS HAVING EXPERIENCED VICTIMIZATION FOR KY-MOMS MATR CLIENTS WHO ENTERED THE PROGRAM POST-BIRTH (N = 19)



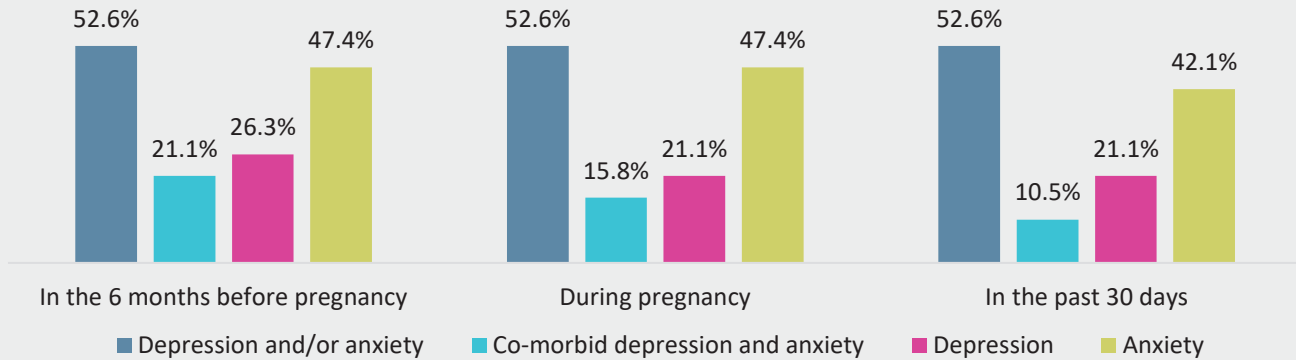
## Mental Health

In the 6 months before pregnancy, 52.6% of clients who entered the program after the birth of their baby met study criteria for depression and/or anxiety and 21.1% of clients met criteria for co-morbid depression and anxiety. About 26% of clients met study criteria for depression and 47.4% met criteria for anxiety (see Figure II.B.10).

During pregnancy, over half of clients (52.6%) met study criteria for depression and/or anxiety

and 15.8% of clients met criteria for co-morbid depression and anxiety. Less than one-quarter of clients (21.1%) met study criteria for depression and 47.4% met criteria for anxiety. In the past 30 days at baseline, 52.6% of clients met criteria for depression and/or anxiety and 10.5% met criteria for both depression and anxiety.

FIGURE II.B.10. PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION AND/OR ANXIETY AT POST-BIRTH BASELINE (N = 19)



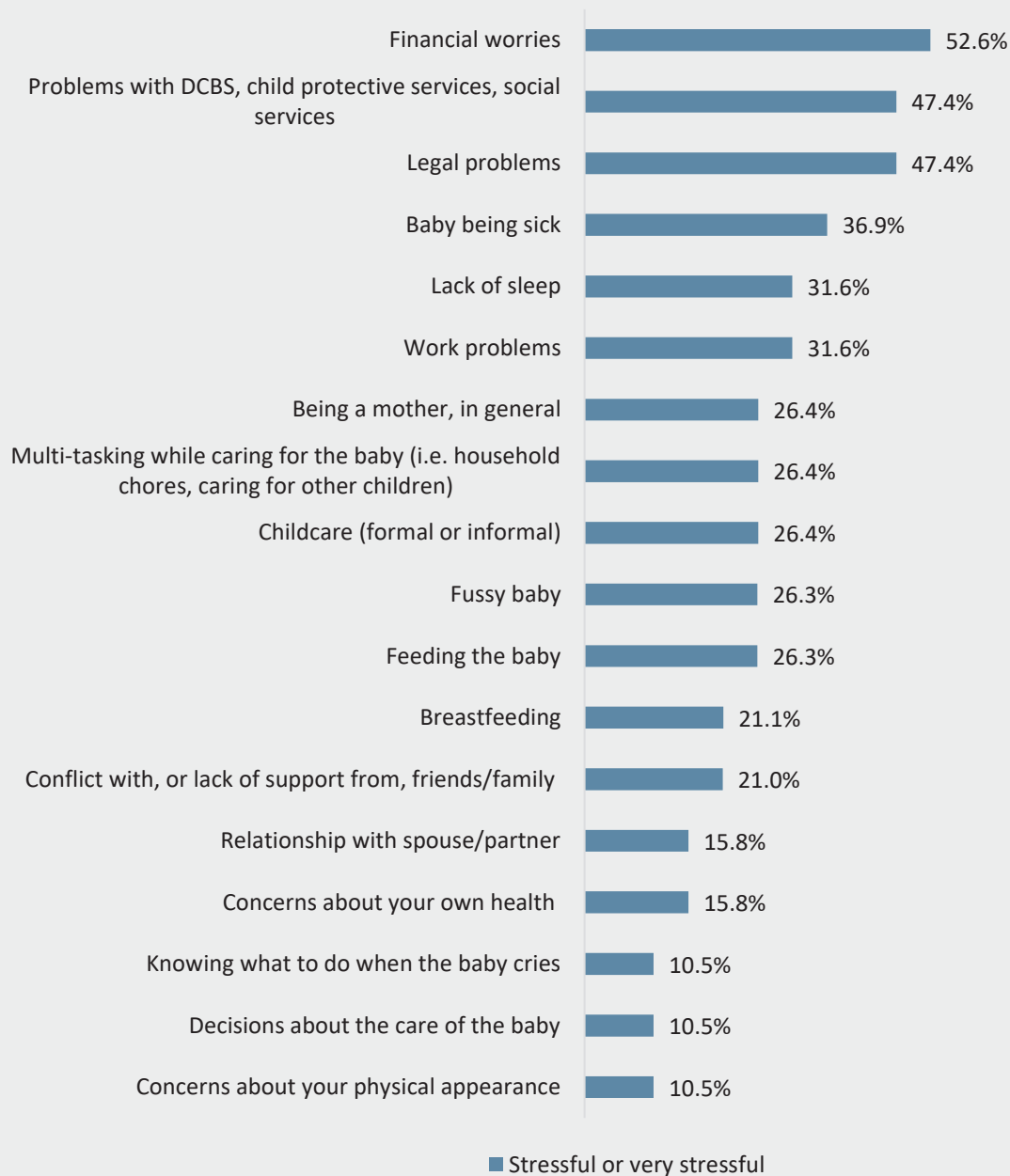
About 21% of clients screened positive for post-traumatic stress disorder (PTSD) in the past 6 months (not represented in a figure).

### Stress

At postnatal baseline, clients were asked a series of questions regarding how stressful certain events have been in the past 6 months.<sup>49</sup> Responses ranged from a score of 1 (not at all stressful) to 4 (very stressful). The top three most mentioned items as stressful were: financial worries (52.6%), problems with DCBS, child protective services, or social services (47.4%), and legal problems (47.4%).

<sup>49</sup> Questions regarding stress are adapted from the Postpartum Stressor Scale which includes a 9-item scale highlighting baby care, well-being, and work problems. Park, E. R., Psaros, C., Traeger, L., Stagg, A., Jacquart, J., Willett, J., Alert, M. D., LaRoche, K. L., & Ecker, J. L. (2015). Development of a postpartum stressor measure. *Maternal and Child Health Journal*, 19(10), 2094–2101. <https://doi.org/10.1007/s10995-015-1731-0>.

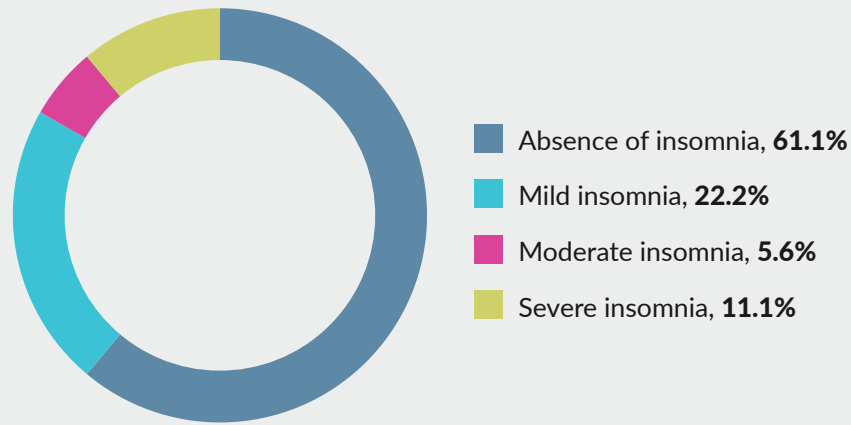
FIGURE II.B.11. RATING OF EVENTS AFTER THE BIRTH OF THE BABY AS STRESSFUL/VERY STRESSFUL (N = 19)



### Sleep Difficulty

Figure II.B.12 shows that 61.1% of clients were classified as having an absence of insomnia. In addition, 22.2% of clients were classified as having mild insomnia and 5.6% of clients were classified as having moderate insomnia. Only 11% of clients (two clients) were classified as having severe insomnia. Overall, clients scored an average of 9.9 on the ISI.

FIGURE II.B.12. NUMBER OF TYPES SLEEP DIFFICULTIES REPORTED AT POST-BIRTH BASELINE (N = 18)<sup>50</sup>

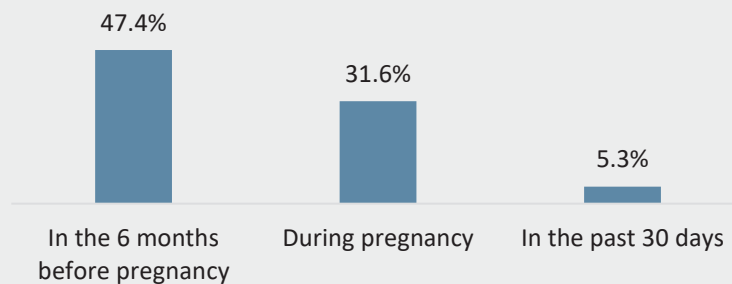


Almost one-quarter of clients (21.1%) reported that, in the past 30 days, they used alcohol, prescription drugs, or illegal drugs to reduce stress, anxiety, worry, sadness, or fear.

### Any Intimate Partner Abuse

Figure II.B.13 shows that in the 6 months before pregnancy, 47.4% of clients reported experiencing any type of partner abuse (including psychological abuse, control, physical abuse, and sexual abuse)<sup>51</sup> perpetrated by a current or ex-partner, 31.6% of clients reported experiencing partner abuse during pregnancy, and 5.3% of clients reported experiencing partner abuse in the past 30 days.

FIGURE II.B.13. ANY TYPE OF ABUSE IN THE 6 MONTHS BEFORE PREGNANCY AND IN THE PAST 30 DAYS AT POST-BIRTH BASELINE (N = 19)



## Summary

Over two-thirds (67.5%) pre-birth clients reported they were referred to the KY-Moms MATR program by either a counselor at a community mental health agency or the justice system. The majority of clients coming into the program before giving birth were White (91.3%), about 28 years old, and over one-third (36.3%) were either married or cohabiting with a partner. Of the

<sup>50</sup>One client was missing data for sleep difficulties at baseline.

<sup>51</sup>Any abuse was defined in this study as a client indicating “yes” to any of the partner abuse questions asked in the survey (e.g., verbal and psychological abuse, extreme jealousy and control, threats of violence towards client and others close to them, physical violence, stalking, partner purposely damaging or destroying property, sexual assault/threats of assault) at each period.



clients who were married or cohabiting, a majority (96.6%) reported that their current partner was the father of the baby. Close to 21% had less than a high school diploma/GED and the vast majority (66.3%) were unemployed.

Overall, clients were an average of 25 weeks into their pregnancy when they completed a prenatal baseline assessment and the majority (82.5%) reported that they had been pregnant before. At baseline, clients reported an average of 6.0 prenatal visits with a health care professional. Over half of clients (55.8%) were planning to breastfeed their babies.

KY-Moms MATR clients reported behavioral health risks associated with negative birth outcomes in the time before becoming involved in the program including high rates of smoking, alcohol and illegal drug use, depression or anxiety, financial difficulties, and intimate partner abuse. In addition, the majority of clients (92.5%) reported at least one adverse childhood experience and almost half reported experiencing emotional maltreatment (46.3%), emotional neglect (43.8%), and sexual abuse (43.8%) in childhood.

Clients who had already had their baby when they entered the program and completed a postnatal baseline (n = 19) reported an average of 12.4 visits with a healthcare professional during pregnancy and 2.3 visits since the baby was born. Close to 16% of clients reported they had breastfed their baby and 47.4% had been told by a doctor of any special health care needs since the baby was born. The majority of clients reported illegal drug use (72.2%) and cigarette use (88.9%) during pregnancy. In addition, all clients reported at least one type of adverse childhood experience and many of the clients reported experiencing emotional neglect (36.8%), emotional maltreatment (42.1%), and sexual abuse in childhood (47.4%). Half of clients who already had their baby met study criteria for depression and/or anxiety during pregnancy and 21% screened positive for PTSD in the past 6 months. About 47% of clients in the 6 months before pregnancy and 31.6% of clients during pregnancy reported experiencing any type of partner abuse.

## Section III. Birth Events and Outcomes

This section uses the Kentucky Vital Statistics birth data to examine: (1) maternal behavior and health characteristics, and (2) infant health characteristics for 33<sup>52</sup> KY-Moms MATR case management clients who entered the KY-Moms MATR program prior to the birth of their baby.<sup>53</sup>

### Maternal Behavior and Health Characteristics

#### Medical and Public Services Utilization

According to the birth event data, KY-Moms MATR women reported an average of 10.1 prenatal visits during their pregnancy (see Table III.1). In addition, the majority of clients (78.8%) reported that they received the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) during pregnancy. The majority of clients (93.9%) reported that the source of payment for delivery of the baby was Medicaid and 6.1% of clients reported they had private insurance to pay for the delivery. Three percent of clients reported any labor and delivery complications such as premature rupture of membranes, short and fast labor, or prolonged labor.

TABLE III.1. MEDICAL AND PUBLIC UTILIZATION (N = 33)<sup>54</sup>

Average number of prenatal visits.....	10.1 (Range 2-16)
WIC food during pregnancy .....	78.8%
Payment source for delivery	
Medicaid.....	93.9%
Private insurance.....	6.1%
Any labor and delivery complication .....	3.0%

#### Maternal Health Risk Factors

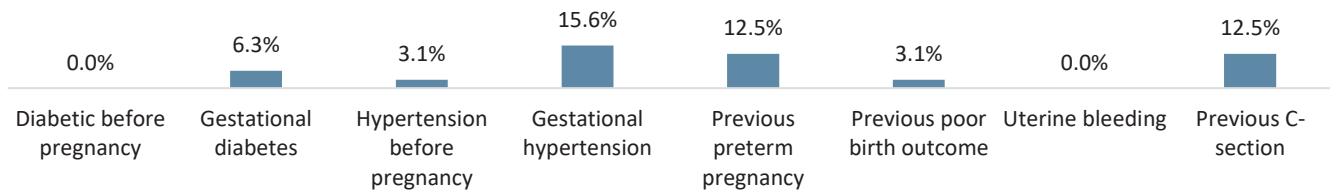
General health conditions of pregnancy that could cause harm to the baby or the mother were collected from the Kentucky Vital Statistics data set. A little less than 40% of KY-Moms MATR mothers (39.4%) reported experiencing at least one maternal health condition such as gestational diabetes (6.3%), gestational hypertension (15.6%), uterine bleeding, previous preterm pregnancy (12.5%), or a previous C-section (12.5%; see Figure III.1).

<sup>52</sup> Four clients who completed a follow-up could not be matched to the birth event data set.

<sup>53</sup> Clients gave birth between January 2021 and November 2021.

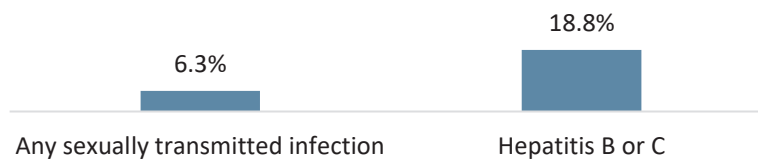
<sup>54</sup> Two clients were missing data for the number of prenatal visits, and one client was missing data for WIC.

FIGURE III.1. OTHER MATERNAL HEALTH RISK FACTOR (n = 32)<sup>55</sup>



Less than 10% of KY-Moms MATR clients (6.3%) reported having a sexually transmitted infection such as gonorrhea, syphilis, herpes, or chlamydia and 18.8% of clients reported they had hepatitis B or C (see Figure III.2).

FIGURE III.2. PERCENT OF WOMEN REPORTING A SEXUALLY TRANSMITTED INFECTION AND HEPATITIS B OR C (N = 32)<sup>56</sup>



### Smoking Patterns and Alcohol Use

In the Kentucky Vital Statistics data, 51.5% of KY-Moms MATR mothers reported smoking and among those mothers (n = 17), they reported, on average, fewer cigarettes in each progressive trimester (see Figure III.3). Clients reported an average of 16.1 cigarettes per day before pregnancy, an average of 15.3 per day in the first trimester, and in second trimester, clients reported an average of 15.3 cigarettes. By the third trimester, clients reported an average of 15.0 cigarettes per day.

One of the clients reported drinking alcohol during their pregnancy (not depicted in a figure).

*“They stayed with me and worked with me. I have a lot of trouble keeping schedules and they helped me. Met me where they could, I would have drowned without them.”*

KY-MOMS MATR FOLLOW-UP CLIENT

<sup>55</sup>Maternal risk factors were unknown for one client.

<sup>56</sup>One client was missing data on sexually transmitted infections.

FIGURE III.3. AVERAGE NUMBER OF CIGARETTES SMOKED PER TRIMESTER, AMONG WOMEN WHO SMOKE (n = 17)




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Average number of cigarettes smoked before pregnancy	Average number of cigarettes smoked 1st trimester	Average number of cigarettes smoked 2nd trimester	Average number of cigarettes smoked 3rd trimester
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a, b, c, d – Values sharing the same subscript differ at  $p < .05$

### Infant Health Characteristics

The average weeks of gestation was 38.3 for the women with data in the Kentucky Vital Statistics dataset. In addition, 9.1% of the babies were born prematurely (see Table III.2). Close to 12% of babies were born with low birthweight (less than 5lbs, 8oz), but on average, babies born to KY-Moms MATR clients weighed 7lbs, 6oz. In addition, babies were born with an average APGAR score of 8.7. None of the clients had babies with birth defects or anomalies (such as Down’s syndrome, cleft palates, anencephaly, congenital heart failure, spina bifida, etc.). Less than 10% of babies (9.4%) were taken to NICU and 9.1% of babies were born with a birthing problem such as inflammation of fetal membranes, intolerance to labor, or being placed on a ventilator (not including being admitted to the neonatal intensive care unit). According to the birth event data set, 51.5% of KY-Moms MATR clients either did or intended to breastfeed their baby during the period from birth to hospital discharge.

TABLE III.2 INFANT HEALTH CHARACTERISTICS (N = 33)

Percent of babies born premature .....	9.1%
Average weeks gestation .....	38.3 (Range 28-40)
Baby born with low birth weight .....	12.1%
Average weight of baby .....	7lbs, 6oz (Range 2lbs, 9oz – 9lbs, 14oz)
Highest average APGAR score.....	8.7
Babies born with birth defects or anomalies .....	0.0%
Baby taken to NICU.....	9.4%
Any problems for baby during birth (not including NICU)....	9.1%
Mother breastfed baby .....	51.5%

## Section IV: Change in Targeted Factors from Pre-birth Baseline to Follow-up for Clients in the Postnatal Follow-up Sample

*This section examines change from baseline to follow-up for clients who entered the KY-Moms MATR program before the birth of their baby and who completed a postnatal follow-up (n = 37) for: (1) information about the baby, (2) substance use, (3) mental health, (4) intimate partner violence, (5) economic and living circumstances, economic hardship, and criminal justice involvement, (6) physical health, and (7) stress, quality of life, and emotional support. Past-30-day and past-6-month measures are examined separately where applicable.*

It is important to keep in mind that because this section includes only those who completed a postnatal follow-up, the sample size is small and should be considered when interpreting the findings. To increase the statistical power to detect change in this small sample size, the alpha for statistical tests was increased to  $p < .10$ , instead of  $p < .05$ .

### A. Information on the Pregnancy/baby

When followed-up clients completed a prenatal baseline they were an average of 24.0 weeks pregnant (Min. = 6 weeks, Max. = 35 weeks).<sup>57</sup> At follow-up, clients reported being very involved in the KY-Moms MATR program an average of 6.7 months (Min. = 1, Max. = 24). Clients also reported being in the program for 2.8 months after the birth of their baby (Min. = 0, Max. = 11).

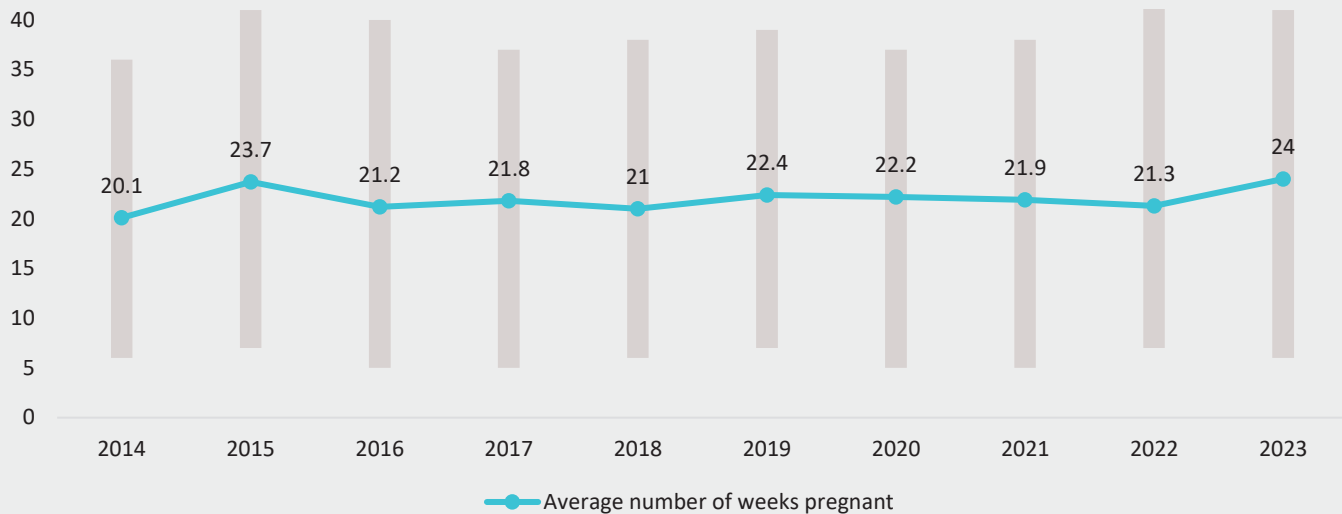
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<sup>57</sup>To be included in the analysis, there must be at least 30 days between the date of program entry and the birth of the baby. The average number of days between program entry and baseline completion was 7.6 (Min. = 0 and Max. = 55). Therefore, even though a client was at 35 weeks in her pregnancy when the baseline was completed, she entered the program more than 30 days before the due date.

### Trends in Average Number of Weeks Pregnant at Baseline by Report Year

The average number of weeks in pregnancy when a client completed a prenatal baseline assessment was relatively stable over the past ten years. In report year 2014, clients were an average of 20.1 weeks into their pregnancies and in 2022 clients were an average of 24.0 weeks into their pregnancies when they completed a prenatal baseline.

FIGURE IV.A.1. AVERAGE NUMBER OF WEEKS CLIENT WAS PREGNANT AT BASELINE AMONG CLIENTS IN THE FOLLOW-UP SAMPLE, REPORT YEARS 2014-2023



### General Information Regarding the Pregnancy/baby

Clients were asked how their baby was doing at postnatal follow-up and all the mothers indicated the baby was “great” or “good.”

At prenatal baseline, KY-Moms MATR clients reported an average of 5.5 doctor visits about the pregnancy and at postnatal follow-up clients reported an average of 7.5 visits to the pediatrician or nurse since giving birth. Less than one-quarter of clients (24.3%) at baseline indicated they were told by a doctor that there were special health care needs that would directly impact the pregnancy or the baby at baseline. At postnatal follow-up, 2 clients (8.0% of the postnatal follow-up sample) reported their doctor told them their baby had special health care needs. More specifically, one client reported their baby had a vascular birthmark and the other client reported their baby had urinary issues. In comparison, for all babies born in the United States, approximately 3.0% of babies are born with a birth defect (such as cleft palate, spina bifida, or neural tube defects).<sup>58</sup> In addition, 19% of children in the United States and 23% of children in Kentucky are considered to have special health care needs as defined by the federal Maternal and Child Health Bureau’s definition.<sup>59</sup>

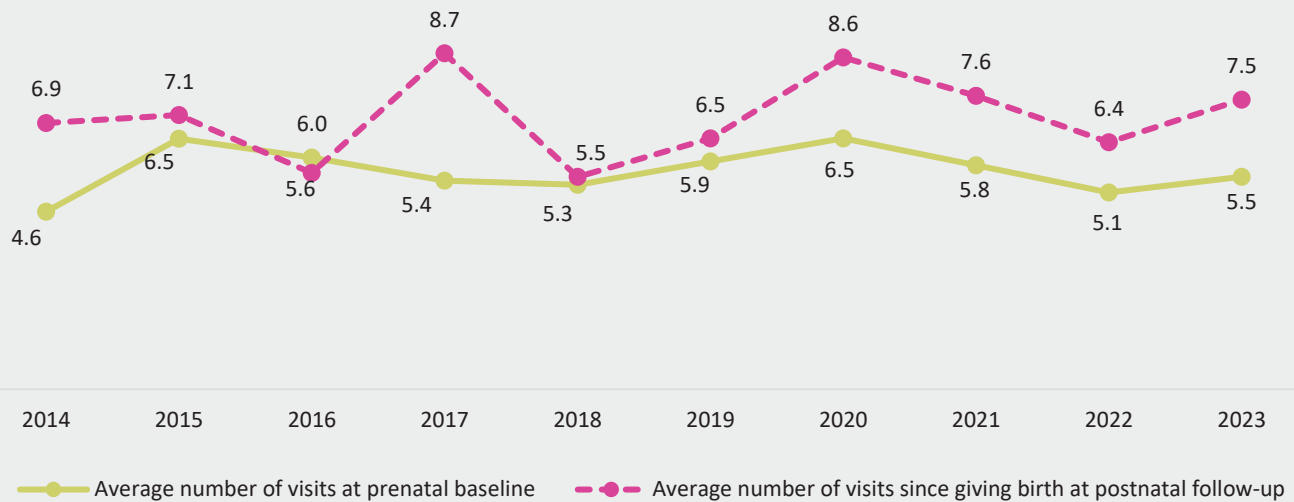
<sup>58</sup> Centers for Disease Control and Prevention. Update on overall prevalence of major birth defects --- Atlanta, Georgia, 1978--2005. *Morbidity and Mortality Weekly Report* 2008, 57(1), 1-5.

<sup>59</sup> Children with special health care needs in the United States 2018-2019. Retrieved from [https:// datacenter.kidscount.org/data/tables/9703-children-with-special-health-care-needs#detailed/1/any/false/1696,1648,1603/any/18949,18950](https://datacenter.kidscount.org/data/tables/9703-children-with-special-health-care-needs#detailed/1/any/false/1696,1648,1603/any/18949,18950) on August 12, 2022.

## Trends in Average Number of Visits with a Health Care Provider at Baseline and Follow-up

In 2014, clients reported an average of 4.6 doctor visits about the pregnancy and at postnatal follow-up clients reported an average of 6.9 visits to the pediatrician or nurse since giving birth. In the 2017 outcomes report, clients reported an average of 5.4 prenatal visits, but an average of 8.7 doctor visits after the baby was born. In 2023, clients reported 5.5 doctor visits at prenatal baseline and 5.5 visits at postnatal follow-up.

FIGURE IV.A.2. AVERAGE NUMBER OF DOCTORS VISITS AT BASELINE AND FOLLOW-UP AMONG CLIENTS IN THE FOLLOW-UP SAMPLE, REPORT YEARS 2014-2023



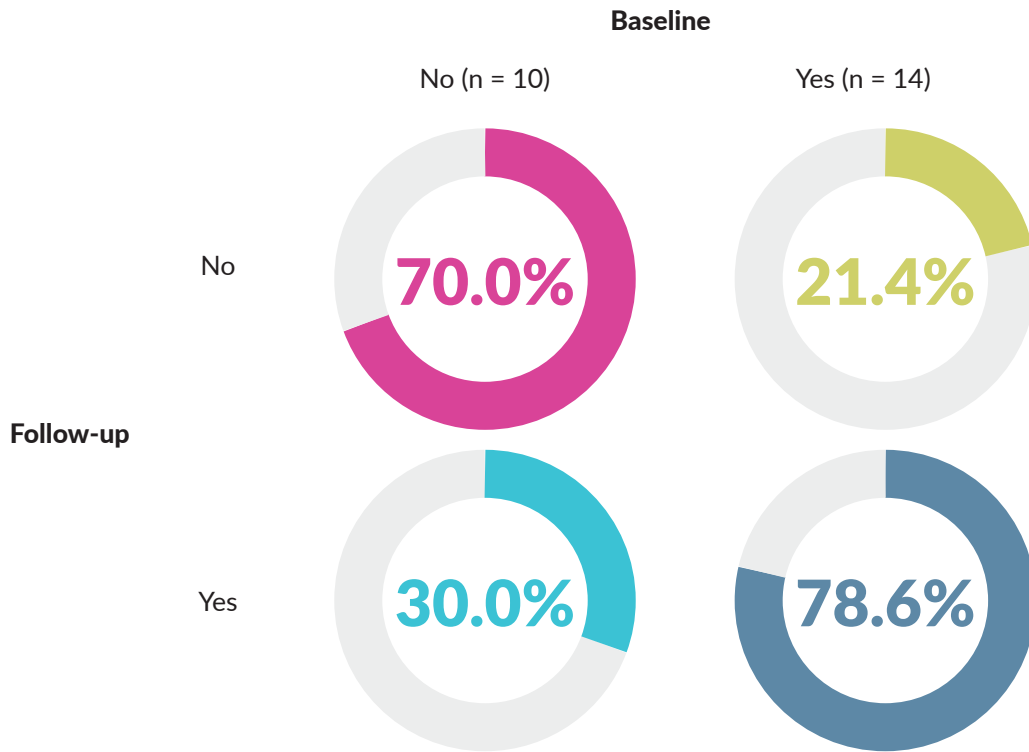
### Emergency Room Visits for the Baby at Postnatal

At postnatal follow-up, 29.7% of clients reported they had taken their baby to the emergency room since giving birth (not depicted in a figure). Of those clients (n = 11), they reported taking their baby to the emergency room an average of 1.6 times (range of 1 to 4 times).

### Breastfeeding

In general, clients followed through with their prenatal plans to breastfeed or not to breastfeed once the baby arrived. About 58% of clients reported at prenatal baseline that they planned on breastfeeding their baby and at postnatal follow-up, 56.0% of clients reported having breastfed their baby for any period. Of the 14 women who reported planning on breastfeeding at prenatal baseline, 78.6% (n = 11) reported having breastfed their baby at postnatal follow-up and of those, 1 reported still breastfeeding. Of the 10 clients who reported at prenatal baseline they were not planning on breastfeeding or had not decided yet, 30.0% (or 3 clients) reported having breastfed at follow-up and one was still breastfeeding.

FIGURE IV.A.3. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING BREASTFEEDING PLANS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP<sup>60</sup>



*Additional analysis was examined between clients who planned on breastfeeding and clients who did not plan on breastfeeding or were unsure on baseline measures such as: chronic health problems, chronic pain, substance use, mental health, victimization, employment, fetal attachment, adverse childhood experiences, and highest level of education. There were no significant differences between clients who planned on breastfeeding and clients who did not plan on breastfeeding on the baseline measures.*

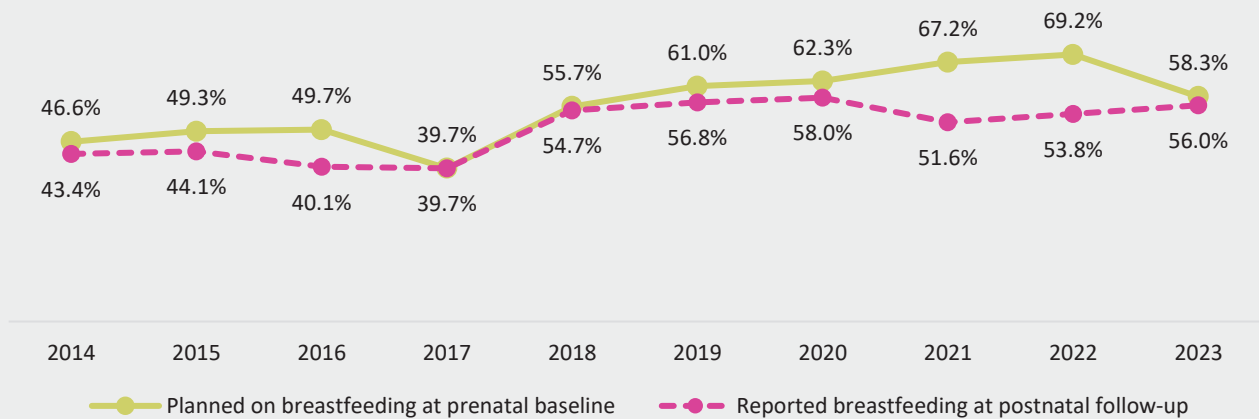
<sup>60</sup>Nine clients were not currently living with their baby and, therefore, this question was not asked. Three additional clients were missing data for this question.



### Trends in Breastfeeding at Prenatal Baseline and Postnatal Follow-up

Overall, the percent of KY-Moms MATR clients who reported at prenatal baseline that they were planning on breastfeeding was fairly similar to the percent of clients at postnatal follow-up who reported that they had breastfed their babies. In 2014, 46.6% of clients reported at prenatal baseline they planned on breastfeeding their babies and, at follow-up, 43.4% of clients reported that they had breastfed. In 2023, 58.3% of clients planned at baseline on breastfeeding their babies and 56.0% of clients reported actually breastfeeding their babies at follow-up.

FIGURE IV.A.4. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING PLANNING ON BREASTFEEDING AT PRENATAL BASELINE AND ACTUALLY BREASTFED AFTER BABY WAS BORN, REPORT YEARS 2014-2023



### Summary

Clients were a little over halfway through their pregnancies when they completed a prenatal baseline interview and reported at follow-up that they had been very involved in the program almost 7 months. Clients remained in the program, on average, almost 3 months after the baby was born. All the mothers in the follow-up sample reported their babies were “great” or “good” and had taken their babies to see a doctor an average of 7.5 times since the baby had been born, which is an average of a little over once per month. In addition, at baseline 58.3% of clients reported they were planning on breastfeeding their babies and 56.0% of mothers reported at postnatal follow-up they had breastfed their babies. Most women (78.6%) who indicated they planned to breastfeed their baby actually did breastfeed their baby.

## B. Substance Use

*This section examines change from baseline to follow-up for clients who entered the KY-Moms MATR program before the birth of their baby (n = 37) for: (1) overall substance use (illegal drug and alcohol use), (2) use of illegal drugs, alcohol, and cigarettes, (3) problems experienced with substance use, (4) readiness for substance abuse treatment, (5) substance abuse treatment and self-help meetings, and (6) medication-assisted treatment. Past-30-day and past-6-month substance use are examined separately where applicable.*

Change in targeted risk factors was examined for two different periods over time:<sup>61</sup>

Six-month periods<sup>62</sup>

- **6 months before pregnancy.** Information collected from the client at prenatal baseline regarding the six months before she found out she was pregnant.
- **6 months since the birth of the baby.** Information collected at postnatal follow-up regarding the 6 months since the baby was born.

30-day periods<sup>63</sup>

- **30 days before pregnancy.** Information collected from the client at prenatal baseline regarding the 30 days before she found out she was pregnant.
- **30 days at prenatal baseline.** Information collected from the client at prenatal baseline regarding the past 30 days she has been pregnant.
- **30 days before the baby was born.** Information collected from the client at postnatal follow-up regarding the 30 days before giving birth while she was involved in KY-Moms MATR case management services.
- **30 days at postnatal follow-up.** Information collected at postnatal follow-up regarding the past 30 days.

### Overall Substance Use (Illegal Drug and Alcohol Use)

#### **PAST-6-MONTH ILLEGAL DRUGS AND/OR ALCOHOL USE**

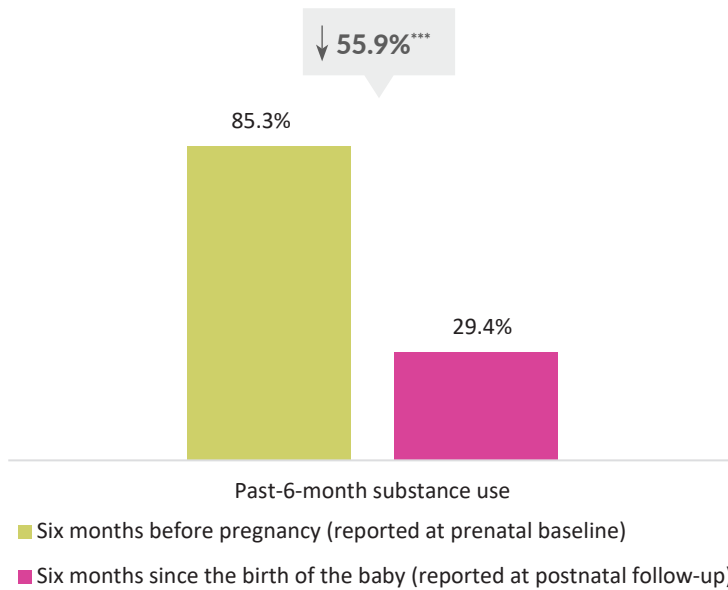
In the 6 months before pregnancy, 85.3% of clients reported using illegal drugs and/or alcohol. In the 6 months before the follow-up interview, 29.4% of clients reported using illegal drugs and/or alcohol (a significant decrease of 55.9%; see Figure IV.B.1).

<sup>61</sup>Significance was determined by McNemar's test for substance use, mental health problems and intimate partner violence unless otherwise indicated.

<sup>62</sup>Because opportunities to use alcohol and drugs are severely reduced while incarcerated this client was not included in this analysis; Three of the clients in this reporting year reported being in a controlled environment all 180 days before pregnancy.

<sup>63</sup>Because some clients were in a controlled environment (e.g., prison, jail, or residential facility) all 30 days before prenatal baseline changes in drug, alcohol, and tobacco use from baseline to follow-up were analyzed for only clients who were not in a controlled environment all 30 days before prenatal baseline. The assumption for excluding clients who were in a controlled environment all 30 days before entering treatment (n = 0) or all 30 days before the follow-up (n = 3 this year) from the change in past-30-day substance use analysis is that being in a controlled environment inhibits opportunities for alcohol and drug use.

FIGURE IV.B.1. PAST-6-MONTH SUBSTANCE USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 34)



\*\*\* p < .01.

### PAST-30-DAY ILLEGAL DRUGS AND/OR ALCOHOL USE

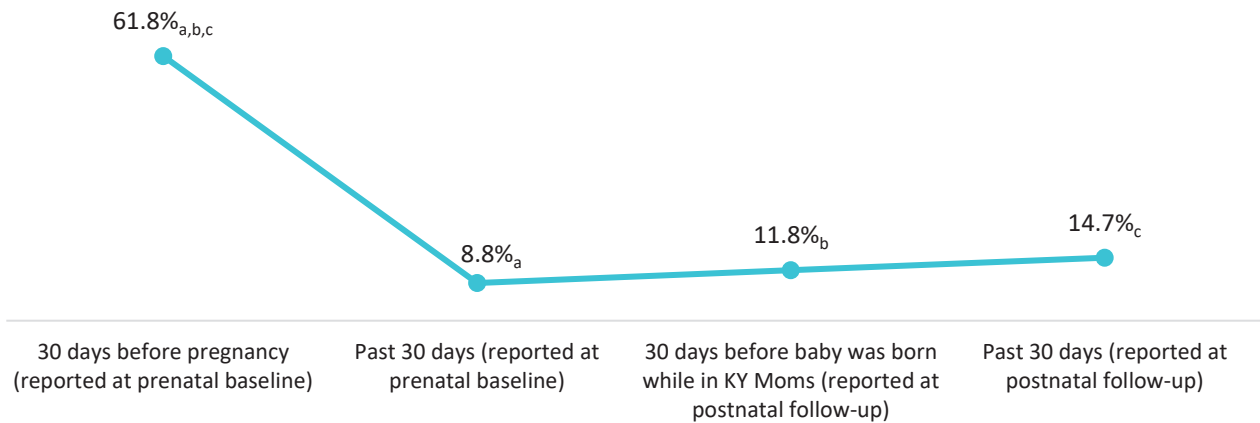
Figure IV.B.2 shows the results for overall illegal drug and/or alcohol use across all four past-30-day periods. In the 30 days before pregnancy, 61.8% of clients reported using illegal drugs and/or alcohol. In the past 30 days at baseline, 8.8% of clients reported using illegal drugs and/or alcohol.

At postnatal follow-up, 11.8% of clients reported using illegal drugs and/or alcohol in the 30 days before the baby was born compared to 61.8% of clients in the 30 days before pregnancy and 8.8% in the past 30 days at prenatal baseline. Finally, 14.7% of clients reported illegal drug and/or alcohol use in the past 30 days at postnatal follow-up. Thus, the period when the smallest percentage of women reported using illegal drugs and/or alcohol was the 30 days before the baby was born (i.e., while the clients were pregnant and involved in KY-Moms MATR).

*I loved the program. The support and kindness helped me get back on my feet.*

KY-MOMS MATR FOLLOW-UP CLIENT

FIGURE IV.B.2. PAST-30-DAY SUBSTANCE USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 34)



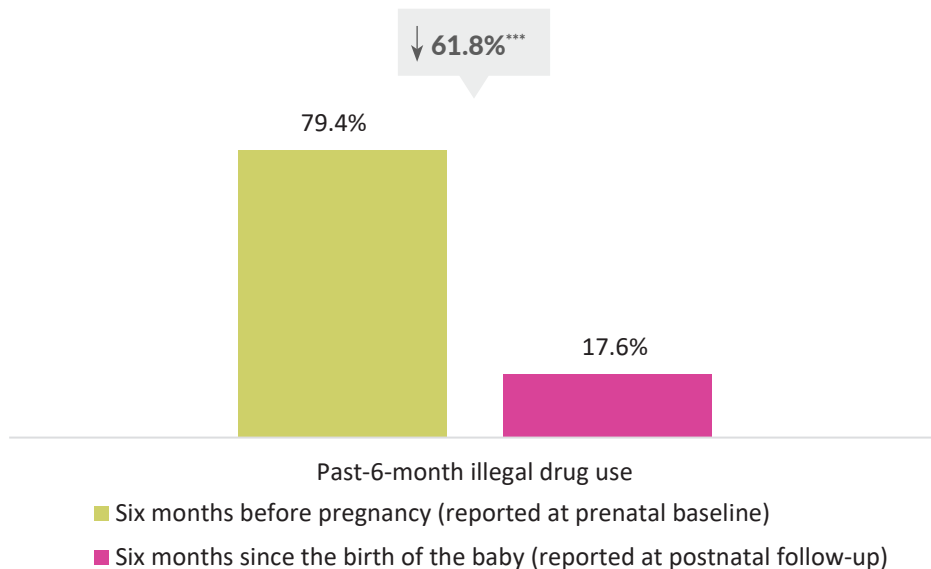
a, b, c- Values sharing the same subscript differ at  $p < .01$ .

## Illegal Drug Use

### PAST-6-MONTH ILLEGAL DRUG USE

Figure IV.B.3 shows that in the 6 months before pregnancy, 79.4% of clients reported using illegal drugs<sup>64</sup> and in the past 6 months at follow-up 17.6% of clients reported illegal drug use (a significant decrease of 61.8%). Of those clients who reported illegal drug use at follow-up ( $n = 6$ ), 33.3% reported using marijuana, 33.3% reported using stimulants or cocaine, 16.7% reported opioid use, and 16.7% report other illicit drugs such as inhalants, hallucinogens, or synthetic drugs).

FIGURE IV.B.3. PAST-6-MONTH ILLEGAL DRUG USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 34)



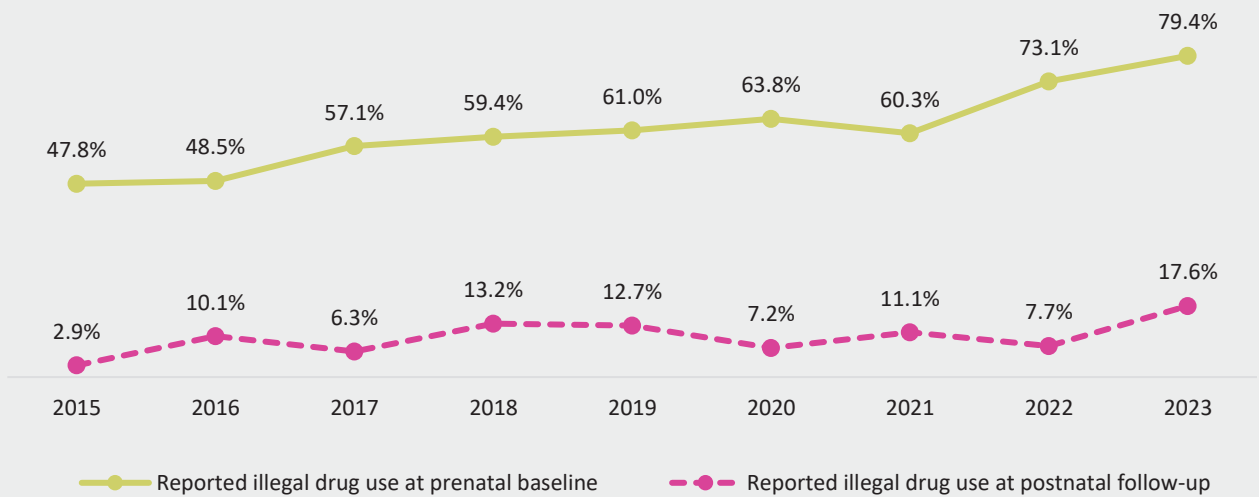
\*\*\*  $p < .01$ .

<sup>64</sup> Illegal drug use includes marijuana, sedatives, barbiturates, non-prescribed prescription opiates, cocaine, heroin, hallucinogens, inhalants, non-prescribed methadone, and non-prescribed buprenorphine.

### Trends in Past-6-month Illegal Drug Use at Prenatal Baseline and Postnatal Follow-up

Among clients who were in the follow-up sample each report year, the percent of women who reported illegal drug use in the 6 months before pregnancy increased since 2015 from 47.8% to 79.4% in 2022. The percent of women who reported illegal drug use in the past 6 months at postnatal follow-up generally increased as well from 2.9% in 2015 to 12.7% in 2019 before decreasing to 7.2% in 2020. In 2023, 17.6% of clients reported illegal drug use in the past 6 months at postnatal follow-up.

FIGURE IV.B.4. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING PAST-6-MONTH ILLEGAL DRUG USE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023



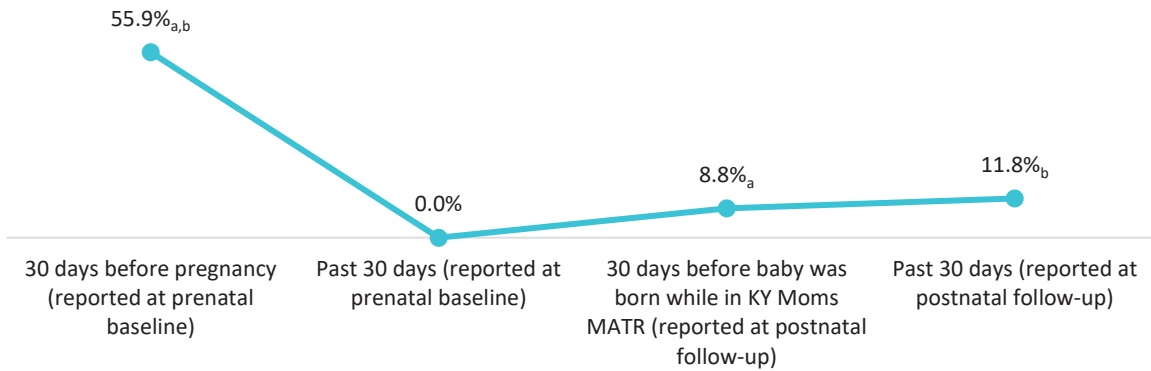
### PAST-30-DAY ILLEGAL DRUG USE

A national survey of women indicated that in 2019, 16.6% of non-pregnant women age 15 and older reported using illegal drugs in the past month.<sup>65</sup> Over half of KY Moms-MATR clients (55.9%) reported illegal drug use in the 30 days prior to becoming pregnant (see Figure IV.B.5). None of the KY Moms-MATR clients reported using illegal drugs in the past 30 days at baseline. In comparison, nationally, 5.8% of pregnant women aged 15-44 reported using illegal drugs in the past month.

At postnatal follow-up, 8.8% of clients reported using illegal drugs in the 30 days before the baby was born and 11.8% reported using illegal drugs 30 days before the follow-up assessment.

<sup>65</sup> Substance Abuse and Mental Health Services Administration. Reports and Detailed Tables from the 2019 National Survey on Drug Use and Health (NSDUH). Retrieved from <https://www.samhsa.gov/data/sites/default/files/reports/rpt29394/NSDUHDetailedTabs2019/NSDUHDefTabsSect6pe2019.htm> on October 6, 2021.

FIGURE IV.B.5. PAST-30-DAY ILLEGAL DRUG USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 34)



a, b – Values sharing the same subscript differ at  $p < .01$ .

### Injection Drug Use

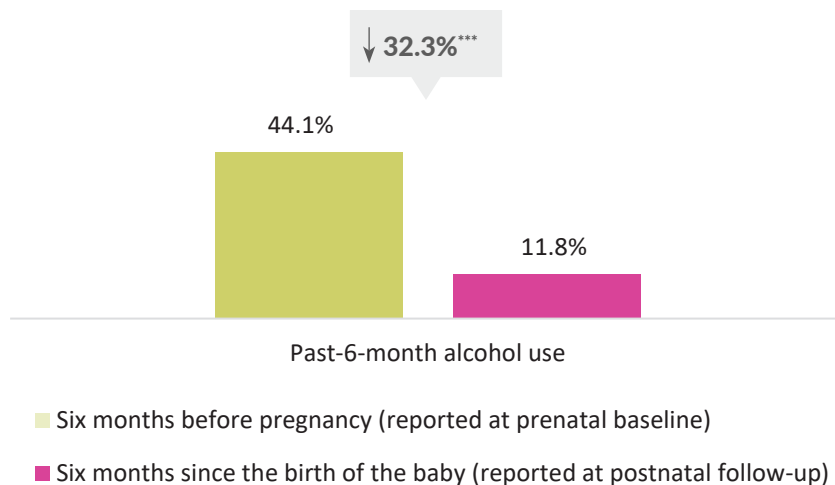
At prenatal baseline, 38.2% of clients reported ever injecting any drugs and none of the clients reported injecting a drug in the past 30 days. At postnatal follow-up, one client reported injecting drugs since they began KY-Moms MATR and in the past 30 days.

### Alcohol Use

#### PAST-6-MONTH ALCOHOL USE

Figure IV.B.6 shows that in the six months before pregnancy 44.1% of clients reported alcohol use, and after the baby was born, 11.8% of clients reported alcohol use in the past 6 months (a significant decrease of 32.3% from the six months before pregnancy).

FIGURE IV.B.6. PAST-6-MONTH ALCOHOL USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 34)

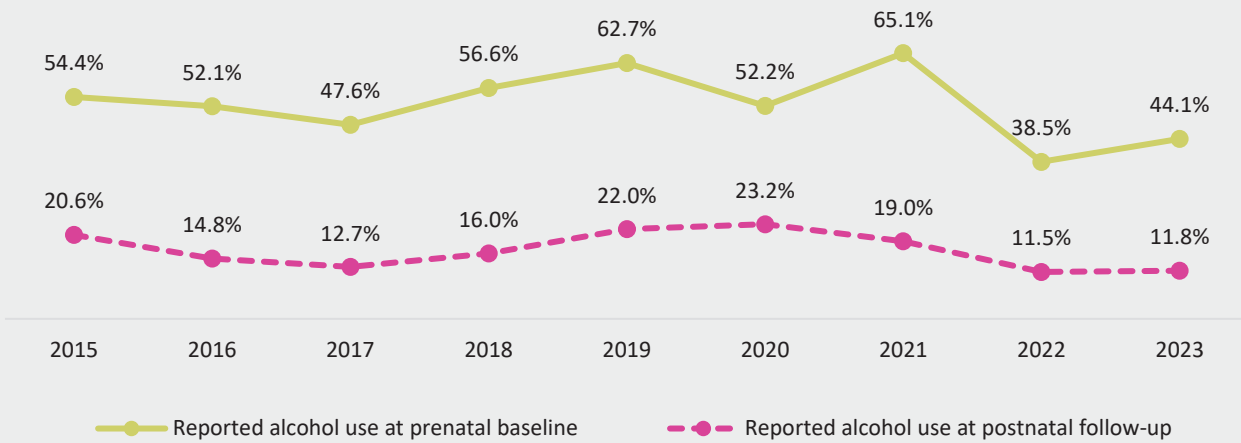


\*\*\*  $p < .01$ .

### Trends in Past-6-month Alcohol Use at Prenatal Baseline and Postnatal Follow-up

For the majority of the past 9 years, around half of clients reported alcohol use in the 6 months before pregnancy. In 2019 and 2021, however, around two-thirds of clients reported alcohol use at prenatal baseline, and in 2023, 44.1% reported past-6-month alcohol use. In addition, alcohol use at follow-up was between 12% and 23%.

FIGURE IV.B.7. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING PAST-6-MONTH ALCOHOL USE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023<sup>66</sup>

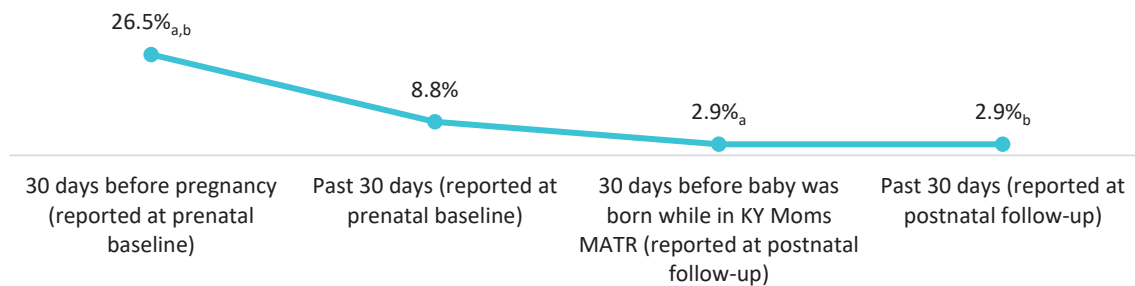


### PAST-30-DAY ALCOHOL USE

Figure IV.B.8 shows that 26.5% of clients reported alcohol use in the 30 days prior to becoming pregnant. At the national level, 55.3% of non-pregnant women aged 15-44 reported drinking alcohol in the past 30 days. In the past 30 days at prenatal baseline, 8.8% of clients reported using alcohol. Nationally, 9.5% of women aged 15-44 reported using alcohol during pregnancy.

At postnatal follow-up, 2.9% of clients reported using alcohol in the 30 days before the baby was born while they were involved in KY-Moms MATR and in the past 30 days at follow-up.

FIGURE IV.B.8. PAST-30-DAY ALCOHOL USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 34)



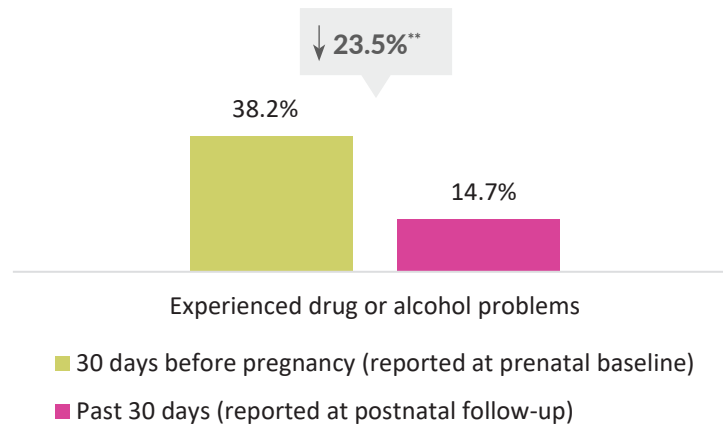
a, b- Values sharing the same subscript differ at  $p < .01$ .

<sup>66</sup>The small sample size in 2022 and 2023 could be affecting the decrease in alcohol use at baseline.

## Problems Experienced with Substance Use

In the 30 days before pregnancy, 38.2% of clients reported they experienced problems with drugs or alcohol such as craving, withdrawal, wanting to quit but being unable, or worrying about relapse (see Figure IV.B.9). In the past 30 days at follow-up, 14.7% of clients reported experiencing problems with drugs or alcohol (a significant decrease of 23.5%).

FIGURE IV.B.9. CLIENTS EXPERIENCING PROBLEMS WITH ILLEGAL DRUGS OR ALCOHOL USE IN THE PAST 30 DAYS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 34)

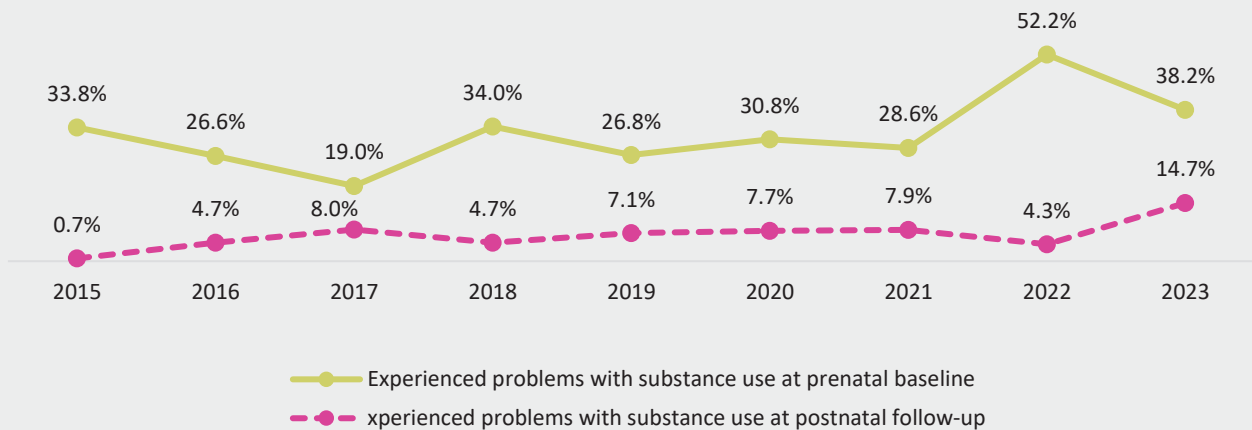


\*\*p < .05.

### Trends in Experiencing Problems with Substance Use at Prenatal Baseline and Postnatal Follow-up

In report year 2015, 33.8% of clients reported they experienced problems with drugs or alcohol in the 30 days before pregnancy and in the past 30 days at follow-up, 0.7% of clients experienced problems. In report year 2023, over one-third of clients experienced problems with drugs or alcohol in the 30 days before pregnancy compared to 14.7% of clients in the past 30 days at the postnatal follow-up.

FIGURE IV.B.10. CLIENTS IN THE FOLLOW-UP SAMPLE EXPERIENCING PROBLEMS WITH SUBSTANCE USE IN THE PAST 30 DAYS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023<sup>67</sup>



<sup>67</sup>The small sample size in 2022 and 2023 could be affecting the percent of clients reporting problems with drugs or alcohol use at baseline.

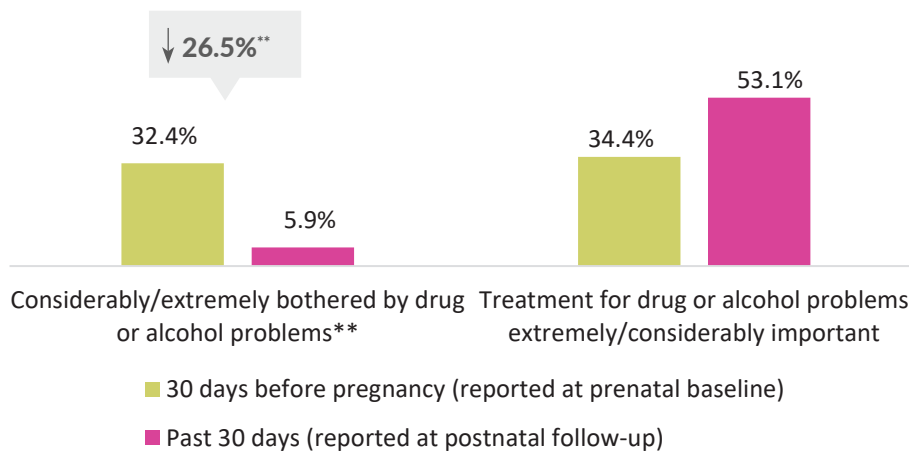


## Readiness for Substance Abuse Treatment

Figure IV.B.11 shows that 32.4% of clients reported they were considerably or extremely troubled or bothered by drug or alcohol problems in the 30 days before pregnancy. In the past 30 days at postnatal follow-up, 5.9% of clients reported that they were considerably or extremely troubled or bothered by drug or alcohol problems (a significant decrease of 26.5%).

The figure below also shows that 34.4% of clients in the 30 days before pregnancy and 53.1% of clients in the past 30 days at postnatal follow-up reported that treatment for drug or alcohol problems was considerably or extremely important, which was not a significant increase.

FIGURE IV.B.11. READINESS FOR TREATMENT FOR ILLEGAL DRUG OR ALCOHOL USE IN THE PAST 30 DAYS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 34)<sup>68a</sup>



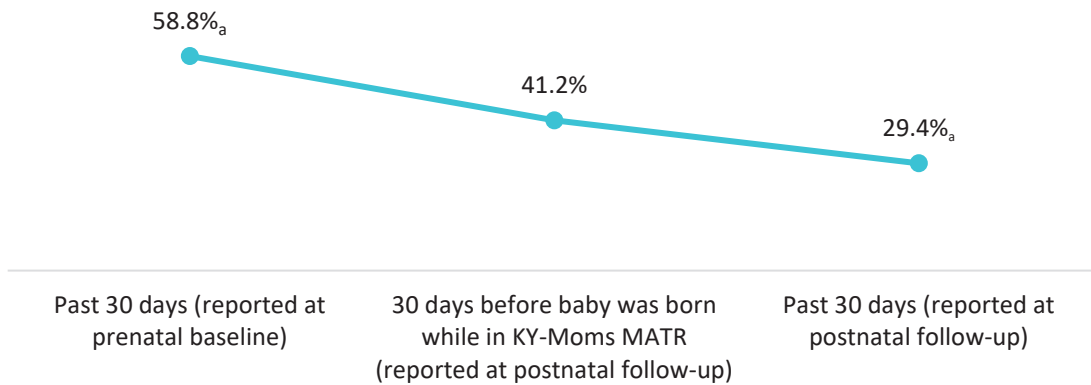
\*\*p < .05.

## Substance Abuse Treatment

Figure IV.B.12 shows that in the past 30 days at baseline, 58.8% of clients reported participating in treatment for substance abuse. At postnatal follow-up, 41.2% of clients reported participating in treatment for substance abuse in the 30 days before the baby was born and 29.4% of clients reported participating in treatment for substance abuse in the past 30 days (a significant decrease compared to the past 30 days at baseline).

<sup>68</sup>Two clients were missing data for the importance of treatment for drug or alcohol problems at follow-up.

FIGURE IV.B.12. CLIENTS REPORTING SUBSTANCE ABUSE TREATMENT IN THE PAST 30 DAYS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 34)



a- Values sharing the same subscript differ at  $p < .01$ .

### Mutual Help Recovery Meetings

In the six months before pregnancy, 20.6% of women reported attending AA, NA, MA or other mutual help recovery group meetings. At postnatal follow-up, 41.2% of clients reported participating in mutual help recovery group meetings in the 30 days before the baby was born and in the past 30 days at follow-up (not shown in a figure).

### Medication-assisted Treatment

At baseline, almost one-quarter of clients (23.5%) reported having ever received buprenorphine/naloxone, naltrexone, or methadone as part of a medication-assisted treatment for their substance abuse problems and 8.8% of clients reported participating in medication-assisted treatment (MAT) in the 6 months before pregnancy. Of those clients who reported participating in MAT in the past 6 months before pregnancy ( $n = 3$ ), 66.7% ( $n = 2$ ) reported receiving Suboxone/Subutex (buprenorphine-naloxone), and 33.3% ( $n = 1$ ) reported methadone. In addition, 66.7% of clients reported obtaining the medication from a doctor in the specialty clinic and 33.3% were dispensed the medication in a methadone clinic. On average, these clients reported using these medications an average of 6.0 out of the 6 months before pregnancy, and for all 30 days in the last 30 days at baseline. All of these clients at baseline reported they had used the prescribed medication within the past 48 hours and that the MAT helped treat their drug problems.

At follow-up, 29.4% of clients reported participating in medication-assisted treatment (MAT) in the past 6 months. Of those clients who reported participating in MAT in the past 6 months ( $n = 8$ )<sup>69</sup>, 62.5% ( $n = 5$ ) reported receiving Suboxone/Subutex (buprenorphine-naloxone), 12.5% ( $n = 1$ ) reported methadone, and 25.0% ( $n = 2$ ) reported Vivitrol. On average, these clients reported using these medications 4 out of the past 6 months, and for 18.2 days in the past 30 days. The majority of these clients at follow-up (90.0%) reported the MAT helped treat their drug problems.

<sup>69</sup>Two clients were missing data for the type of medication used.

Also, at follow-up, clients were asked what the single biggest barrier to receiving MAT. Twenty-nine percent of clients reported that they didn't believe it would help them or that they didn't need MAT and 45.2% of clients reported that they had no issues with receiving MAT for their substance use problems. About 13% of KY-Moms MATR clients reported that they didn't want to take medications for their drug problem and 9.7% of clients reported that they never thought about receiving MAT. Close to 3% of client reported MAT-related stigma was a barrier for them.

## Tobacco Use

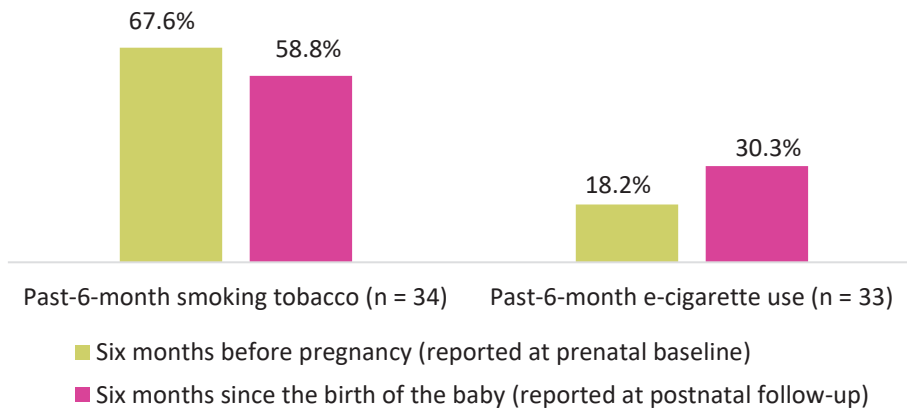
### PAST-6-MONTH TOBACCO USE

At prenatal baseline, 67.6% of clients reported smoking tobacco in the 6 months prior to pregnancy (Figure IV.B.13). At postnatal follow-up, 58.8% of clients reported smoking tobacco in the past 6 months.

About 18% of clients reported using e-cigarettes (e.g., battery-powered nicotine delivery devices that vaporize a liquid mixture consisting of propylene glycol, glycerin, flavorings, nicotine, and other chemicals) compared to 30.3% of clients in the past 6 months at follow-up (which was not a significant increase).

Only one client reported smokeless tobacco use in the 6 months prior to pregnancy and none reported smokeless tobacco use in the past 6 months at postnatal follow-up (not depicted in a figure).

FIGURE IV.B.13. PAST-6-MONTH SMOKING TOBACCO AND E-CIGARETTE USE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP <sup>70</sup>

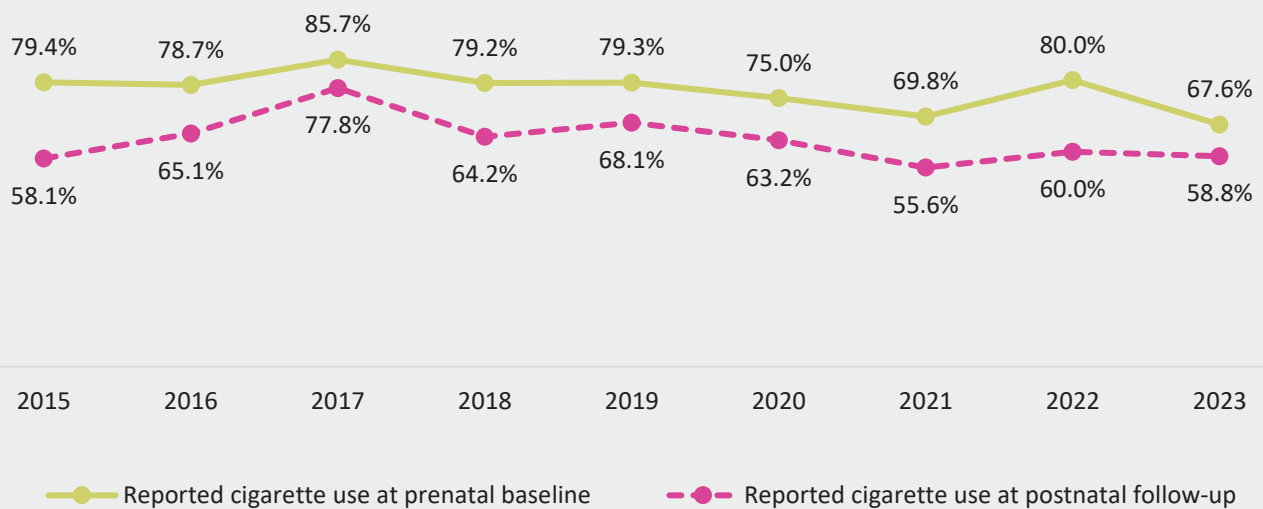


<sup>70</sup>One client was missing data for e-cigarette use at follow-up.

### Trends in Past-6-month Cigarette Use at Prenatal Baseline and Postnatal Follow-up

Cigarette use was high at prenatal baseline each year with well over three-quarters of women reporting smoking cigarettes in the six months before pregnancy from 2015 to 2020. In 2021, the percent of women reporting smoking cigarettes appeared to decrease slightly to 69.8%. At follow-up, many of the women continued to smoke cigarettes. From 2015 to 2017, the percent of women reporting smoking cigarettes at baseline and follow-up increased overall; however, from 2018 to 2020 the percent of women reporting smoking cigarettes was relatively stable at both baseline and follow-up before increasing in 2022.

FIGURE IV.B.14. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING CIGARETTE USE IN THE PAST 6 MONTHS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023



### PAST-30-DAY TOBACCO USE

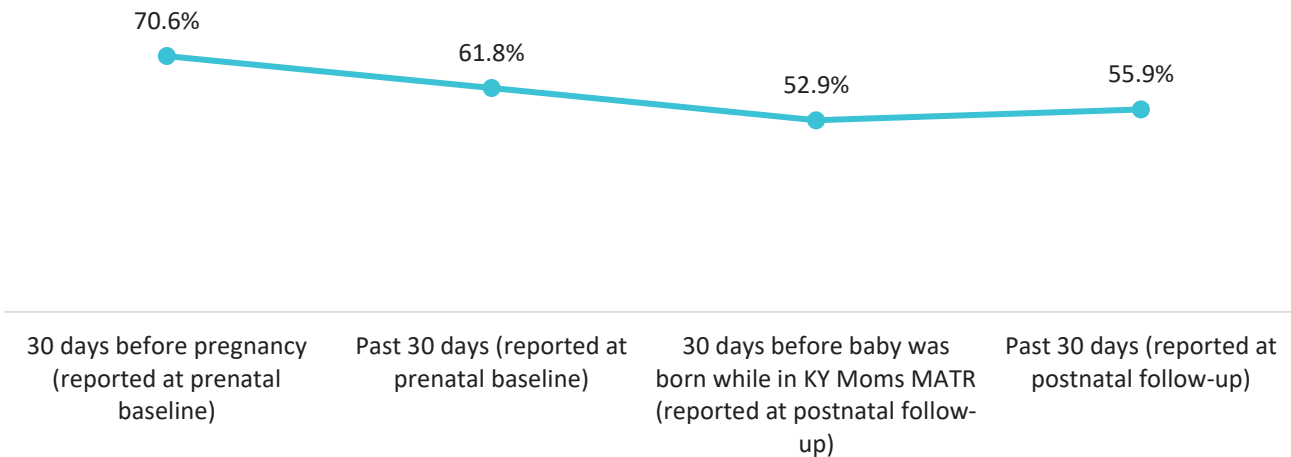
At prenatal baseline, 70.6% of clients reported smoking tobacco products in the 30 days prior to pregnancy (Figure IV.B.15). This number is considerably higher than either the national estimate of 17.2% of non-pregnant women aged 15-44 who are self-reported smokers<sup>71</sup> or the estimate of Kentucky women who report smoking (28.8%).<sup>72</sup> In addition, 61.8% of clients reported smoking tobacco in the past 30 days at prenatal baseline compared to 15.3% of pregnant women in Kentucky who reported smoking cigarettes and 8.7%, nationally.

At postnatal follow-up, in the 30 days before the baby was born, 52.9% of clients reported smoking tobacco products. The percent of women who reported cigarette use in the past 30 days at postnatal follow-up increased slightly to 55.9%.

<sup>71</sup> Substance Abuse and Mental Health Services Administration. Reports and Detailed Tables from the 2019 National Survey on Drug Use and Health (NSDUH). Retrieved from <https://www.samhsa.gov/data/sites/default/files/reports/rpt29394/NSDUHDetailedTabs2019/NSDUHDefTabsSect6pe2019.htm> on October 6, 2021.

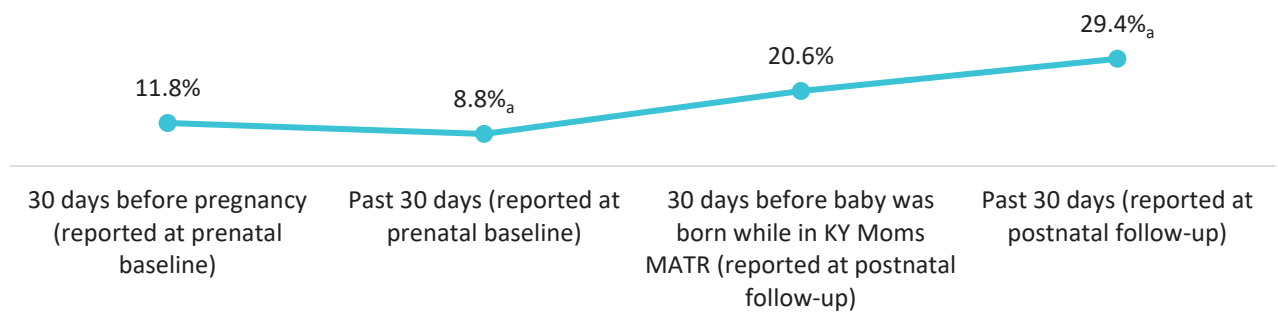
<sup>72</sup> America’s Health Rankings Health of Women and Children Report 2021 found at [https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/overall\\_hwc\\_2020/state/KY](https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/overall_hwc_2020/state/KY)

FIGURE IV.B.15. PAST-30-DAY SMOKING TOBACCO AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 34)



Close to 12% of women reported using e-cigarette in the 30 days before pregnancy and 8.8% of women reported e-cigarette use in the past 30 days at baseline. At postnatal follow-up, 20.6% of women reported e-cigarette use in the 30 days before the baby was born and 29.4% of women reported e-cigarette use in the past 30 days (see Figure IV.B.16). This percent is higher than the percent of women in Kentucky (6.7%; without regard to pregnancy status) who reported e-cigarette use

FIGURE IV.B.16. PAST-30-DAY E-CIGARETTE USE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 34)



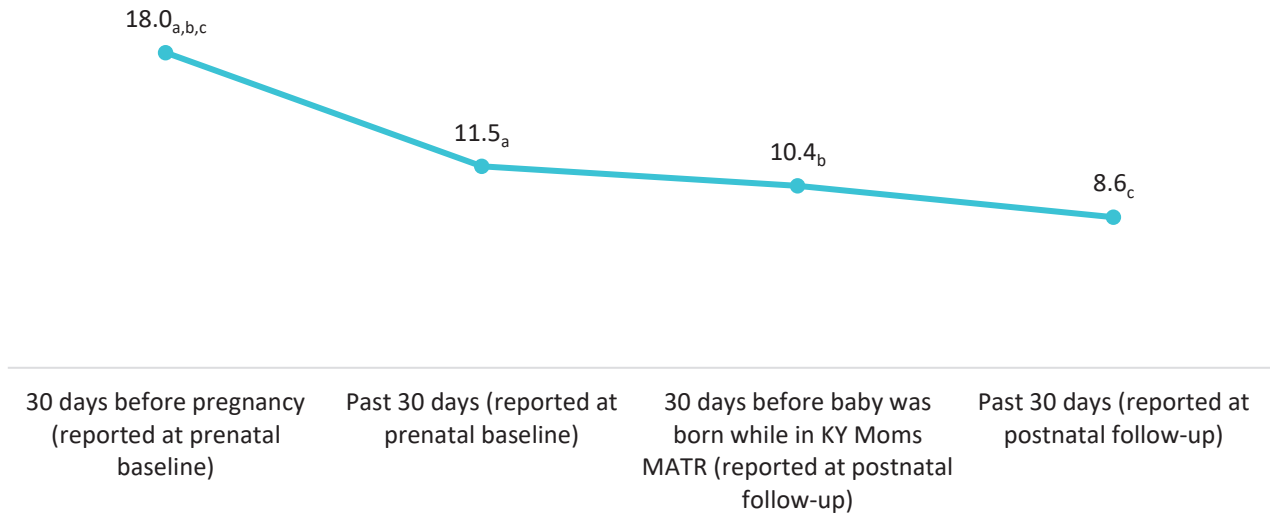
a- Values sharing the same subscript differ at  $p < .05$ .

### AVERAGE NUMBER OF CIGARETTES SMOKED IN THE PAST 30 DAYS

Figure IV.B.17 shows that for women who reported smoking tobacco in the 30 days prior to pregnancy (n = 24), the average number of cigarettes smoked declined from prior to pregnancy to after the client became involved in KY-Moms MATR and remained low after the birth of the baby. At prenatal baseline, women who smoked reported that in the 30 days before they found out they were pregnant they smoked an average of 18.0 cigarettes per day (less than one pack) and an average of 11.5 cigarettes per day in the past 30 days at prenatal baseline. At postnatal

follow-up, in the 30 days before the baby was born when the client was in the KY-Moms MATR program, the average number of cigarettes decreased further to 10.4. Clients reported smoking an average of 8.6 cigarettes in the past 30 days at postnatal follow-up suggesting positive changes in smoking habits.

FIGURE IV.B.17. AVERAGE NUMBER OF CIGARETTES SMOKED AMONG WOMEN REPORTING CIGARETTE USE IN THE 30 DAYS PRIOR TO PREGNANCY (N = 24)



a, b, c- Values sharing the same subscript differ at  $p < .01$

### Summary

KY-Moms MATR clients reported significant reductions in substance use in the past 30 days of pregnancy at prenatal baseline and further reductions after beginning participation in KY-Moms MATR. Specifically, 55.9% of clients reported illegal drug use in the 30 days before pregnancy compared to 8.8% of clients in the 30 days before the baby was born and 11.8% of clients in the past 30 days at postnatal follow-up. While 26.5% of clients reported alcohol use in the 30 days before pregnancy, only 2.9% reported alcohol use in the 30 days before the baby was born. In addition, in the 30 days at postnatal follow-up, significantly fewer clients experienced or were bothered by substance use problems (such as craving, withdrawal, wanting to quit but being unable, or worrying about relapse).

The number of women who reported smoking cigarettes in the 30 days before the baby was born decreased, but not significantly, compared to the 30 days prior to pregnancy. Nationally, however, more KY-Moms MATR mothers smoked cigarettes before, during and after pregnancy. The average number of cigarettes clients reported smoking, however, decreased significantly from the 30 days before pregnancy (18.0) to the 30 days before the baby was born (10.4) and remained low in the past 30 days at follow-up.

## C. Mental Health, Sleep Difficulty, and Stress

This subsection examines mental health change in the follow-up sample (n = 37) for the following factors: (1) depression, (2) generalized anxiety, (3) comorbid depression and anxiety, (4) post-traumatic stress disorder. Past-6-month and past-30-day mental health symptoms are examined separately where applicable.

### Depression Symptoms

To assess depression, clients were first asked two screening questions:

“Did you have two weeks in a row (or more) when you were consistently depressed or down, most of the day, nearly every day?” and

“Did you have two weeks in a row (or more) when you were much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?”

If participants answered “yes” to at least one of these two screening questions, then they were asked seven additional questions about symptoms of depression (e.g., sleep problems, weight loss or gain, feelings of hopelessness or worthlessness).

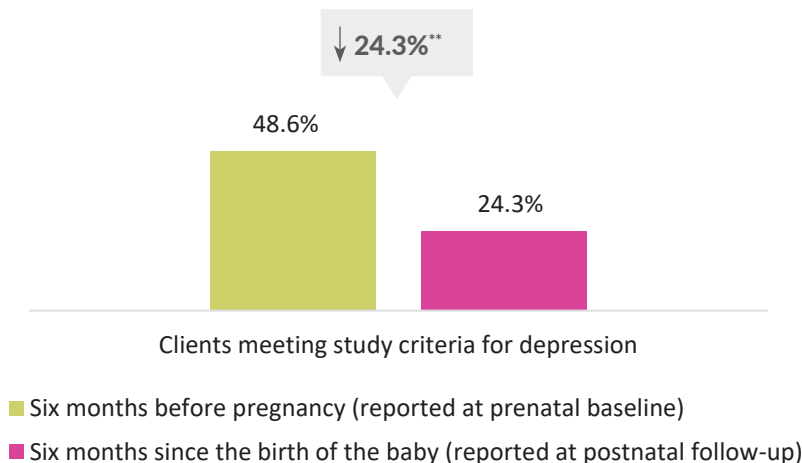
#### STUDY CRITERIA FOR DEPRESSION

To meet study criteria for depression, clients had to say “yes” to at least one of the two screening questions and at least 4 of the 7 symptoms. Thus, the minimum score to meet study criteria: 5 out of 9.

### CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION IN THE PAST 6 MONTHS

In the 6 months before they became pregnant, 48.6% of the women met study criteria for depression. In the past 6 months at postnatal follow-up, 24.3% of KY-Moms MATR clients met study criteria for depression, which was a significant decrease of 24.3% from baseline.

FIGURE IV.C.1. MEETING STUDY CRITERIA FOR DEPRESSION IN 6 MONTHS BEFORE PREGNANCY AND PAST 6 MONTHS AT POSTNATAL FOLLOW-UP (N = 37)

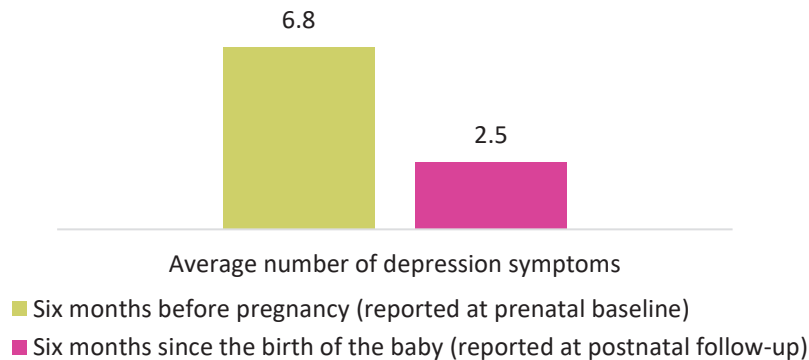


\*\*p < .05.

### AVERAGE NUMBER OF DEPRESSION SYMPTOMS IN THE PAST 6 MONTHS

Of the clients who met study criteria for depression in the 6 months before pregnancy (n = 18), they reported an average of 6.8 symptoms. In the past 6 months at postnatal follow-up, these same clients reported significantly fewer symptoms (average of 2.5 symptoms) indicating that the reduction in depressive symptoms was sustained after KY-Moms MATR participation.

FIGURE IV.C.2. AVERAGE NUMBER OF DEPRESSION SYMPTOMS AMONG THOSE CLIENTS WHO MET STUDY CRITERIA FOR DEPRESSION IN THE 6 MONTHS BEFORE PREGNANCY AT PRENATAL BASELINE (N = 18)\*\*\*

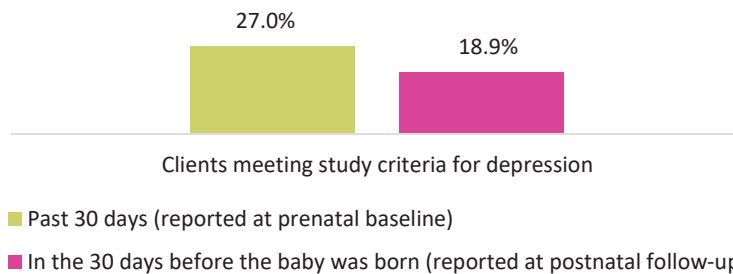


\*\*\* p < .01; Significance tested with paired sample t-test.

### CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION IN THE PAST 30 DAYS

In the past 30 days at prenatal baseline, 27.0% of the women met study criteria for depression (see Figure IV.C.3). At postnatal follow-up, 18.9% of clients met study criteria for depression in the 30 days before the baby was born, which was not a significant decrease.

FIGURE IV.C.3. MEETING STUDY CRITERIA FOR DEPRESSION IN THE 30 DAYS BEFORE PRENATAL BASELINE AND 30 DAYS BEFORE THE BABY WAS BORN (N = 37)

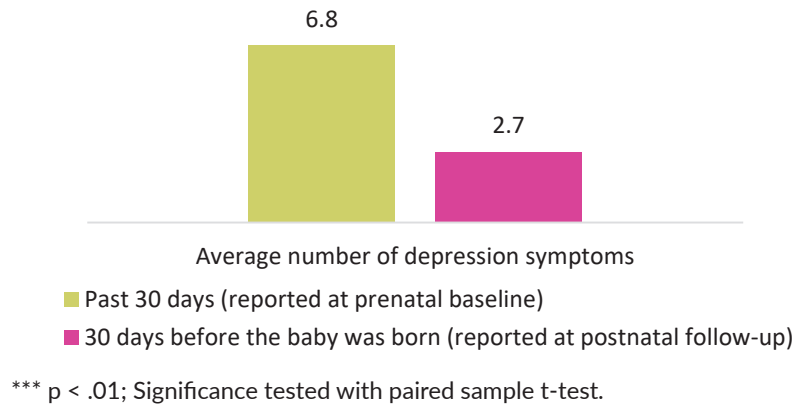


### AVERAGE NUMBER OF DEPRESSION SYMPTOMS IN THE PAST 30 DAYS

Of the clients who met study criteria for depression in the past 30 days at prenatal baseline (n = 10), they reported an average of 6.8 symptoms. In the past 30 days before the baby was born, these same clients reported significantly fewer symptoms (average of 2.7 symptoms) indicating that the reduction in depressive symptoms was sustained after KY-Moms MATR participation.



FIGURE IV.C.4. AVERAGE NUMBER OF DEPRESSION SYMPTOMS AMONG THOSE CLIENTS WHO MET STUDY CRITERIA FOR DEPRESSION IN THE PAST 30 DAYS AT PRENATAL BASELINE (N = 10)\*\*\*



### Generalized Anxiety Symptoms

To assess for generalized anxiety symptoms, participants were first asked:

“In the 6 months before pregnancy, did you have a period lasting 6 months or longer where you worried excessively or were anxious about multiple things on more days than not (like family, health, finances, school, or work difficulties)?”

Participants who answered “yes” were then asked 6 additional questions about anxiety symptoms (e.g., felt restless, keyed up or on edge, have difficulty concentrating, feel irritable).

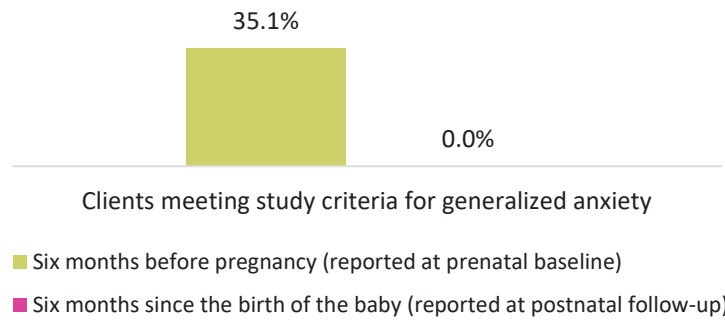
#### STUDY CRITERIA FOR GENERALIZED ANXIETY

To meet study criteria for generalized anxiety, clients had to say “yes” to the one screening question and at least 3 of the other 6 symptoms. Thus, minimum score to meet study criteria: 4 out of 7.

#### CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY IN THE PAST 6 MONTHS

In the 6 months before pregnancy, 35.1% of clients reported symptoms that met study criteria for generalized anxiety (see Figure IV.C.5). In the past 6 months at postnatal follow-up, none of the clients met study criteria for generalized anxiety. Among clients who met study criteria for generalized anxiety in the 6 months before pregnancy (n = 13), they reported an average of 5.4 symptoms (not presented in a figure).

FIGURE IV.C.5. MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY IN 6 MONTHS BEFORE PREGNANCY AND PAST 6 MONTHS AT POSTNATAL FOLLOW-UP (N = 37)<sup>a</sup>

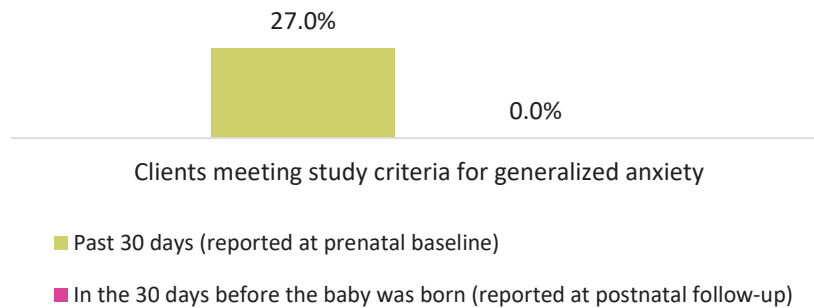


a--No test of statistical association could be computed for generalized anxiety in the past 6 months at postnatal follow-up because one of the cell values was 0.

**CLIENTS MEETING STUDY CRITERIA FOR ANXIETY IN THE PAST 30 DAYS**

At prenatal baseline, 27.0% of clients reported symptoms that met study criteria for generalized anxiety in the past 30 days (see Figure IV.C.6). In the 30 days before the baby was born, none of the KY-Moms MATR clients met criteria for generalized anxiety. Clients who met criteria for generalized anxiety in the past 30 days at prenatal baseline (n = 10), clients reported an average of 5.6 symptoms.

FIGURE IV.C.6. MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY IN THE 30 DAYS BEFORE PRENATAL BASELINE AND 30 DAYS BEFORE THE BABY WAS BORN (N = 37)<sup>a</sup>



a--No test of statistical association could be computed for generalized anxiety in the past 30 days at postnatal follow-up because one of the cell values was 0.

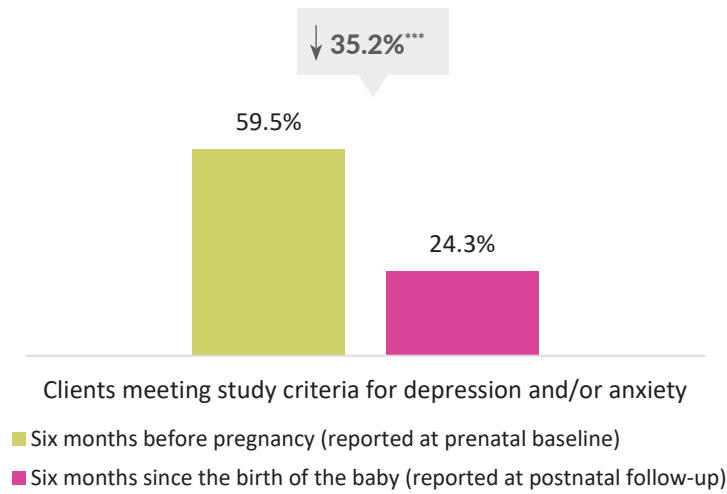
**Depression and Anxiety Symptoms**

**CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION AND/OR ANXIETY IN THE PAST 6 MONTHS**

Figure IV.C.7 shows that 59.5% met study criteria for either depression or anxiety (or both) in the 6 months before pregnancy. In the past 6 months at postnatal follow-up, 24.3% of clients

met criteria for depression and/or anxiety, which was a significant decrease of 35.2%.

FIGURE IV.C.7. MEETING STUDY CRITERIA FOR DEPRESSION AND/OR ANXIETY IN THE PAST 6 MONTHS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 37)



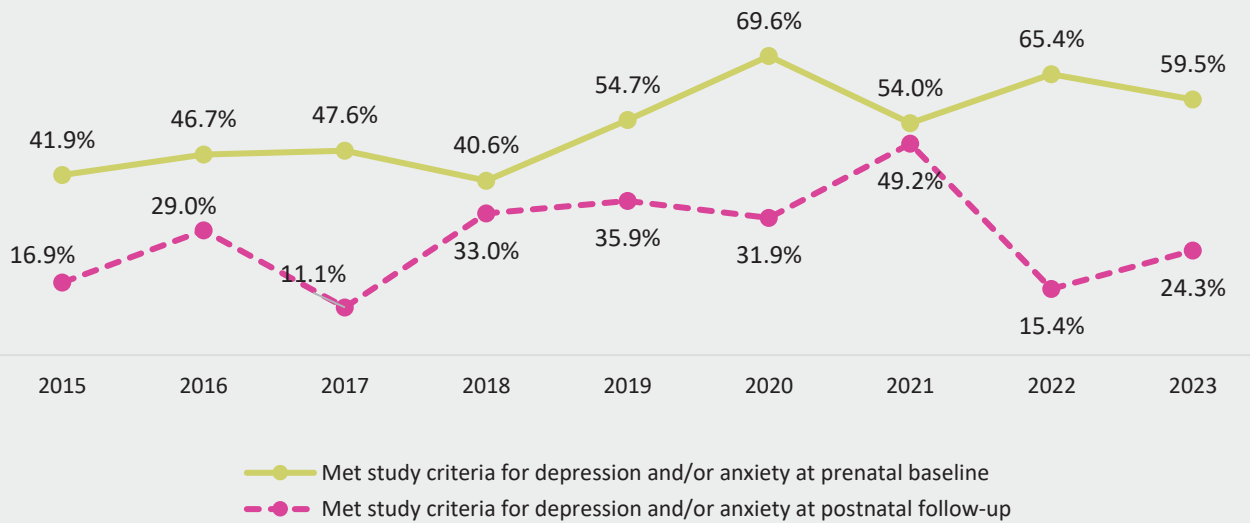
\*\*\*p < .01.

## Trends in Depression And/or Anxiety at Prenatal Baseline and Postnatal Follow-up

The percent of clients who met study criteria for depression and/or anxiety at prenatal baseline was fairly consistent from 2015 to 2018. After 2018, the percent of clients who met study criteria for depression and/or anxiety at prenatal baseline increased. In 2021, the percent of women reporting depression and/or anxiety at prenatal baseline appeared to decrease compared to the previous year, and then was higher in 2022 and 2023.

At follow-up, while the percent of women who met study criteria for depression and/or anxiety decreased compared to baseline, the degree to which the percent decreased fluctuated from 2015 to 2018. In 2021, the percent of women who met study criteria for depression and/or anxiety was higher compared to previous years and was similar to baseline. In 2022 and 2023, with smaller sample sizes than in previous years, small percentages of clients met study criteria for depression and/or anxiety.

FIGURE IV.C.8. CLIENTS IN THE FOLLOW-UP SAMPLE WHO MET STUDY CRITERIA FOR DEPRESSION AND/OR ANXIETY IN THE PAST 6 MONTHS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023<sup>73</sup>

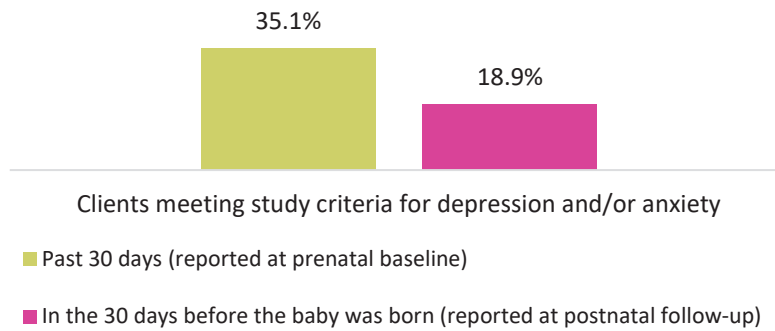


### CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION AND/OR ANXIETY IN THE PAST 30 DAYS

In the past 30 days at prenatal baseline, 35.1% of clients met study criteria for either depression or anxiety (or both), and in the 30 days before the baby was born, 18.9% of the women met study criteria for depression and/or anxiety, which was not a significant decrease.

<sup>73</sup>The small sample size in report year 2022 may be affecting the number of clients who met study criteria for depression and/or anxiety.

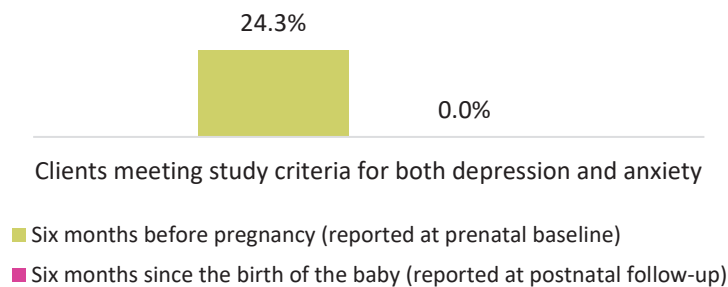
FIGURE IV.C.9. MEETING STUDY CRITERIA FOR DEPRESSION AND/OR ANXIETY IN THE 30 DAYS BEFORE PRENATAL BASELINE AND 30 DAYS BEFORE THE BABY WAS BORN (N = 37)



**CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND ANXIETY IN THE PAST 6 MONTHS**

Less than one-quarter of clients (24.3%) met criteria for comorbid depression and anxiety in the 6 months before they became pregnant, and at postnatal follow-up, none of the clients reported comorbid depression and anxiety (see Figure IV.C.10).

FIGURE IV.C.10. MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY IN THE PAST 6 MONTHS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 37)<sup>a</sup>

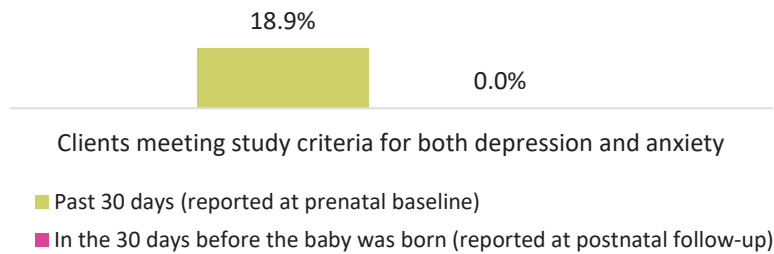


a--No test of statistical association could be computed for comorbid depression and generalized anxiety in the past 30 days at postnatal follow-up because one of the cell values was 0.

**CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND ANXIETY IN THE PAST 30 DAYS**

Close to 19% of clients in the past 30 days at prenatal baseline and none of the clients in the 30 days before the baby was born met study criteria for both depression and anxiety (see Figure IV.C.11).

FIGURE IV.C.11. MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY IN THE 30 DAYS BEFORE PRENATAL BASELINE AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 37)<sup>a</sup>

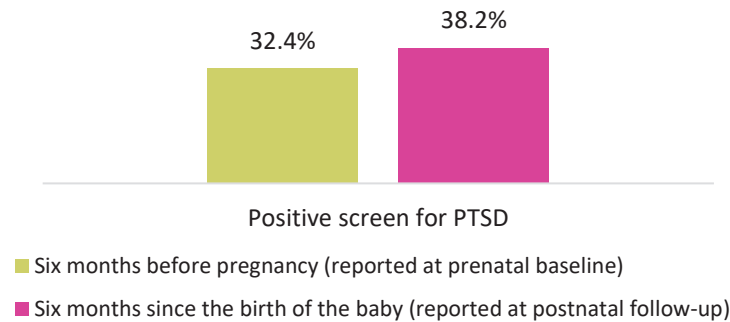


a--No test of statistical association could be computed for comorbid depression and generalized anxiety in the past 6 months at postnatal follow-up because one of the cell values was 0.

### Post-traumatic Stress Disorder

Less than one-third of clients (32.4%) screened positive for post-traumatic stress disorder (PTSD)<sup>74</sup> in the six months before pregnancy. At follow-up, 38.2% of clients screened positive for PTSD (see Figure IV.C.12).

FIGURE IV.C.12. CLIENTS WHO SCREENED POSITIVE FOR POST-TRAUMATIC STRESS DISORDER IN THE PAST 6 MONTHS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 34)<sup>75</sup>



### Summary

The number of clients who met study criteria for depression and/or for anxiety decreased significantly from prenatal baseline to postnatal follow-up. Further, the average number of depression symptoms decreased significantly from before pregnancy to 6 months after the birth of the baby. The number of clients who met study criteria for comorbid depression and anxiety in the past 6 months decreased from 24.3% at prenatal baseline to 0.0% at postnatal follow-up. The number of clients who screened positive for PTSD increased, but not significantly, from the 6 months before pregnancy to the 6 months since the birth of the baby.

<sup>74</sup>Price, M., Szafranski, D., van Stolk-Cooke, K., & Gros, D. (2016). Investigation of an abbreviated 4 and 8-item version of the PTSD Checklist 5. *Psychiatry Research*, 239, 124-130.

<sup>75</sup>Three clients were missing data for PTSD at follow-up.

## D. Intimate Partner Violence and Victimization Experiences

This subsection examines intimate partner abuse and victimization in the follow-up sample ( $n = 37$ ) such as: (1) felt unsafe, (2) any form of intimate partner abuse, (3) psychological abuse, (4) coercive control, (5) physical abuse, (6) sexual assault, and (7) victimization experiences. These are examined from prenatal baseline to postnatal follow-up. Past 6-month and past 30-day partner abuse measures are examined separately where applicable.

### Felt Unsafe Because of Fear of Current or Ex-partner

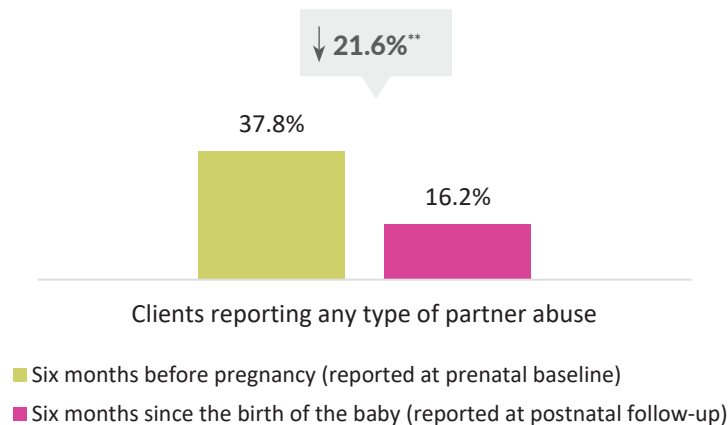
Including fear of a current or ex-partner, 5.4% of the clients reported they felt unsafe at baseline and at follow-up.

### Any Intimate Partner Violence

#### ANY FORM OF INTIMATE PARTNER VIOLENCE IN THE PAST 6 MONTHS

Figure IV.D.1 shows that in the 6 months before pregnancy, 37.8% of clients reported experiencing any form of intimate partner abuse (including psychological abuse, control, physical abuse, and sexual abuse)<sup>76</sup> perpetrated by a current or ex-partner and 16.2% of clients reported experiencing partner violence in the 6 months before the postnatal follow-up (significant decrease of 21.6%).

FIGURE IV.D.1. ANY TYPE OF ABUSE IN THE 6 MONTHS BEFORE PREGNANCY AND THE PAST 6 MONTHS AT POSTNATAL FOLLOW-UP (N = 37)



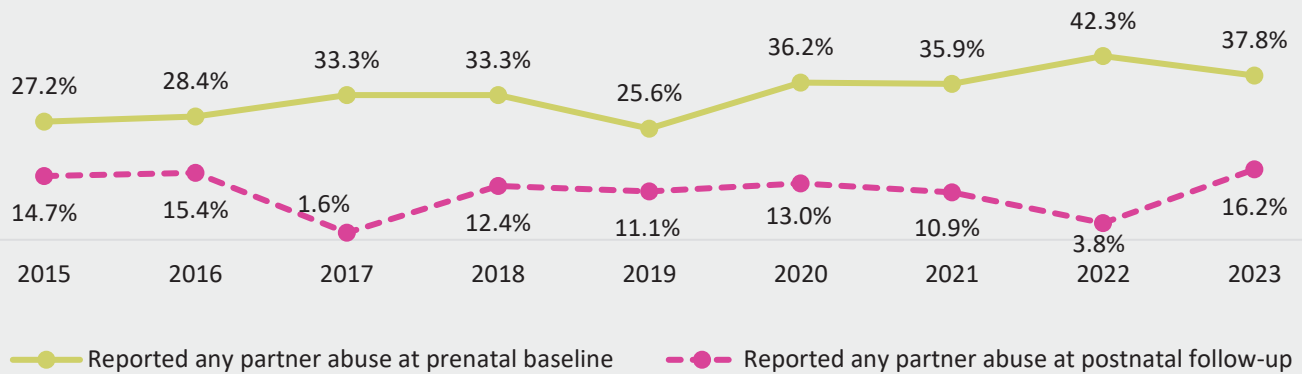
\*\*  $p < .05$ .

<sup>76</sup> Any intimate partner abuse was defined in this study as a client indicating “yes” to any of the partner violence questions asked in the survey (e.g., verbal and psychological abuse, extreme jealousy and control, threats of violence towards client and others close to them, physical violence, stalking, partner purposely damaging or destroying property, sexual assault/threats of assault) at each period.

### Trends in Any Past-6-month Partner Abuse at Prenatal Baseline and Postnatal Follow-up

The percent of clients who reported any partner abuse at prenatal baseline was fairly consistent from 2015 to 2019. Since 2019, however, the number of clients who reported any partner abuse at baseline has increased. Overall, the percent of clients who reported partner abuse at follow-up was also fairly consistent with about 11% to 16% of clients reporting partner abuse in the 6 months since the birth of the baby (with the exception of 2017 at 1.6% and 2022 at 3.8%). In 2023, the percent of clients who reported partner abuse at follow-up was higher than in previous years.

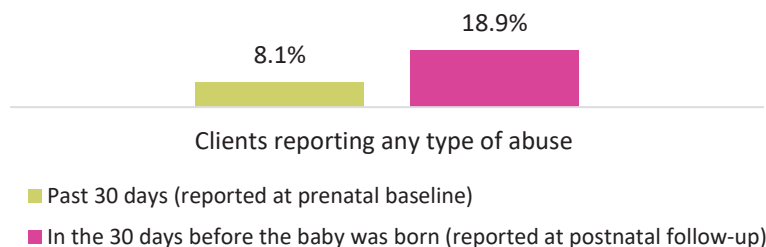
FIGURE IV.D.2. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING ANY PARTNER ABUSE IN THE PAST 6 MONTHS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023



### ANY ABUSE IN THE PAST 30 DAYS

Less than 10% of KY-Moms MATR clients (8.1%) in the past 30 days at prenatal baseline and 18.9% of clients in the 30 days before the baby was born clients reported experiencing any type of abuse (see Figure IV.D.3).

FIGURE IV.D.3. ANY TYPE OF ABUSE IN THE 30 DAYS BEFORE PRENATAL BASELINE AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 37)



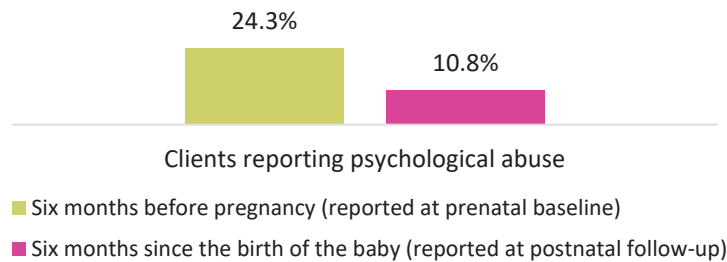


## Psychological Abuse

### PSYCHOLOGICAL ABUSE IN THE PAST 6 MONTHS

Less than one-quarter of clients (24.3%) reported at prenatal baseline that a partner psychologically abused them (e.g., insulted the client, shouted, criticized them, criticized them in front of others, treated them like an inferior, tried to make them feel crazy, or told them their feelings were irrational or crazy) in the 6 months before pregnancy and 10.8% of clients reported psychological abuse in the past 6 months at postnatal follow-up. Compared to the 6 months before they were pregnant, there was not a significant decrease in reports of psychological abuse in the 6 months after clients had their baby (see Figure IV.D.4).

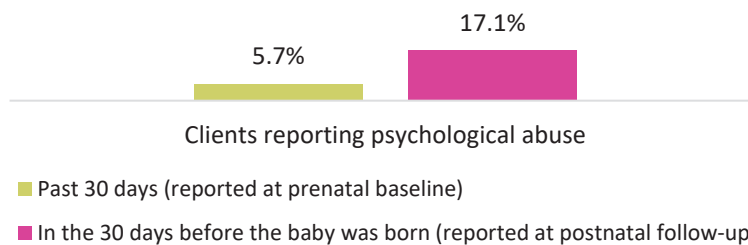
FIGURE IV.D.4. PSYCHOLOGICAL ABUSE IN THE 6 MONTHS BEFORE PREGNANCY AND THE PAST 6 MONTHS AT POSTNATAL FOLLOW-UP (N = 37)



### PSYCHOLOGICAL ABUSE IN THE PAST 30 DAYS

Less than 6% of clients in the past 30 days at prenatal baseline and in the 30 days before the baby was born 17.1% of clients reported psychological abuse, which was not a significant increase.

FIGURE IV.D.5. PSYCHOLOGICAL ABUSE IN THE 30 DAYS BEFORE PRENATAL BASELINE AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 35)<sup>77</sup>



## Coercive Control

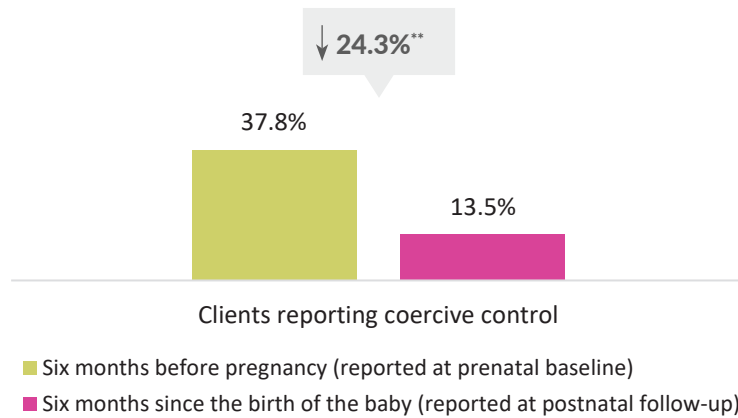
### COERCIVE CONTROL IN THE PAST 6 MONTHS

For this study, coercive control is described as abuse by a partner wherein the partner

<sup>77</sup>Two clients declined to answer if they had been psychologically abused in the past 30 days at follow-up.

threatened the client or a family member in order to frighten her, was extremely jealous and controlling, interfered with other relationships, stalked her, or purposely destroyed property that belonged to her or a close friend/family member. In the 6 months before becoming pregnant, 37.8% of clients reported being a victim of coercive control and 13.5% of clients in the past 6 months at postnatal follow-up reported experiencing coercive control from their partner (a significant decrease of 24.3%; see Figure IV.D.6).

FIGURE IV.D.6. COERCIVE CONTROL BY A PARTNER IN THE 6 MONTHS BEFORE PREGNANCY AND THE 6 MONTHS BEFORE POSTNATAL FOLLOW-UP (N = 37)

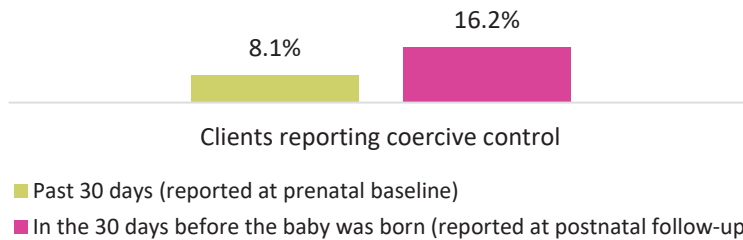


\*\* p < .05.

### COERCIVE CONTROL IN THE PAST 30 DAYS

In the past 30 days at prenatal baseline 8.1% of clients reported coercive control and in the 30 days before the baby was born, 16.2% reported coercive control occurred while they were pregnant (see Figure IV.D.7).

FIGURE IV.D.7. COERCIVE CONTROL BY A PARTNER IN THE 30 DAYS BEFORE PRENATAL BASELINE AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 37)



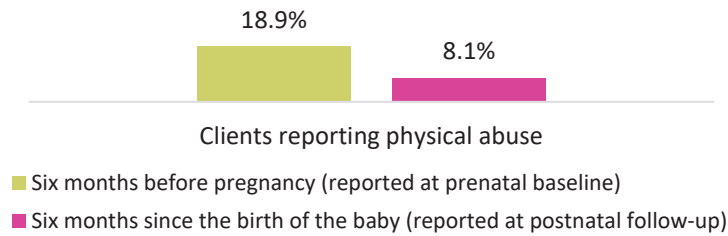
## Physical Abuse

### PHYSICAL ABUSE IN THE PAST 6 MONTHS

About 19% of women reported that a partner physically abused them (e.g., pushing, shoving, kicking, beating up, strangling, burning, attacking with a weapon) in the 6 months before they became pregnant (see Figure IV.D.8). In the past 6 months at postnatal follow-up, 8.1% of

clients reported physical abuse by a partner which was not a significant decrease.

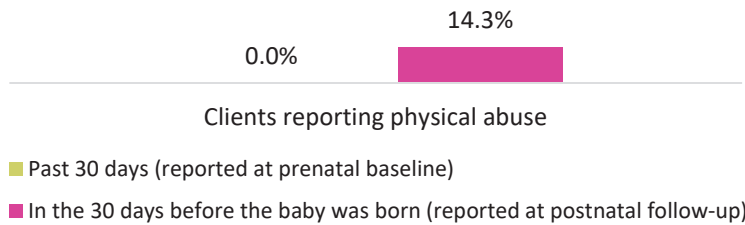
FIGURE IV.D.8. PHYSICAL ABUSE IN THE 6 MONTHS BEFORE PREGNANCY AND THE PAST 6 MONTHS AT POSTNATAL FOLLOW-UP (N = 37)



### PHYSICAL ABUSE IN THE PAST 30 DAYS

None of the women in the past 30 days at prenatal baseline and 14.3% of women in the 30 days before the birth of the baby reported a partner physically abused them (see Figure IV.D.9).

FIGURE IV.D.9. PHYSICAL ABUSE IN THE 30 DAYS BEFORE PRENATAL BASELINE AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 35)<sup>78</sup>



## Sexual Assault

### SEXUAL ASSAULT IN THE PAST 6 MONTHS

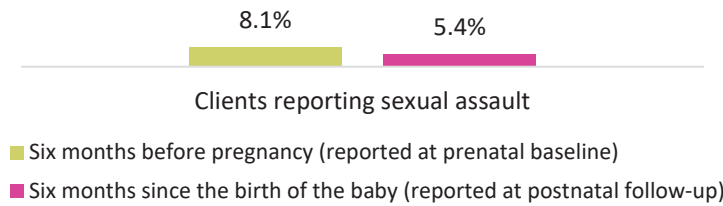
Less than 10% of clients (8.1%) reported at prenatal baseline that they had been sexually assaulted by a partner (e.g., partner made them do sexually degrading things, caused them to have sex because they were afraid of what would happen if they didn't, made the client have sex by threatening to harm them or someone close to them, or physically forcing them to have sex) in the 6 months before pregnancy. In the past 6 months at postnatal follow-up, 5.4% of clients indicated they had been sexually assaulted by a partner (see Figure IV.D.10).

*I loved the program. The support and kindness helped me get back on my feet.*

KY-MOMS MATR FOLLOW-UP CLIENT

<sup>78</sup>Two clients declined to answer if they had been physically abuse in the past 30 days at follow-up.

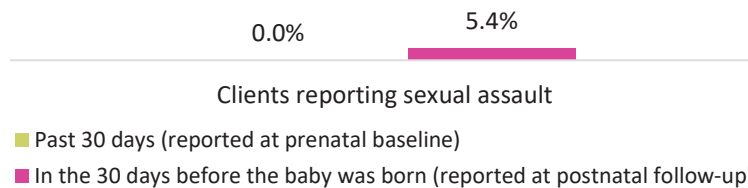
FIGURE IV.D.10. PARTNER SEXUALLY ASSAULTED CLIENT IN THE 6 MONTHS BEFORE PREGNANCY AND THE 6 MONTHS BEFORE POSTNATAL FOLLOW-UP (N = 37)



### Sexual Assault in the Past 30 Days

None of the clients reported being a victim of sexual assault by a partner in the past 30 days at prenatal baseline and 5.4% of clients reported being a victim of sexual assault by a partner in the 30 days before the baby was born.

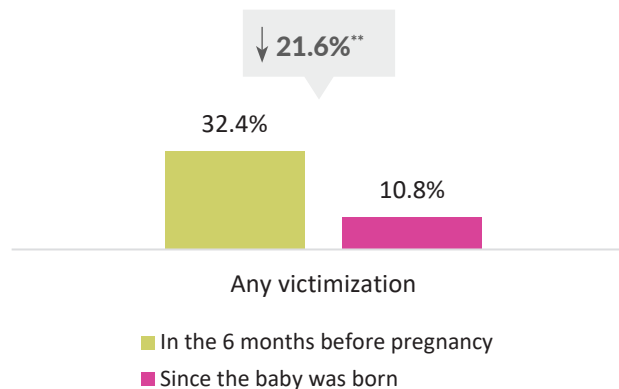
FIGURE IV.D.11. PARTNER SEXUALLY ASSAULTED CLIENT IN THE 30 DAYS BEFORE PREGNANCY AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 37)



### Any Victimization Experiences

Clients were asked about situations in which the client may have been the victim of a crime, harmed by someone else, or made to feel unsafe by someone in the past 6 months at baseline and follow-up. Because relatively small percentages of clients reported each type of criminal victimization experience in the 6-month periods, the items were collapsed. The percent of clients who reported experiencing any criminal victimization (i.e., any harassment or any assault) in the past 6 months decreased 21.6% from 32.4% the 6 months before pregnancy to 10.8% the past 6 months at follow-up (see Figure IV.D.12).

FIGURE IV.D.12. PERCENT OF CLIENTS WHO EXPERIENCED CRIMINAL VICTIMIZATION (N = 37)



\*\* p < .05.

## Summary

Clients' experiences of several forms of partner violence were examined from prenatal baseline to postnatal follow-up. About 38% of KY-Moms MATR clients reported experiencing some type of partner abuse in the 6 months before pregnancy. At postnatal follow-up, 16.2% of clients reported experiencing some type of abuse in the past 6 months since the baby was born, which was a significant decrease. Less than 10% of KY-Moms MATR clients (8.1%) in the past 30 days at prenatal baseline and 18.9% of clients in the 30 days before the baby was born clients reported experiencing any type of abuse. The number of clients reporting coercive control decreased significantly from before pregnancy (37.8%) to the past 6 months at postnatal follow-up (13.5%). Three clients reported experiencing a sexual assault by a partner or other type of perpetrator at baseline and two clients reported experiencing a sexual assault at follow-up. The number of clients who reported experiencing any criminal victimization decreased significantly from the six months before pregnancy (32.4%) to the past 6 months at follow-up (10.8%).

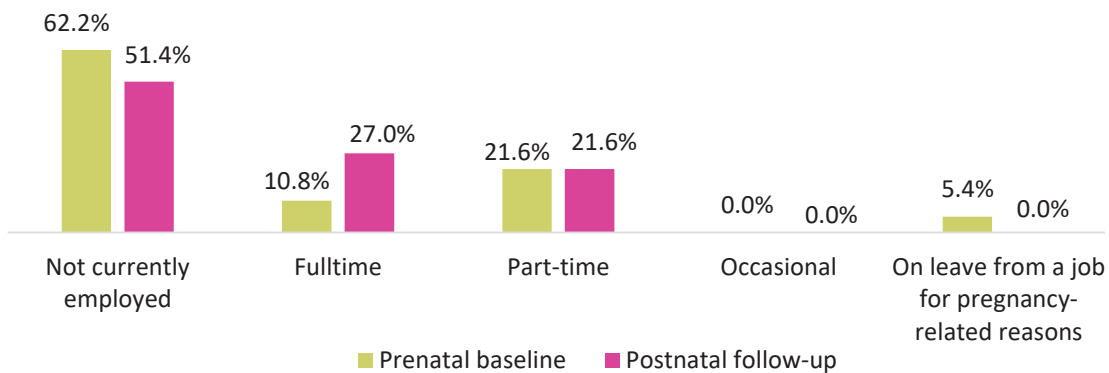
## E. Economic and Living Circumstances, Economic Hardship, and Criminal Justice Involvement

*This subsection examines employment, economic hardship, living situation, and criminal justice involvement in the follow-up sample (n = 37) from baseline to follow-up. Specifically, this section examines: (1) current employment status, (2) hourly wage, among employed individuals, (3) public assistance, (4) economic hardship, (5) living situation, and (6) criminal justice involvement. Past-6-month and past-30-day measures are examined separately where applicable.*

### Current Employment Status

Clients' current employment status changed significantly from prenatal baseline to postnatal follow-up. Over one-third clients (37.8%) were employed in some capacity (full-time, part-time, occasional, or on leave) at prenatal baseline and 48.6% of clients at follow-up (not represented in a figure). Less than two-thirds of clients (62.2%) at prenatal baseline and 51.4% of clients at postnatal follow-up reported being unemployed which was not a significant decrease (see Figure IV.E.1).

FIGURE IV.E.1. CURRENT EMPLOYMENT STATUS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 37)<sup>a</sup>

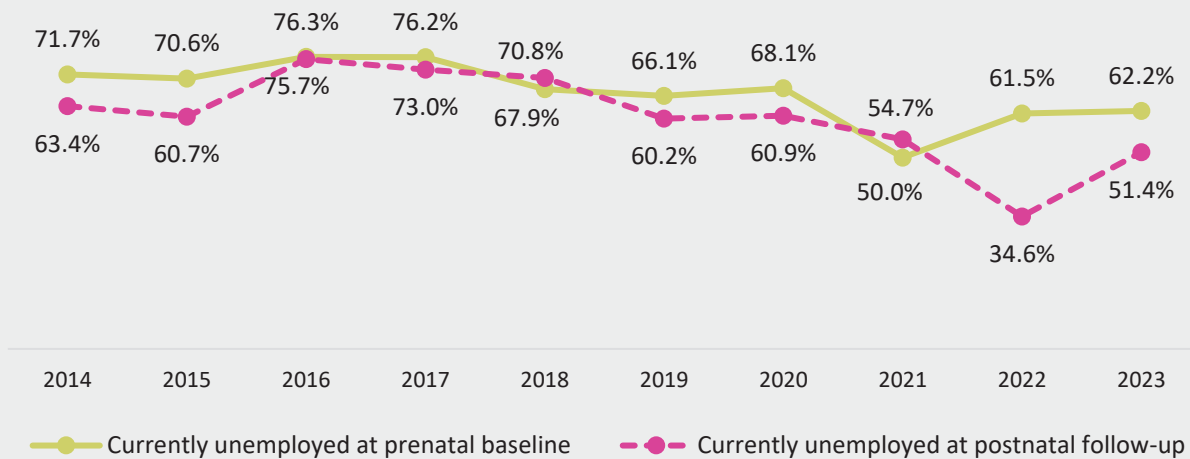


a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity.

## Trends in Current Unemployment Status at Prenatal Baseline and Postnatal Follow-up

The majority of women at both prenatal baseline and postnatal follow-up were unemployed from 2014 and then again in 2022 and 2023 report years. Furthermore, from 2016 to 2018, the percent of clients who reported being unemployed changed only minimally from baseline to follow-up. In fact, in 2018, the percent of clients reporting being unemployed at follow-up was slightly greater than the percent of clients reporting being unemployed at baseline. In 2019 and 2020, the percent of clients who reported being unemployed was slightly greater at baseline compared to follow-up. In 2022, however, 61.5% clients were unemployed at baseline and 34.6% of clients were unemployed at follow-up.

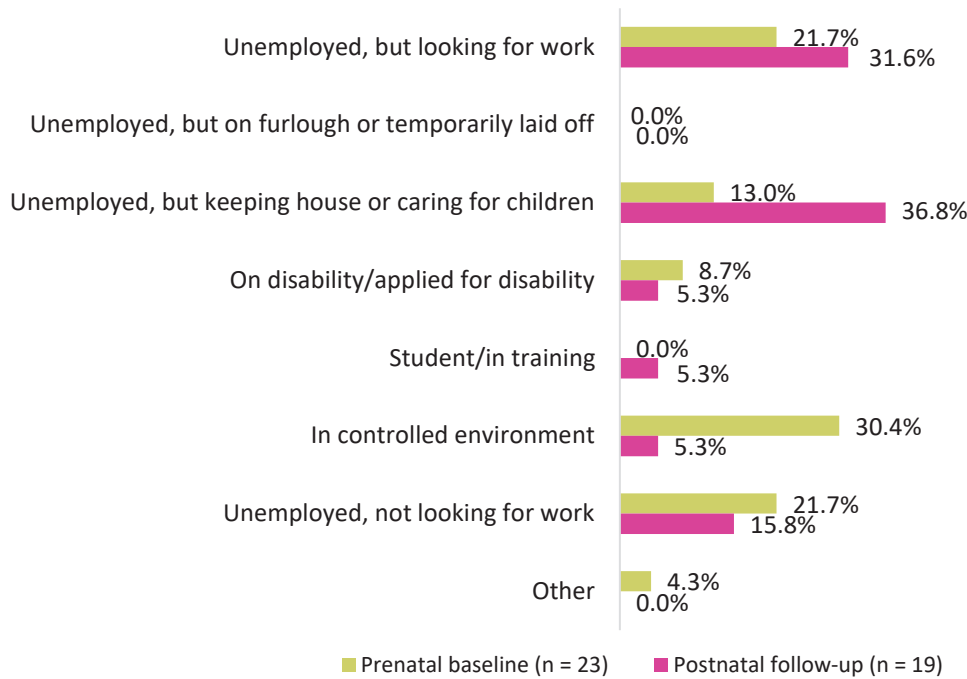
FIGURE IV.E.2. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING CURRENT UNEMPLOYMENT STATUS AT PRENATAL BASELINE, REPORT YEARS 2014-2023



For clients who were employed (full- or part-time) at each point, the average hourly wage clients reported was \$8.57 at prenatal baseline (n = 12) and \$13.47 at postnatal follow-up (n = 18; not depicted in a figure). About 7% of clients who were employed at baseline (including clients on leave for pregnancy-related reasons) and 11.9% of the clients who were employed at follow-up reported they were also in school or receiving additional vocational training (not depicted in a figure).

Of the clients who reported they were not currently employed at each point, the majority of clients (36.8%) who were unemployed at follow-up reported they were keeping house or caring for children full-time compared to 13.0% of clients at prenatal baseline (see Figure IV.E.3). At baseline, 21.7% of clients reported they were looking for work and, at follow-up, 31.6% of clients reported looking for work.

FIGURE IV.E.3. REASON FOR UNEMPLOYMENT AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP



The majority of clients at prenatal baseline (76.9%) and postnatal follow-up (84.6%) expected to be employed in the next 12 months.<sup>79</sup>

### Public Assistance

Clients were asked at postnatal follow-up what type of public assistance they received during their pregnancy.

The vast majority of clients (91.9%) reported receiving public assistance while they were pregnant and involved in KY-Moms MATR and 83.8% reported currently receiving public assistance at postnatal follow-up (not depicted in a figure).

The majority of clients reported receiving Women, Infants and Children (WIC; 70.3% during pregnancy and 64.5% after the birth of their baby) and Supplement Nutrition Assistance Program (SNAP; 70.3% during pregnancy and 71.0% after the birth of their baby).

### Economic Hardship

Economic hardship may be a better indicator of the actual day-to-day stressors clients face than a measure of income. Therefore, the prenatal baseline and postnatal follow-up surveys included several questions about clients’ difficulty meeting expenses for basic needs and food insecurity.<sup>80</sup> Clients were asked eight items, five of which asked about difficulty meeting basic

<sup>79</sup> Two clients declined to answer if they expected to be employed in the next 12 months at follow-up.

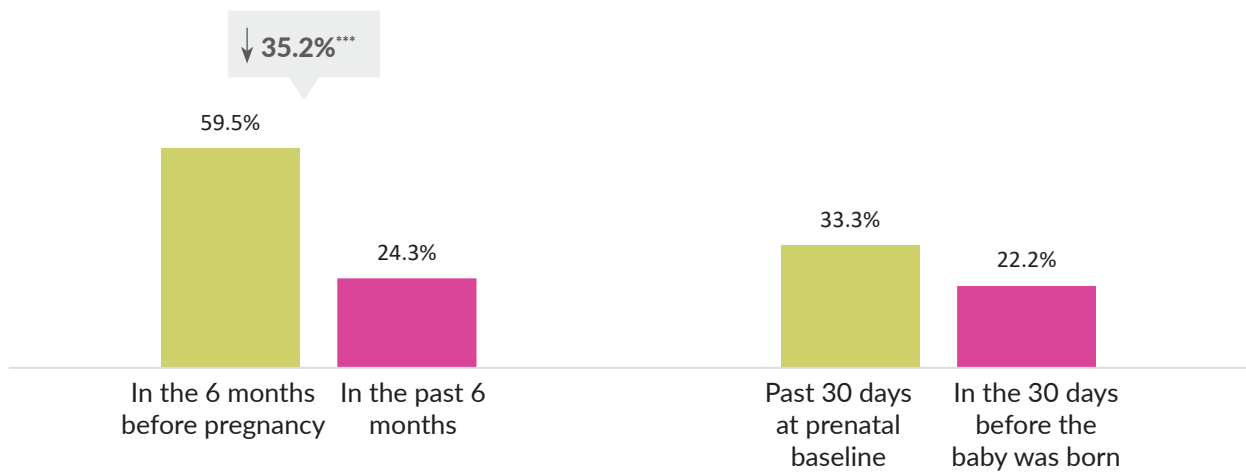
<sup>80</sup> SIPP; She, P., & Livermore, G. (2007). Material hardship, poverty, and disability among working-age adults. *Social Science Quarterly*, 88(4), 970-989.

living needs such as food, shelter, utilities, and telephone, and three items asked about difficulty receiving medical care for financial reasons.

In the 6 months before becoming pregnant, 59.5% of clients reported they had difficulty meeting at least one of the basic living needs for financial reasons and 24.3% of clients reported difficulty meeting basic living needs in the past 6 months at postnatal follow-up (since the baby was born) which was a 35.2% significant decrease (see Figure IV.E.4).

One-third of clients reported having difficulty meeting basic living needs in the past 30 days at prenatal baseline. In the 30 days before the baby was born, 22.2% of clients had difficulty meeting basic needs such as food, shelter or utilities which was not a significant decrease.

FIGURE IV.E.4. DIFFICULTY IN MEETING BASIC LIVING NEEDS FOR FINANCIAL REASONS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (n = 37)<sup>81</sup>



\*\*\*p < .01.

*In the past 6 months at follow-up, 21.6% of KY-Moms MATR clients reported having difficulty paying rent/mortgage, 10.8% of clients reported they were unable to pay their gas/electric bill, 5.4% had telephone service disconnected, and 5.4% said there was a time when there was not enough food to eat.*

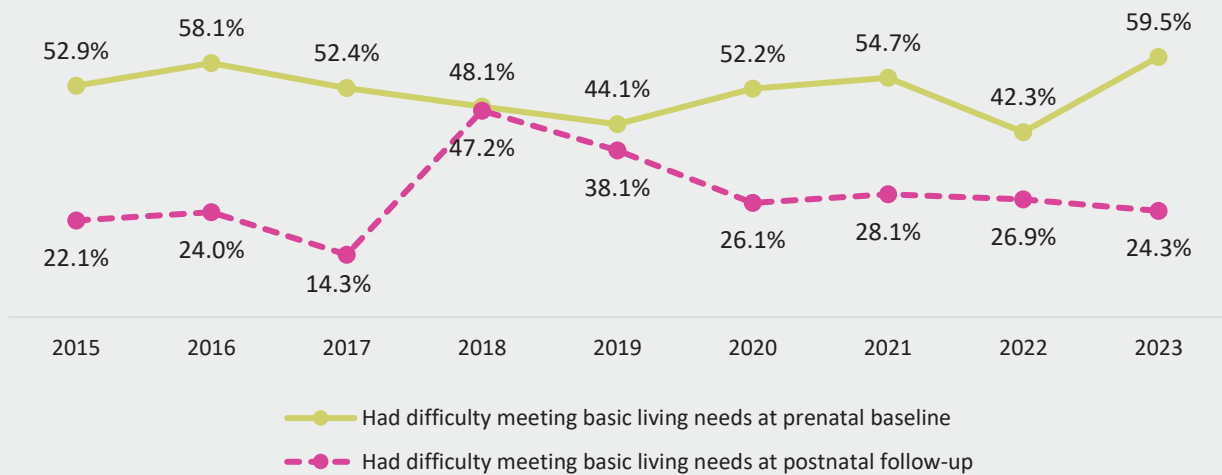
<sup>81</sup>One client was missing data for basic living needs in the 30 days before the baby was born.



## Trends in Difficulty Meeting Basic Living Needs at Prenatal Baseline and Postnatal Follow-up

The percent of clients who reported having difficulty meeting basic living needs in the six months before pregnancy remained between 42% and 60% over the past 9 years at baseline. In 2018 and 2019, the percent of clients who reported difficulty meeting basic living needs did not decrease significantly from baseline to follow-up.

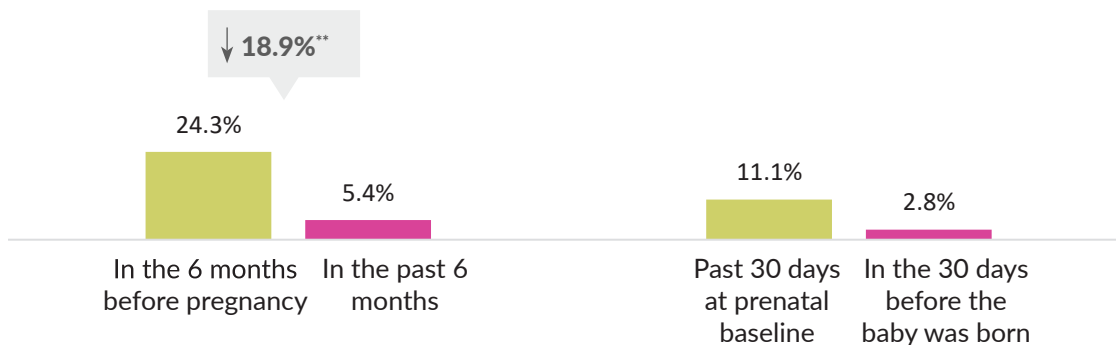
FIGURE IV.E.5. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING DIFFICULTY MEETING BASIC HOUSEHOLD NEEDS IN THE 6 MONTHS BEFORE PREGNANCY AT PRENATAL BASELINE AND IN THE PAST 6 MONTHS AT POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023



Close to one-quarter of clients (24.3%) reported their household had difficulty meeting health care needs (such as not going to the doctor, not having a prescription filled, or not going to the dentist because of financial reasons) in the 6 months before pregnancy (see Figure IV.E.6). At follow-up, 5.4% of clients reported they had difficulty meeting health care needs in the 6 months since the baby was born (a significant decrease of 18.9%).

In the past 30 days at prenatal baseline, 11.1% of clients reported their household had difficulty meeting health care needs because of financial reasons. In the 30 days before the baby was born, 2.8% of clients reported difficulty meeting health care needs.

FIGURE IV.E.6. DIFFICULTY IN MEETING HEALTH CARE NEEDS FOR FINANCIAL REASONS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 37)<sup>82</sup>



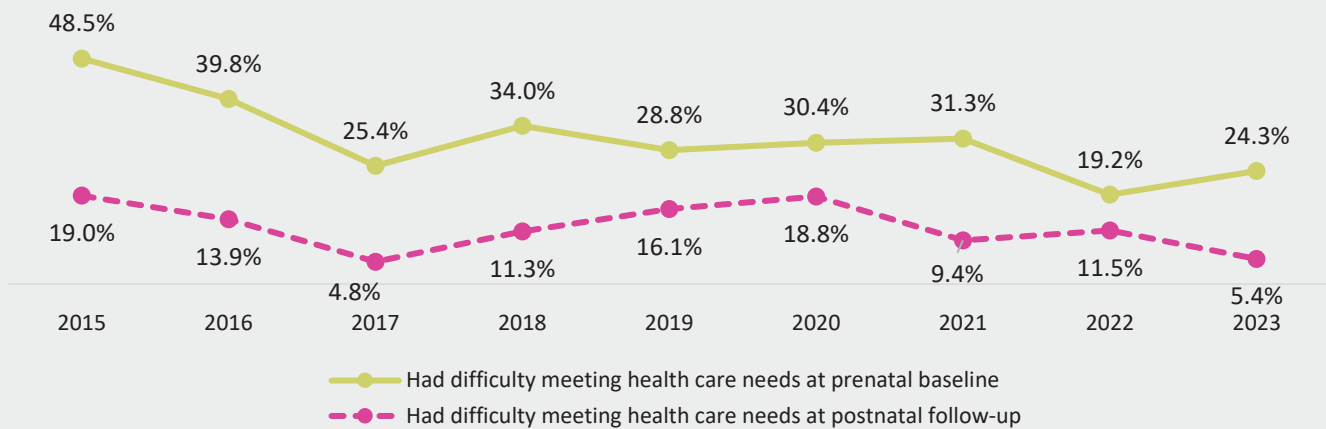
\*\*p < .05.

<sup>82</sup>One client was missing data for health care needs in the 30 days before the baby was born.

## Trends in Difficulty Meeting Basic Health Care Needs at Prenatal Baseline and Postnatal Follow-up

Overall, at baseline, the percent of clients reporting that they had difficulty meeting health care needs steadily declined from 2015 to 2017. In 2015, almost half of clients reported having difficulty meeting health care needs in the 6 months before pregnancy and in 2018, one-fourth of clients (25.4%). Since 2018 the percent of clients who have reported having difficulty meeting basic health care needs has fluctuated from a high of 34.0% in 2018 to a low of 19.2% in 2022. At postnatal follow-up, on average, less than one-fifth of clients reported struggling to meet health care needs. In 2022, 11.5% of clients reported difficulty meeting basic health care needs at postnatal follow-up.

FIGURE IV.E.7. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING DIFFICULTY MEETING HEALTH CARE NEEDS IN THE 6 MONTHS BEFORE PREGNANCY AT PRENATAL BASELINE AND IN THE PAST 6 MONTHS POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023



### Living Situation

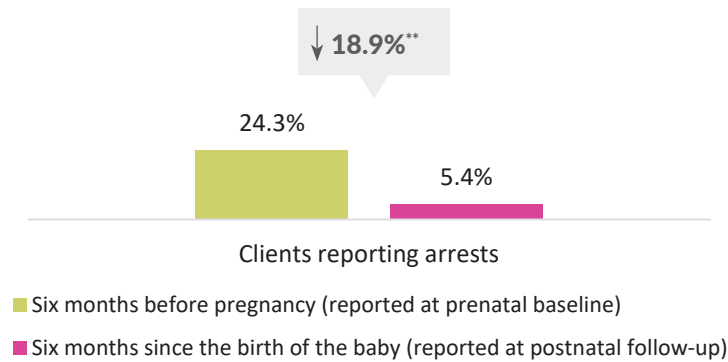
About 11% of the KY-Moms MATR clients reported being homeless at prenatal baseline and 8.1% of client reported being homeless at postnatal follow-up (not depicted in a figure). The majority of clients at prenatal baseline (69.4%) and postnatal follow-up (83.8%) reported living in a private residence (i.e., their own or someone else’s home or apartment) before the birth of their baby.

### Criminal Justice Involvement

#### ARRESTS

Clients were asked about their arrests in the 6 months before pregnancy (at baseline) and since the baby was born (at postnatal follow-up). In the 6 months before pregnancy, 24.3% of clients reported an arrest (see Figure IV.E.8). Among those clients who reported being arrested in the 6 months before pregnancy (n = 9), the average number of times clients reported being arrested was 1.2 (not depicted in a figure). At follow-up, this percent had decreased, but not significantly, to 5.4% (2 clients).

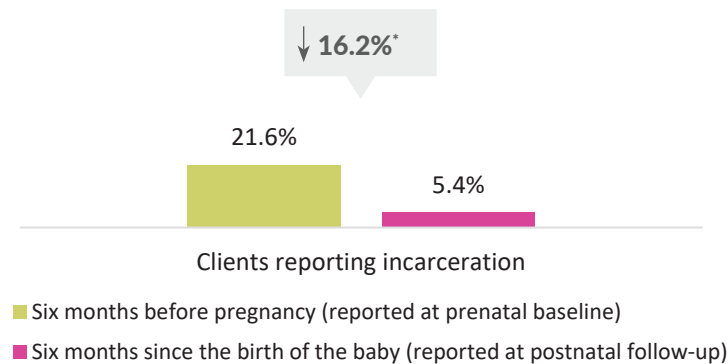
FIGURE IV.E.8. CLIENTS REPORTING ARRESTS IN THE 6 MONTHS BEFORE PREGNANCY AND THE 6 MONTHS BEFORE POSTNATAL FOLLOW-UP (N = 37)



### Incarceration

At baseline, 21.6% of clients reported spending at least one night in jail or prison in the 6 months before pregnancy (Figure IV.E.9). Among those clients who reported being incarcerated in the 6 months before pregnancy (n = 8), the average number of nights incarcerated was 24.9 (not depicted in a figure). At follow-up, only two clients (5.4%) reported spending at least one night in jail or prison since the baby was born, which was a significant decrease of 16.2%.

FIGURE IV.E.9. CLIENTS REPORTING BEING INCARCERATED IN THE 6 MONTHS BEFORE PREGNANCY AND THE 6 MONTHS BEFORE POSTNATAL FOLLOW-UP (N = 37)

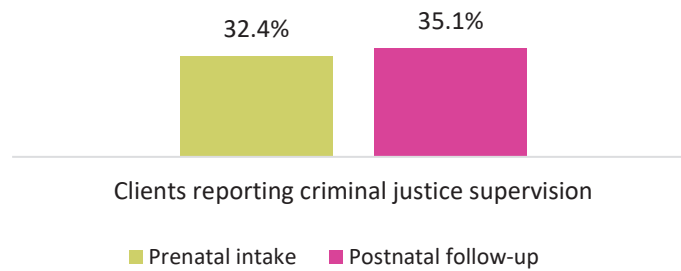


\*p < .10.

### Criminal Justice Supervision

At prenatal baseline, 32.4% of clients reported they were currently under criminal justice system supervision (e.g., probation, or parole; Figure IV.E.10). At follow-up, 35.1% were currently under criminal justice system supervision.

FIGURE IV.E.10. CLIENTS REPORTING BEING CURRENTLY UNDER SUPERVISION BY THE CRIMINAL JUSTICE SYSTEM AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 37)



## Summary

The percent of clients who reported full-time employment did not change significantly at postnatal follow-up. Of the clients who reported they were not currently employed at each point, over one-third of clients (36.8%) who were unemployed at follow-up reported they were keeping house or caring for children full-time compared to 13.0% of clients at prenatal baseline. The majority of clients were able to receive public assistance (mainly SNAP and WIC) while pregnant and in KY-Moms MATR and after the birth of the baby. The percent of clients who reported having difficulty meeting basic living needs for financial reasons decreased significantly in the past 6 months at follow-up compared to the past 6 months before pregnancy. There were also significant decreases in the percent of clients who reported being arrested and spending at least one night in jail or prison from the 6 months before pregnancy at prenatal baseline to the past 6 months at postnatal follow-up.

## F. Physical Health

*This subsection describes physical health problems reported at prenatal baseline and change in physical health status of clients from prenatal baseline to postnatal follow-up (n = 37) including: (1) chronic health problems at baseline, (2) current health, (3) chronic pain, and (4) perceptions of poor physical and mental health.*

### Chronic Health Problems Reported at Prenatal Baseline

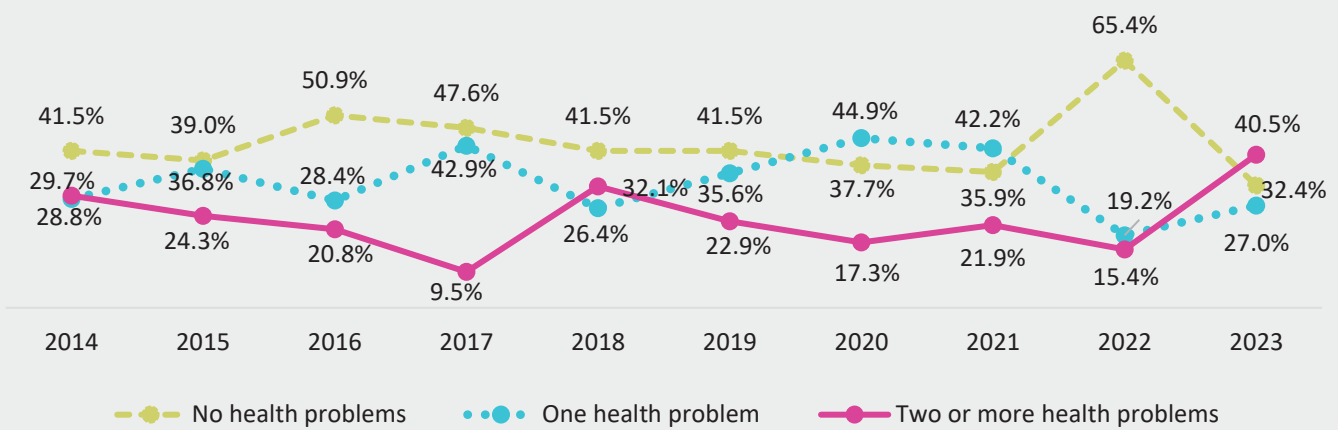
At prenatal baseline, 32.4% of postnatal follow-up clients reported no chronic health problems, 27.0% reported having one chronic health problem, and 40.5% of clients had two or more chronic health problems.

Among the clients who reported at least one physical health problem at prenatal baseline (n = 25), 56.0% of clients reported asthma, 36.0% of KY-Moms MATR clients reported Hepatitis C, 52.0% reported a sexually transmitted infection (STI), 12.0% reported diabetes, and 12.0% reported seizures (not included in the figure).

### Trends in Chronic Health Problems at Prenatal Baseline

In general, for each year, more clients reported having no chronic health problems at prenatal baseline, with the exception of 2020 and 2021. In 2016, for example, a little over half of clients (50.9%) reported they had no chronic health problems. The percent of clients who reported one health problem and multiple health problems were similar over the first three years and in 2018 and in 2022. In 2020 and 2021, more clients reported having one chronic health problem compared to no health problems or multiple health problems. In 2022, almost two-thirds of clients reported they had no chronic health problems compared to 32.4% in 2023.

FIGURE IV.F.1. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING CHRONIC HEALTH PROBLEMS AT PRENATAL BASELINE, REPORT YEARS 2014-2023<sup>83</sup>



At prenatal baseline, 10.8% reported they had major health problems that were not currently being treated. Of those clients who indicated they had major health problems that were not being treated (n = 4), clients mentioned various responses such as Hepatitis C and fibromyalgia. At postnatal follow-up, 10.8% clients reported major health problems that were not currently being treated. Of those clients, they mentioned Hepatitis C, substance abuse, and kidney problems.

*“They were wonderful, so supportive with my concerns and helped me every step of the way.”*

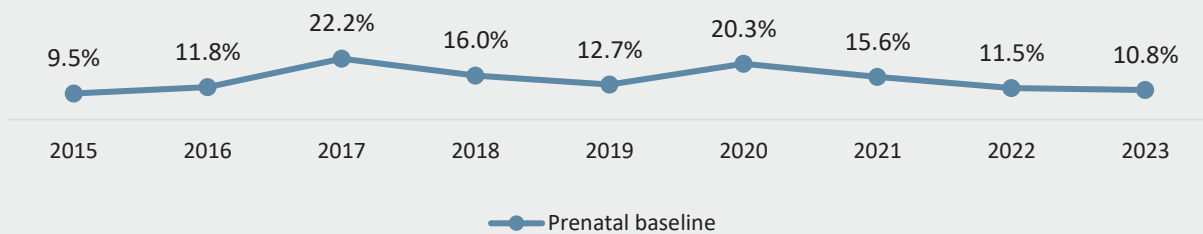
KY-MOMS MATR FOLLOW-UP CLIENT

<sup>83</sup>The small sample sizes in 2022 and 2023 report years may be affecting the number of chronic health problems.

### Trends in Health Problems Not Being Treated at Prenatal Baseline

A minority of clients each year reported having major health problems that were not currently being treated at baseline. In 2015, 9.5% of clients reported having a health problem that was not being treated and the highest percentage of clients reporting a major health problem that was not being treated was found in 2017 (22.2%). After 2017, the number of clients who reported having major health problems that were not currently being treated decreased to 12.7% in 2019 and increased to 20.3% in 2020. In 2023, the percent of clients who reported having a major health problem that was not being treated was 10.8%.

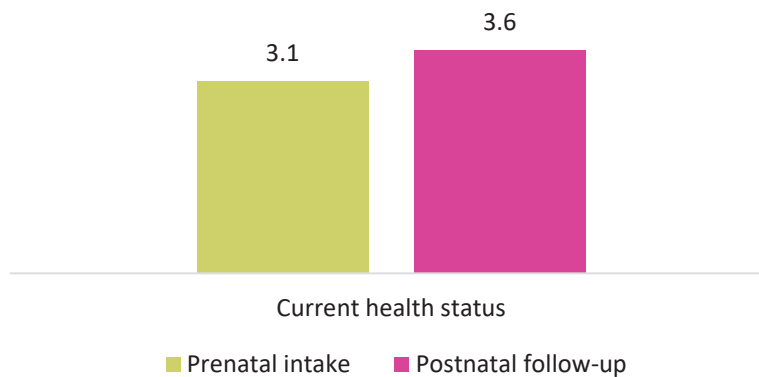
FIGURE IV.F.2. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING HEALTH PROBLEMS THAT WERE NOT BEING TREATED AT PRENATAL BASELINE, REPORT YEARS 2015-2023



### Current Health Status

At prenatal baseline, clients reported their current health as an average of 3.1 on a scale of 1 – 5, with 1 being “poor” and 5 being “excellent.” At postnatal follow-up, clients reported that their current health was an average of 3.6, which was a significant increase compared to prenatal baseline (see Figure IV.F.3).

FIGURE IV.F.3. AVERAGE OVERALL HEALTH RATING FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 26)\*\*

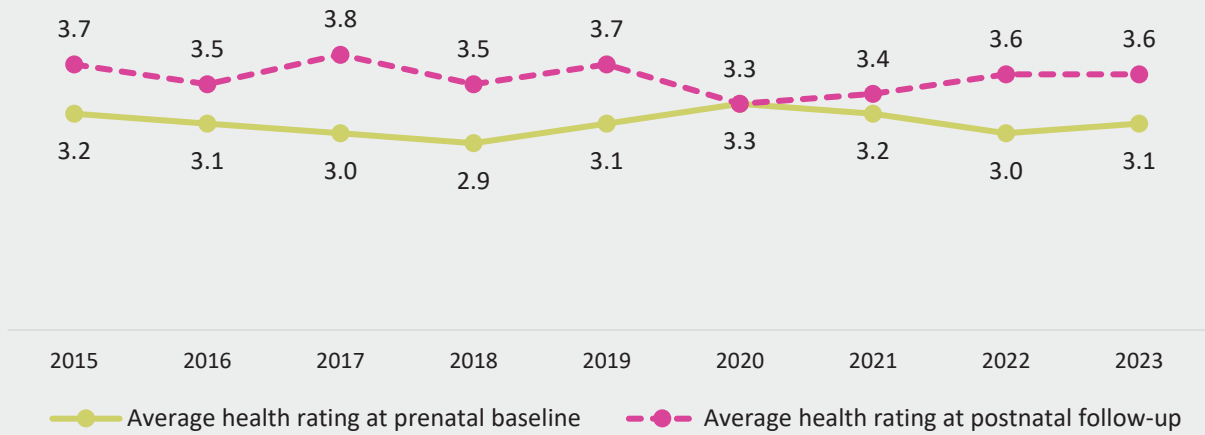


\*\*p < .01.

### Trends in Current Health Rating at Prenatal Baseline and Postnatal Follow-up

The average health rating was relatively stable at both baseline and postnatal follow-up. Overall, clients' average rating of their health was around 3 at baseline. At follow-up, clients' average health rating was 3.5 or higher except in 2020 and 2021 report years.

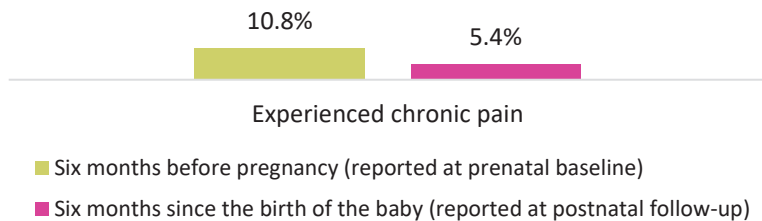
FIGURE IV.F.4. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING AVERAGE HEALTH RATING AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023



### Chronic Pain

At prenatal baseline, 10.8% of women reported experiencing chronic pain in the 6 months before pregnancy and, of those clients (n = 4), they reported experiencing pain an average of 30.0 days in the 30 days before pregnancy. All four clients reported that this chronic pain continued into their pregnancy with those clients reporting experiencing 30 days of chronic pain in the past 30 days at prenatal baseline. Two clients reported experiencing chronic pain in the past 6 months at postnatal follow-up.

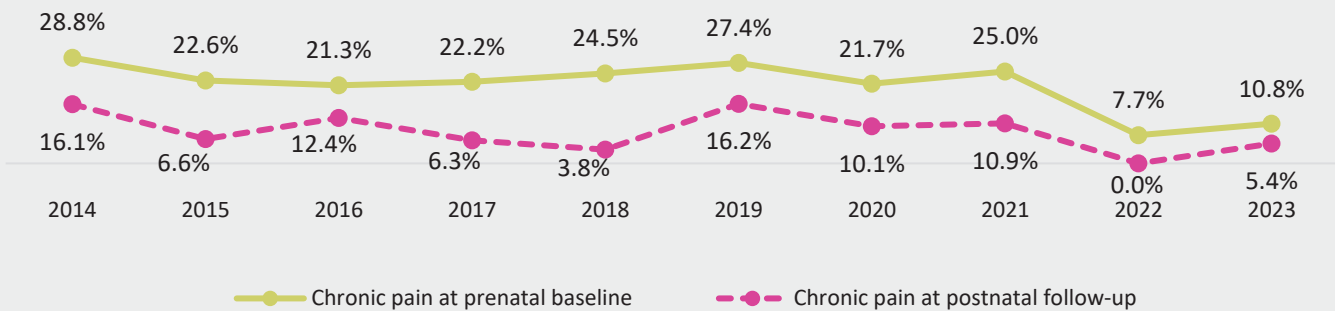
FIGURE IV.F.5. CHRONIC PAIN IN THE 6 MONTHS BEFORE PREGNANCY AND THE 6 MONTHS BEFORE POSTNATAL FOLLOW-UP (N = 37)



## Trends in Past-6-month Chronic Pain at Prenatal Baseline and Postnatal Follow-up

Around one-quarter of clients each year reported having chronic pain at baseline. In 2014, 28.8% of clients at baseline and 16.1% of clients at follow-up reported having chronic pain. In 2021, 25.0% of clients reported experiencing chronic pain at baseline and 10.9% of clients reported chronic pain at postnatal follow-up. The 2022 report, with its smaller sample size, showed the largest divergence from the other years, with only 7.7% reporting chronic pain at baseline and 0.0% at follow-up.

FIGURE IV.F.6. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING PAST-6-MONTH CHRONIC PAIN AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2014-2023



## Perceptions of Poor Physical or Mental Health Limiting Activities

Clients were asked how many days in the past 30 days their physical and mental health were not good at prenatal baseline and postnatal follow-up (see Figure IV.F.7). Clients reported an average of 4.2 days out of the past 30 days their physical health was not good at prenatal baseline and 1.0 days at follow-up with 4 clients at prenatal baseline (10.8%) and one client at follow-up reporting 14 or more days of poor physical health which is considered frequent physical distress.<sup>84</sup> In comparison, America’s Health Rankings indicate that 9.8% of Kentucky women reported reporting frequent physical distress. More KY-Moms MATR clients reported frequent physical distress at prenatal baseline but fewer client reported frequent physical distress at follow-up compared to other women surveyed in Kentucky.

The average number of days clients reported their mental health was not good decreased significantly from 7.8 days at prenatal baseline to 5.4 days at postnatal follow-up. Specifically, 24.3% of clients reported 14 or more days of mental distress at prenatal baseline and 16.2% of clients reported frequent mental distress in the past 30 days at follow-up. America’s Health Rankings indicate that in the past 30 days 24.8% of Kentucky women reported frequent mental distress.<sup>85</sup> This indicates slightly more KY-Moms MATR clients reported frequent mental distress at prenatal baseline and fewer at postnatal follow-up compared to women surveyed in Kentucky.

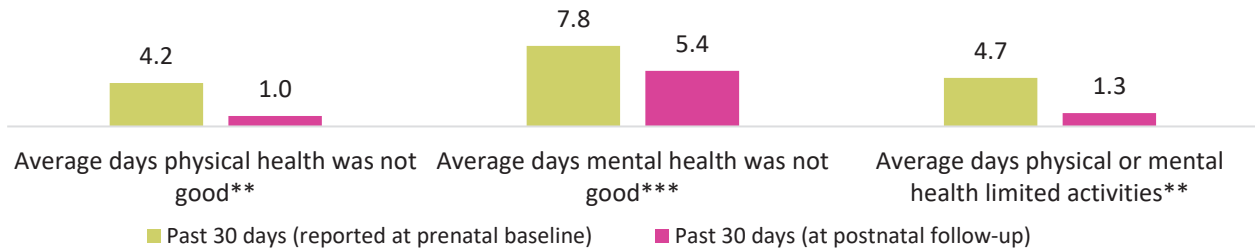
<sup>84</sup> America’s Health Rankings: Health of Women and Children. Retrieved from [https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/physical\\_distress\\_women/state/KY](https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/physical_distress_women/state/KY)

<sup>85</sup> Retrieved from [https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/mental\\_distress\\_women/state/KY](https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/mental_distress_women/state/KY).



Clients were also asked to report the number of days in the past 30 days poor physical or mental health had kept them from doing their usual activities. The number of days clients reported their physical or mental health kept them from doing their usual activities decreased significantly from 4.7 days at baseline to 1.3 days at follow-up.

FIGURE IV.F.7. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS AT BASELINE AND FOLLOW-UP (N = 37)



\*\*\*p < .01, \*\*p < .05.

Significance tested with paired sample t-test.

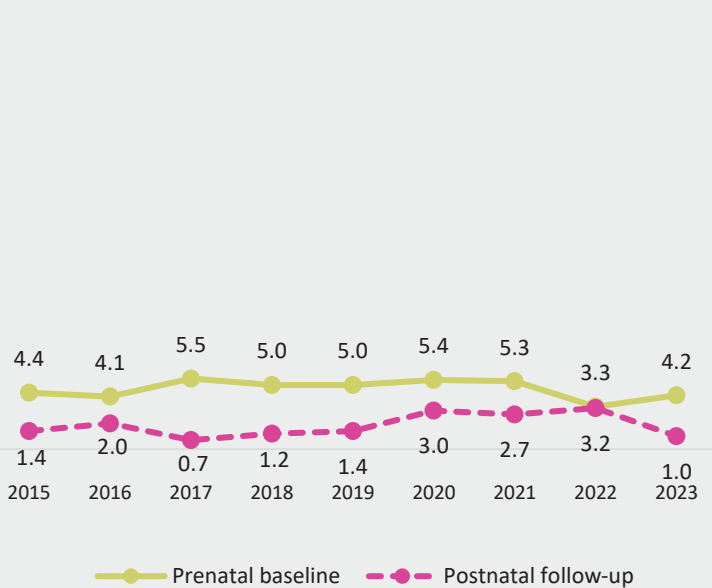
## Trends in Average Number of Days Physical and Mental Health Were Not Good at Prenatal Baseline and Postnatal Follow-up

At baseline and follow-up, clients are asked how many days in the past 30 days their physical health had not been good. Each year, the average number of days clients report their physical health was not good has significantly decreased from baseline to follow-up. In 2022, clients reported an average of 4.2 days their physical health was not good compared to 1.0 days at follow-up.

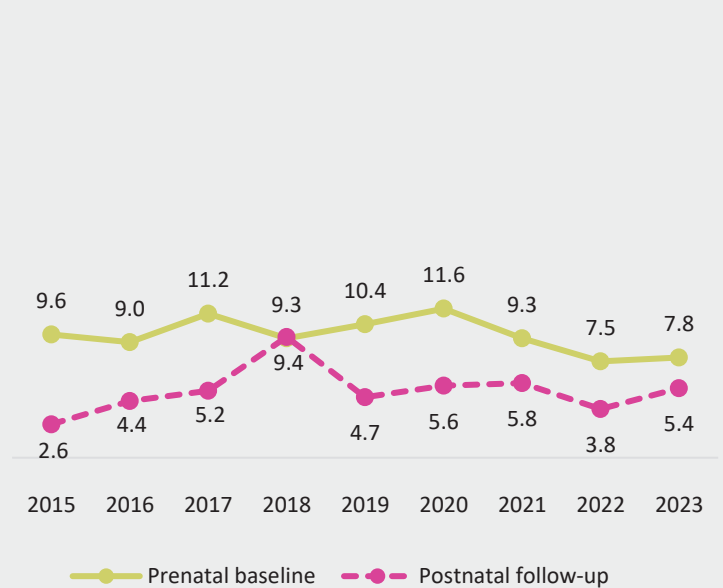
At baseline and follow-up, clients are also asked how many days in the past 30 days their mental health had not been good. While the average number of days of their mental health was not good at baseline has been relatively steady, the average number of days at follow-up has increased from 2015 to 2018, then decreased in 2019. In 2023, however, the average number of days their mental health was not good increased to 5.4 compared to previous years.

FIGURE IV.F.8. CLIENTS IN THE FOLLOW-UP SAMPLE REPORTING AVERAGE NUMBER OF DAYS IN THE PAST 30 DAYS PHYSICAL AND MENTAL HEALTH WERE NOT GOOD AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023

Poor Physical Health Days



Poor Mental Health Days



### Summary

At prenatal baseline, around 32% of clients reported having at least one chronic health problem such as asthma, Hepatitis C, and other sexually transmitted infection. About 11% of clients at prenatal baseline reported they had health problems that were not currently being treated. Clients' overall current health status rating improved significantly from 3.1 at prenatal baseline to 3.6 on a scale of 1 – 5 at postnatal follow-up. Close to 11% of clients in the 6 months before pregnancy and 5.4% of clients in the past 6 months at postnatal follow-up reported experiencing chronic pain. Clients also reported a significant decrease in the average number of days their physical or mental health was not good.

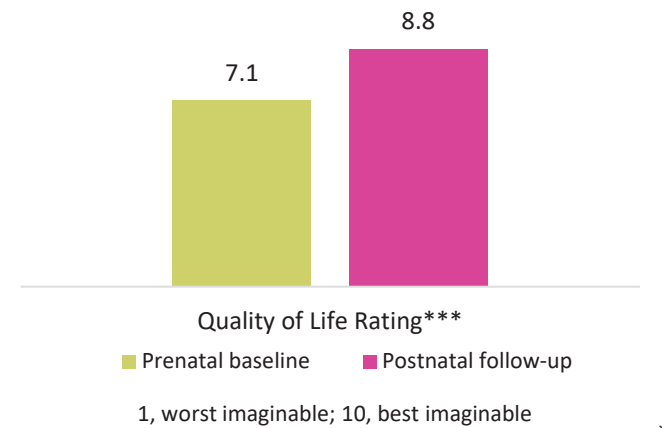
## G. Quality of Life and Emotional Support

This subsection examines changes in stress, quality of life, and emotional support for the follow-up sample (n = 37) including the following factors: (1) quality of life ratings, (2) the number of people clients said they could count on for emotional support, and (3) their satisfaction with the level of emotional support from others.

### Quality of Life

At both prenatal baseline and postnatal follow-up, clients were asked to rate their current quality of life using ratings ranging from 1 = 'Worst imaginable' to 10 = 'Best imaginable'. Clients rated their quality of life before entering the KY-Moms MATR program as a 7.1, on average (see Figure IV.G.1). The average rating of quality of life increased significantly to 8.8 at postnatal follow-up.

FIGURE IV.G.1. PERCEPTION OF QUALITY OF LIFE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (n = 25)<sup>86</sup>



\*\* p < .01.

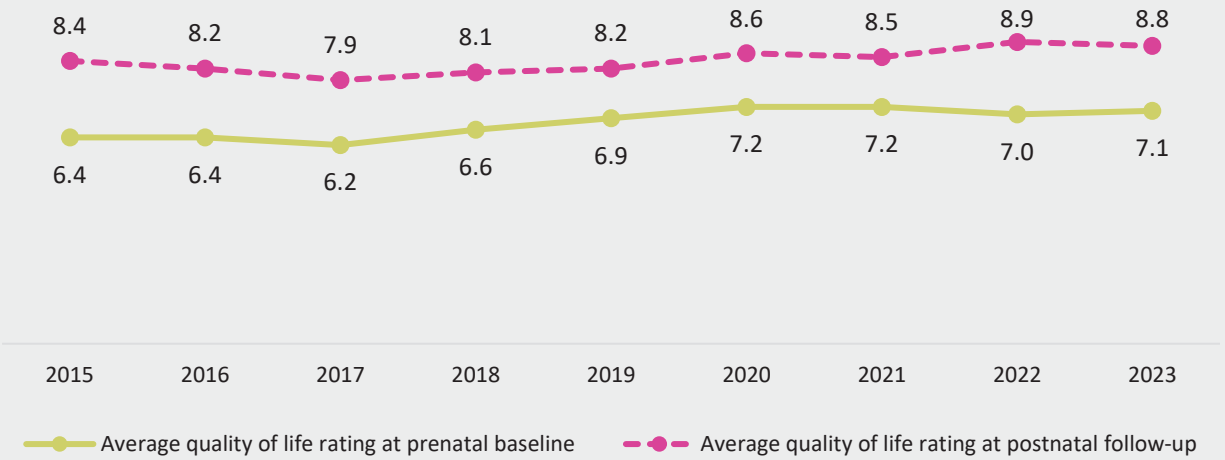
\*

<sup>86</sup>Twelve clients were missing data for quality of life at follow-up.

### Trends in Quality of Life at Prenatal Baseline and Postnatal Follow-up

KY-Moms MATR clients are asked to rank their overall quality of life on a scale from 1 (worst imaginable) to 10 (best imaginable) at both baseline and follow-up. At baseline, clients have rated their quality of life, on average, from 6.2 to 7.2. At postnatal follow-up, that rating was an average of around 8 or higher.

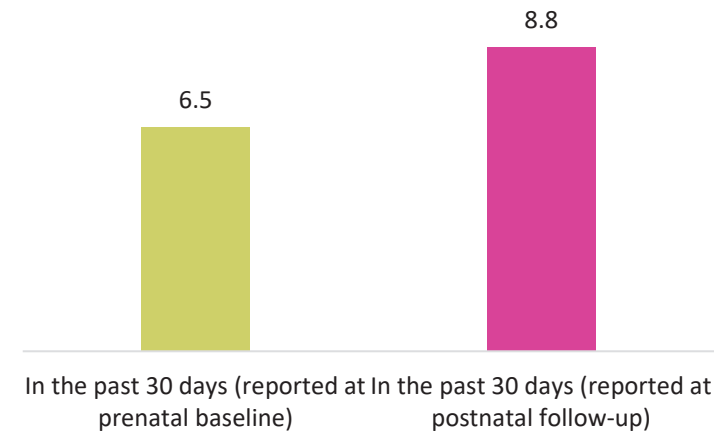
FIGURE IV.G.2. CLIENTS IN THE FOLLOW-UP SAMPLE RANKING THEIR QUALITY OF LIFE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023



### Emotional Support

In the past 30 days at baseline, clients reported they could count on an average of 6.5 people for emotional support. In the past 30 days at postnatal follow-up, clients reported that they could count on an average of 8.8 people for emotional support, which was not a significant increase (see Figure IV.G.3).

FIGURE IV.G.3. AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR EMOTIONAL SUPPORT AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 35)<sup>87\*</sup>



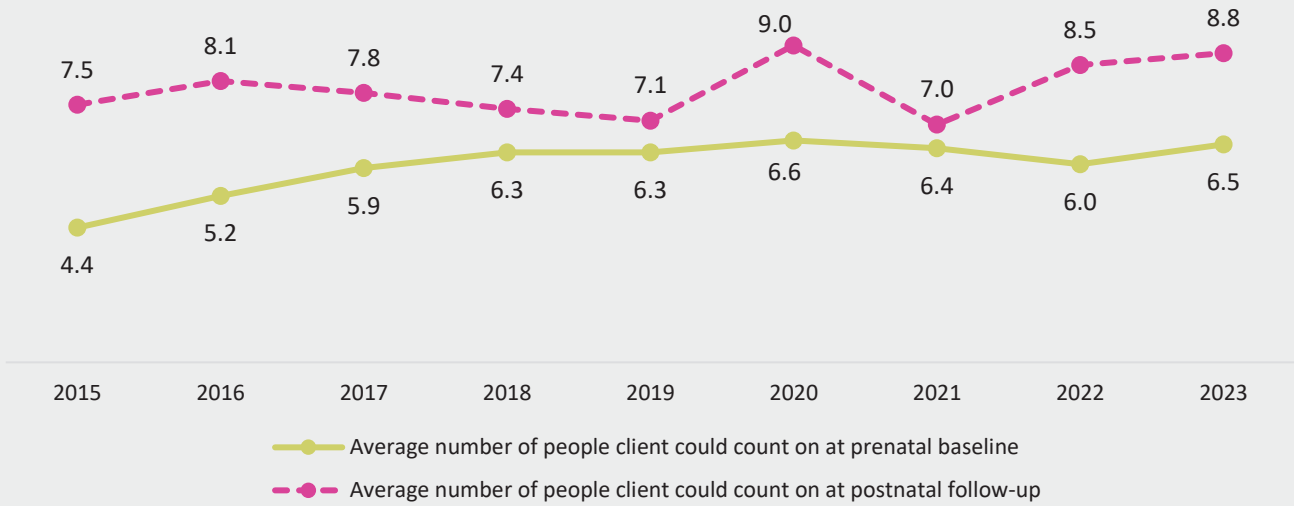
\*p < .10.

<sup>87</sup>Two clients responded that they didn't know how many people they could count on for emotional support.

### Trends in the Average Number of People Clients Can Count on for Emotional Support in the Past 30 Days at Prenatal Baseline and Postnatal Follow-up

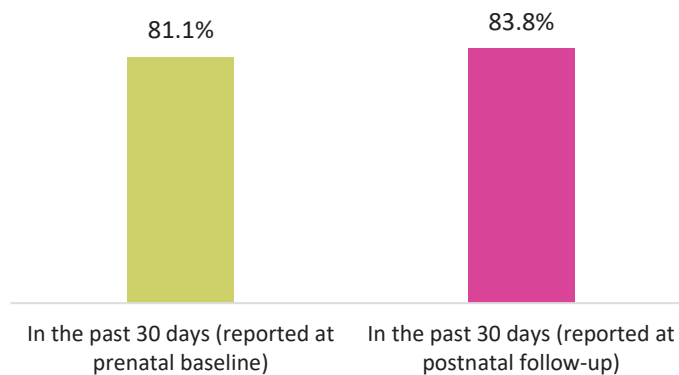
The average number of people clients reported they could count on for emotional support in the past 30 days appears to have steadily increased over time. In 2015, clients reported at baseline that they could count on 4.4 people with increases in the averages until 2020 (6.6 people). At follow-up, the average number of people clients could count on for emotional support decreased from 2016 to 2019, but increased in 2020 to a high of 9.0.

FIGURE IV.G.4. CLIENTS IN THE FOLLOW-UP SAMPLE ON THE AVERAGE NUMBER OF PEOPLE CLIENTS CAN COUNT ON FOR EMOTIONAL SUPPORT IN THE PAST 30 DAYS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP, REPORT YEARS 2015-2023



The majority of clients were satisfied with the level of emotional support they received from others in the past 30 days. About 81% of clients at prenatal baseline and 83.8% of clients at postnatal follow-up reported they were extremely or fairly satisfied with the level of emotional support they received from others (see Figure IV.G.5).

FIGURE IV.G.5. FAIRLY/EXTREMELY SATISFIED WITH THE OVERALL LEVEL OF SUPPORT IN LIFE (N = 37)



## Summary

Clients reported a significantly greater quality of life at postnatal follow-up compared to prenatal baseline. Compared to baseline, clients reported a significantly more people they could count on for emotional support at postnatal follow-up. Almost 84% of KY-Moms MATR clients at postnatal follow-up were satisfied with the level of support they received from others.

## H. Multidimensional Recovery Status

*This subsection examines multidimensional recovery status for clients who had not had their baby before entering KY-Moms MAT client from the period before becoming pregnant to postnatal follow-up (n = 37).*

Recovery goes beyond relapse or return to occasional drug or alcohol use. Recovery from substance use disorders can be defined as “a process of change through which an individual achieves abstinence and improved health, wellness and quality of life: (p. 5).”<sup>88</sup> The SAMHSA definition of recovery is similarly worded and encompasses health (including but not limited to abstinence from alcohol and drugs), having a stable and safe home, a sense of purpose through meaningful daily activities, and a sense of community.<sup>89</sup> In other words, recovery encompasses multiple dimensions of individuals’ lives and functioning. The multidimensional recovery measure uses items from the baseline and follow-up surveys to classify individuals who have all positive dimensions of recovery.

TABLE IV.H.1. COMPONENTS OF MULTIDIMENSIONAL RECOVERY STATUS

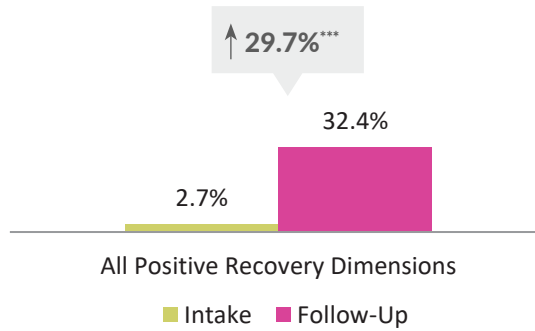
<b>INDICATOR</b>	<b>POSITIVE RECOVERY DIMENSIONS</b>	<b>NEGATIVE RECOVERY DIMENSIONS</b>
Illicit drug use.....	No illicit drug use	Any Illicit drug use
Employment.....	Employed at least part-time or in school	Unemployed (not on disability, not going to school, not a caregiver)
Homelessness.....	No reported homelessness	Reported homelessness
Criminal Justice System Involvement.....	No arrest or incarceration	Any arrest or incarceration
Depression and/or anxiety.....	No depression or anxiety	Depression or anxiety
Partner violence.....	No partner violence	Any partner violence
Overall health	Fair to excellent overall health	Poor overall health
Recovery support.....	Had at least one person she could count on for recovery support	Had no one she could count on for recovery support
Quality of life.....	Mid to high-level quality of life	Low-level quality of life

<sup>88</sup> Center on Substance Abuse Treatment. (2007). *National summit on recovery: conference report* (DHHS Publication No. SMA 07-4276). Rockville, MD: Substance Abuse and Mental Health Services Administration.

<sup>89</sup> Laudet, A. (2016). *Measuring recovery from substance use disorders*. Workshop presentation at National Academies of Sciences, Engineering, and Medicine (February 24, 2016). Retrieved from [https://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse\\_171025.pdf](https://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse_171025.pdf)

At prenatal baseline, 2.7% of clients were classified as having all positive dimensions of recovery in the 6 months before pregnancy (see Figure IV.H.1). At postnatal follow-up, 32.4% of clients were classified as all positive dimensions of recovery at follow-up, which was a significant increase of 29.7%.

FIGURE IV.H.1. MULTIDIMENSIONAL RECOVERY AT BASELINE AND FOLLOW-UP (N = 37)



\*\*\*p < .01.

Table IV.H.2 presents the frequency of clients who reported each of the specific components of the multidimensional recovery measure at intake and follow-up. At intake, the positive factors with the lowest percent of individuals indicated were for not meeting study criteria for depression and/or anxiety and not reporting illicit drug use. At follow-up, the factors with the lowest percent of individuals reporting the positive dimensions of recovery were for not meeting study criteria for depression and/or anxiety, no illicit drug use, and usual employment was employed full-time or part-time in the past 6 months.

TABLE IV.H.2. PERCENT OF CLIENTS WITH SPECIFIC POSITIVE DIMENSIONS OF RECOVERY AT BASELINE AND POSTNATAL FOLLOW-UP (N = 37)

Factor	Baseline %Yes	Follow-up %Yes
Reported no illicit drug use in the past 6 months.....	27.0%	81.1%
Usual employment was employed full-time or part-time in the past 6 months (or unemployed because a student, retired, home caregiver, on disability).....	70.3%	83.8%
Reported no homelessness (or living in recovery center at follow-up).....	89.2%	91.9%
Reported not being arrested and/or incarcerated in the past 6 months.....	73.0%	94.6%
Did not meet study criteria for depression and/or generalized anxiety in the past 6 months.....	40.5%	75.7%
Reported no partner violence in the past 6 months .....	62.2%	83.8%
Self-rating of overall health in the past 6 months was fair, good, very good, or excellent .....	100.0%	100.0%
Reported having someone they could count on for recovery support .....	100.0%	97.3%
Reported a quality-of-life rating in the mid or higher range (rating of 5 or higher) .....	94.6%	100.0%

## Summary

An analysis of multidimensional recovery that takes into account illicit drug use, employment, homelessness, criminal justice system involvement, depression and/or anxiety, partner violence, overall health, recovery support, and quality of life was computed for clients at prenatal baseline and postnatal follow-up. Less than 3% of clients were classified as having all positive dimensions of recovery at baseline, whereas 32.4% were classified as having all positive dimensions at follow-up.



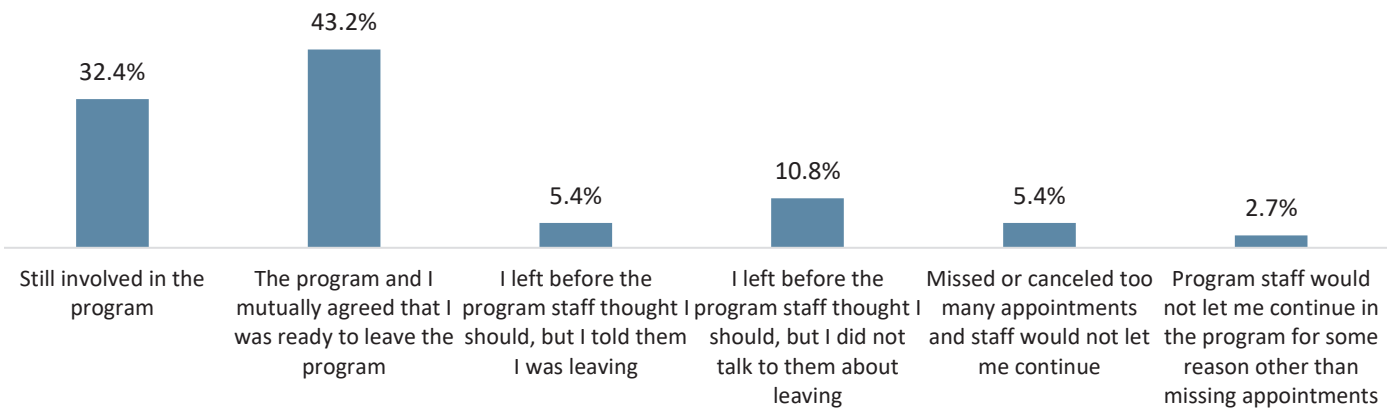
## Section V. Client Experience with KY-Moms MATR Case Management

This section describes the experience of the KY-Moms MATR case management program assessed by clients who entered the KY-Moms MATR program before the birth of their baby and who completed a postnatal follow-up (n = 37): (1) manner in which the client left the program, and (2) satisfaction with KY-Moms MATR case management.

### Manner in Which the Client Left the Program

Clients reported they were involved in the KY-Moms MATR program an average of 6.7 months (a range of 1 to 24 months). About 32% of clients were still involved in the program at follow-up (see Figure V.1). Close to 43% of clients reported that the program and the client mutually agreed that the client was ready to leave the program. About 16% of the clients reported they left before the program staff thought they should, but told they staff they were leaving (5.4%), or that they left before the program staff thought they should, but did not talk to the staff about leaving (10.8%). One client reported that program staff would not let them continue in the program for some reason other than missing appointments and 5.4% reported leaving the KY-Moms program because of missing or canceling too many appointments.

FIGURE V.1. HOW DID THE CLIENT LEAVE THE KY-MOMS PROGRAM (N = 37)



### KY-Moms MATR Case Management Program Satisfaction and Experiences

Clients were asked questions about their satisfaction with the KY-Moms MATR case management services. The statements presented in Figure V.2 had different response options, with ratings ranging from 0 to 10. The higher values corresponded to the more positive responses and the lower values corresponded to the negative responses.

Figure V.2 shows the percent of clients who gave a rating between 8 and 10 for each item. The majority of clients reported that the program approach and method were a good fit for them (89.2%) and 86.5% reported they felt the program staff cared about them and their treatment progress and that the program staff believed in them and that the treatment would work. About 84% of women agreed that they felt completely heard by their case manager when they told

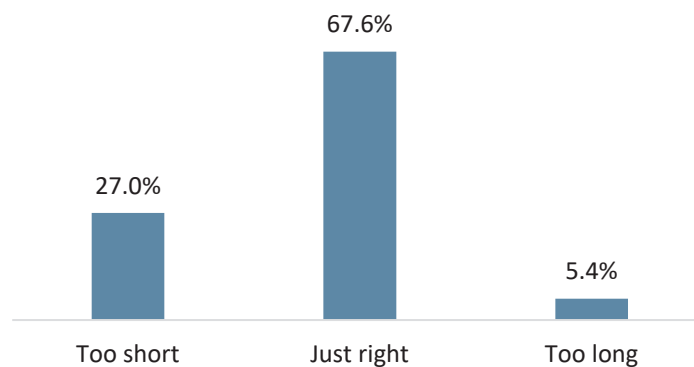
them about personal things, they had a lot of input into treatment goals, plans, and how they were progressing over time, and they had a very strong connection with a counselor or staff person during treatment. Over three-quarters of clients (78.4%) reported that they worked on things that were most important to them and their expectations and hopes for the program were perfectly met. Seventy-three percent of clients reported that they discussed everything with their case manager and held nothing back.

FIGURE V.2. RATINGS OF 8, 9, or 10 FOR PROGRAM EXPERIENCES WITH KY-MOMS (N = 37)<sup>90</sup>



Clients were asked about their satisfaction with the length of the KY-Moms MATR program. Over two-thirds of clients (67.6%) reported that the length of the program was just right (see Figure V.3). Twenty-seven percent of clients reported that the length of the KY-Moms program was too short and 5.4% of clients reported the program was too long.

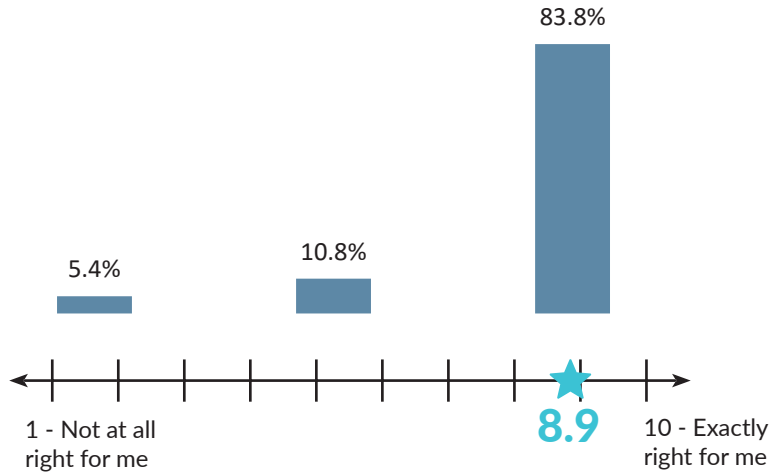
FIGURE V.3. CLIENTS' EVALUATION OF THE LENGTH OF THE KY-MOMS MATR PROGRAM (N = 37)



<sup>90</sup>One client declined to answer if their case manager believed in them and believed the program would work for them.

On a scale of 0 = “not at all right for me” to 10 = “exactly right for me”, clients rated their overall KY-Moms MATR experience, on average, as 8.9 (see Figure V.4). Overall, 83.8% gave a rating between 8 and 10, with 59.5% of clients giving the highest possible rating, 10.

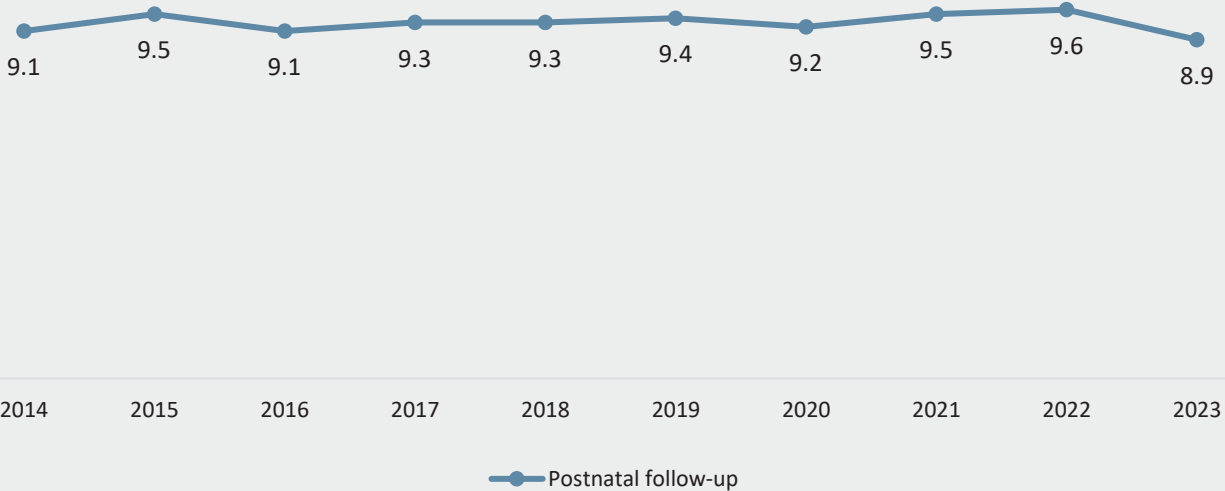
FIGURE V.4. RATING OF EXPERIENCE WITH KY-MOMS (N = 37)



### Trends in Ratings of Experience with KY-Moms MATR at Postnatal Follow-up

KY-Moms MATR clients have consistently rated their experience with the program as an average of 9.1 or higher over the past 10 years, indicating that they are very satisfied with the KY-Moms MATR program. In 2023, however, the average experience rating decreased to 8.9.

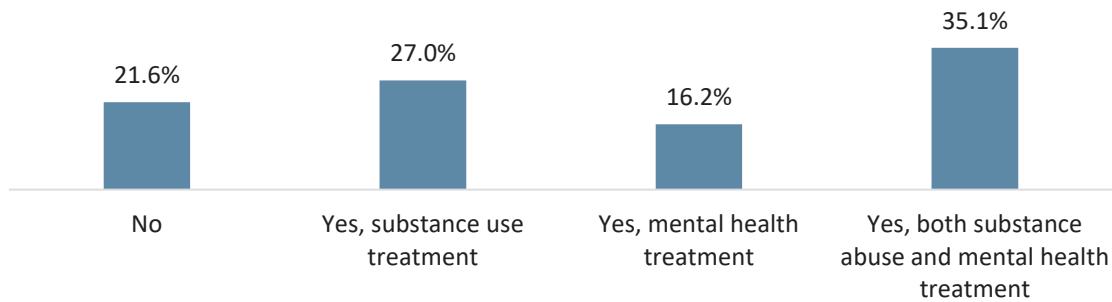
FIGURE V.5. AVERAGE SATISFACTION RATING OF THE KY-MOMS MATR PROGRAM AT POSTNATAL FOLLOW-UP, REPORT YEARS 2014-2023



Overall, the majority of clients (94.6%) reported that the KY-Moms program worked pretty well or extremely well for them. In addition, the majority of clients (89.2%) in the postnatal follow-up sample indicated they would refer a friend or family member to their treatment provider. Of the clients who reported they would refer a close friend or family member to the program (n = 33), 63.6% reported they would warn their friend or family member about certain things or tell them who to work with or who to avoid.

Less than one-quarter of clients (21.6%) reported they did not receive either substance abuse or mental health treatment while in the KY-Moms MATR program (see Figure V.6). Overall, 27.0% of clients reported they went to substance abuse treatment, 16.2% went to mental health treatment, and 35.1% went to both substance use and mental health treatment.

FIGURE V.6. SUBSTANCE ABUSE TREATMENT OR MENTAL HEALTH COUNSELING WHILE IN KY-MOMS (N = 37)



Less than one-quarter (21.6%) reported they had been in other treatment programs since ending their participation with the KY-Moms MATR program. Of those clients (n = 8), clients reported being involved in an average of 1.3 other treatment program or episode (range of 1-2).

## Section VI. Conclusion

### AREAS OF SUCCESS

#### Healthy Babies

In spite of significant risk factors (low income, high rates of unemployment, adverse childhood experiences, victimization, substance use, mental health problems and intimate partner abuse) among clients who entered the KY-Moms MATR program before the birth of their baby, mothers had positive birth outcomes. Less than 10% of the babies born to KY-Moms MATR mothers were born premature and babies were an average gestation of 38.3 weeks. About 12% of babies were born with low birth weight (less than 5lbs, 8oz), but babies were an average of 7lbs, 6oz. In addition, babies were born with an average APGAR score of 8.7. None of the clients had babies with birth defects or anomalies (such as Down's syndrome, cleft palates, anencephaly, congenital heart failure, spina bifida, etc.). A little over 9% of babies were taken to NICU and 9.1% of babies were born with a birthing problem such as inflammation of fetal membranes, intolerance to labor, or being placed on a ventilator (not including being admitted to the neonatal intensive care unit).

#### Substance Use

Close to 56% of clients reported illegal drug use in the 30 days before becoming pregnant, compared to 16.6% of non-pregnant women age 15 and older reported using illegal drugs in the past month in a national survey.<sup>91</sup> In the past 30 days at prenatal baseline, none of the clients reported illegal drug use, and in the 30 days before the baby was born, 8.8% of the clients reported illegal drug use. This decrease was sustained to 11.8% in the 30 days before follow-up. Past-6-month illegal drug use decreased significantly at postnatal follow-up (17.6%) compared to the 6 months before clients found out about the pregnancy (79.4%).

A similar pattern was seen with reduction in alcohol use with clients reporting significantly less use while pregnant and in KY-Moms MATR and a sustained decrease after the birth of their baby. About 27% of clients reported using alcohol in the 30 days before pregnancy. Further, 8.8% of KY-Moms MATR clients reported any alcohol use in the past 30 days at prenatal baseline and 2.9% reported alcohol use in the 30 days before the baby was born.

The number of clients who reported smoking tobacco decreased slightly, but not significantly, from the 6 months before pregnancy to the past 6 months at follow-up. The number of clients who reported smoking decreased, but not significantly, from the 30 days before the client became pregnant to the 30 days before the baby was born. However, the average number of cigarettes clients smoked decreased from before the client found out about their pregnancy (18.0) to the past 30 days at prenatal baseline (11.5). The number of cigarettes decreased further in the 30 days before the baby was born (10.4) and in the past 30 days at follow-up (8.6).

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<sup>91</sup> Substance Abuse and Mental Health Services Administration. Reports and Detailed Tables from the 2018 National Survey on Drug Use and Health (NSDUH). Retrieved from <https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHDetailedTabs2018R2/NSDUHDefTabsSect1pe2018.htm> on September 30, 2019.

## Mental Health

Clients' mental health also showed significant improvements. Specifically, there were significant reductions in the number of women who met study criteria for depression and for anxiety in the six months since the birth of the baby. There was also a reduction in the average number of symptoms clients reported from baseline to follow-up among the clients who met criteria for depression or for anxiety at baseline.

## Victimization and Trauma

Reported incidences of any intimate partner abuse, such as psychological abuse and coercive control, decreased significantly from the 6 months before clients found out they were pregnant (37.8%) to the past 6 months at postnatal follow-up (16.2%). Significantly fewer clients who completed a follow-up reported having been the victim of a crime, harmed by someone else, or made to feel unsafe by someone at postnatal follow-up (32.4%) compared to 10.8% in the 6 months before pregnancy. In addition, slightly more clients screened positive for PTSD in the 6 months since the baby was born at postnatal follow-up (38.2%) compared to the six months before pregnancy (32.4%) though the increase was not significant.

## Multidimensional Recovery Status

The multidimensional recovery status takes into account illicit drug use, employment, homelessness, criminal justice system involvement, depression and/or anxiety, partner violence, overall health, recovery support, and quality of life, and was computed for clients at prenatal baseline and postnatal follow-up. At prenatal baseline, 2.7% of clients were classified as having all positive dimensions of recovery in the 6 months before pregnancy. At postnatal follow-up, 32.4% of clients were classified as all positive dimensions of recovery at follow-up, which was a significant increase of 29.7%.

## Other Areas of Improvement

In addition to the improvement in targeted risk factors, there were improvements in other areas of the mothers' lives after becoming involved in the KY-Moms MATR program including significantly fewer average days in the past 30 days their mental health (7.8 vs. 5.4 days) was not good at follow-up compared to baseline. Women also reported improved economic conditions with significantly fewer clients reporting they had difficulty meeting basic living needs as a result of financial problems in the past 6 months at follow-up (24.3%) compared to the past 6 months before pregnancy at prenatal baseline (59.5%).

Clients reported significantly higher quality of life at postnatal follow-up compared to prenatal baseline. Clients' level of satisfaction with the KY-Moms MATR was high. Specifically, the majority indicated that the program extremely well for them and, on a scale of 0 = "not at all right for me" to 10 = "exactly right for me", clients rated their overall KY-Moms MATR experience, on average, as 8.9. Additionally, the vast majority of clients reported that the program approach and method were a good fit for them, they felt the program staff cared about them and their treatment progress, and that the program staff believed in them and that the treatment would work. In addition, the majority of clients (89.2%) indicated they would

recommend the KY-Moms MATR program to a friend and reported that the KY-Moms program worked pretty well or extremely well for them (94.6%). Less than one-quarter (21.6%) reported they had been in other treatment programs since ending their participation with the KY-Moms MATR program.

## Areas of Concern

Despite significant improvements in many areas of clients' lives, there was a minority of new mothers who had targeted risks such as illicit drug use, tobacco use, mental health problems and PTSD, adverse childhood experiences, intimate partner abuse, financial issues, and multidimensional recovery status at follow-up.

### Illegal Drug Use

Almost 18% of clients reported still using illegal drugs in the 6 months since having the baby. Of those clients who reported illegal drug use at follow-up (n = 6), 33.3% reported using marijuana, 33.3% reported using stimulants or cocaine, 16.7% reported opioid use, and 16.7% report other illicit drugs such as inhalants, hallucinogens, or synthetic drugs). Parental drug use may interfere with the ability to care for a child and provide a safe environment. From the physical and mental impairments resulting from the drugs themselves, prioritizing money spent on drugs instead of other household needs, or time spent looking for drugs, children's needs may go unmet by a drug using parent.<sup>92</sup> Furthermore, a household with a substance using parent may be unsafe if illegal drugs or paraphernalia are accessible to children.<sup>93</sup>

### Tobacco Use

The majority of clients smoked during pregnancy (61.8% in the past 30 days at prenatal baseline and 55.9% in the 30 days before the baby was born), both of which are considerably higher than the 15.3% of pregnant women in Kentucky who reported smoking cigarettes or the 8.7% of women in the U.S. Additionally, a high percentage of KY Moms-MATR mothers reported smoking tobacco in the 30 days before pregnancy (70.6%), and in the 30 days before postnatal follow-up (58.8%). These percentages were considerably higher than either the national estimate of 17.2% of non-pregnant women aged 15-44 who are self-reported smokers or the state estimate of women who report smoking (28.8%). Several studies have shown that childhood exposure to cigarette smoke contributes to the incidence of sudden infant death syndrome,<sup>94, 95</sup> respiratory infections,<sup>96</sup> middle ear disease and adenotonsillectomy,<sup>97</sup> poor lung

<sup>92</sup> Child Welfare Information Gateway. (2003). *Substance Abuse and Child Maltreatment*. U.S. Department for Health and Human Services, Washington, DC. Retrieved from [https://www.childwelfare.gov/pubPDFs/subabuse\\_childmal.pdf](https://www.childwelfare.gov/pubPDFs/subabuse_childmal.pdf)

<sup>93</sup> Smith, V. & Wilson, C., AAP Committee on Substance Use and Prevention. (2016) Families affected by parental substance use. *Pediatrics*, 138(2), e20161575.

<sup>94</sup> Anderson, H. R., & Cook, D. G. (1997). Passive smoking and sudden infant death syndrome: review of the epidemiological evidence. *Thorax*, 52(11), 1003-1009.

<sup>95</sup> Zhang, K., & Wang, X. (2013). Maternal smoking and increased risk of sudden infant death syndrome: a meta-analysis. *Legal Medicine*, 15(3), 115-121.

<sup>96</sup> Strachan, D. P., & Cook, D. G. (1997). Health effects of passive smoking. 1. Parental smoking and lower respiratory illness in infancy and early childhood. *Thorax*, 52(10), 905-914.

<sup>97</sup> Strachan, D. P., & Cook, D. G. (1998). Health effects of passive smoking. 4. Parental smoking, middle ear disease and adenotonsillectomy in children. *Thorax*, 53(1), 50-56.

function and asthma,<sup>98, 99, 100</sup> neurodevelopmental and behavioral problems,<sup>101</sup> and childhood cancer.<sup>102, 103, 104</sup> As a result, there may be a need to increase postpartum support services for smoking cessation in the KY-Moms MATR program.

In addition, in the 6 months since the baby was born, 30.3% of clients reported e-cigarette use, which was an increase (though not significant) compared to the 6 months before pregnancy (18.2%). While many individuals may think that e-cigarette exposure to a child is less harmful than exposure to tobacco cigarettes, children exposed to the liquid nicotine were over 5 times more likely to be admitted to hospital and over 2.5 times greater odds of having a serious medical outcomes than children who were exposed to tobacco cigarettes.<sup>105</sup> In addition, even after the implementation of the Child Nicotine Poisoning Prevention Act in 2016, there is an increased risk of children being exposed to liquid nicotine poisoning.<sup>106</sup>

## Mental Health, Partner Abuse, and PTSD

About 24.3% of KY-Moms MATR clients reported meeting study criteria for depression and/or anxiety in the 6 months after the baby was born. Caring for a newborn and the typical new mother sleep deprivation may be especially difficult for women experiencing trauma, depression, and/or anxiety. Prior trauma and depression/anxiety may increase risk for, or exacerbate, postpartum depression. Postpartum depression is a common problem affecting millions of new mothers and though it usually presents itself around 4 weeks postpartum,<sup>107</sup> it can continue for as long as 14 months.<sup>108</sup> While it is mostly caused by the swing of hormones that occur after birth, a study by the Centers for Disease Control & Prevention found that postpartum depression was significantly associated with tobacco use in the last trimester,

<sup>98</sup> Strachan, D. P., & Cook, D. G. (1998). Health effects of passive smoking. 9. Parental smoking and spirometric indices in children. *Thorax*, 53(1), 884-893.

<sup>99</sup> Von Mutius, E. (2002). Environmental factors influencing the development and progression of pediatric asthma. *Journal of Allergy and Immunology*, 109(6), 525-532.

<sup>100</sup> Burke, H., Leonardi-Bee, J., Hashim, A., Pine-Abata, H., Chen, Y., Cook, D. G., Britton, J., & McKeever, T. M. (2012). Prenatal and passive smoke exposure and incidence of asthma and wheeze: systematic review and meta-analysis. *Pediatrics*, 129(4), 735-744.

<sup>101</sup> Eskenazi, B., & Castorina, R. (1999). Association of prenatal maternal or postnatal child environmental tobacco smoke exposure and neurodevelopmental and behavioral problems in children. *Environmental Health Perspectives*, 107(12), 991-1000.

<sup>102</sup> John, E., Savitz, D., & Sandler, D. (1991). Prenatal exposure to parents' smoking and childhood cancer. *American Journal of Epidemiology*, 133(2), 123-132.

<sup>103</sup> Vasco, AJ, & Vainio, H. From in utero and childhood exposure to parental smoking to childhood cancer: a possible link and the need for action. *Human and Experimental Toxicology*, 18, 192-201.

<sup>104</sup> Hofhuis, W., Jongste, JC, & Merkus, P. (2003). Adverse health effects of prenatal and postnatal tobacco smoke exposure on children. *Archives of Disease in Childhood*, 88, 1086-1090.

<sup>105</sup> Govindarajan, P., Spiller, H., Casavant, M., Chounthirath, T., & Smith, G. (2018). E-cigarette and liquid nicotine exposures among young children. *Pediatrics*, 141(5) e20173361; DOI: 10.1542/peds.2017-3361.

<sup>106</sup> Chang, J., Wang, B., Chang, C., & Ambrose, B. (2019). National estimates of poisoning events related to liquid nicotine in young children treated in US hospital emergency departments, 2013-2017. *Injury Epidemiology*, 59(5), 742-745.

<sup>107</sup> American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. Arlington, VA: American Psychiatric Publishing.

<sup>108</sup> Wolkind S, Zajicek E, & Ghodsian J. (1990). Continuities in maternal depression. *International Journal of Family Psychiatry*, 1, 167-182.



intimate partner abuse, and financial stress (including the use of Medicaid).<sup>109, 110</sup> In addition, studies have found that marital status (being single), having a history of depression or anxiety as well as experiencing depression or anxiety during pregnancy can be risk factors for experiencing postpartum depression.<sup>111, 112</sup> For women who have experienced mental health problems, targeted or adapted mental health services may be critical to preventing postpartum depression or reducing its severity.

At baseline, 8.1% of clients reported any form of intimate partner abuse in the 6 months before they found out they were pregnant. At follow-up, 18.9% of KY-Moms MATR clients reported experiencing intimate partner abuse in the 30 days before their baby was born and 16.2% reported experiencing intimate partner abuse in the past 6 months, which suggests that the intimate partner abuse is an ongoing concern through the pregnancy and after the baby is born. Partner violence and trauma can contribute to mental health symptoms and can interfere with the parenting relationship.<sup>113</sup> Infants can experience symptoms of trauma (eating problems, sleep disturbances, emotional developmental problems, poor health and irritability) as a result of witnessing or hearing intimate partner abuse.<sup>114</sup> Thus, support and resources for trauma and partner violence is an issue that should be targeted during the pregnancy and postnatal period.

Over one-third of clients (38.2%) had PTSD scores that met a positive screen for PTSD in the 6 months since the baby was born. Other research found about 1 in 10 individuals with exposure to traumatic events developed PTSD at some point, with the highest risk of PTSD associated with assaultive violence (20.9%).<sup>115</sup> Individuals with PTSD have a high rate of alcohol/drug abuse or dependence in their lifetime<sup>116, 117</sup> and the overall prevalence of PTSD is high among individuals with substance use disorders.<sup>118, 119</sup>

<sup>109</sup> Centers for Disease Control and Prevention (2008). Prevalence of self-reported postpartum depressive symptoms --- 17 states, 2004–2005. *MMWR*, 57(14), 361-366.

<sup>110</sup> Segre, L. S., O'Hara, M. W., Arndt, S., & Stuart, S. (2007). The prevalence of postpartum depression. *Social Psychiatry and Psychiatric Epidemiology*, 42(4), 316-321.

<sup>111</sup> O'Hara, M. & McCabe, J. (2013). Postpartum depression: current status and future directions. *Annual Review of Clinical Psychology*, 9, 379-407.

<sup>112</sup> Robertson, E., Grace, S., Wallington, T., & Stewart, D. E. (2004). Antenatal risk factors for postpartum depression: a synthesis of recent literature. *General Hospital Psychiatry*, 26(4), 289-295.

<sup>113</sup> Dubowitz, H., Black, M. M., Kerr, M. A., Hussey, J. M., Morrel, T. M., Everson, M. D., & Starr, R. H. (2001). Type and timing of mothers' victimization: Effects on mothers and children. *Pediatrics*, 107, 728-735.

<sup>114</sup> Bogat, G. A., DeJonghe, E., Levendosky, A. A., Davidson, W. S., & von Eye, A. (2006). Trauma symptoms among infants exposed to intimate partner abuse. *Child Abuse & Neglect*, 30(2), 109-125.

<sup>115</sup> Breslau, N., Kessler, R., Chilcoat, H., Schultz, L., Davis, G., & Andreski, P. (1998). Trauma and posttraumatic stress disorder in the community. The 1996 Detroit Area Survey of Trauma. *Archives of General Psychiatry*, 55(7), 626-632.

<sup>116</sup> Kessler, R., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry*, 52, 1048-1060.

<sup>117</sup> Regier, D., Farmer, M., Rae, D., Locke, B., Keith, S., & Judd, L. (1990). Comorbidity of mental disorders with alcohol and other drug abuse: Results from the Epidemiologic Catchment Area (ECA) Study. *Journal of the American Medical Association*, 264, 2511-2518.

<sup>118</sup> Cottler, L., Compton, W., Mager, D., Spitznagel, E., & Janca, A. (1992). Posttraumatic stress disorder among substance users from the general population. *American Journal of Psychiatry*, 149, 664-670.

<sup>119</sup> Najavits, L., Runkel, R., Neuner, C., Frank, A., Thase, M., Crits-Christoph, P., & Blaine, J. (2003). Rates and symptoms of PTSD among cocaine-dependent patients. *Journal of Studies on Alcohol*, 64, 601-606.

## Adverse Childhood Experiences

At baseline, 92.5% of clients reported at least one adverse childhood experience such as neglect or abuse before the age of 18. The average number of ACE in the sample of KY Moms-MATR clients was 4.4, with 55.0% of women reporting 4 or more ACE. Of particular importance, prior research shows the risk of alcohol or drug use increases as the number of adverse childhood experiences increases.<sup>120, 121, 122, 123</sup> Higher ACE scores are associated with initiating alcohol abuse and smoking in adolescence.<sup>124, 125</sup> Additionally, experiencing more types of childhood abuse is associated with greater likelihood of experiencing an unintended first pregnancy among women.<sup>126</sup> Poor self-rated health as well as health problems such as ischemic heart disease, cancer, and liver disease were more prevalent in those who reported a higher number of ACEs.<sup>127</sup> Higher ACE scores have been linked to having a higher number of health risk factors for leading causes of death in adults and a higher rate of mortality in women.<sup>128</sup>

## Financial Issues

With 51.4% of KY-Moms MATR women reporting being currently unemployed and 24.3% of women reporting difficulty meeting basic needs because of financial reasons in the past 6 months at follow-up, economic hardship is a continuing problem for many of these new mothers. As mentioned previously, financial stress has been linked to the risk for developing postpartum depression (and vice versa). Research suggests that financial stress has an adverse effect on parents' emotions and behaviors, which, in turn, may impact their parenting.<sup>129</sup> In addition, children born to parents with limited economic resources have less to invest in the development of the child because they must invest a larger proportion of their resources into basic living needs (e.g., food, shelter, utilities, medical needs).<sup>130</sup> Therefore, providing referrals and support to help new mothers with financial difficulties may improve basic living situations

<sup>120</sup> Anda, R., Felitti, V., Walker, J., Whitfield, C., Bremner, J., Perry, B., Dube, S., & Giles, W. (2006). The enduring effects of abuse and related adverse experiences in childhood: a convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatry and Clinical Neurosciences*, 56(3), 174–86.

<sup>121</sup> Dube, S., Felitti, V., Dong, M., Giles, W., & Anda, R. (2003b). The impact of adverse childhood experiences on health problems: evidence from four birth cohorts dating back to 1900. *Preventative Medicine*, 37, 268-277.

<sup>122</sup> Dube, S., Felitti, V., Dong, M., Chapman, D., Giles, W., & Anda, R. (2003a). Childhood abuse neglect and household dysfunction and the risk of illicit drug use: The Adverse Childhood Experiences Study. *Pediatrics*, 111, 564–572.

<sup>123</sup> Felitti, V., Anda, R., Nordenberg, D., Williamson, D., Spitz, A., Edwards, V., & Marks, J. (1998). The relationship of adult health status to childhood abuse & household dysfunction. *American Journal of Preventative Medicine*, 14(4), 245-258.

<sup>124</sup> Anda, R., Croft, J., Felitti, V., Nordenberg, D., Giles, W., Williamson, D., & Giovino, G. (1999). Adverse childhood experiences and smoking during adolescence and adulthood. *Journal of the American Medical Association*, 282, 1652–1658.

<sup>125</sup> Dube, S., Miller, J., Brown, D., Giles, W., Felitti, V., Dong, M., & Anda, R. (2006). Adverse childhood experiences and the association with ever using alcohol and initiating alcohol use during adolescence. *Journal of Adolescent Health*, 38(4), 444.e1-10.

<sup>126</sup> Dietz, P., Spitz, A., Anda, R., Williamson, D., McMahon, P., Santelli, J., Nordenberg, D., Felitti, V., & Kendrick, J. (1999). Unintended pregnancy among adult women exposed to abuse or household dysfunction during their childhood. *Journal of the American Medical Association*, 282, 1359–1364.

<sup>127</sup> Felitti, V., Anda, R., Nordenberg, D., Williamson, D., Spitz, A., Edwards, V., & Marks, J. (1998). The relationship of adult health status to childhood abuse & household dysfunction. *American Journal of Preventative Medicine*, 14(4), 245-258.

<sup>128</sup> Chen, E., Turiano, N., Mroczek, D., & Miller, G. (2016). Association of reports of childhood abuse and all-cause mortality rates in women. *Journal of the American Medical Association*, 73(9), 920-927.

<sup>129</sup> Bogat, G. A., DeJonghe, E., Levendosky, A. A., Davidson, W. S., & von Eye, A. (2006). Trauma symptoms among infants exposed to intimate partner abuse. *Child Abuse & Neglect*, 30(2), 109-125.

<sup>130</sup> Conger, R. D., & Conger, K. J. (2008). Understanding the processes through which economic hardship influences families and children. *Handbook of Families and Poverty*, 64-81.

for many mothers and promote continued long-term positive results for both mother and infant.

## Multidimensional Recovery Status

Even though there were significantly more clients who had all positive dimensions of recovery at follow-up when compared to baseline, over two-thirds of KY-Moms MATR clients were still classified as not having all eight positive dimensions of recovery.

## Program Issues

While clients were largely satisfied with their program experience, over one-quarter of clients reported that there were things they did not fully discuss with their counselor/program staff. In addition, 56.8% of clients reported that they would warn their friend or family member about certain things or tell them who to work with or who to avoid. Twenty-seven percent of clients reported that the length of the program was too short and 5.4% of clients reported that the length of the program was too long. Even though 59.5% of clients met study criteria for either depression or anxiety (or both) and 85.3% of clients reported using illegal drugs and/or alcohol in the 6 months before pregnancy, close to 22% of clients reported they did not receive either substance abuse or mental health treatment while in the KY-Moms MATR program.

## Trend Report Summary

Trend reports provided throughout this report reflect the importance of annual data collection. These data trends can show consistency, improvement, or highlight areas that may need further attention in the KY-Moms MATR program. Trend analysis of substance use appears to show an overall steady increase in clients reporting past-6-month illegal drug use at prenatal baseline. While the percent of clients reporting illegal drug use decreased significantly each year at follow-up compared to baseline, in 2018 and 2019 the percent of clients reporting illegal drug use at follow-up increased slightly. In 2023, the percent of clients reporting past-6-month illegal drug use at follow-up increased again.

In addition, a nine-year trend analysis shows that rates of depression and/or anxiety has increased overall at prenatal baseline but have appeared to peak in 2018 before decreasing in 2021. Rates of depression and/or anxiety at follow-up have fluctuated at postnatal follow-up in the past; however, in 2021, the percent of women meeting criteria for depression and/or anxiety has higher compared to previous years. In 2022, however, the number of women who met study criteria for depression and/or anxiety decreased to 15.4% at postnatal which could be a result of the small sample size during this reporting year. Further, with trend analysis, findings show that the number of clients who have reported any partner abuse at prenatal baseline had been fairly consistent from 2015 to 2019, but decreased in 2022 and increased again in 2023.

The percent of clients reporting difficulty meeting basic household needs at follow-up increased briefly in 2018, but has decreased since. In addition, overall, the difference between prenatal baseline and postnatal follow-up for unemployment status was stable over the previous seven years. In 2022, however, more clients reported they were not currently employed at prenatal baseline compared to follow-up.

Clients' average ratings of their current health has remained fairly consistent at both baseline and follow-up from 2015 to 2019. However, in 2020, the average current health rating was the same at baseline and follow-up, and in 2022 and 2023, clients' average health rating returned to being higher at follow-up compared to baseline. In addition, for trends in the number of chronic health problems show in 2020 and 2021 there appear to be more clients that reported just one health problem compared to no health problems or multiple health problems. In 2022, nearly two thirds, of clients reported having no chronic health problems, which was considerably more compared to the previous 8 years.<sup>131</sup> The number of clients who have reported chronic pain in the 6 months before pregnancy remained relatively constant at baseline (around one-quarter of clients) until 2022 when very few clients reported chronic pain. In 2023, the number of clients reporting chronic pain increased slightly compared to 2022. In addition, the average number of poor physical health days in the past 30 days clients have reported were consistent at baseline but have appeared to slightly increase at follow-up beginning in 2020. In 2023, however, the number of poor physical health days decreased in 2023. In terms of the average number of days clients reported poor mental health, the difference in the number of days reported at baseline and at follow-up were relatively stable over the years with the exception of 2018 when the number of poor mental health days at follow-up was similar to baseline.

Further, clients' ranking of their quality of life has been consistent through the years for baseline and has appeared to increase slightly at follow-up. Trends also show that the average number of people clients can count on for emotional support has increased over the years at baseline but has fluctuated at follow-up since 2019.

Trend analysis also shows that KY-Moms MATR clients have been consistently and highly satisfied with their experiences in the program, with clients consistently ranking their experience with the program as an average of 9.3 (with 10 being the best possible rating) or higher over the past 10 years.

## Limitations

There are several limitations to this outcome study. For this report year compared to previous years, a considerably smaller number of clients completed a follow-up and a baseline because of the COVID-19 pandemic. A smaller number of clients at baseline means that there is a smaller pool of eligible follow-up sample clients to pull from. In addition to fewer clients completing a baseline assessment, the percent of baseline clients not agreeing to be contacted for follow-up has increased. In 2023, 21.3% of the baseline sample did not agree to be contacted which is about four times more than in 2021.

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<sup>131</sup> This could be a result of the small follow-up sample size in the 2022 report year.

TABLE 1. NUMBER AND PERCENT OF CLIENTS CONSENTING TO FOLLOW-UP FOR EACH REPORT YEAR

Report year	Baseline sample size	Clients NOT consenting to follow-up
2018.....	181	16 (10.5%)
2019.....	177	0 (0.0%)
2020.....	158	10 (6.3%)
2021.....	131	7 (5.3%)
2022.....	73	12 (16.4%)
2023.....	80	17 (21.3%)

The sample size is small in this report should be considered when interpreting the findings. To increase the statistical power to detect change in this small sample size, the alpha for statistical tests was increased to  $p < .10$ , instead of  $p < .05$ .

In addition, this outcome study does not involve random assignment to the KY-Moms MATR program. Although it would be ethically and procedurally difficult to conduct a random assignment of pregnant women at risk for substance use to participate in a program such as KY-Moms MATR, random assignment could provide more confidence that the birth outcomes of these mothers are directly due to interventions provided by KY-Moms MATR. Also, this study has no control group and no comparison group in the birth data file with which to compare KY-Moms MATR clients.

Also, the majority of data for this report is self-reported by KY-Moms MATR clients. Recent research has supported findings about the reliability and accuracy of individuals’ reports of their substance use.<sup>132, 133, 134, 135</sup> Skepticism about the validity of self-report data has prompted investigations of the concordance of self-report data on sensitive issues such as substance use with more objective measures, such as urinalysis or blood serum analysis of drugs and alcohol. In most of these studies the concordance or agreement is acceptable or high.<sup>136, 137, 138, 139</sup> In several studies, when there were discrepant results, the majority were self-reported substance

<sup>132</sup> Del Boca, F.K., & Noll, J.A. (2000). Truth or consequences: The validity of self-report data in health services research on addictions. *Addiction*, 95, 347-360.

<sup>133</sup> Harrison, L. D., Martin, S. S., Enev, T., & Harrington, D. (2007). *Comparing drug testing and self-report of drug use among youths and young adults in the general population* (DHHS Publication No. SMA 07-4249, Methodology Series M-7). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

<sup>134</sup> Rutherford, M.J., Cacciola, J.S., Alterman, A.I., McKay, J.R., & Cook, T.G. (2000). Contrasts between admitters and deniers of drug use. *Journal of Substance Abuse Treatment*, 18, 343-348.

<sup>135</sup> Shannon, E.E., Mathias, C.W., Marsh, D.M., Dougherty, D.M., & Liguori, A. (2007). Teenagers do not always lie: Characteristics and correspondence of telephone and in-person reports of adolescent drug use. *Drug and Alcohol Dependence*, 8 (90), 288-291.

<sup>136</sup> Buchan, B. J., Dennis, M. L., Tims, F. M., & Diamond, G. S. (2002). Cannabis use: Consistency and validity of self-report, on-site urine testing and laboratory testing. *Addiction*, 97 (Suppl. 1), 98-108.

<sup>137</sup> Denis, C., Fatséas, M., Beltran, V., Bonnet, C., Picard, S., Combourieu, I., Daulouède, J., & Auriacombe, M. (2012). Validity of the self-reported drug use section of the Addiction Severity and associated factors used under naturalistic conditions. *Substance Use & Misuse*, 47, 356-363.

<sup>138</sup> Rowe, C., Vittinghoff, E., Colfax, G., Coffin, P. O., & Santos, G. M. (2018). Correlates of validity of self-reported methamphetamine use among a sample of dependent adults. *Substance Use & Misuse*, 53 (10), 1742-1755.

<sup>139</sup> Rygaard Hjorthoj, C., Rygaard Hjorthoj, A., & Nordentoft, M. (2012). Validity of Timeline Follow-Back for self-reported use of cannabis and other illicit substances—Systematic review and meta-analysis. *Addictive Behaviors*, 37, 225-233.

use that was not detected with urinalysis or blood serum analysis.<sup>140, 141, 142</sup> Underreporting of substance use occurs less in certain conditions, such as, when assurances of confidentiality can be made and when positive results are not associated with negative consequences.<sup>143</sup> During the informed consent process at the beginning of the KY-Moms MATR follow-up survey, interviewers tell participants that the research team operates independently from the KY-Moms MATR program and individuals' responses will be reported in group format and will not be identifiable at the individual level. These assurances of confidentiality and lack of affiliation with the program staff may minimize individuals' concern about reporting stigmatizing behavior or conditions. In addition, studies of pregnant women and substance use indicate that self-report is as good as urine tests in identifying illegal drug use.<sup>144, 145</sup>

Finally, clients are self-selected and voluntarily agree to participate in KY-Moms MATR case management rather than being randomly or mandated to participate. While these women report high risk factors such as substance use, mental health and interpersonal violence victimization, there is likely a segment of the pregnant population who are heavier drug users, have more severe mental health problems, or are at an even greater risk for safety compared to the women who voluntarily enter KY-Moms MATR. Women with more severe use may be more hesitant to seek or accept treatment because they either do not accept they have a problem, fear having the child removed from their custody, or fear being prosecuted.<sup>146</sup> On the other hand, the fact that this program is voluntary, but recruits and retains high risk women, is a strength of the program. High-risk pregnant mothers in other state-funded substance abuse programs in Kentucky are referred by the courts or the child protective service agency, the Department for Community Based Services. Recruiting and retaining clients who have no external motivating factor poses challenges to service providers who must rely on their interpersonal skills to engage clients in services.

## Conclusion

This study provides support of the efforts by the Kentucky Division of Behavioral Health to address the rising statewide and national problem of drug-exposed pregnancies given the positive changes in the clients' substance-using behavior once interventions were initiated. Overall, pregnant women participating in KY-Moms MATR services significantly improved on all three targeted areas of behavioral health and had birth outcomes similar to the general population of mothers. Further, clients were overwhelmingly positive about the program. They

<sup>140</sup> Babor, T. F., Steinberg, K., Anton, R., & Del Boca, F. (2000). Talk is cheap: Measuring drinking outcomes in clinical trials. *Journal of Studies on Alcohol*, 61, 53-63.

<sup>141</sup> Hilario, E. Y., Griffin, M. L., McHugh, R. K., McDermott, K. A., Connery, H. S., Fitzmaurice, G. M., & Weiss, R. D. (2015). Denial of urinalysis-confirmed opioid use in prescription opioid dependence. *Journal of Substance Abuse Treatment*, 48, 85-90.

<sup>142</sup> Weiss, R. D., Najavits, L. M., Greenfield, S. F., Soto, J. A., Shaw, S. R., & Wyner, D. (1998). Validity of substance use self-reports in dually diagnosed outpatients. *American Journal of Psychiatry*, 155(1), 127-128.

<sup>143</sup> Hilario, E. Y., Griffin, M. L., McHugh, R. K., McDermott, K. A., Connery, H. S., Fitzmaurice, G. M., & Weiss, R. D. (2015). Denial of urinalysis-confirmed opioid use in prescription opioid dependence. *Journal of Substance Abuse Treatment*, 48, 85-90.

<sup>144</sup> Christmas, J., Nislely, J., Dawson, K., Dinsmoor, M., Weber, S., Schnoll, S. (1992). Comparison of questionnaire screening and urine toxicology for detection of pregnancy complicated by substance use. *Obstetrics & Gynecology*, 80, 750-754.

<sup>145</sup> Yonkers, K. A., Howell, H. B., Gotman, N., & Rounsaville, B. J. (2011). Self-report of illicit substance use versus urine toxicology results from at-risk pregnant women. *Journal of Substance Use*, 16(5), 372-380.

<sup>146</sup> Tuchman, E. (2010). Women and addiction: The importance of gender issues in substance abuse research. *Journal of Addictive Diseases*, 29(2), 127-138.

indicated they would refer their friends or others to the program and felt like what they gained from the program helped them have a healthier pregnancy, improved their birth outcomes, and provided valuable information about the risk of substance use during pregnancy.

One of the most important policy questions implicit in this study is about the months and early years of the child's life after the mother has given birth. Mothers who persist in or return to drug-using lifestyles are at great risk for child neglect and other forms of child maltreatment,<sup>147, 148</sup> as well as for setting the stage for their children to use and misuse alcohol and illegal drugs as adolescents and adults.<sup>149, 150</sup> Thus, reducing risk during the early development of the child is in large part contingent on continued services and engagement with recovery and parenting supports. As Kentucky continues to work toward more integrated service provisions under the umbrella of behavioral health, the use of all possible resources will be important both for these mothers and their newborns. The KY-Moms MATR program plays a critical role toward this end.

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<sup>147</sup>McKeganey, N., Barnard, M. & McIntosh, J. (2002) Paying the price for their parent's addiction: meeting the needs of the children of drug using parents. *Drugs: Education, Prevention and Policy*, 9, 233-246.

<sup>148</sup>Barnard, M., & McKeganey, N. (2004). The impact of parental problem drug use on children: what is the problem and what can be done to help? *Addiction*, 99(5), 552-559.

<sup>149</sup>Ireland, T. O., Smith, C. A., & Thornberry, T. P. (2002). Developmental issues in the impact of child maltreatment on later delinquency and drug use. *Criminology*, 40(2), 359-400.

<sup>150</sup>Biederman, J., Faraone, S. V., Monuteaux, M. C., & Feighner, J. A. (2000). Patterns of alcohol and drug use in adolescents can be predicted by parental substance use disorders. *Pediatrics*, 106(4), 792-797.

## Appendix A: Methods

*This evaluation project collects data from pregnant women in Kentucky who are at high risk for substance abuse and participate in KY-Moms MATR case management services. Fourteen community mental health centers participate in the program and collect baseline data on each client entering the KY-Moms MATR case management services program. Data analysis has three main phases: (1) change in behavior and risks over time, using the prenatal baseline information and the postnatal follow-up interviews among clients who gave birth, and (2) description of KY-Moms MATR clients' birth outcome information from the Vital Statistics birth outcome data set.*

### Baseline Assessment

The baseline assessment is an electronic, evidence-based interview developed by the University of Kentucky Center on Drug and Alcohol Research (UK CDAR) in collaboration with KY-Moms MATR program administrators. Baseline information is collected during face-to-face client interviews with case managers when the client enters the program and interview responses are electronically submitted to UK CDAR. At the end of the baseline interview, clients are told about the opportunity to participate in a follow-up telephone interview that is conducted independently from the program by the UK CDAR Behavioral Health Outcome Studies (BHOS) staff approximately 6 months after the birth of their baby. Clients who volunteer to participate in the follow-up interview provide locator information including phone numbers of two relatives or friends who could help UK CDAR locate the client for the postnatal follow-up interview. Overall, a total of 80 baselines were completed between June 2020 and November 2021 with women who had due dates that would result in target months for a follow-up interview between July 2021 and June 2022. Overall, women completed a KY-Moms MATR case management baseline when they were an average of 25 weeks into their pregnancy (minimum = 5 weeks, maximum = 39 weeks).<sup>151</sup>

### Method of Determining Follow-up Sample

Follow-up Assessment. KY-Moms MATR pre-birth clients are eligible for the follow-up assessment if: (1) the client consents to be contacted by UK CDAR BHOS staff, (2) the prenatal baseline is submitted to UK CDAR within 30 days of completion, (3) the client is in the program at least 30 days before the birth of the baby, and (4) adequate contact information is provided for follow-up staff to use to attempt to locate and contact them for the follow-up interview. These individuals are then included in the sample of women to be followed up. The target month for a follow-up assessment is computed by adding 6 months (180 days) to the self-reported due date the client provides at prenatal baseline. In reality, there was an average of 8.0 months between the due date and the date of the follow-up assessment (with a mode of 4 months).

For clients who have given birth to their baby prior to entering the KY-Moms MATR program, eligibility is similar to the pre-birth clients with exception of being in the program at least 30 days. The target month for a post-birth follow-up assessment is computed by adding 6 months

<sup>151</sup> The average number of days between when clients were admitted to the KY-Moms MATR program and when their baseline surveys were completed was 12.4 days, with a minimum of 0 days and a maximum of 165 days.



(180 days) to the completion date of the post-birth baseline.

Follow-up interviews are conducted on the telephone by the UK CDAR BHOS research team and are independent of KY-Moms MATR case management services in order to confidentially examine changes in clients' behavior and risks. In addition, UK CDAR BHOS obtained a Federal Certificate of Confidentiality from the National Institute of Health, which states that BHOS researchers cannot be forced to disclose any information which may identify the client, even by court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings.<sup>152</sup> The follow-up interviews examine program satisfaction, current substance use, intimate partner abuse, physical and mental health status, employment, and recovery supports.

The UK CDAR BHOS team begins their efforts to locate and conduct follow-up interviews with women pulled into the follow-up sample one month before the target month for their follow-up interview and continue their efforts until the women have completed the follow-up interview or for two months after the target month, whichever comes first. For example, if a woman has a targeted follow-up interview in August, the research team will begin their attempts to locate and contact her in July (i.e., one month before the targeted month for her follow-up interview). If the team is unable to locate this woman, they will continue their efforts until the end of October (i.e., two months after her target month for the follow-up interview).

When the follow-up team contacts women, they must determine additional eligibility criteria before completing the pre-birth follow-up interview such that women who are living in a controlled environment (e.g., jail, prison, residential treatment) are not eligible for completing the follow-up interview. As mentioned previously, 80 baseline surveys were completed between June 2020 and November 2021 and had a targeted month for follow-up in FY 2022 (July 2021 – June 2022). Of these clients who were in the targeted window to complete a postnatal follow-up, 17 did not agree to be contacted for the follow-up survey, and 16 clients were ineligible for follow-up staff to begin locating as a result of prenatal baseline data: 4 clients were in the program less than 30 days, 1 client had their baseline assessment submitted more than 30 days after it was completed, and 11 clients had invalid contact data. In addition, at follow-up, 1 client was ineligible for follow-up because they were in a residential treatment facility during the follow-up window (see Table AA.1).

Of the remaining eligible clients (n = 46), 9 clients (19.6%) had a final follow-up status of expired because interviewers were not able to complete a follow-up survey with them during the follow-up period. Overall, UK CDAR staff completed follow-up interviews with 37 clients, representing a follow-up rate of 80.4%.

Completing follow-up surveys was a challenge in this fiscal year for three main reasons. First, although scam-related or robocalls decreased at the beginning of the pandemic they are back up. In fact, so far in 2021, approximately 38.7 billion robocalls were placed which is about 117.9 calls per person.<sup>153</sup> This means people are less likely to answer the phone and more skeptical of providing us with information to confirm their identity. Second, there has been some staff turnover and it is time consuming to hire and train new staff. UK CDAR senior leadership have implemented several key changes and monitor the follow-up rates regularly to

<sup>152</sup> The exception to this is if harm to the client, harm to others, or child abuse is disclosed to the researchers.

<sup>153</sup> <https://robocallindex.com/history/time>

maintain improvements or to initiate changes to overcome challenges. A third reason is there is a smaller pool of individuals to include in the follow-up sample because of the lower number of completed baselines and % who agree to be followed up.

TABLE AA.1. FOLLOW-UP SAMPLE AND EFFORTS

	<b>Number of baselines (n = 80)</b>
Did not consent to follow-up .....	17
	n = 63
Not eligible for follow-up sample .....	17
Other reasons based upon prenatal baseline (i.e., invalid locator data, client not in program long enough, baseline submission more than 30 days after completion) .....	16
In jail or controlled environment (i.e, residential treatment) .....	1
Baby is deceased .....	0
Total number of baseline surveys eligible for follow-up.....	46
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period) .....	9
Expired rate ((the number of expired cases/eligible cases)*100) .....	19.6%
Declined .....	0
Declined rate ((the number of refusal cases/eligible cases)*100) .....	0.0%
Completed follow-up interviews.....	37
Follow-up rate .....	80.4%

**Obtaining the Birth Event Data.** Before any analysis of the Vital Statistics birth data is conducted, a series of steps is performed to ensure data quality and integrity. Each step is described in the following paragraphs.

Kentucky Vital Statistics automatically moves each year of updated birth index text files to UK CDAR using the CHFS MoveIT Central FTP process. The data is then opened in Microsoft Access to create variables based upon a file layout codebook provided by Kentucky Vital Statistics. From Access, the data are transferred into SPSS and given variable names, values, and labels corresponding to the codebook. Births occurring within the time frame of the annual report are then saved to a separate file where they are cleaned. Because there were so few follow-ups in FY22, the usual comparison analysis with mothers who were not in the KY-Moms MATR program was not completed. Instead, birth event data was analyzed for only KY-Moms MATR clients.

**Analysis.** Once the data set was cleaned and internally certified according to UK CDAR BHOS quality standards, data analysis began. This included using the statistical software SPSS to complete Chi-square tests of independence, one-way ANOVAS, and McNemar tests. The statistical results were then placed in tables for review by the research team.

**Birth Data Sample.** As described in the section regarding obtaining the birth event data, based upon the range of dates that the KY-Moms MATR clients gave birth, which were from February 2021 to November 2021. Using mothers' social security numbers, KY-Moms MATR clients were matched to their respective birth outcome data. Out of the 37 clients who completed a follow-up, four clients did not have a match to their birth data. None of the mothers had more than one child in the dataset in FY22.

## Appendix B. Client Characteristics at Baseline for Those with Completed Follow-Up Interviews and Those without Completed Follow-Up Interviews

Between June 2019 and November 2020, 80 pregnant mothers completed a prenatal baseline and were eligible for a six-month postnatal follow-up between July 2021 and June 2022. Individuals who completed a postnatal follow-up assessment during this time (n = 37) are compared in this section with 43 individuals who did not complete a postnatal follow-up interview but were in their 6-month follow-up window in FY 2022.

As mentioned in Appendix A, 43 clients did not complete a postnatal follow-up interview for a variety of reasons:

TABLE AB.1. REASONS WHY CLIENTS DID NOT COMPLETE A FOLLOW-UP ASSESSMENT

Reason for not completing follow-up assessment	n
Ineligible as a result of prenatal baseline criteria:	
Client was not in the program long enough.....	4
More than 30 days between when the baseline was completed and when it was submitted.....	1
Insufficient locator information .....	11
Did not agree to follow-up .....	17
Ineligible as a result of postnatal follow-up criteria:	
Mother living in a residential facility.....	1
Client was not located within the targeted window .....	9
<b>TOTAL.....</b>	<b>43</b>

### Demographic Characteristics

There were no significant differences between clients who were followed up and clients who were not followed up on demographic characteristics (see Table AB.2). The average client age was around 24 to 26 years old for both groups. Clients who were not followed up were an average of 27.8 weeks into their pregnancies and clients who were followed up were an average of 27.9 weeks. There was no significant differences between the two groups for average age or for the average number of weeks pregnant. Over 40% of clients in both groups were never married. Of those who were married or cohabiting, 93.8% of clients who completed a follow-up reported that the partner is the father of the baby compared to all clients who were not followed up. In addition, the majority of clients in both groups were White.

TABLE AB.2. COMPARISON OF DEMOGRAPHICS FOR CLIENTS WHO WERE INCLUDED IN THE FOLLOW-UP SAMPLE AND CLIENTS WHO WERE NOT INCLUDED IN THE FOLLOW-UP SAMPLE

	FOLLOWED UP	
	NO n = 43	YES n = 37
Average age <sup>154</sup> .....	27.8	27.9
Average weeks pregnant.....	25.5	24.0
<b>Relationship status</b>		
Married.....	11.6%	13.5%
Cohabiting .....	18.6%	29.7%
Separated, divorced, or widowed.....	27.9%	10.8%
Never married.....	41.9%	43.2%
Of those married or cohabiting, percent that reported the partner is the father.....	(n = 13) 100.0%	(n = 16) 93.8%
<b>Race</b>		
White .....	93.0%	89.2%
Black.....	7.0%	5.4%
Hispanic.....	0.0%	5.4%
Other or multiracial .....	0.0%	0.0%

There were no significant differences for employment status between clients who were followed up and clients who were not followed up. Of those who completed a postnatal follow-up, 62.2% were currently unemployed compared to 69.8% of the clients who did not complete a follow-up. There were no significant differences between clients who were followed up and not followed up on whether they expected to be employed in the next 12 months (see Table AB.3).

TABLE AB.3. CURRENT EMPLOYMENT STATUS AT PRENATAL BASELINE BY FOLLOW-UP STATUS

	FOLLOWED UP	
	NO n = 43	YES n = 37
<b>Employment</b>		
Not currently employed.....	69.8%	62.2%
Full-time .....	20.9%	10.8%
Part-time.....	7.0%	21.6%
Occasional, from time-to-time seasonal work .....	2.3%	0.0%
On leave from a job for pregnancy related reasons .....	0.0%	5.4%
Expect to be employed in the next 12 months.....	86.0%	86.5%

<sup>154</sup> One client had an incorrect birthdate and, therefore, their age could not be calculated.

There were no significant differences in usual living arrangement between those who completed a follow-up assessment and those who did not. About 68% of clients who were followed up reported that their usual living arrangement in the past 30 days at prenatal baseline was in a private residence (i.e., their own home or apartment or someone else’s home or apartment; see Table AB.4) compared to clients who were not followed up (51.2%). About 40% of clients who did not complete a follow-up and 27.0% of clients who did complete a follow-up were living in a residential facility, hospital, recovery center, or sober living home.

At baseline, there was no significant difference between the groups of clients who considered themselves to be homeless. About 27.9% of clients who did not complete a follow-up and 10.8% of the clients who did complete a follow-up considered themselves homeless (see Table AB.4).

TABLE AB.4 LIVING SITUATION OF CLIENTS BEFORE ENTERING THE KY-MOMS MATR PROGRAM BY FOLLOW-UP STATUS

	FOLLOWED UP	
	NO n = 43	YES n = 37
<b>Usual living arrangement in the past 30 days</b>		
Own or someone else’s home or apartment.....	51.2%	67.6%
Jail or prison .....	0.0%	0.0%
Residential program, hospital, recovery center, or sober living home .....	39.5%	27.0%
Shelter or on the street.....	2.3%	2.7%
Other.....	7.0%	2.7%
<b>Considers self to be currently homeless</b>		
Why the individual considers himself/herself to be homeless.....	27.9% (n = 12)	10.8% (n = 4)
Staying in a shelter.....	0.0%	0.0%
Staying temporarily with friends or family .....	58.3%	25.0%
Staying on the street or living in a car.....	8.3%	0.0%
Other.....	33.3%	75.0%

## Physical Health

On a scale of 1 - 5, clients who completed a follow-up rated their health an average of 3.1 and clients who did not complete a follow-up rated their health an average of 3.0. There was no significant difference between clients who were followed up and clients who were not followed up on the average number of health problems. There were no significant differences between the groups on having chronic pain in the 6 months before pregnancy. The average number of doctor visits reported by clients was not significantly different with 6.4 visits for clients not followed up and 6.2 visits for clients who completed a follow-up.

TABLE AB.5. PHYSICAL HEALTH ISSUES OF CLIENTS BEFORE ENTERING THE KY-MOMS MATR PROGRAM BY FOLLOW-UP STATUS

	FOLLOWED UP	
	NO n = 43	YES n = 37
<b>Number of health problems</b>		
None .....	30.2%	32.4%
One health problem.....	46.5%	27.0%
Two or more health problems .....	23.3%	40.5%
Overall health rating (1 – poor, 5 – excellent).....	3.0	3.1
Chronic pain in the 6 months before pregnancy .....	9.3%	10.8%
Average number of doctor visits about pregnancy .....	6.4	6.2

## Targeted Risk Factors

### Substance Use

There was one significant difference for substance use at prenatal baseline between clients who did and clients who did not complete a postnatal follow-up and were not incarcerated all 180 days before they knew they were pregnant. While the majority of clients in both groups reported illegal drugs and/or alcohol use in the 6 months before pregnancy and in the 30 days before pregnancy, more clients who completed a follow-up, however, reported significantly more cigarettes on average compared to clients who did not complete a follow-up (13.2 vs. 9.8, respectively).

TABLE AB.6 SUBSTANCE USE OF CLIENTS AT PRENATAL BASELINE BY FOLLOW-UP STATUS AMONG CLIENTS NOT INCARCERATED ALL 180 DAYS BEFORE PREGNANCY<sup>155</sup>

	FOLLOWED UP	
	NO n = 42	YES n = 34
<b>Substance use in the 6 months prior to pregnancy</b>		
Illegal drugs and/or alcohol.....	81.0%	85.3%
Illegal drugs .....	81.0%	79.4%
Alcohol.....	35.7%	44.1%
Cigarettes.....	76.2%	67.6%
<b>Substance use in the 30 days prior to pregnancy</b>		
Illegal drugs and/or alcohol.....	78.6%	70.6%
Illegal drugs .....	76.2%	64.7%
Alcohol.....	19.0%	29.4%
Cigarettes.....	73.8%	67.6%
Of clients who smoked .....	(N = 31)	(N = 23)
Average number of cigarettes per day .....	15.6	19.8
<b>Substance use in the past 30 days</b>		
Illegal drugs and/or alcohol.....	2.4%	8.8%
Illegal drugs .....	0.0%	0.0%
Alcohol.....	2.4%	8.8%
Cigarettes.....	66.7%	61.8%
Of clients who smoked .....	(N = 28)	(N = 21)
Average number of cigarettes per day** .....	9.8	13.2
<b>Participant was treated for substance use before pregnancy ..</b>	57.1%	64.7%

\*\*p < .05.

## Mental Health

There was no significant difference between the two groups in the percent of clients who met study criteria for depression or anxiety in the 6 months before pregnancy or the 30 days before prenatal baseline (see Table AB.7). Almost half of clients who did not complete a follow-up interview (46.5%) and 48.6% of clients who did complete a follow-up interview met study criteria for depression in the 6 months before pregnancy. Clients who did not complete a follow-up reported significantly more depression symptoms compared to clients who completed a follow-up (7.8 vs. 6.8, respectively). About 47% of clients who were not followed up and 35.1% of clients who were followed up met study criteria for generalized anxiety in the 6 months before pregnancy.

<sup>155</sup> Four clients were incarcerated all 180 days before pregnancy.



TABLE AB.7 SELF-REPORTED MENTAL HEALTH SYMPTOMS OF CLIENTS AT PRENATAL BASELINE BY FOLLOW-UP STATUS

	FOLLOWED UP	
	NO n = 43	YES n = 37
Experienced symptoms of depression in the past 6 months before pregnancy .....	46.5%	48.6%
Average number of symptoms** .....	(N = 20) 7.8	(N = 18) 6.8
Experienced symptoms of depression in the past 30 days at prenatal baseline .....	23.3%	27.0%
Average number of symptoms .....	(N = 10) 6.7	(N = 10) 6.8
Experienced symptoms of anxiety in the past 6 months before pregnancy .....	46.5%	35.1%
Average number of symptoms .....	(N = 20) 5.3	(N = 13) 5.4
Experienced symptoms of anxiety in the past 30 days at prenatal baseline .....	34.9%	27.0%
Average number of symptoms .....	(N = 15) 5.1	(N = 10) 5.6

\*\*p< .05.

### Intimate Partner Abuse

There were no significant differences between clients who completed a postnatal follow-up and clients that did not on intimate partner abuse and violence measures. About 46.5% of clients who did not complete a follow-up and 37.8% of clients that completed a follow-up assessment reported some type of partner abuse or violence in the 6 months before pregnancy (see Table AB.8).

TABLE AB.8 INTIMATE PARTNER VIOLENCE AND SEXUAL VIOLENCE BY ANY TYPE OF PERPETRATOR REPORTED BY CLIENTS AT PRENATAL BASELINE BY FOLLOW-UP STATUS

	FOLLOWED UP	
	NO n = 43	YES n = 37
<b>Any partner abuse</b>		
6 Months before pregnancy .....	46.5%	37.8%
Past 30 days .....	14.0%	8.1%
<b>Verbal abuse</b>		
6 Months before pregnancy .....	37.2%	24.3%
Past 30 days .....	9.3%	5.4%
<b>Coercive control</b>		
6 Months before pregnancy .....	44.2%	37.8%
Past 30 days .....	11.6%	8.1%
<b>Physical abuse</b>		
6 Months before pregnancy .....	23.3%	18.9%
Past 30 days .....	4.7%	0.0%
<b>Sexual abuse</b>		
6 Months before pregnancy .....	16.3%	8.1%
Past 30 days .....	2.3%	0.0%