

**KIDS NOW Plus** | 2016  
ANNUAL OUTCOME REPORT



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## KIDS NOW Plus 2016 Annual Outcome Report

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## Executive Summary

### **KIDS NOW Plus is a state-funded prevention, outreach, 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.**

This report summarizes KIDS NOW Plus case management program evaluation results by examining birth and infant outcomes as well as changes in other targeted risk factors such as substance use, mental health, intimate partner violence, and quality of life. Specifically, this report describes outcomes for 169 pregnant KIDS NOW Plus program clients who participated in the KIDS NOW Plus case management program, completed a face-to-face baseline interview with program staff, completed a 6-month follow-up (between July 2014 and June 2015) after the birth of their baby, and who had a match to their state vital statistics birth event data.

KIDS NOW Plus clients reported behavioral health risks associated with negative birth outcomes before

becoming involved in the program including high rates of smoking, alcohol and illegal drug use, depression or anxiety, and intimate partner abuse. Overall, clients were an average of 21 weeks pregnant when they completed a prenatal baseline assessment and were in the program an average of 19 weeks before the birth of their babies. Clients were, on average, 25 years old (6% of whom were 18 and under) and over one-quarter had less than a high school diploma or GED. The majority of clients (76%) were unemployed at prenatal baseline and

over half of clients (58%) had difficulty meeting basic needs for financial reasons in the 6 months before they found out they were pregnant.

Compared to a matched comparison group of women who gave birth during the same timeframe, clients in the program used more clinical services such as individual substance abuse or mental health therapy, intensive outpatient, and group therapy. Besides the additional clinical services

**Even with increased risk factors for negative birth outcomes the KIDS NOW Plus mothers had before participating in the program, their birth outcomes were very positive overall and were nearly identical to the general population of mothers and babies.**





received by pregnant women in KIDS NOW Plus case management, significantly more clients were enrolled in Women Infants and Children (WIC).

Even with increased risk factors for negative birth outcomes the KIDS NOW Plus mothers had before participating in the program, their birth outcomes were very positive overall, and were nearly identical to the general population of mothers and babies. After controlling for factors such as mother's age, education, marital status, area of residence, and smoking status at birth, the two groups of mothers had similar birth outcomes for the percentage of babies born premature, babies' average birth weight, percentage of mothers experiencing birthing problems, percentage of babies taken to the neonatal intensive care unit, percentage of women breastfeeding and the average highest APGAR score. In fact, KIDS NOW Plus clients reported significantly more prenatal visits with a health care provider compared to the general population.

All the mothers in the follow-up sample reported their babies were doing "good" or "great" and both the mother and the baby's father were very excited about the baby. The majority of clients felt confident about being the mother of an infant and felt that life with a new baby was very manageable. Also, the majority of clients had someone to turn to for emotional support both during pregnancy and after the birth of the baby.

Furthermore, fewer pregnant mothers reported substance use while in the program compared to before being pregnant. And, these reductions were sustained six months after the birth of their baby. Smoking rates were also reduced as was smoking frequency among those who did smoke. Specifically, clients who reported smoking prior to pregnancy reported an average of 8.5 cigarettes in the 30 days before their baby was born compared to 18.2 cigarettes the 30 days before their pregnancy.

**Fewer pregnant mothers reported substance use while in the program compared to before being pregnant and smoking rates were also reduced.**

Overall, at follow-up fewer mothers met study criteria for depression, anxiety, and co-occurring depression and anxiety than at baseline. Among mothers with any mental health symptoms, there was a reduction in the number of reported symptoms after participation in the KIDS NOW Plus program. These improvements in mental health problems were sustained after the birth of the baby. In addition, clients' reported stress-related health consequences decreased significantly from prenatal baseline to postnatal follow-up.

**“It was helpful. My case manager helped me get the services I needed to have a better pregnancy.”**

-KIDS NOW Plus Follow-up Client



The number of mothers who reported intimate partner abuse significantly decreased after becoming involved in the KIDS NOW Plus case management program.

In addition to these targeted risk factors, there were improvements in other general areas of the mothers' lives after becoming involved in the KIDS NOW Plus program including a reduction in chronic pain and improved overall health. Women also reported improved economic conditions with significantly fewer clients reporting they had difficulty meeting basic living or health care needs as a result of financial problems.

Clients reported significantly higher quality of life after

**“They’re great. They care about you on a deeper level, like they don’t see a statistic.”**

-KIDS NOW Plus Follow-up Client

the program, having significantly more positive feelings and significantly less negative feelings, and an overall greater satisfaction with life at postnatal follow-up compared to prenatal baseline.

Further, program clients were overwhelmingly satisfied with the KIDS NOW Plus case management services they received. In particular, clients reported they learned about the risks of tobacco, alcohol and drugs during pregnancy, had improvements in their mental health, felt safer from intimate partner violence, believed they had a healthier pregnancy, and felt better about themselves as direct results of their participation in the KIDS NOW Plus program. Also, the majority of clients indicated they would recommend the program to a friend.

Overall, evaluation results indicate that the KIDS NOW Plus case management 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 violence. 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 KIDS NOW Plus 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 KIDS NOW Plus case management 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) at the request of the Division of Behavioral Health in the Department for Behavioral Health, Developmental and Intellectual Disabilities. The evaluation results are organized into 13 main sections as outlined below.*

**Section 1: Introduction and Evaluation Method.** This section briefly describes the KIDS NOW Plus case management program and how cases are selected into the analysis for the outcome evaluation.

**Section 2: Description of Kids Now Plus Case Management Program Clients Who Were Followed-up.** Section 2 describes the KIDS NOW Plus client characteristics for 169 clients who completed a prenatal baseline between May 2013 and October 2014 (and this was submitted to UK CDAR within 30 days), and completed a six-month follow-up assessment between July 2014 and June 2015 after the birth of their baby. In addition, these clients met the following additional criteria: (1) clients were in the program for 30 days or longer before the birth of their baby; (2) clients had matching information from the Kentucky Vital Statistics birth event data set in order to compare birth outcomes; (3) clients had to report living in the state; and, (4) clients had to give permission for UK CDAR to access their birth event data. Characteristics examined include risk status, age, race, marital status, metropolitan/non-metropolitan status, socioeconomic status (i.e., education, employment, public assistance and socioeconomic hardships), and living situation.

**Section 3: Clinical Services.** This section examines case management services received by KIDS NOW Plus clients while in the program as well as mental health diagnosis. In addition, it compares services received by KIDS NOW Plus clients to those received by women with similar socioeconomic characteristics who gave birth during the same time period but who were not part of the program.

**Section 4: Pregnancy Status.** Section 4 describes clients' pregnancy status at prenatal baseline as well as general feelings and attitudes about their pregnancies including: (1) expectations and feelings about the baby; (2) general information regarding the pregnancy/baby; and (3) planned method of birth control. Comparisons of client-level data are made from prenatal baseline to postnatal follow-up where applicable.

**Section 5: Birth Events and Outcomes: KIDS NOW Plus Case Management Clients Compared to the General Population of Mothers.** This section uses the Kentucky Vital Statistics birth data to examine (1) general risk factors; (2) targeted risk factors available from the Vital Statistics data set; and (3) birth events and outcomes of 169 KIDS NOW Plus case management clients and their babies compared to others in the state who had babies during the same period (between December 2013 and December 2014) but who did not participate in the KIDS NOW Plus Case Management study (n = 55,351).<sup>1</sup>

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<sup>1</sup> Section 5 compares birth events and outcomes of KIDS NOW Plus mothers to the general population of mothers who also gave birth during the same time period. Appendix D compares birth events and outcomes for three mutually exclusive groups including: (1) mothers involved in KIDS NOW Plus case management services; (2) a comparison group of mothers matched on selected characteristics (race, age, education, metropolitan/non-metropolitan residence, marital status and smoking status); and (3) a randomly selected group of mothers from the general population.

**Section 6: Substance Use.** This section of targeted risk factors examines change in: (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; and (5) substance abuse treatment and self-help meetings. Past 30-day and past-6-month substance use are examined separately where applicable.

**Section 7: Mental Health.** This section examines changes in self-reported mental health for the following factors: (1) depression; (2) generalized anxiety; (3) comorbid depression and anxiety; (4) exposure to traumatic events; and, (5) number of days physical and mental health were poor. Past 30-day and past-6-month mental health symptoms are examined separately where applicable.

**Section 8: Partner Abuse and Sexual Assault.** This section examines changes in past-30-day and past-6-month intimate partner abuse and violence such as: (1) psychological abuse, (2) coercive control, (3) physical abuse, and (4) sexual violence by any type of perpetrator, from prenatal baseline to postnatal follow-up.

**Section 9: Physical Health.** Section 9 describes chronic health problems reported at prenatal baseline and change in physical health status of clients from prenatal baseline to postnatal follow-up including: (1) current health; (2) chronic pain; and (3) emergency room usage.

**Section 10: Emotional Support.** This section focuses on two main changes in emotional support: (1) the number of people mothers said they could count on for emotional support; and (2) their satisfaction with the level of emotional support from others.

**Section 11: Stress and Quality of Life.** This section examines changes in stress and quality of life including the following factors: (1) health consequences of stress; (2) quality of life ratings; (3) positive and negative experiences; and (4) satisfaction with life.

**Section 12: Client Satisfaction with KIDS NOW Plus Case Management.** This section describes four aspects of client satisfaction assessed by clients who completed a postnatal follow-up: (1) overall satisfaction with the program; (2) ratings of program experiences; (3) if the client would recommend the program to a friend; and (4) what clients found most useful about the program.

**Section 13: Conclusion and Study Limitations.** This section summarizes the report findings, discusses limitations, and describes implications of the main findings.

## Section 1:

# Introduction and Evaluation Method

*This section briefly describes the KIDS NOW Plus case management program and how clients were selected into the outcome evaluation.*

KIDS NOW Plus is a state-funded prevention, outreach, and case management program aimed at reducing substance use 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>2, 3, 4, 5, 6</sup> In addition, substance use is often related to mental health problems and an increased risk of partner abuse and sexual assault.<sup>7, 8</sup> All three of these interrelated risk factors increase the likelihood of negative birth outcomes.<sup>9, 10</sup> Additionally, risks of negative birth outcomes are increased when women using alcohol and illegal drugs avoid obtaining prenatal care due to fear of losing custody of their babies or fear of being arrested.<sup>11</sup>

The overall goal of the KIDS NOW Plus case management program is to increase positive birth outcomes for pregnant women in Kentucky who are at risk for negative birth outcomes by reducing these three targeted risk factors that impact the health of the pregnant mother, fetal development, and birth outcomes. 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 women at risk for substance abuse during pregnancy (referred to in this report as KIDS NOW Plus program).

The KIDS NOW Plus program case managers provide support, referrals, information, and other needed services (e.g., transportation) based on a client-centered format. This intervention focuses on meeting clients' needs as they evolve over time, as different risks manifest, and needs change as the pregnancy progresses.<sup>12</sup> By focusing on clients' needs, client-centered intensive case management encourages

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<sup>2</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>3</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 meta-analyses. *American Journal of Obstetrics and Gynecology*, 204(4), 340-e1-12.

<sup>4</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>5</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>6</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>7</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>8</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>9</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>10</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>11</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>12</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.

continued engagement in clinical services and helps with a variety of practical needs.<sup>13,14</sup> KIDS NOW Plus 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>15,16</sup>

The KIDS NOW Plus case management program is part of the Governor’s Office of Early Childhood’s Kentucky Invests in Developing Success NOW (KIDS NOW) program supported by Tobacco Settlement funds. The KIDS NOW Plus program is administered by the Division of Behavioral Health in the Department for Behavioral Health, Developmental and Intellectual Disabilities. Eight of Kentucky’s regional community mental health centers (see Figure 1) are provided Tobacco Settlement funds along with Substance Abuse Prevention and Treatment Block Grant funding to manage the KIDS NOW Plus program for total program funding of about \$1.1 million dollars annually.

FIGURE 1. MAP OF KENTUCKY COMMUNITY MENTAL HEALTH REGIONS PROVIDING KIDS NOW PLUS SERVICES



Pregnant women who are referred to the KIDS NOW Plus case management program are first screened 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 KIDS NOW Plus referral sources is the “Substance Use During Pregnancy Questionnaire” which assesses a variety of risks including substance use, mental health, and intimate partner violence, any of which make a

<sup>13</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>14</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>15</sup> Ingersoll, K. S., Ceperich, S. D., Hetteema, 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>16</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.

woman eligible for case management services. Adolescents (under age 18) are also eligible regardless of other risk factors.

## EVALUATION METHOD

The KIDS NOW Plus outcome evaluation included a face-to-face baseline interview by program staff from the eight sites (shown above) to assess substance use, mental health symptoms, intimate partner violence, and other factors such as education, employment status, and living situation prior to pregnancy and while involved in the program. At prenatal baseline, clients are offered the opportunity to be contacted for a postnatal follow-up interview. If the client gives consent to be contacted for a follow-up, an interviewer at UK CDAR contacts that client about 6 months after the birth of their baby (based upon estimated due date reported by the client at prenatal baseline). UK CDAR interviewers obtain verbal consent to complete the follow-up survey. Client responses to the follow-up interviews are kept confidential to facilitate accurate reporting of client outcomes and satisfaction with program services.

The UK CDAR team begins their efforts to locate and conduct follow-up interviews with women who agreed to be contacted for the follow-up one month before their target month (i.e., six months after the birth of their baby) for the follow-up interview and continues their efforts until the women have completed the follow-up interview or for two months after the target month, whichever comes first. During FY15, 181 postnatal follow-up assessments were completed (an 83.0% follow-up rate). See Appendix B for more details about follow-up methods and eligibility.

The clients who completed a follow-up (n = 181) during this fiscal year were compared on selected factors to 168 clients, who did not complete a follow-up within the targeted window for a variety of reasons.<sup>17</sup> Results showed very few differences in demographics, substance use, mental health or intimate partner violence victimization (see Appendix C). A greater number of clients who did not complete a follow-up considered themselves homeless at prenatal baseline. More clients who did not complete a follow-up reported experiencing a serious fall while pregnant and more clients who did complete a follow-up reported experiencing a virus or serious infection while pregnant. A greater number of clients who completed a follow-up reported using alcohol in the 6 months prior to pregnancy while clients who did not complete a follow-up were more likely to report any substance use (illegal drug or alcohol use) in the past 30 days.

To be included in the analysis for this outcome report, there were also five additional criteria: (1) baseline interviews had to have been submitted by the clinician within 30 days of their completion; (2) clients had to have been in the program for 30 days or longer before the birth of their baby; (3) clients had to have matching information from the Kentucky Vital Statistics birth event data set in order to compare birth outcomes; (4) clients had to report living in the state; and, (5) the client had to give permission for UK CDAR to access their birth event data. If any of these criteria were not met, the client was not included in the outcome analysis. With this criteria in mind, although 181 clients had postnatal follow-up assessments, 2 cases were not included in the analysis because the number of days between when the client entered the program and the date they gave birth was less than 30 days.

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<sup>17</sup> Of the 168 who were within the targeted follow-up window but did not complete a follow-up assessment, 80 did not consent to participate in the follow-up and 51 were not eligible for follow-up because they were in jail or a controlled environment, the baby was not living with them, the client was not in the program at least 30 days before the birth of the baby, or the client had invalid contact data. In addition, 37 cases expired and could not be completed within the follow-up window.

<sup>18</sup> Clients who completed a postnatal follow-up assessment (n = 181) were admitted to the KIDS NOW Plus case management program between May 2013 and September 2014. They completed baseline assessments between May 2013 and October 2014.

In addition, 1 client did not reside in Kentucky and 7 clients did not have a match in the birth event data set which could be due to an incorrect social security number, name, birthdate, or out of state birth. Finally, 2 clients did not give permission to access their birth event data. This left a final follow-up sample of 169 women who gave birth between December 2013 and December 2014 and completed a postnatal follow-up assessment between July 2014 and June 2015 (an average of 6.1 months after giving birth).

## Section 2:

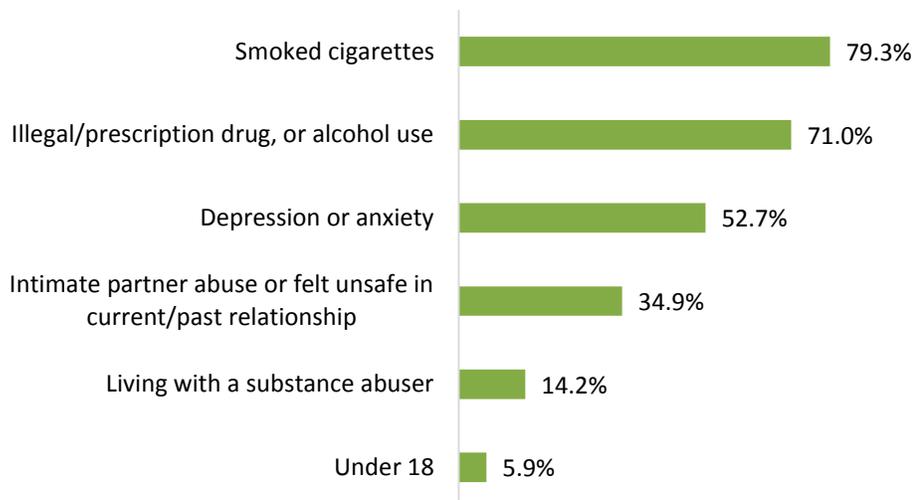
# Description of KIDS NOW Plus Case Management Program Clients Who Were Included in the Postnatal Follow-up Analysis

Section 2 describes the KIDS NOW Plus client characteristics for the 169 clients who completed a six-month postnatal follow-up assessment between July 2014 and June 2015 and met the criteria to be included in the analysis for this report. Characteristics examined include race, metropolitan/non-metropolitan status, marital status, socioeconomic status (i.e., education, employment, public assistance and socioeconomic hardships), living situation, and physical health.

## RISK STATUS

Figure 2.1 shows that of the 169 clients who completed a six-month postnatal follow-up assessment and met criteria to be included in this report, 96.4% (n = 163 clients), fit into at least one of the major risk factor categories assessed in the baseline interview.<sup>19</sup> Overall, 79.3% of clients reported cigarette use, 71.0% reported drug or alcohol use at baseline, 52.7% reported depression or anxiety, 34.9% reported intimate partner abuse and/or feeling unsafe in either their current relationship or because of a partner from a previous relationship, 14.2% of clients reported currently living with someone who has drug or alcohol problems, and 5.9% were under the age of 18.

FIGURE 2.1. PERCENTAGE OF CLIENTS FALLING INTO AT LEAST ONE TARGETED RISK FACTOR ASSESSED (N = 169)



## CLIENT CHARACTERISTICS

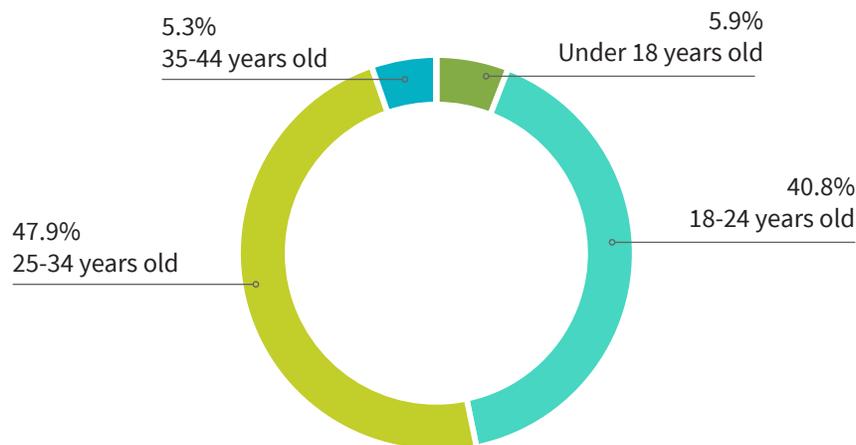
### AGE

At baseline, the average age of clients who were included in the 6-month postnatal follow-up sample was about 25 years old. Most clients were between the ages of 25 and 34 (47.9%) or between the ages

<sup>19</sup> Calculation includes 6 months before pregnancy, 30 days before pregnancy and past 30 days at prenatal baseline.

of 18 and 24 years old (40.8%). A little less than 6% of clients were under the age of 18 and 5.3% were between 35 and 44 years old (see Figure 2.2).

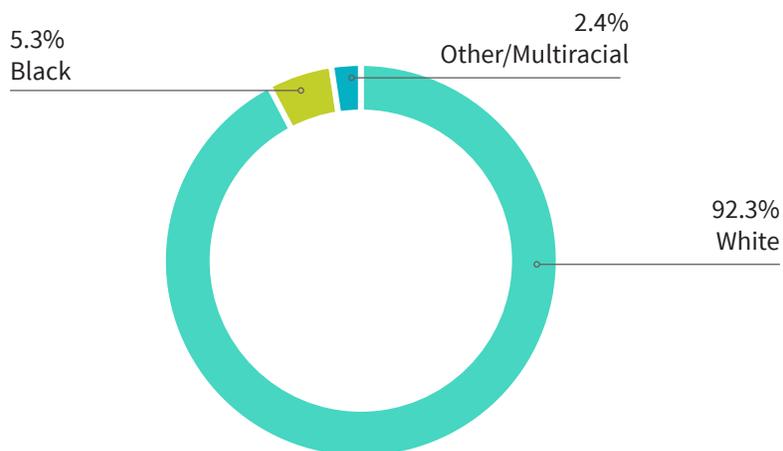
FIGURE 2.2. AGE CATEGORIES (N = 169)



## RACE

The vast majority of the follow-up sample was White (92.3%), with a minority 5.3% reporting their race as Black (see Figure 2.3).

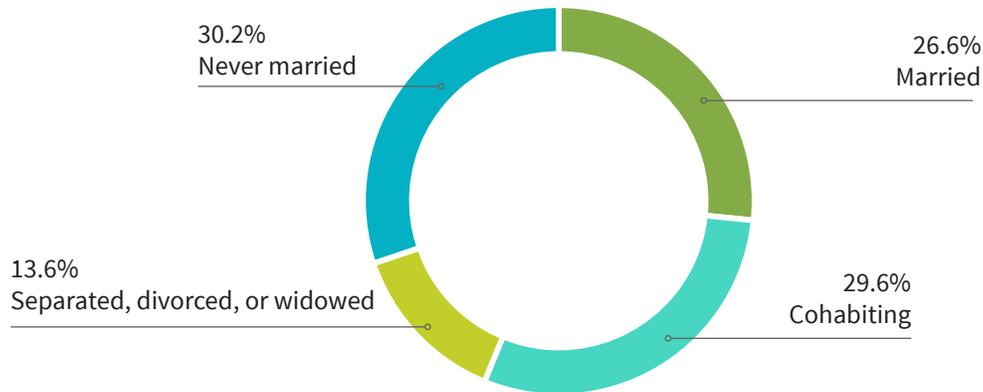
FIGURE 2.3. RACIAL MAKE-UP OF CLIENTS (N = 169)



## MARITAL STATUS

Over half of clients were either married (26.6%) or cohabiting (29.6%). Of these clients (n = 95), 94.7% reported their partner was the father of the baby with whom they were pregnant. Less than one-third of clients (30.2%) had never been married and 13.6% were either separated, divorced, or widowed (see Figure 2.4).

FIGURE 2.4. MARITAL STATUS AT PRENATAL BASELINE (N = 169)



### METROPOLITAN/NON-METROPOLITAN STATUS

Rural-Urban Continuum Codes (or Beale codes) for the county in which the mother lived when she gave birth are obtained from the U.S. Department of Agriculture.<sup>20</sup> Counties are classified based upon population, socioeconomic indicators, commuting flow and adjacency to a metro area as derived from the U.S. Census Bureau. Figure 2.5 shows slightly more clients were from non-metropolitan areas (46.7%) than metropolitan areas (37.3%) while 16.0% were from very rural areas.

FIGURE 2.5. TYPE OF COMMUNITY CLIENTS LIVED IN (N = 169)



Note: Metropolitan/non-metropolitan status was based upon Beale codes assigned to the county in which the mother reported residing in the birth event data set

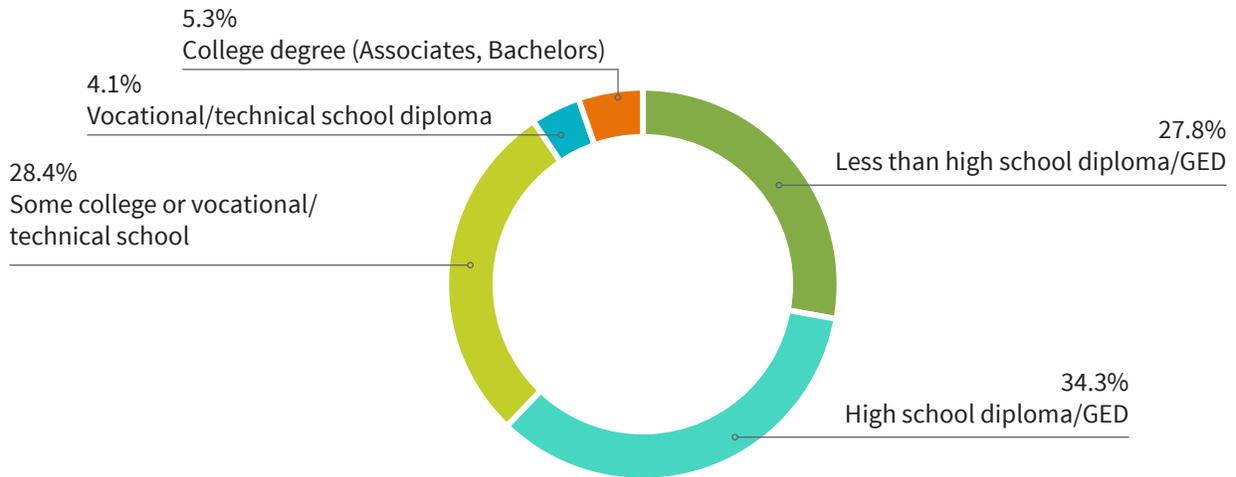
### SOCIOECONOMIC STATUS INDICATORS

#### EDUCATION

Figure 2.6 shows that more than one-quarter (27.8%) of clients had less than a high school education or GED and another 34.3% had a high school diploma or GED as their highest level of education. Almost 3 in 10 clients had some college or vocational/technical school.

<sup>20</sup> Rural-Urban Continuum Codes used to classify counties are obtained from the USDA found at <http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx#.UxoE4YWwV8H>.

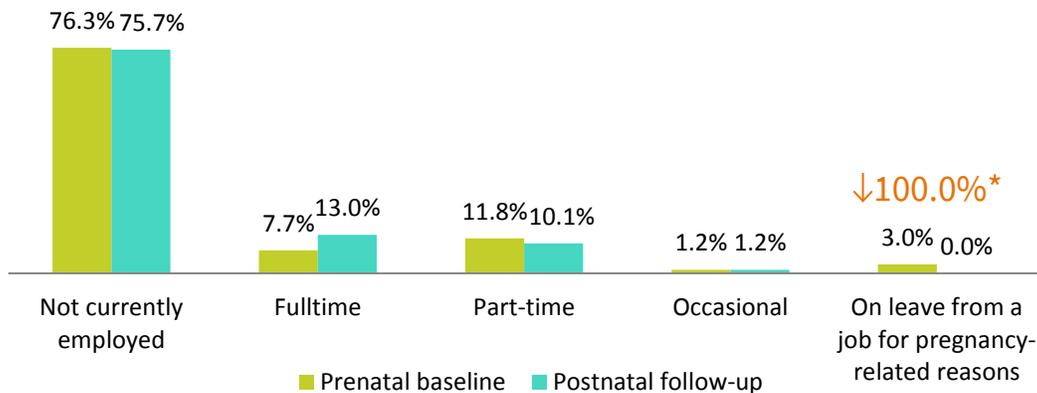
FIGURE 2.6. LEVEL OF EDUCATION OF POSTNATAL FOLLOW-UP SAMPLE (N = 136)



### EMPLOYMENT STATUS

Overall, the number of clients reporting their current employment status did not change significantly from prenatal baseline to postnatal follow-up. At prenatal baseline, 76.3% of clients reported being unemployed and at postnatal follow-up, this percentage was 75.7% (see Figure 2.7). In addition, the percentage of women who reported being employed full-time increased slightly from 7.7% at prenatal baseline to 13.0% at postnatal follow-up. There was a significant decrease in the number of clients reporting they were on leave from their job for pregnancy-related reasons.

FIGURE 2.7. CURRENT EMPLOYMENT STATUS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 169)

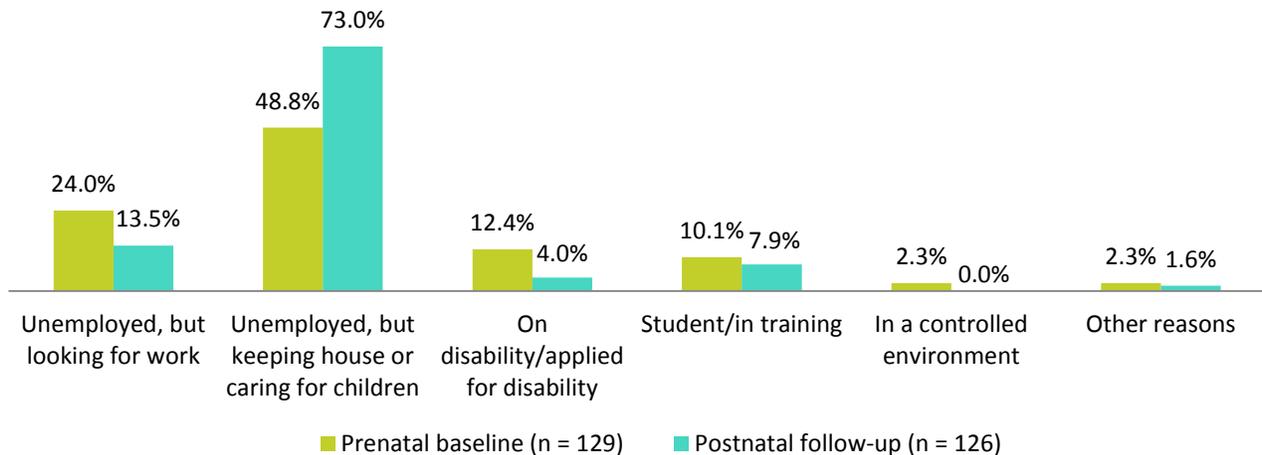


\* p < .05

For clients who were employed full-time, the average hourly wage clients reported decreased slightly from \$9.39 at prenatal baseline to \$8.89 at postnatal follow-up (not depicted in a figure).

Of the clients who reported they were not currently employed at each point, fewer clients indicated they were looking for work at postnatal follow-up compared to prenatal baseline. In addition, 73.0% reported they were keeping house or caring for children full-time compared to 48.8% of clients at prenatal baseline.

FIGURE 2.8. REASON FOR UNEMPLOYMENT AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP<sup>a</sup>



a—Question skipped for 2 clients at follow-up.

About three-quarters (74.6%) of clients at prenatal baseline and 74.9% of clients at postnatal follow-up expected to be employed in the next 12 months.

### PUBLIC ASSISTANCE AND MEDICAL INSURANCE

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

The vast majority of clients (97.0%) reported receiving public assistance while they were pregnant and involved in KIDS NOW Plus and 87.0% reported currently receiving public assistance at postnatal follow-up (not depicted in a figure).

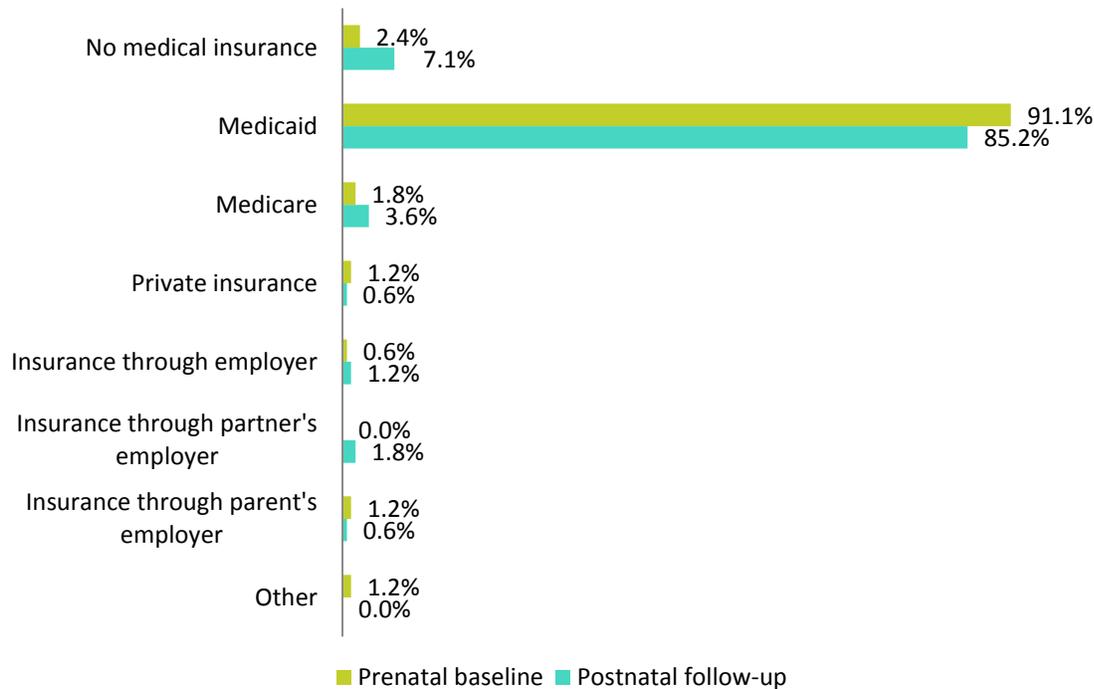
The majority of clients who received public assistance reported receiving Supplement Nutrition Assistance Program (SNAP; 70.1% during pregnancy and 71.4% after the birth of their baby) and Women, Infants and Children (WIC; 85.0% during pregnancy and 86.4% after the birth of their baby).

At prenatal baseline, only 2.4% of clients reported having no medical insurance compared to 7.1% at postnatal follow-up. In addition, 91.1% of clients reported having Medicaid, but at postnatal follow-up, 85.2% of clients reported having Medicaid (see Figure 2.9).

“The program helped me learn how to be a better mom and parent.”

-KIDS NOW Plus Follow-up Client

FIGURE 2.9. REPORTED MEDICAL INSURANCE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 169)



### 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>21</sup> Clients were asked eight items, five of which asked about difficulty meeting basic living needs such as food, shelter, utilities, and telephone, and three items asked about difficulty receiving medical care for financial reasons.

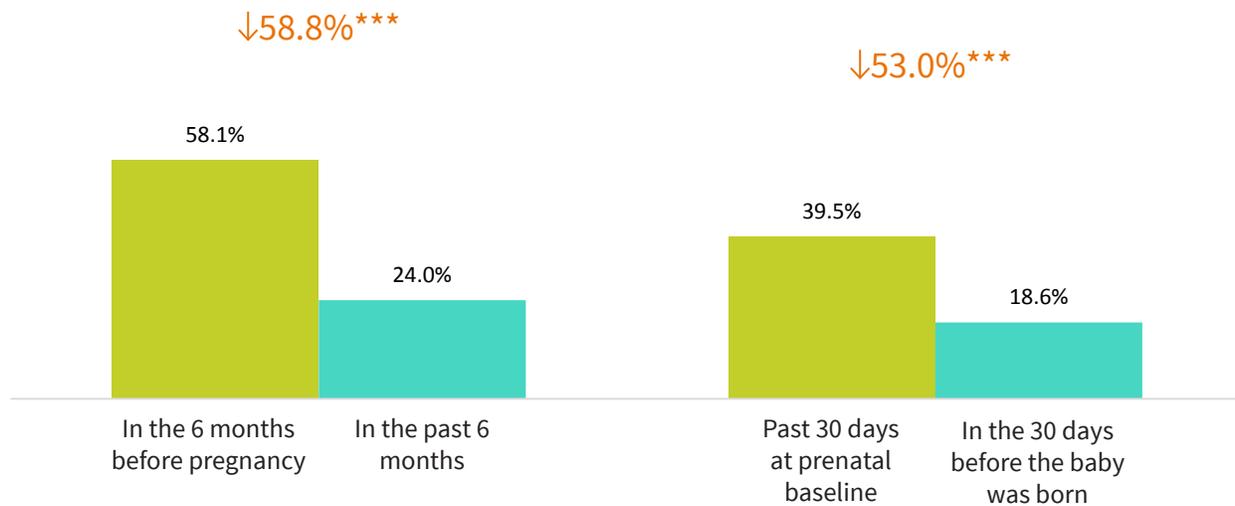
In general, the number of clients who reported having difficulty meeting basic needs such as food, shelter, telephone, and utilities decreased significantly from prenatal baseline to postnatal follow-up (see Figure 2.10). In the 6 months before becoming pregnant, more than half (58.1%) of clients reported they had difficulty meeting at least one of the basic living needs for financial reasons and 24.0% of clients reported difficulty meeting basic needs in the past 6 months at postnatal follow-up (a significant decrease of 58.8%).

Almost 40% 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, 18.6% of clients had difficulty meeting basic needs such as food, shelter or utilities (a significant decrease of 53.0%).

“They just care so much. It’s personal for them. You’re not just some number.”  
 -KIDS NOW Plus Follow-up Client

<sup>21</sup> SIPP; She, P., & Livermore, G. (2007). Material hardship, poverty, and disability among working-age adults. *Social Science Quarterly*, 88(4), 970-989.

FIGURE 2.10. DIFFICULTY IN MEETING BASIC LIVING NEEDS FOR FINANCIAL REASONS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 167)<sup>a</sup>

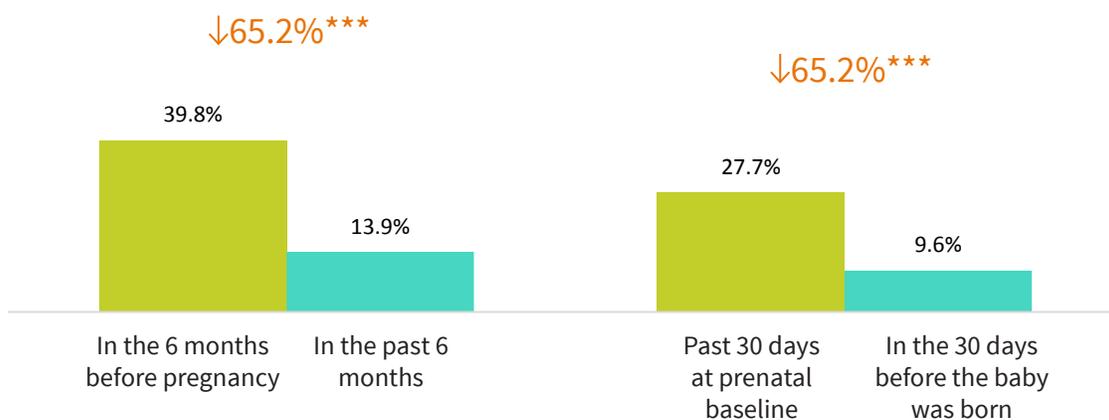


\*\*\* p < .001  
 Significance tested with z-test for proportions  
 a—Question skipped for two clients at follow-up.

About 4 in 10 clients 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 2.11). About 14% of clients reported they had difficulty meeting health care needs in the past 6 months at follow-up (a 65.2% significant decrease compared to the 6 months before the client was pregnant).

In the past 30 days at prenatal baseline, 27.7% of clients reported their household had difficulty meeting health care needs because of financial reasons (see Figure 2.11). In the 30 days before the baby was born, 9.6% of clients reported difficulty meeting health care needs, which is a 65.2% significant decrease compared to the past 30 days at prenatal baseline.

FIGURE 2.11. DIFFICULTY IN MEETING HEALTH CARE NEEDS FOR FINANCIAL REASONS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 166)<sup>a</sup>



\*\*\* p < .01  
 Significance tested with z-test for proportions  
 a—Question skipped for 3 clients at follow-up.

## LIVING SITUATION

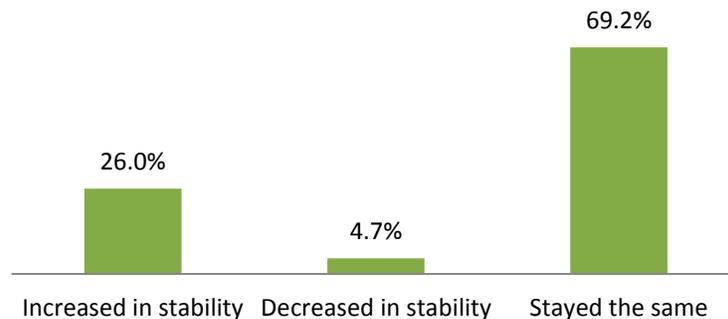
Overall, the number of clients reporting being homeless (5.9%) declined from prenatal baseline to postnatal follow-up, however, 1.2% of clients reported being currently homeless (a decrease of 80.0%).

There were no significant changes in the type of situation clients reported living, with the majority of clients (well over 90% at each point) living in a private residence (i.e., their own or someone else's home or apartment) before the birth of their baby and after.

At follow-up, clients were asked about the stability of their living situation during their pregnancy while in KIDS NOW Plus case management services (see Figure 2.12). One-quarter of clients (26.0%) felt they experienced increased stability in their living situation, 69.2% indicated their living situation stayed the same, and only 4.7% of clients reported they experienced a decrease in stability.

26.0% of clients experienced an **increase in stability of their living situation while in KIDS NOW Plus**

FIGURE 2.12. LIVING SITUATION STABILITY WHILE PREGNANT AND IN KIDS NOW PLUS PROGRAM (N = 169)



## SUMMARY

Clients in the postnatal follow-up sample (n = 169) were mostly White and an average of 25 years old. About one-quarter of clients were married and one in three were cohabiting with a partner.

While the percentage of clients who reported employment did not increase significantly at postnatal follow-up, the majority were caring for their children at home. Most clients were able to receive public assistance (mainly SNAP) while pregnant and in KIDS NOW Plus and after the birth of the baby. The number of clients who reported having difficulty meeting basic needs or health care needs decreased significantly compared to prenatal baseline, both in the past 6 months at postnatal and in the 30 days before the baby was born. Over one-quarter of clients also reported the stability of their living situation increased while they were pregnant and in KIDS NOW Plus while the majority of clients reported their living situation stayed the same.

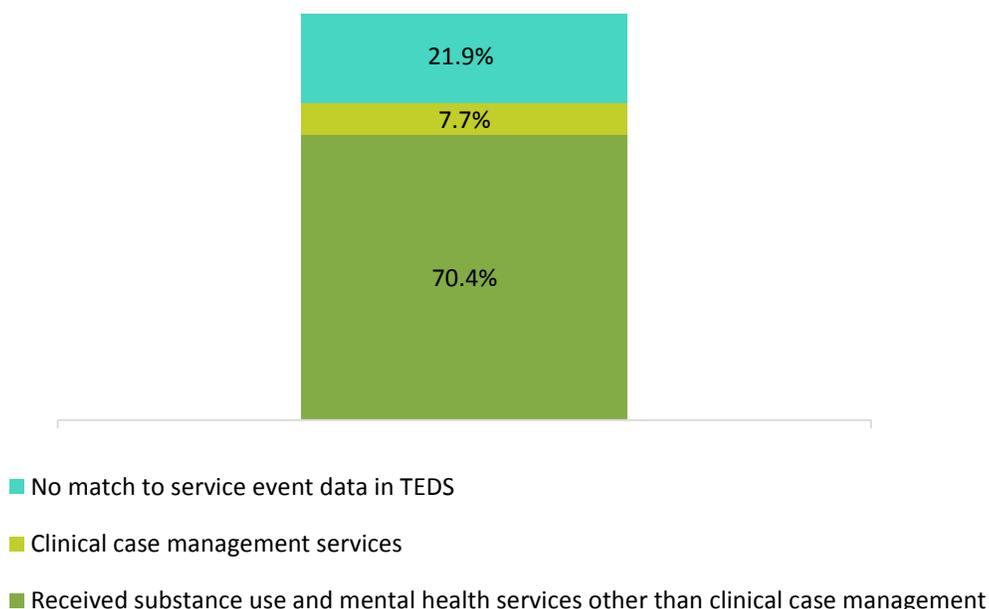
## Section 3: Clinical Services

*This section examines case management services received by KIDS NOW Plus clients while in the program as well as mental health diagnosis. In addition, it compares services received by KIDS NOW Plus clients to those received by women with similar socioeconomic characteristics who gave birth during the same time period but who were not part of the program.*

Information on clinical service events for KIDS NOW Plus clients receiving case management at community mental health centers (CMHCs) is submitted into the Treatment Event Dataset (TEDS) and is managed by the University of Kentucky Institute for Pharmaceutical Outcomes and Policy (IPOP). Clinical services include outpatient counseling, residential treatment and other services as reported monthly by the CMHCs to the Department of Behavioral Health, Development and Intellectual Disabilities as service event data in TEDS. Service events were matched to clients in the KIDS NOW Plus postnatal follow-up sample using encrypted social security numbers. In order to collect service events during the time the client was active in KIDS NOW Plus, service events were requested for the date the client was admitted to the KIDS NOW Plus case management program to two months after the date the baby was born. The timeframe varied for each client (average days 200.9; Minimum = 38, Maximum = 322 days) but could range from May 2013 (the earliest date which a client in the follow-up sample entered the program) to February 2015 (two months after the latest date a baby in the follow-up sample was born).

Out of the 169 KIDS NOW Plus clients in the postnatal follow-up sample, 21.9% were not found in the clinical services database. There are many reasons that an individual may not be found in the database including mistakes in identifying information, classification errors, and potentially no clinical services were rendered during this time period.<sup>22</sup> Further, as Figure 3.1 shows, 119 (70.4%) received clinical services other than clinical case management services during the timeframe analyzed.

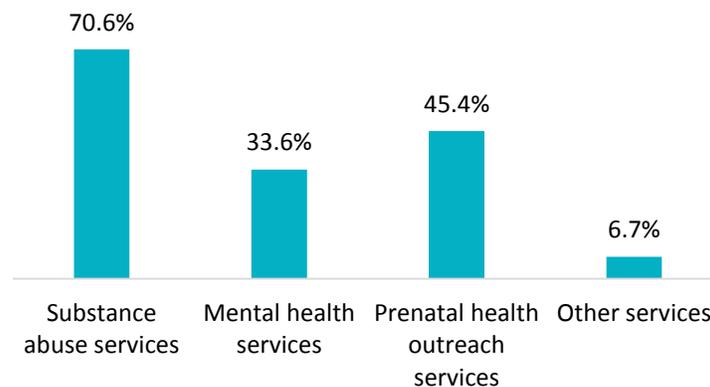
FIGURE 3.1. PERCENTAGE OF CLIENTS IN EACH SERVICE CATEGORY BETWEEN DATE THE CLIENT ENTERED THE KIDS NOW PLUS CASE MANAGEMENT PROGRAM AND TWO MONTHS AFTER THE DATE THE BABY WAS BORN (N = 169)



<sup>22</sup> Across all of the outcome studies at UK CDAR conducted on publicly funded treatment programs there is a similar proportion of individuals that are not found in the clinical services database.

According to the clinical services database, among clients receiving clinical services other than clinical case management (n = 119), 70.6% of these clients received substance abuse treatment services including individual substance abuse therapy, day hospital programs, residential substance abuse treatment, family residential, and intensive outpatient (see Figure 3.2). In addition, 33.6% of these clients received mental health treatment services such as individual mental health therapy, group therapy, therapeutic rehabilitation, and psychosocial and other assessment/evaluation services. Also, 45.4% of these clients received prenatal health outreach services and 6.7% of these clients received other services such as medical evaluations, supported housing, and outreach and education.

FIGURE 3.2. OF THOSE WHO RECEIVED CLINICAL SERVICES OTHER THAN CASE MANAGEMENT (N = 119), PERCENTAGE OF CLIENTS RECEIVING SUBSTANCE ABUSE TREATMENT SERVICES AND OTHER SERVICES



Among the clients who received clinical services other than case management (n = 119), clients received an average of 45.3 services (Min. = 1, Max. = 1,122 services).

## KIDS NOW PLUS SERVICES COMPARED TO SERVICES FOR OTHER MOTHERS FROM THE BIRTH OF THE CHILD TO ONE YEAR PRIOR

In order to evaluate if pregnant women in KIDS NOW Plus receive more services than pregnant women who are not in the program, service utilization for KIDS NOW Plus clients was compared with other mothers who are not part of the program (see Figure 3.3). KIDS NOW Plus clients were matched to other mothers in the Kentucky Vital Statistic birth event data set who gave birth during the same period and had similar socioeconomic characteristics.<sup>23,24</sup> If there were KIDS NOW Plus clients that did not have a match in the birth event data set on all characteristics for comparison, the clients were excluded from the analysis because the remaining cases would not result in a complete matched comparison. Therefore, out of the 169 KIDS NOW Plus clients who were included in the follow-up sample, a matched comparison sample was generated for 161 clients. Because the comparison sample was not in KIDS NOW Plus and, therefore, did not have a program start date, services were requested for KIDS NOW Plus clients and the comparison group during the time between the birth of the child and one year prior. Out of the 161 clients in the KIDS NOW Plus sample and the 161<sup>25</sup> matched comparison sample, significantly more KIDS NOW Plus clients (77.0%) received clinical services other than case management than the matched comparison sample (6.2%) one year prior to the birth of the child.<sup>26</sup>

<sup>23</sup> Clients were matched on age, race, education, marital status, smoking status and metropolitan/non-metropolitan status.

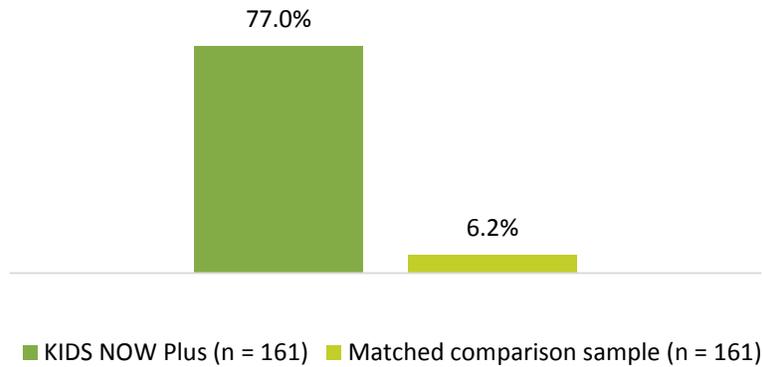
<sup>24</sup> More detailed information about the study method can be found in Appendix B.

<sup>25</sup> One case in the comparison group had an unknown social security number and therefore, could not be matched to the services database.

<sup>26</sup> 7 additional KIDS NOW Plus clients and 1 mother in the comparison group received only additional case management services (substance abuse or mental health) but were not included in this analysis.

More information about the matched comparison sample and other comparisons with KIDS NOW Plus clients can be found in Appendix D.

FIGURE 3.3. PERCENTAGE OF MOTHERS WHO RECEIVED CLINICAL SERVICES OTHER THAN CASE MANAGEMENT DURING THE TIME BETWEEN THE BIRTH OF THE CHILD AND ONE YEAR PRIOR\*\*\*



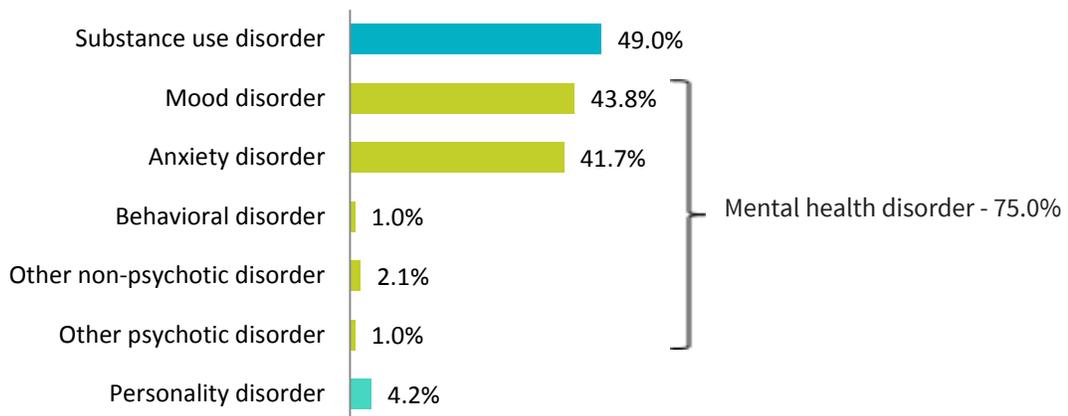
\*\*\*p < .001

### DSM-IV DIAGNOSIS

Using mental health diagnosis codes reported by Community Mental Health Center (CMHC) providers to the Department for Behavioral Health, Developmental and Intellectual Disabilities, DSM-IV diagnoses were obtained for KIDS NOW Plus case management services clients between the date the client was admitted to the KIDS NOW Plus case management program and two months after the date the baby was born. Out of 169 clients who were included in the postnatal follow-up sample, 56.2% had a mental health diagnosis (n = 96).

Figure 3.4 shows of those clients who received a DSM-IV mental health diagnosis, 49.0% of clients were diagnosed with a substance use disorder and 75.0% were diagnosed with a mental health disorder. Specifically, 43.8% were diagnosed with mood disorder (depression or non-psychotic bipolar disorder), 41.7% were diagnosed with anxiety disorder (generalized anxiety, panic disorder, or obsessive-compulsive disorder), and 1.0% were diagnosed with a behavioral disorder (such as attention-deficit/hyperactivity disorder). In addition, 4.2% were diagnosed with a personality disorder (such as antisocial, narcissistic, borderline). These diagnoses are not mutually exclusive, thus a person could have multiple DSM-IV diagnoses.<sup>27</sup>

FIGURE 3.4. DSM-IV DIAGNOSES FOR CLIENTS WITH MENTAL HEALTH DIAGNOSIS (N = 96)

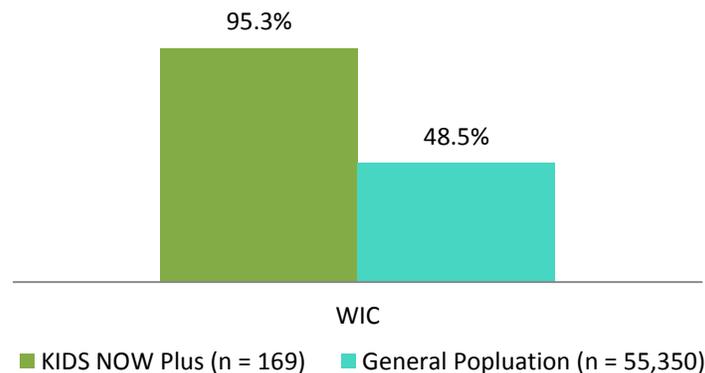


<sup>27</sup> Clients who receive a diagnosis do not necessarily receive clinical services. Nine clients received a DSM-IV mental health diagnosis, but did not receive clinical services and 32 clients received services, but did not receive a DSM-IV mental health diagnosis.

## WIC

Besides the additional clinical services received from KIDS NOW Plus case management, caseworkers make an effort to connect women with support services like the Women, Infants and Children (WIC) program. WIC provides nutrition education, breastfeeding promotion and education, a monthly food allotment to use toward nutritious foods, and access to maternal, prenatal and pediatric health-care services for high-risk women. In fact, according to the vital statistics data, 95.3% of KIDS NOW Plus clients received support from WIC compared to 48.5% of mothers who were not in KIDS NOW Plus<sup>28</sup> which may suggest lower incomes and/or greater effort by KIDS NOW Plus caseworkers to connect women with this service (see Figure 3.5).

FIGURE 3.5. PERCENTAGE OF WOMEN ENROLLED IN WIC PROGRAM COMPARED TO THE GENERAL POPULATION OF MOTHERS<sup>a\*\*\*</sup>



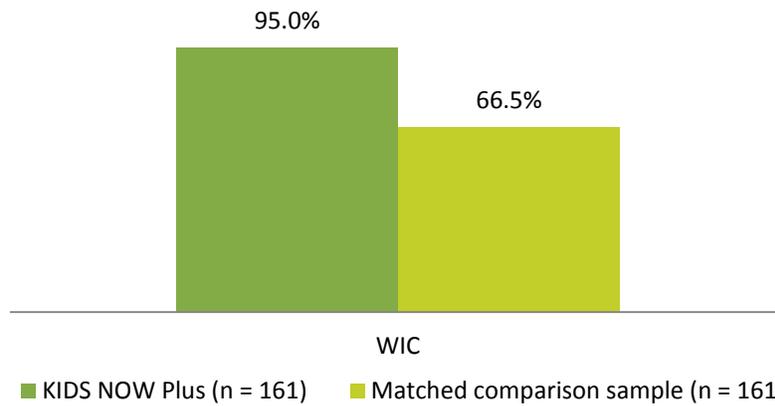
a – Information on WIC was missing for 1 mother and labeled “unknown” for 349 mothers in the general population.  
Significance tested with Chi-square test; \*\*\* p < .001

When the KIDS NOW Plus mothers were compared to the matched comparison sample of women who gave birth during the same timeframe,<sup>29</sup> a significantly greater percentage of KIDS NOW Plus case management clients were enrolled in WIC at the time of the birth (95.0%) compared to the matched comparison group (66.5%; see Figure 3.6).

<sup>28</sup> For more comparisons between the KIDS NOW Plus clients and mothers in the general population, see birth events and outcomes in section 5.

<sup>29</sup> More detailed information about service methods can be found in Appendix B, and other comparisons with the matched sample can be found in Appendix D.

FIGURE 3.6. PERCENTAGE OF WOMEN ENROLLED IN WIC PROGRAM AMONG KIDS NOW PLUS CLIENTS AND A MATCHED COMPARISON SAMPLE<sup>a\*\*\*</sup>



a – Information on WIC was labeled “unknown” for 1 mother in the matched comparison sample.  
Significance established using Chi-square test; \*\*\* p < .001

## SUMMARY

Seven in ten KIDS NOW Plus clients received clinical services other than case management. Of those clients who received clinical services other than clinical case management, 70.6% received substance abuse services such as individual therapy, day hospital programs, residential substance abuse treatment, family residential, and intensive outpatient. About one-third (34%) of clients received mental health services such as individual mental health therapy, group therapy, and psychosocial and other assessment/evaluation services. In addition, 45.4% of clients received prenatal health outreach services. Compared to mothers of similar socioeconomic status who also gave birth during the same timeframe but were not part of the KIDS NOW Plus program, KIDS NOW Plus clients were significantly more likely to receive services in the year prior to the birth of their child. Additionally, KIDS NOW Plus mothers were more likely to receive support services such as WIC.

## Section 4: Pregnancy Status

*This section describes clients' pregnancy status at prenatal baseline as well as general feelings and attitudes about their pregnancies including: (1) expectations and feelings about the baby; (2) general information regarding the pregnancy/baby; and (3) planned method of birth control. Comparisons of client-level data are made from prenatal baseline to postnatal follow-up where applicable.*

### PREGNANCY STATUS

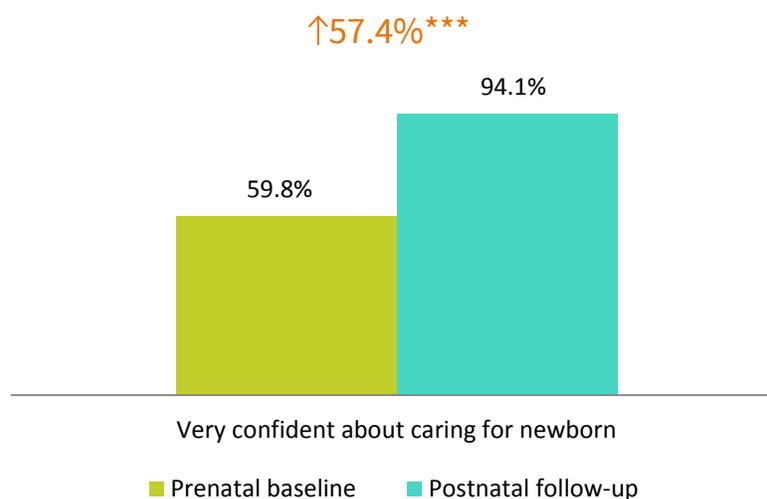
When followed-up clients completed a prenatal baseline they were an average of 21.2 weeks pregnant (Min. = 5 weeks, Max. = 40 weeks)<sup>30</sup> and were in the program an average of 19.4 weeks (Min. = 4 weeks, Max. = 35 weeks).<sup>31</sup> After the baby was born, clients reported remaining in KIDS NOW Plus case management an average of 6.4 weeks (Min. = 0 weeks, Max. = 40 weeks).<sup>32</sup>

### EXPECTATIONS AND FEELINGS ABOUT THE BABY

At prenatal baseline and postnatal follow-up, clients were asked, on a scale of 1 being 'not confident at all' to 5 being 'very confident about it', how confident they were in taking care of a newborn baby (see Figure 4.1). At prenatal baseline, 59.8% of clients reported they felt very confident (an average score of 4.5) and at postnatal follow-up, 94.1% felt very confident (an average score of 4.9), which is a 57.4% increase in the number of clients reporting they felt very confident in taking care of a newborn.

**Well over 90% of clients felt confident about their ability to care of their newborn at follow-up**

FIGURE 4.1. LEVEL OF CONFIDENCE WITH TAKING CARE OF NEWBORN BABY AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 169)



\*\*\*p < .001

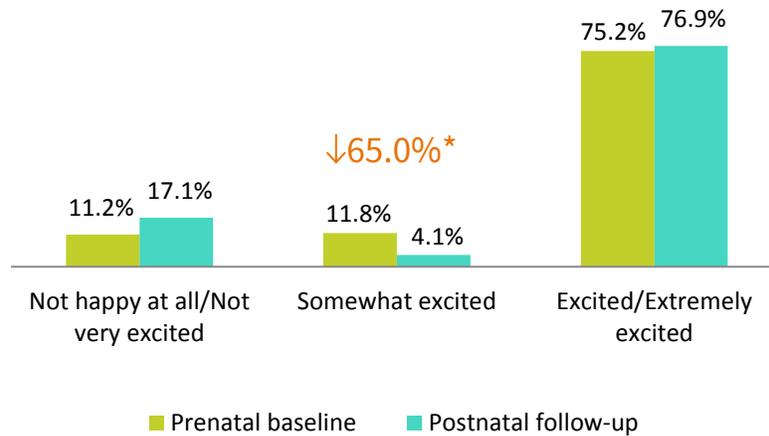
<sup>30</sup> In order to be included in the analysis, there must be at least 30 days between the date of program entry and the birth of the baby. The average numbers of days between program entry and baseline completion was 21 (Min. = 0 and Max. = 131). Therefore, even though a client was 40 weeks when the baseline was completed, she was in the program more than 30 days.

<sup>31</sup> 8 clients either had an incorrect/missing date the child was born or an incorrect date they were admitted to the KIDS NOW Plus program.

<sup>32</sup> 20 clients did not have data because 17 replied they did not know how long they remained in KIDS NOW Plus and the question was skipped by the interviewer for 3 clients at follow-up.

The majority of clients reported the baby’s father was excited or extremely excited about the pregnancy at prenatal baseline (75.2%) as well as at postnatal follow-up (76.9%).

FIGURE 4.2. FATHER’S FEELINGS ABOUT THE PREGNANCY AT PRENATAL BASELINE AND THE BABY AT POSTNATAL FOLLOW-UP (N = 169)<sup>a</sup>

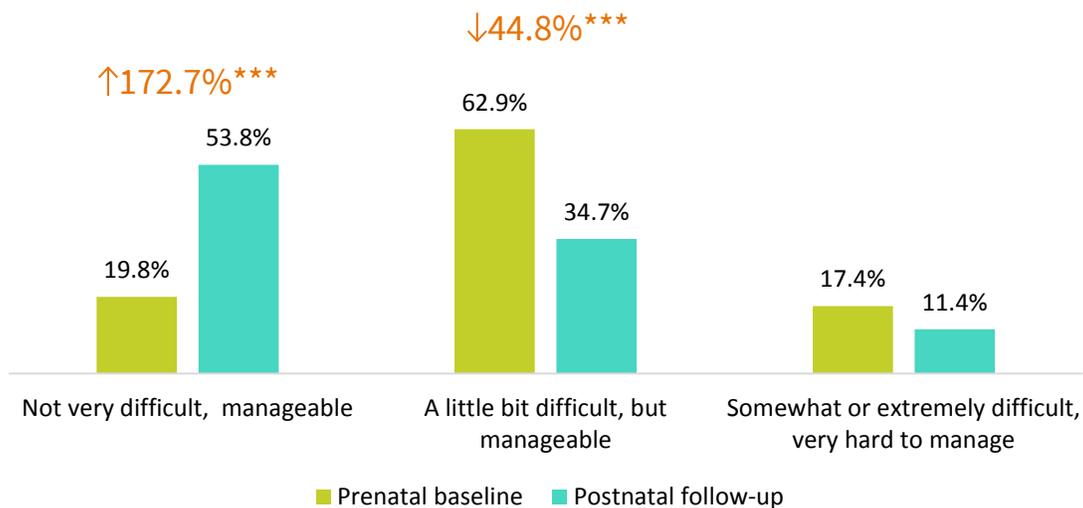


\* p < .05

a—3 clients at prenatal baseline and 1 client at postnatal follow-up reported that the father of the pregnancy/baby did not know about the child and 2 clients reported at follow-up that they didn’t know what the father thought about the baby.

Perceptions about how difficult life would be/is with the baby also changed from prenatal baseline to postnatal follow-up (see Figure 4.3). In general, at prenatal baseline, clients felt life with a new baby would be more difficult: 17.4% reporting things would be somewhat difficult to extremely difficult and 62.9% of clients feeling that life would be a little bit difficult, but manageable. At postnatal follow-up, over half of clients (53.8%) reported that life with the baby was not very difficult and very/fairly manageable (a significant increase of 172.7% compared to prenatal baseline).

FIGURE 4.3. CLIENT PERCEPTIONS OF LIFE WITH THE BABY AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 167)<sup>a</sup>



\*\*\* p < .001

Significance tested with z-test for proportions

a—Question skipped for 2 clients at follow-up

## GENERAL INFORMATION REGARDING THE PREGNANCY/BABY

Clients reported they were in labor an average of 12 hours with the majority of clients reporting between a half an hour and 15 hours.

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, clients reported an average of 6.0 doctor visits about the pregnancy and at postnatal follow-up clients reported an average of 5.6 visits to the pediatrician or nurse since giving birth. Less than one-quarter of clients (21.7%) 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 postnatal follow-up, 12.7% (21 clients)<sup>33</sup> reported their doctor has told them their baby has special health care needs. More specifically, 14 clients reported their babies had minor health care needs such as allergies, acid reflux, or a heart murmur. However, 7 mothers<sup>34</sup> (or 4.1% of the postnatal follow-up sample) reported various and potentially serious problems such as developmental issues, a cleft lip, and heart condition. 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>35</sup> and about 1.0% of babies will be born with a congenital heart defect.<sup>36</sup> In addition, 20% of children in the United States and 26% 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>37</sup>

“My case manager was so great. I left like I was talking to my best friend, I could tell her anything.”

-KIDS NOW Plus Follow-up Client

Almost half of clients (46.7%) reported at prenatal baseline that they planned on breastfeeding their baby. At postnatal follow-up, 40.1% of clients reported having breastfed their baby and, of those clients (n = 67), 20.9% were still breastfeeding.

## SUMMARY

Clients’ reports of comfort level and confidence in caring for a baby increased significantly from baseline to follow up. Also, all the mothers in the follow-up sample reported their babies were doing “great” or “good” and the majority felt confident about being the mother of an infant. In addition, over three-quarters of mothers felt the baby’s father was excited or extremely excited about the baby. Finally, mothers had taken their babies to see a doctor an average of 5.6 visits since the baby had been born, which is an average of about once/month.

<sup>33</sup> Question was skipped for 3 clients at baseline and follow-up.

<sup>34</sup> Mothers could report more than one special health care need.

<sup>35</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>36</sup> <http://www.marchofdimes.com/baby/congenital-heart-defects.aspx#>

<sup>37</sup> KIDS COUNT Data Center. (2013). *Children with special health care needs 2011-2012*. Retrieved from <http://datacenter.kidscount.org/data/tables/29-children-with-special-health-care-needs?loc=19&loct=2#detailed/2/19/false/1021,18,19,12/any/298,299> and <http://datacenter.kidscount.org/data/tables/29-children-with-special-health-care-needs?loc=1&loct=1#detailed/1/any/false/1021,18,19,12/any/298,299> on September 2, 2015.

## Section 5.

# Birth Events and Outcomes: KIDS NOW Plus Case Management Clients Compared to the General Population of Mothers

*This section uses the Kentucky Vital Statistics birth data<sup>38</sup> to examine (1) general risk factors; (2) targeted risk factors available from the Vital Statistics data set; and (3) birth events and outcomes of 169 KIDS NOW Plus case management clients and their babies compared to others in the state who had babies during the same period (between December 2013 and December 2014) but who did not participate in the KIDS NOW Plus Case Management study (n = 55,351).<sup>39, 40</sup>*

Three KIDS NOW Plus clients and 949 mothers from the general population had more than one baby in the data set. As a result, there were 172 babies in the KIDS NOW Plus sample and 56,385 babies in the general population sample.<sup>41</sup> The information in this section is limited to data in the Kentucky Vital Statistics data set and describes demographic information (age, race, and metropolitan/non-metropolitan area of residence), socio-economic status indicators (education and source of payment for birth of the baby), physical health status (average weight gained during pregnancy and maternal health problems), patterns of cigarette smoking, and birth outcomes.

## GENERAL RISK FACTORS

### DEMOGRAPHICS

Table 5.1 shows the demographic differences between KIDS NOW Plus mothers and mothers from the general population in regions served by KIDS NOW Plus at the time of the birth of the baby.

Compared to the general population of women who gave birth, KIDS NOW Plus clients were younger, more likely to be White, and were less likely to live in metropolitan communities.

In addition, significantly more mothers in the general population were married (56.6%) compared to the KIDS NOW Plus mothers (36.7%).

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<sup>38</sup> In the Kentucky Vital Statistics birth event data set, each case is one baby paired with the mother's information collected at the time of the birth. There could potentially be multiple babies (cases) attached to one mother in the instance of multiple births or multiparous births in the same year. For that reason, the number of cases in the file does not equal the number of mothers in the file.

<sup>39</sup> Out of the 58,674 cases in the Vital Statistics data set that remained in December 2013 to December 2014 after cleaning, 2,115 cases had the mother's residence as out-of-state or not entered, and 2 were KIDS NOW Plus mothers who had given birth prior to their date of admission to the program. A total of 56,557 cases, therefore, remained in the analysis.

<sup>40</sup> See Appendix D for further birth data comparisons between KIDS NOW Plus clients and a sample of mothers with matching characteristics.

<sup>41</sup> More detailed description of the birth data methods can be found in Appendix B.

TABLE 5.1. DEMOGRAPHIC INFORMATION OF BIRTH DATA GROUPS<sup>a</sup>

	KIDS NOW Plus (n = 169)	General Population (n = 55,351)
Average age**	25.4	26.8
Race**		
White	92.9%	83.4%
Non-white	7.1%	16.5%
Type of community***		
Metropolitan	37.3%	59.6%
Non-metropolitan	46.7%	32.4%
Very rural	16.0%	8.0%
Married***	36.7%	56.6%

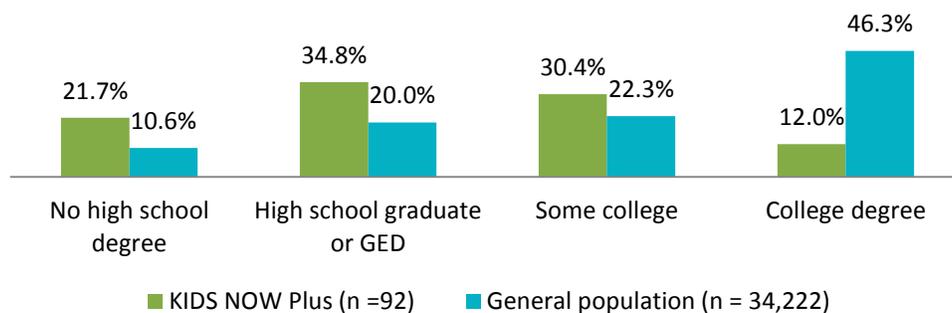
\*\* p < .001 , \*\* p < .01

a—Marital status was missing for 17 women and age was missing for 7 women in the general population.

### SOCIOECONOMIC STATUS INDICATORS

Because the KIDS NOW Plus mothers were younger than the general population it is important to compare education rates only for those who had sufficient time to finish high school or a GED. The 2013 census indicates that of Kentuckians ages 25 and older, 83% had high school degrees. When both groups of women ages 25 and older are compared, 77.2% of KIDS NOW Plus mothers and 88.6% of mothers in the general population have at least a high school diploma or GED (see Figure 5.1). Therefore, among women 25 years of age and older, 21.7% of KIDS NOW Plus mothers and 10.6% of mothers in the general population had less than a high school degree. In addition, 46.3% of mothers in the general population, which was significantly older than the KIDS NOW Plus mothers, received a college degree compared to 12.0% of mothers in KIDS NOW Plus.

FIGURE 5.1. LEVEL OF EDUCATION ACROSS GROUPS, AMONG WOMEN 25 YEARS OLD OR OLDER\*\*\*

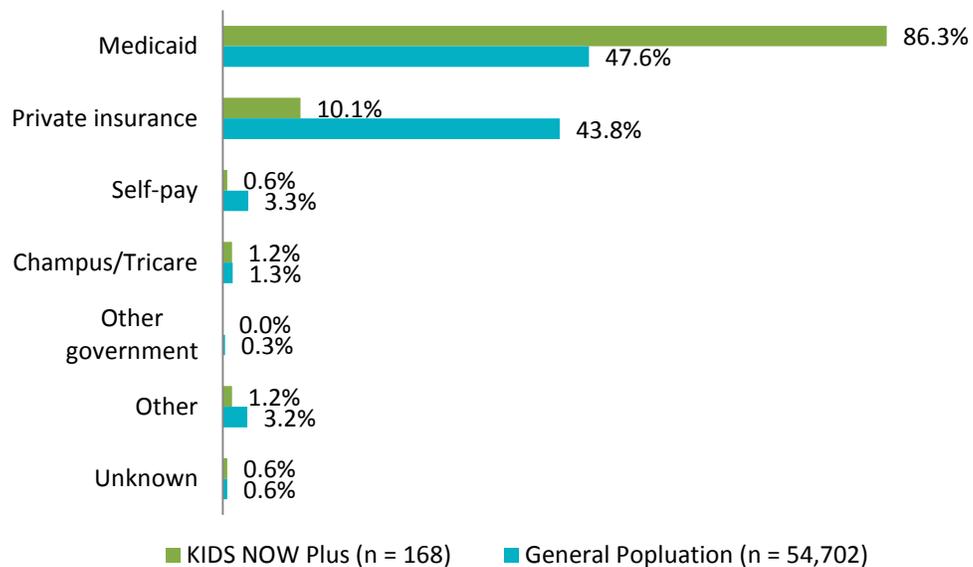


\*\*\*p < .001

Figure 5.2 shows that KIDS NOW Plus clients were significantly more likely to have Medicaid as their source of payment for the birth of the baby (86.3%)<sup>42</sup> whereas the general population was more likely to have private insurance (43.8%) compared to the KIDS NOW Plus clients (10.1%).

<sup>42</sup> Percent of KIDS NOW Plus clients with Medicaid is different from section 2 because this data is from the birth event data set as opposed to self-reported at postnatal follow-up.

FIGURE 5.2. SOURCE OF PAYMENT FOR DELIVERY COSTS ACROSS GROUPS<sup>a\*\*\*</sup>



Significance tested with Chi-square test; \*\*\*p < .001

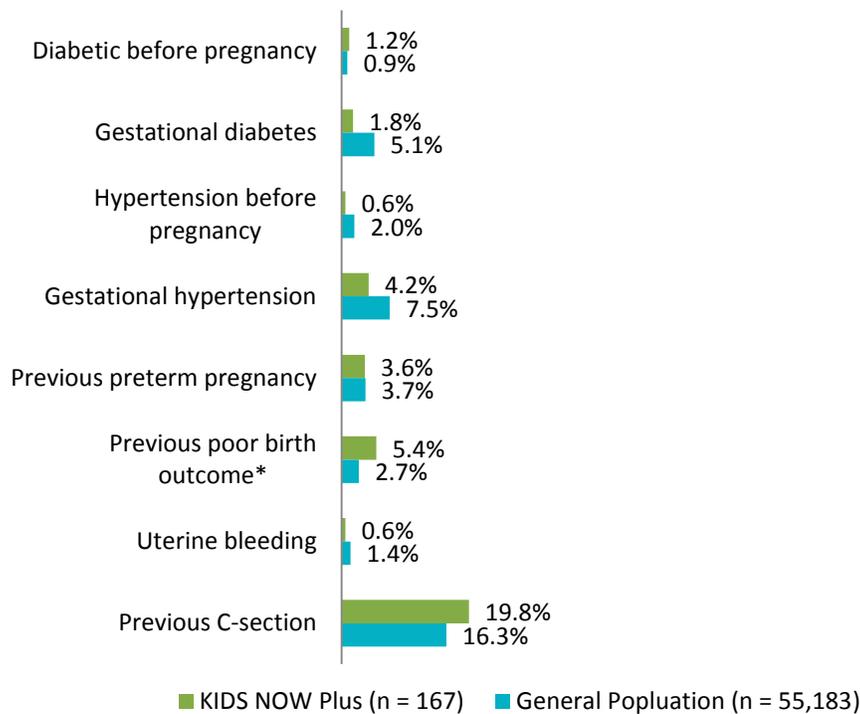
a—Source of payment missing for 1 KIDS NOW Plus client and 651 mothers in the general population.

### PHYSICAL HEALTH STATUS

General health conditions of pregnancy that could cause harm to the baby or the mother were collected from the Kentucky Vital Statistics data set. KIDS NOW Plus mothers were not significantly more or less likely than the general population of mothers to experience most of the maternal health conditions such as diabetes, gestational diabetes, hypertension, and gestational hypertension (see Figure 5.3). KIDS NOW Plus mothers were significantly more likely, however, to have had a previous poor outcome (5.4%) compared to the general population (2.7%) which may be another indicator of the need for KIDS NOW Plus services.

Though KIDS NOW Plus mothers were more likely to have a poor outcome from a previous birth, **they did not have any more maternal health problems for the current pregnancy than the general population of mothers**

FIGURE 5.3. OTHER MATERNAL HEALTH FACTORS ACROSS GROUPS<sup>a</sup>



\* p < .05

a—2 KIDS NOW Plus clients and 170 mothers in the general population had missing information on maternal health questions.

KIDS NOW Plus clients were significantly more likely (9.5%) to have sexually transmitted infections such as gonorrhea, syphilis, herpes, or chlamydia compared to the general population (4.7%).<sup>43,44</sup> They were also significantly more likely to have hepatitis B or C (10.1%) compared to the general population of mothers (1.6%, not shown in a figure).

## TARGETED RISK FACTORS

### SMOKING PATTERNS

A significantly greater percentage of KIDS NOW Plus mothers (64.3%) were smokers compared to the general population of mothers (25.0%).<sup>45</sup> In addition, among mothers who smoked, KIDS NOW Plus mothers reported smoking more cigarettes in each trimester compared the women in the general population (see Figure 5.4).

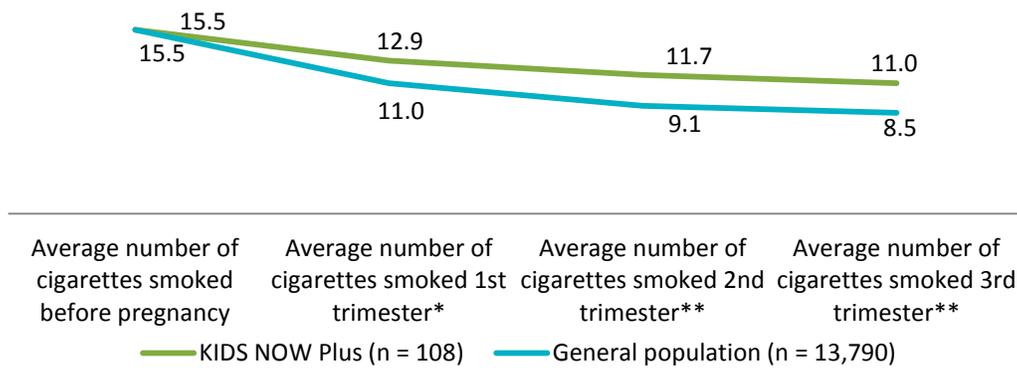
Among mothers who smoked, **KIDS NOW Plus mothers smoked significantly more cigarettes during pregnancy compared to women in the general population**

<sup>43</sup> Percentage of clients with STI is different from section 2 because this data is from the birth event data set as opposed to self-reported at baseline.

<sup>44</sup> 258 mothers in the general population were missing data on sexually transmitted infections.

<sup>45</sup> One KIDS NOW Plus client and 130 mothers in the general population was missing data about whether or not she was a smoker.

FIGURE 5.4. AVERAGE NUMBER OF CIGARETTES SMOKED PER TRIMESTER



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

a—From the general population, 11 mothers were missing information on the number of cigarettes before pregnancy, 13 were missing the number of cigarettes in the first trimester, 12 were missing the number of cigarettes in the second trimester and 8 were missing the number of cigarettes in the last trimester.

## BIRTH EVENTS AND OUTCOMES

### MULTIVARIATE ANALYSIS OF BIRTH OUTCOMES

Using the Kentucky Vital Statistics data, the birth outcomes of children born to mothers who participated in KIDS NOW Plus case management (n = 172) were compared to the outcomes of children born to mothers who did not participate in KIDS NOW Plus and who lived in the CMHC regions that provide KIDS NOW Plus (n = 56,385). Logistic regression models were used to examine the association between KIDS NOW Plus participation and birth outcomes while adjusting for key factors.<sup>46</sup>

Each birth outcome in Table 5.2 was entered as the dependent variable in a separate binary logistic regression model with KIDS NOW Plus participation as the predictor variable and the covariates of mother’s age, education (i.e., less than high school diploma/high school diploma or higher), area of residence (metropolitan vs. non-metropolitan county), marital status (married vs. not married), and smoking at the time of the birth (Yes/No).<sup>47</sup>

Results of the analysis show that KIDS NOW Plus clients were not significantly more or less likely than mothers in the general population to give birth to a baby prematurely (the adjusted average mean<sup>48</sup> weeks gestation was 38.3 for both groups), to have a child with low birth weight (the adjusted average mean of 7lbs, 2oz to 7lbs, 3oz), to have birthing problems (between 11.6%

“I like how concerned my case worker was. She was very accommodating, if I couldn’t meet her she would come to me.”

-KIDS NOW Plus Follow-up Client

<sup>46</sup> The alpha level was set at p < .01.

<sup>47</sup> Because race was highly associated with metropolitan vs. non-metropolitan residence for KIDS NOW Plus clients, such that only 8 non-White KIDS NOW Plus clients lived in a non-metropolitan community, to avoid the problem of multicollinearity in the models, race was excluded as a covariate while mother’s residence in a metropolitan vs. non-metropolitan community was included.

<sup>48</sup> An ANCOVA was used to estimate adjusted means using the same covariates used in the multivariate models and included mother’s age, education (i.e., high school diploma or higher), area of residence (metropolitan vs. non-metropolitan county), marital status, and smoking at the time of the birth.

and 12.3%), to have their baby taken to the neonatal intensive care unit (NICU; between 7.9% and 11.0%), or to breastfeed (between 47.6% and 66.0%).

TABLE 5.2. EFFECT OF KIDS NOW PLUS PARTICIPATION ON BIRTH OUTCOMES (N = 56,557)<sup>a</sup>

	<i>b</i>	Adj. Odds ratio	99% Confidence Intervals
Premature	-.368	.692	.336-1.423
Low birth weight	-.081	.922	.475-1.791
Any birthing problems (other than the baby being taken to the NICU)	-.045	.956	.516-1.771
Baby taken to NICU	.299	1.348	.717-2.537
Breastfeeding	-.169	.844	.553-1.288

Note: Categorical variables were coded in the following ways: KIDS NOW Plus participation (0 = General population, 1 = KIDS NOW Plus client); Type of community in which mother resided (0 = Non-metropolitan, 1 = Metropolitan); Mother's education (0 = Less than a high school diploma/GED, 1 = High school diploma/GED or higher); Mother reported being a smoker (0 = No, 1 = Yes); Mother's marital status (0 = Not married, 1 = Married); Premature (0 = Fullterm, 1 = Premature); Any birthing problems other than the baby being taken to the NICU (0 = No, 1 = Yes); Baby taken to NICU (0 = No, 1 = Yes); Breastfeeding (0 = No, 1 = Yes).

a--The number of cases with missing values on at least one of the covariates or dependent variable for the 5 logistic models were: premature (n = 24), low birth weight (n = 7), any birth problems (n = 12), baby taken to NICU (n = 185), and breastfeeding (n = 203).

The highest APGAR score<sup>49</sup> was entered as the dependent variable in a linear regression model with KIDS NOW Plus participation as the predictor variable and the covariates of mother's age, education, area of residence, marital status, and smoking status at birth. As shown in Table 5.3, there was no difference in APGAR score for babies born to KIDS Now Plus mothers (adjusted average score of 8.9) versus mothers in the general population (adjusted average score of 8.8), after adjusting for the selected covariates.

TABLE 5.3. EFFECT OF PARTICIPATION IN KIDS NOW PLUS ON BABY'S HIGHEST APGAR SCORE (N = 55,987)<sup>a</sup>

	$\beta$	t	df	p
Highest APGAR score	.002	.494	6	.622

R<sup>2</sup> = .002, R<sup>2</sup>adj. = .001, F(6, 55,980) = 14.885, p < .001.

Note: Categorical variables were coded in the following ways: KIDS NOW Plus participation (0 = General population, 1 = KIDS NOW Plus client); Type of community in which mother resided (0 = Non-metropolitan, 1 = Metropolitan); Mother's education (0 = Less than a high school diploma/GED, 1 = High school diploma or higher); Mother reported being a smoker (0 = No, 1 = Yes); Mother's marital status (0 = Not married, 1 = Married).

a-- 141 cases had missing values for the highest APGAR score, 5 cases had scores outside the range of permissible values (negative values), and 424 cases had missing values on at least one of the covariates.

The number of prenatal visits was also entered as the dependent variable in a linear regression model with KIDS NOW Plus participation as the predictor variable and the covariates of mother's age, education, area of residence, marital status, and smoking status at birth (see Table 5.4). There was a significant difference in the number of prenatal visits for KIDS NOW Plus mothers (adjusted average of 12.9) compared to mothers in the general population (adjusted average of 11.8), after adjusting for the selected covariates.

<sup>49</sup> Most babies had one APGAR (5-minute) recorded in the file, but for a smaller number of babies a 10-minute APGAR was recorded. A new variable was computed that took the highest value APGAR (if 2 scores were recorded) or the only score.

TABLE 5.4. EFFECT OF PARTICIPATION IN KIDS NOW PLUS ON THE NUMBER OF PRENATAL VISITS (N = 54,585)<sup>a</sup>

	$\beta$	t	df	p
Average number of prenatal visits	.014	3.406	6	.001

R<sup>2</sup> = .037, R<sup>2</sup>adj. = .037, F(6, 54,578) = 354.347, p < .001.

Note: Categorical variables were coded in the following ways: KIDS NOW Plus participation (0 = General population, 1 = KIDS NOW Plus client); Type of community in which mother resided (0 = Non-metropolitan, 1 = Metropolitan); Mother’s education (0 = Less than a high school diploma/GED, 1 = High school diploma or higher); Mother reported being a smoker (0 = No, 1 = Yes); Mother’s marital status (0 = Not married, 1 = Married).

a—1,610 cases had missing values for the number of prenatal visits and 362 cases had missing values on at least one of the covariates.

## SUMMARY

Compared to the general population of mothers in Kentucky who gave birth during the same period of time as KIDS NOW Plus clients, KIDS NOW Plus clients were younger, more likely to live in non-metropolitan areas, were less likely to be married, and had less education. In addition, KIDS NOW Plus mothers were more likely to have Medicaid as their source of payment for the birth of the baby. While they were not more likely to have maternal health problems such as gestational diabetes and hypertension, they were more likely to have previous poor outcomes and sexually transmitted infections as well as Hepatitis B and/or C. More KIDS NOW Plus mothers also smoked cigarettes before becoming pregnant and, among those who smoked, they smoked significantly more cigarettes in each trimester compared to the general population of mothers. Despite these characteristics, multivariate analysis showed that birth events and outcomes were very similar between groups.

Specifically, there were no significant differences for the average number of gestational weeks, the percentage of babies who were born premature, highest APGAR score, birth weight, the percentage of babies with birthing problems, the percentage of babies being taken to the neonatal intensive care unit, or the decision to breastfeed. In addition, KIDS NOW Plus mothers reported significantly more prenatal care visits with a health care provider compared to the general population.

### A CLOSER LOOK AT BIRTH EVENT OUTCOMES

Further analysis of birth data outcomes can be found in Appendix B in which KIDS NOW Plus clients were compared to a sample of mothers on selected factors (i.e., age, race, education, marital status, metropolitan/non-metropolitan residence, and smoking status) along with a randomly selected comparison group from the general population. Overall, results of the comparison analysis parallel the results of the multivariate analysis with birth events and outcomes being very similar across the three groups.

## Section 6.

# Substance Use

*This section of targeted risk factors examines change in: (1) overall substance use (illegal drug and/or alcohol use); (2) use of illegal drugs, alcohol, and cigarettes; (3) problems experienced with substance use; (4) readiness for substance abuse treatment; and (5) substance abuse treatment and self-help meetings. Past-6-month and past-30-day substance use are examined separately where applicable.*

Change in targeted risk factors were examined for two different trends over time:<sup>50</sup>

### 1. Six month trends

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

### 2. 30 day trends

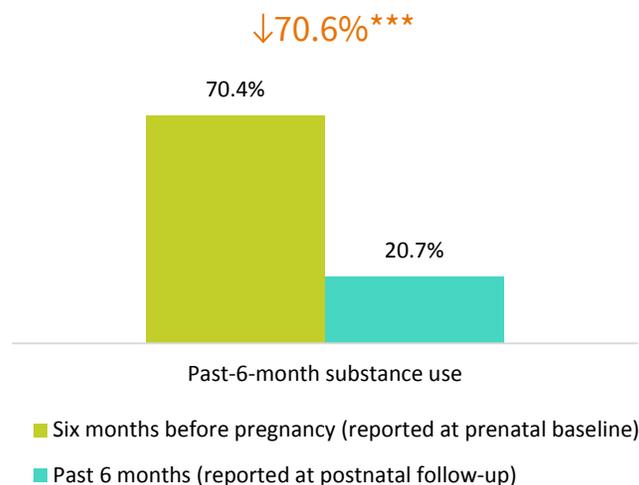
- a. **30 days before pregnancy.** Information collected from the client at prenatal baseline regarding the 30 days before she found out she was pregnant.
- b. **30 days at prenatal baseline.** Information collected from the client at prenatal baseline regarding the past 30 days she has been pregnant.
- c. **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 KIDS NOW Plus case management services.
- d. **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, almost three-quarters of clients (70.4%) reported using illegal drugs and/or alcohol. In the past 6 months at follow-up, less than one-quarter (20.7%) of clients reported using illegal drugs and/or alcohol (a significant decrease of 70.6%).

FIGURE 6.1. PAST-6-MONTH SUBSTANCE USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 169)



\*\*\* p < .001

<sup>50</sup> z-test for proportion was used for significance testing of substance use, mental health problems and intimate partner violence unless otherwise indicated.

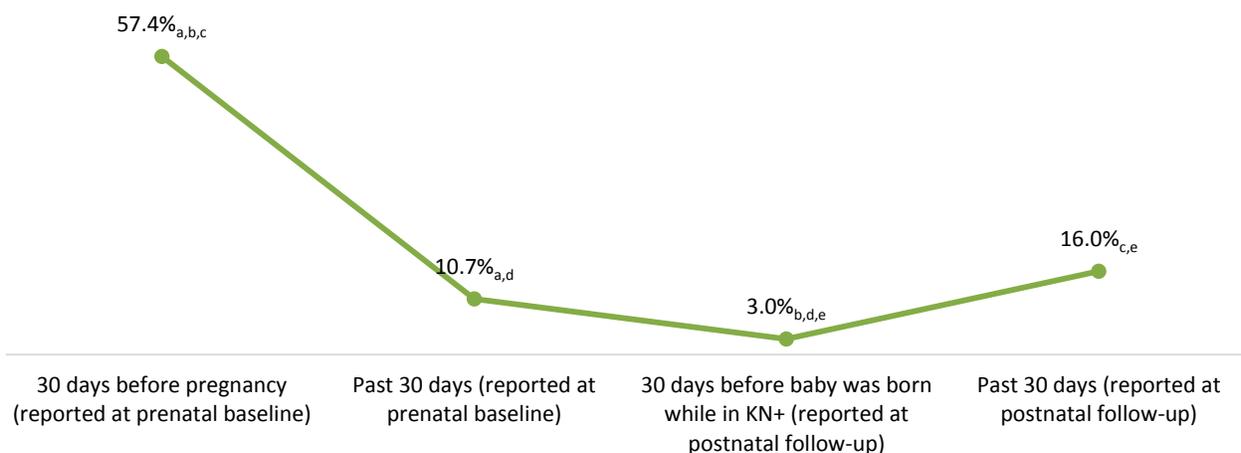
## PAST-30-DAY ILLEGAL DRUGS AND/OR ALCOHOL USE

Figure 6.2 shows the results for overall illegal drug and/or alcohol use across all four past-30-day periods. In the 30 days before pregnancy, 57.4% of clients reported using illegal drugs and/or alcohol. In the past 30 days at baseline, 10.7% of clients reported using illegal drugs and/or alcohol.

At postnatal follow-up, 3.0% of clients reported using illegal drugs and/or alcohol in the 30 days before the baby was born compared to 57.4% of clients in the 30 days before pregnancy and 10.7% in the past 30 days at prenatal baseline. Finally, 16.0% 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 while they were involved in KIDS NOW Plus.

**“I liked having someone to talk to about things I didn’t know. I’m a new mom so it was really nice.”**  
 -KIDS NOW Plus Follow-up Client

FIGURE 6.2. PAST-30-DAY SUBSTANCE USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 169)



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

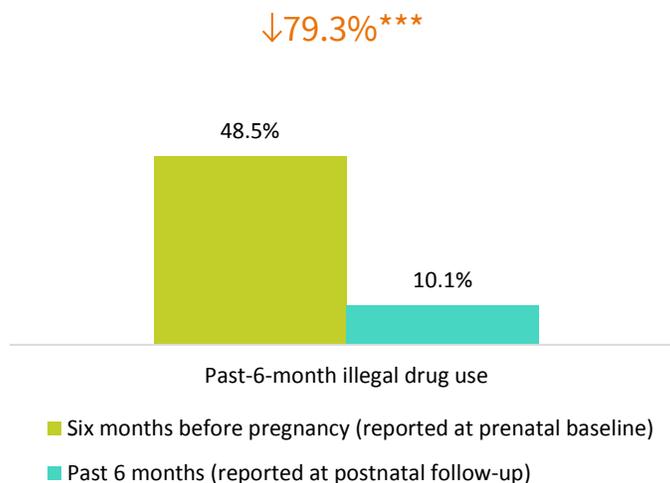
## ILLEGAL DRUG USE

### PAST-6-MONTH ILLEGAL DRUG USE

Figure 6.3 shows that in the 6 months before pregnancy, 48.5% of clients reported using illegal drugs and in the past 6 months at follow-up 10.1% of clients reported illegal drug use (a significant decrease of 79.3%).

**Almost half of clients reported illegal drug use in the 6 months before pregnancy compared to 10% in the past 6 months at postnatal follow-up**

FIGURE 6.3. PAST-6-MONTH ILLEGAL DRUG USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 169)



\*\*\* p < .001

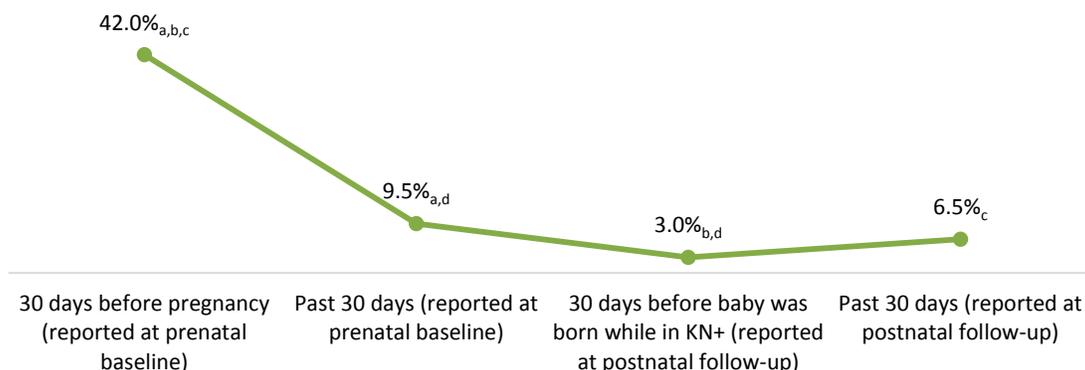
### PAST-30-DAY ILLEGAL DRUG USE

Less than one-half (42.0%) of clients reported illegal drug use<sup>51</sup> in the 30 days prior to becoming pregnant (see Figure 6.4). **A national survey of women indicated that 11.4% of non-pregnant women age 15-44 reported using illegal drugs in the past month.**<sup>52</sup> About 10% of clients reported using illegal drugs in the past 30 days at baseline. **In comparison, nationally, 5.4% of pregnant women aged 15-44 reported using illegal drugs in the past month.**

The number of clients who reported **illegal drug use decreased significantly in the past 30 days at prenatal baseline and again in the 30 days before the baby was born**

At postnatal follow-up, 3.0% of clients reported using illegal drugs in the 30 days before the baby was born and 6.5% reported using illegal drugs 30 days before the follow-up assessment.

FIGURE 6.4. PAST-30-DAY ILLEGAL DRUG USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 169)



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

<sup>51</sup> Illegal drug use includes marijuana, sedatives, barbiturates, prescription opiates, cocaine, heroin, hallucinogens, inhalants, methadone, and non-prescribed buprenorphine

<sup>52</sup> Substance Abuse and Mental Health Services Administration. *Results from the 2013 National Survey on Drug Use and Health: Summary of National Findings*, NSDUH Series H-48, HHS Publication No. (SMA) 14-4863. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2014.

## INJECTION DRUG USE

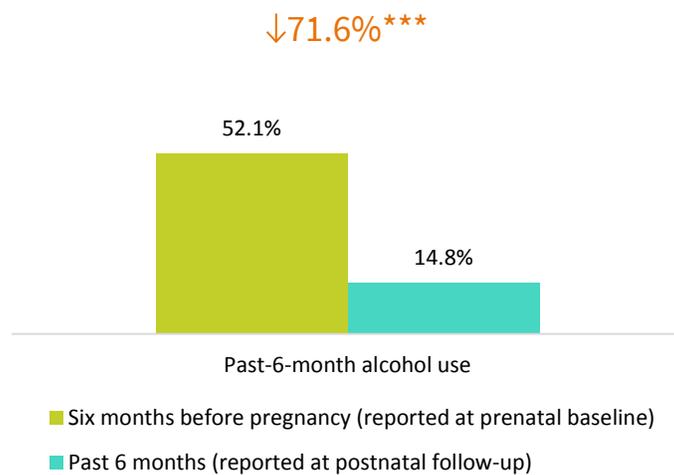
At prenatal baseline, 23.1% of clients reported ever injecting any drug and 0.6% of clients reported injecting a drug in the past 30 days. At postnatal follow-up, 1.2% of clients reported injecting drugs since they began KIDS NOW Plus and 0.6% of clients reported injecting any drug in the past 30 days.

## ALCOHOL USE

### PAST-6-MONTH ALCOHOL USE

Figure 6.5 shows that in the six months before pregnancy 52.1% of clients reported alcohol use and after the baby was born, 14.8% of clients reported alcohol use in the past 6 months (a significant decrease of 71.6% from the six months before pregnancy).

FIGURE 6.5. PAST-6-MONTH ALCOHOL USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 169)



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

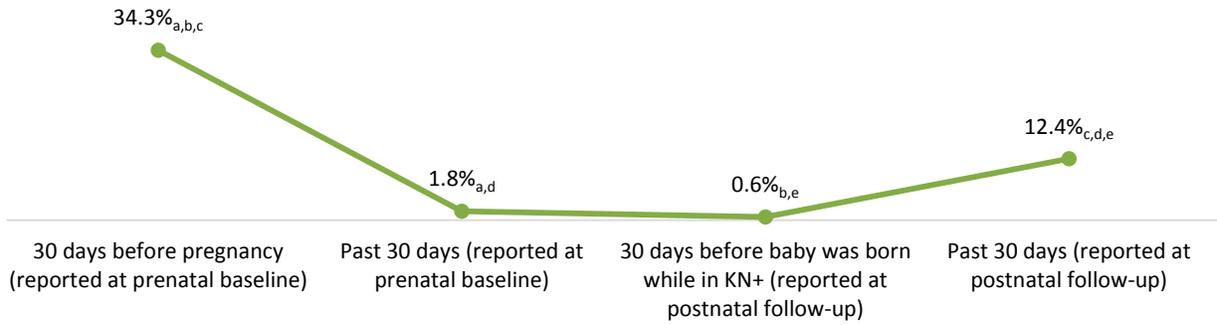
### PAST-30-DAY ALCOHOL USE

Figure 6.6 shows that 34.3% of clients reported alcohol use in the 30 days prior to becoming pregnant. At the national level, 55.4% of non-pregnant women aged 15-44 reported drinking alcohol in the past 30 days. In the past 30 days at prenatal baseline, 1.8% of clients reported using alcohol. Nationally, 9.4% of women aged 15-44 reported using alcohol during pregnancy.

The vast majority of KIDS NOW Plus clients **did not report any alcohol use in the 30 days before the baby was born**

At postnatal follow-up, one client reported using alcohol in the 30 days before the baby was born while they were involved in KIDS NOW Plus. Six months after the baby was born, 12.4% clients reported alcohol use in the past 30 days.

FIGURE 6.6. PAST-30-DAY ALCOHOL USE FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 169)



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

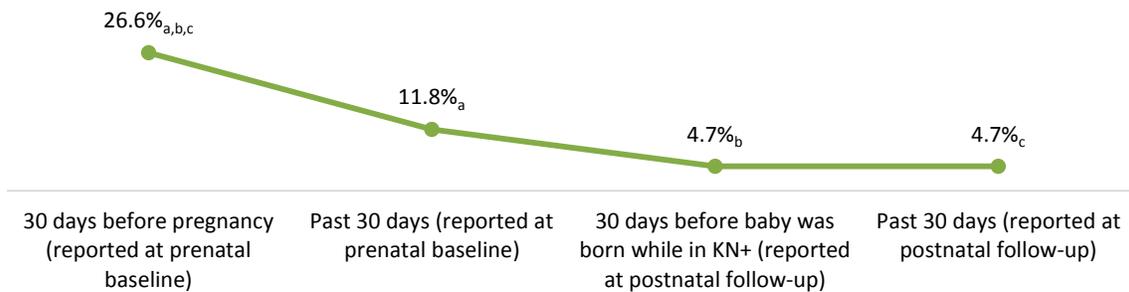
### PROBLEMS EXPERIENCED WITH SUBSTANCE USE

In the 30 days before pregnancy, 26.6% 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 6.7). In the past 30 days at prenatal baseline, 11.8% of clients reported experiencing problems with drugs or alcohol. At follow-up, 4.7% of clients reported experiencing problems with drugs or alcohol in the 30 days before the baby was born and in the past 30 days.

“I learned a lot about the baby and about life.”

-KIDS NOW Plus Follow-up Client

FIGURE 6.7. CLIENTS EXPERIENCING PROBLEMS WITH ILLEGAL DRUGS OR ALCOHOL AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 169)



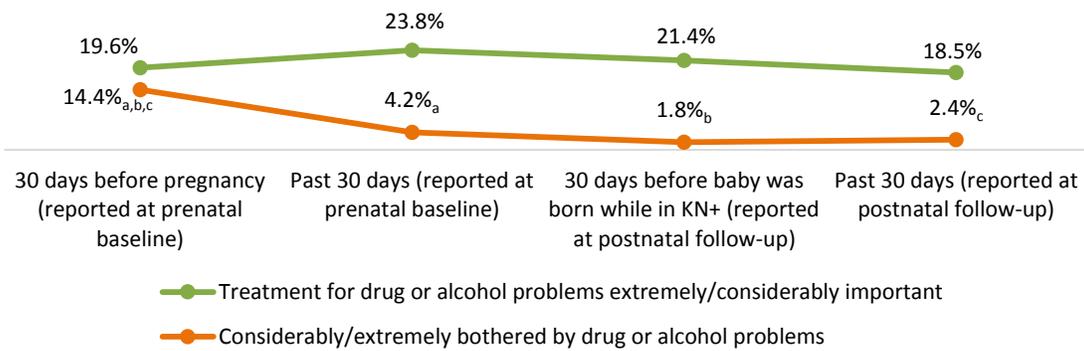
a, b, c- Values sharing the same subscript differ at  $p < .01$

### READINESS FOR SUBSTANCE ABUSE TREATMENT

Figure 6.8 shows the percentage of clients who reported that treatment for drug or alcohol problems was considerably or extremely important: the 30 days before pregnancy (19.6%), the past 30 days at prenatal baseline (23.8%), the 30 days before the baby was born (21.4%), and the past 30 days at postnatal follow-up (18.5%).

The figure below also shows the percentage of clients who reported they were considerably or extremely troubled or bothered by drug or alcohol problems: the 30 days before pregnancy (14.4%), the past 30 days at prenatal baseline (4.2%), the 30 days before the baby was born (1.8%), and the past 30 days at postnatal follow-up (2.4%).

FIGURE 6.8. READINESS FOR TREATMENT FOR ILLEGAL DRUG OR ALCOHOL USE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP



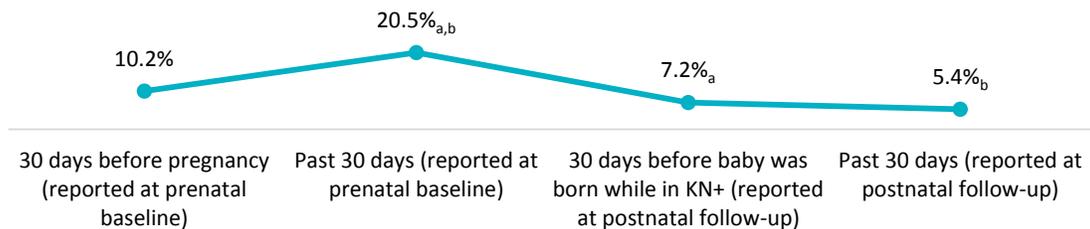
a, b, c- Values sharing the same subscript differ at  $p < .01$

Note: Interviewer skipped question regarding being bothered by drug problems for two clients and importance of treatment for one client in the past 30 days at postnatal follow-up.

## SUBSTANCE ABUSE TREATMENT

Figure 6.9 shows that in the 30 days before pregnancy, 10.2% of clients reported being treated for substance abuse (including detox) and in the past 30 days at baseline, 20.5% of clients reported being treated for substance abuse. At postnatal follow-up, 7.2% of clients reported being treated for substance abuse (including detox) in the 30 days before the baby was born and 5.4% of clients reported being treated for substance abuse in the past 30 days.

FIGURE 6.9. CLIENTS REPORTING SUBSTANCE ABUSE TREATMENT AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 166)



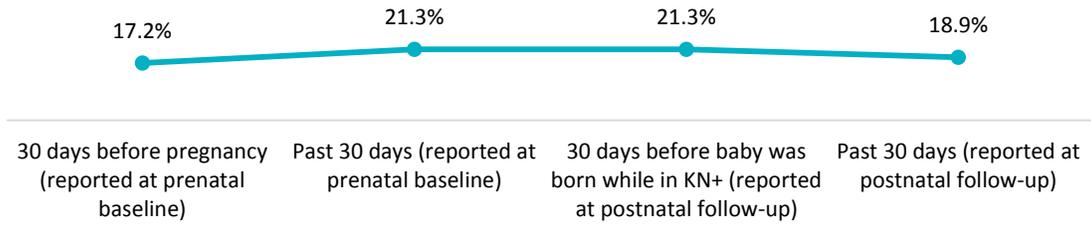
a, b- Values sharing the same subscript differ at  $p < .01$

Note: Interviewer skipped question regarding substance abuse treatment for two clients in the 30 days before the baby was born and two clients in the past 30 days at postnatal follow-up.

## SELF-HELP MEETINGS

The number of clients who reported attending a self-help recovery meeting (such as AA, NA, or MA) remained relatively stable from the 30 days before pregnancy to the past 30 days at follow-up. In the 30 days prior to pregnancy, 17.2% of clients reported attending a self-help meeting compared to 21.3% in the past 30 days at prenatal baseline (see Figure 6.10). At follow-up, 21.3% of clients reported attending a self-help meeting in the 30 days before the baby was born and 18.9% of clients reported attending a self-help meeting in the past 30 days at follow-up.

FIGURE 6.10. CLIENTS REPORTING ATTENDING A SELF-HELP GROUP AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 169)

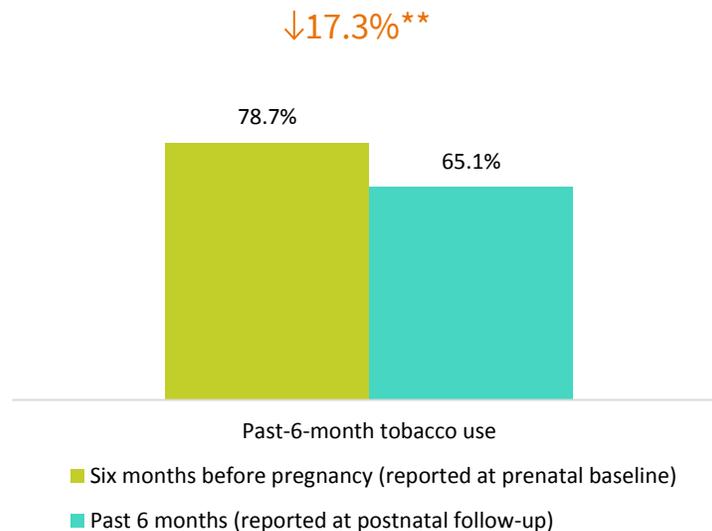


## TOBACCO USE

### PAST-6-MONTH TOBACCO USE

At prenatal baseline, 78.7% of clients reported smoking tobacco use in the 6 months prior to pregnancy (Figure 6.11). At postnatal follow-up, 65.1% of clients reported tobacco use in the past 6 months (a significant decrease of 17.3%).

FIGURE 6.11. PAST-6-MONTH SMOKING TOBACCO USE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 169)



\*\* p < .01

### PAST-30-DAY TOBACCO USE

At prenatal baseline, 76.9% of clients reported smoking tobacco products in the 30 days prior to pregnancy (Figure 6.12). This percentage is considerably higher than the national estimate of 24.0% of non-pregnant women aged 15-44 who reported cigarette use. The majority of clients (65.1%) reported smoking tobacco in the past 30 days at prenatal baseline compared to a little over 15% of pregnant women, nationally, who reported smoking cigarettes.

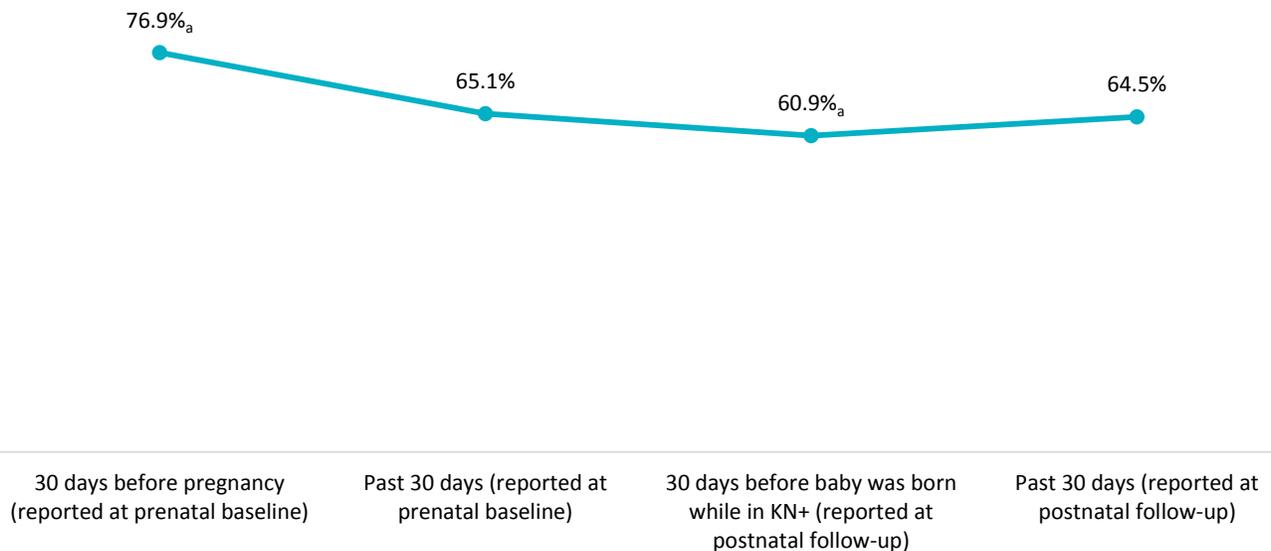
At postnatal follow-up, in the 30 days before the baby was born,

“I liked the people, they were really trustworthy and seemed to want to take care of you.”

-KIDS NOW Plus Follow-up Client

60.9% of clients reported smoking tobacco products. The percentage of women who reported cigarette use in the past 30 days at postnatal follow-up remained fairly stable with 64.5% of clients reporting cigarette use (still a decrease from prior to pregnancy).

FIGURE 6.12. PAST-30-DAY SMOKING TOBACCO USE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 169)



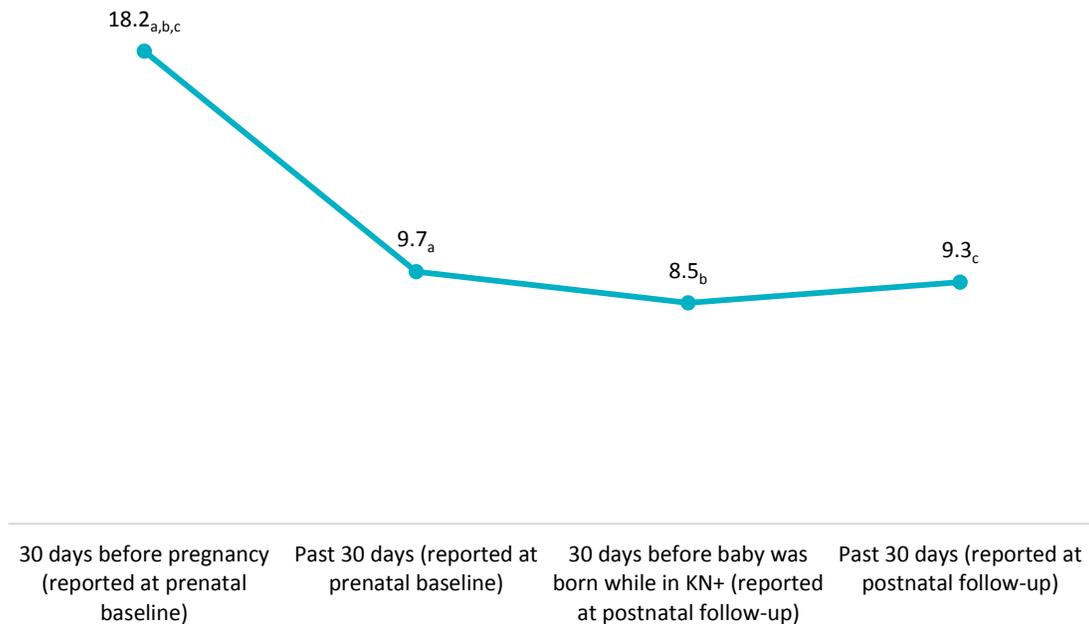
a- Values sharing the same subscript differ at  $p < .01$

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

Figure 6.13 shows that for women who reported smoking tobacco in the 30 days prior to pregnancy (n = 130), the average number of cigarettes smoked declined from prior to pregnancy to after the client became involved in KIDS NOW Plus 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 18.2 cigarettes per day (nearly one pack) and an average of 9.7 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 KIDS NOW Plus case management program, the average number of cigarettes decreased further to 8.5. While there was a slight increase to 9.2 cigarettes after the baby was born compared to the 30 days before the baby was born, they still smoked significantly fewer cigarettes compared to before pregnancy suggesting positive changes in smoking.

KIDS NOW Plus clients **sustained a decrease in the average number of cigarettes smoked after the baby was born** compared to before pregnancy

FIGURE 6.13. AVERAGE NUMBER OF CIGARETTES SMOKED AMONG WOMEN REPORTING CIGARETTE USE IN THE 30 DAYS PRIOR TO PREGNANCY (N = 130)



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

## SUMMARY

KIDS NOW Plus clients reported significant reductions in substance use in the past 30 days of pregnancy at prenatal baseline and further reductions after beginning participation in KIDS NOW Plus. Specifically, 42.0% of clients reported illegal drug use in the 30 days before pregnancy compared to 3.0% of clients in the 30 days before the baby was born and 6.5% of clients 6 months after the birth of the baby. Less than 1% of clients (0.6%) reported alcohol use in the 30 days before the baby was born. In addition, in the 30 days before the baby was born, 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 significantly from the 30 days prior to pregnancy as did the average number of cigarettes clients reported smoking. These decreases in smoking, compared to before pregnancy, were sustained even after the baby was born. Compared to pregnant women, nationally, however, more KIDS NOW Plus mothers smoked cigarettes before, during and after pregnancy.

## Section 7.

# Mental Health

*This section examines changes in self-reported mental health for the following factors: (1) depression; (2) generalized anxiety; (3) exposure to traumatic events; and, (4) number of days physical and mental health were poor. Past-6-month, past-30-day, and 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?”

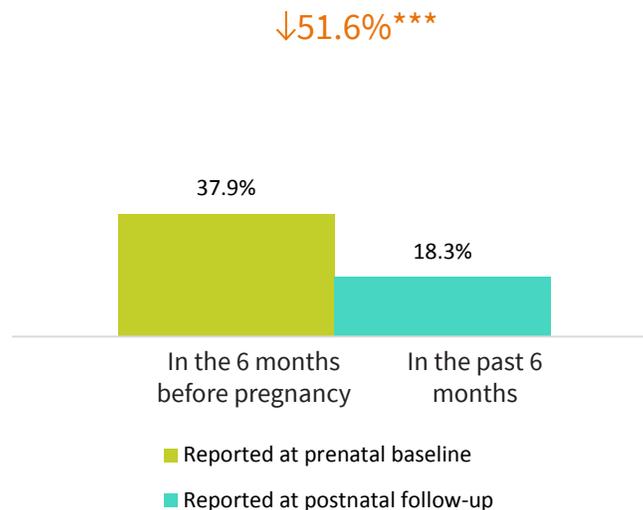
If participants answered “yes” to at least one of these two screening questions, they were then asked seven additional questions about symptoms of depression (e.g., sleep problems, weight loss or gain, feelings of hopelessness or worthlessness). To meet study criteria for depression, clients had to say “yes” to at least one of the two screening questions and at least 4 of the other symptoms. Clients were asked these series of questions for both the 6 months before they became pregnant and in the past 30 days at baseline.

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

In the 6 months before they became pregnant, 37.9% of the women met study criteria for depression. In the past 6 months at postnatal follow-up, 18.3% of KIDS NOW Plus clients met study criteria for depression (a significant decrease of 51.6%).

The number of clients who met study criteria for **depression decreased over 50%** from prenatal baseline

FIGURE 7.1. MEETING STUDY CRITERIA FOR DEPRESSION IN 6 MONTHS BEFORE PREGNANCY AND PAST 6 MONTHS AT POSTNATAL FOLLOW-UP (N = 169)

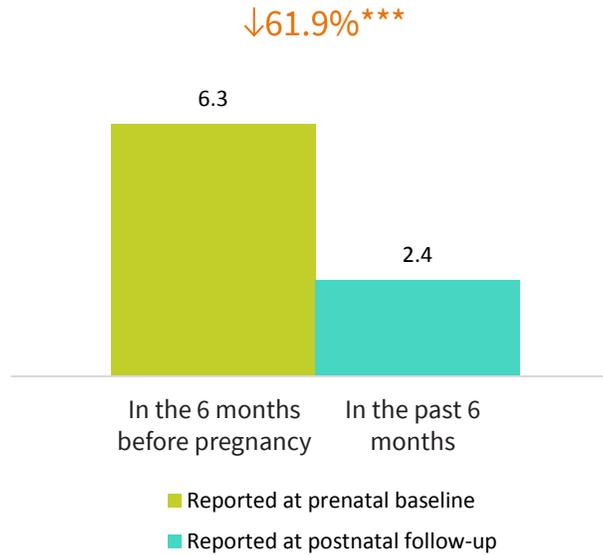


\*\*\* p < .001

### 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 = 64), they reported an average of 6.3 symptoms. In the past 6 months at postnatal follow-up, clients reported an average of 2.4 symptoms (a significant decrease of 61.9% compared to before pregnancy), indicating that the reduction in depressive symptoms was sustained after KIDS NOW Plus participation.

FIGURE 7.2. AVERAGE NUMBER OF DEPRESSION SYMPTOMS AMONG THOSE CLIENTS WHO MET STUDY CRITERIA FOR DEPRESSION IN THE 6 MONTHS BEFORE PREGNANCY AT PRENATAL BASELINE (N = 64)

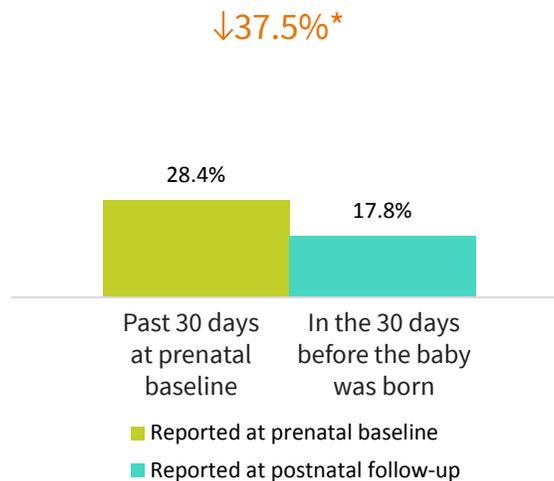


\*\*\* p < .001  
Significance tested with paired sample t-test

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

In the past 30 days at prenatal baseline, 28.4% of the women met study criteria for depression (see Figure 7.3). At postnatal follow-up, 17.8% of clients met study criteria for depression in the 30 days before the baby was born.

FIGURE 7.3. MEETING STUDY CRITERIA FOR DEPRESSION IN THE 30 DAYS BEFORE PRENATAL BASELINE AND 30 DAYS BEFORE THE BABY WAS BORN (N = 169)

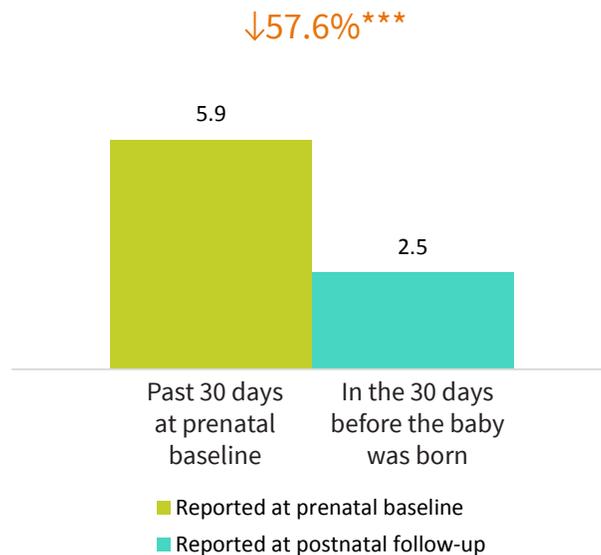


\* p < .05

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

Clients who met study criteria for depression in the past 30 days at baseline (n = 48) reported an average of 5.9 symptoms in the past 30 days at prenatal baseline and an average of 2.5 symptoms in the 30 days before the baby was born (a significant decrease of 57.6%).

FIGURE 7.4. AVERAGE NUMBER OF DEPRESSION SYMPTOMS AMONG THOSE CLIENTS WHO MET STUDY CRITERIA FOR DEPRESSION IN THE PAST 30 DAYS AT PRENATAL BASELINE (N = 48)



\*\*\* p < .001  
Significance tested with paired sample t-test

### GENERALIZED ANXIETY SYMPTOMS

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

“In the 12 months before you entered this program, 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)?”

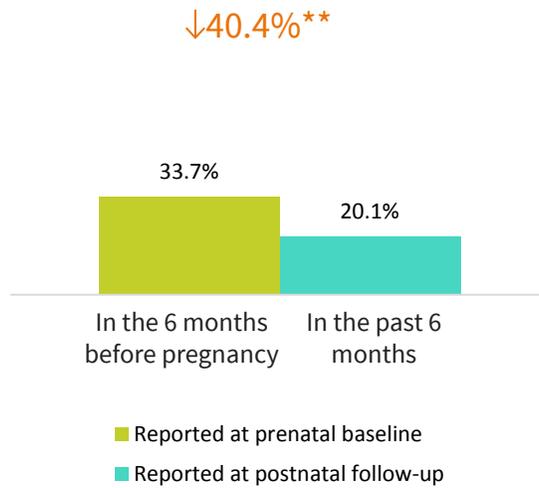
Participants who answered “yes” were then asked 6 additional questions about anxiety symptoms (e.g., felt restless, keyed up or on edge, have difficulty concentrating, feel irritable). To meet study criteria for generalized anxiety, clients had to answer “yes” to the screening question and to at least 3 of the symptom items. Clients were asked these series of questions for both the 6 months before they became pregnant and in the past 30 days at baseline.

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

In the 6 months before pregnancy, 33.7% of clients reported symptoms that met study criteria for generalized anxiety (see Figure 7.5). In the past 6 months at postnatal follow-up, 20.1% of clients met study criteria for generalized anxiety, which is a significant decrease of 40.4% from the 6 months before pregnancy.

The number of clients who met study criteria for **generalized anxiety decreased 40%** from prenatal baseline

FIGURE 7.5. MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY IN 6 MONTHS BEFORE PREGNANCY AND PAST 6 MONTHS AT POSTNATAL FOLLOW-UP (N = 169)

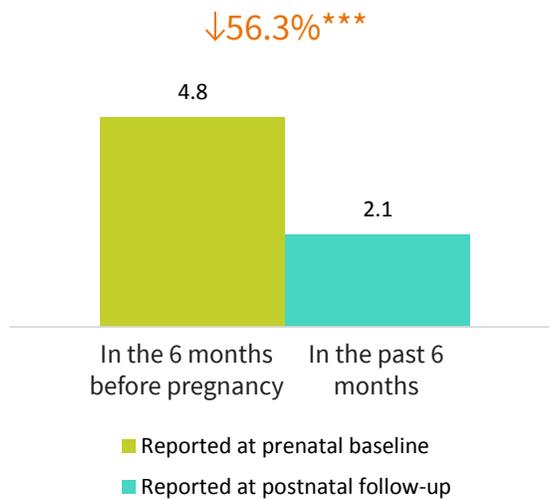


\*\* p < .01

**AVERAGE NUMBER OF GENERALIZED ANXIETY SYMPTOMS IN THE PAST 6 MONTHS**

Of the clients who met study criteria for generalized anxiety in the 6 months before pregnancy (n = 57), they reported an average of 4.8 symptoms. In the past 6 months at postnatal follow-up, clients reported an average of 2.1 symptoms which is a significant decrease compared to before pregnancy.

FIGURE 7.6. AVERAGE NUMBER OF ANXIETY SYMPTOMS AMONG THOSE CLIENTS WHO MET STUDY CRITERIA FOR GENERALIZED ANXIETY IN THE 6 MONTHS BEFORE PREGNANCY AT PRENATAL BASELINE (N = 57)



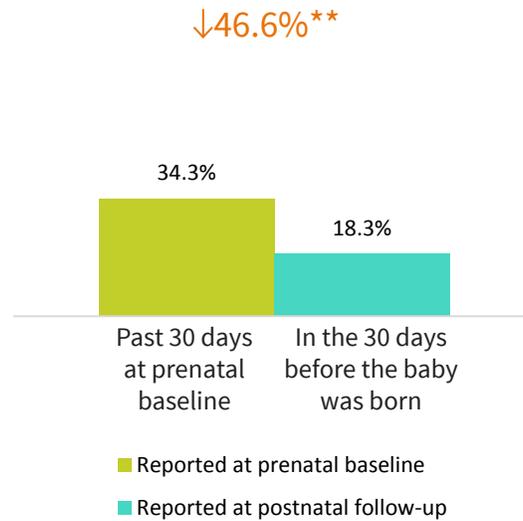
\*\*\* p < .001

Significance tested with paired sample t-test

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

At prenatal baseline, 34.3% of clients reported symptoms that met study criteria for generalized anxiety in the past 30 days (see Figure 7.7). In the 30 days before the baby was born, 18.3% of KIDS NOW Plus clients met criteria for generalized anxiety, which is a significant decrease of 46.6% from the past 30 days at prenatal baseline.

FIGURE 7.7. MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY IN THE 30 DAYS BEFORE PRENATAL BASELINE AND 30 DAYS BEFORE THE BABY WAS BORN (N = 169)

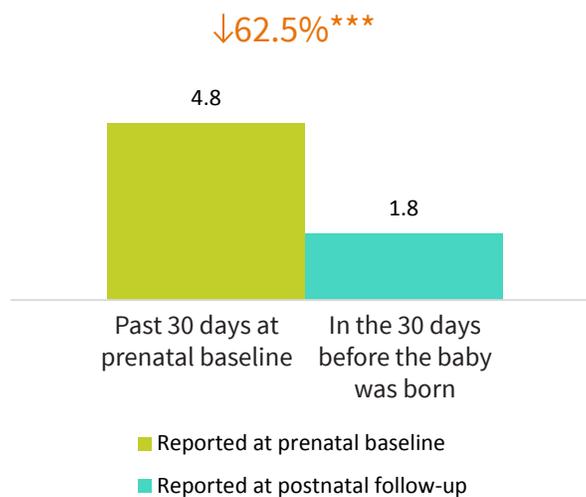


\*\* p < .01

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

Clients who met study criteria for anxiety in the past 30 days at baseline (n = 58) reported an average of 4.8 symptoms in the past 30 days at prenatal baseline and an average of 1.8 symptoms in the 30 days before the baby was born (a significant decrease of 62.5%).

FIGURE 7.8. AVERAGE NUMBER OF ANXIETY SYMPTOMS AMONG THOSE CLIENTS WHO MET STUDY CRITERIA FOR GENERALIZED ANXIETY IN THE PAST 30 DAYS AT PRENATAL BASELINE (N = 58)



\*\*\* p < .001

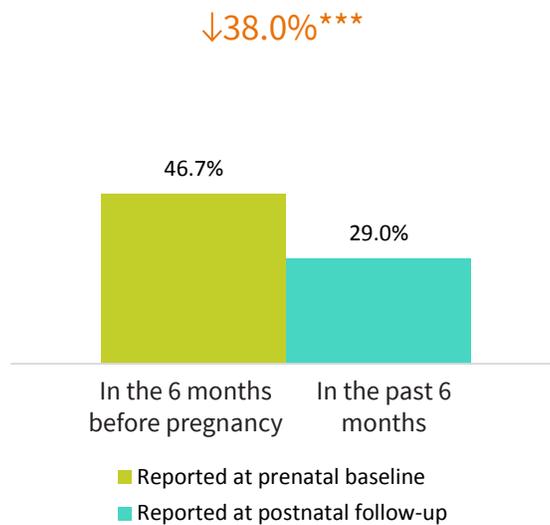
Significance tested with paired sample t-test

## DEPRESSION AND ANXIETY SYMPTOMS

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

Figure 7.9 shows that 46.7% 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, 29.0% of clients met criteria for depression and/or anxiety, which is a 38.0% significant decrease from the 6 months before pregnancy.

FIGURE 7.9. MEETING STUDY CRITERIA FOR DEPRESSION AND/OR ANXIETY IN THE PAST 6 MONTHS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 169)

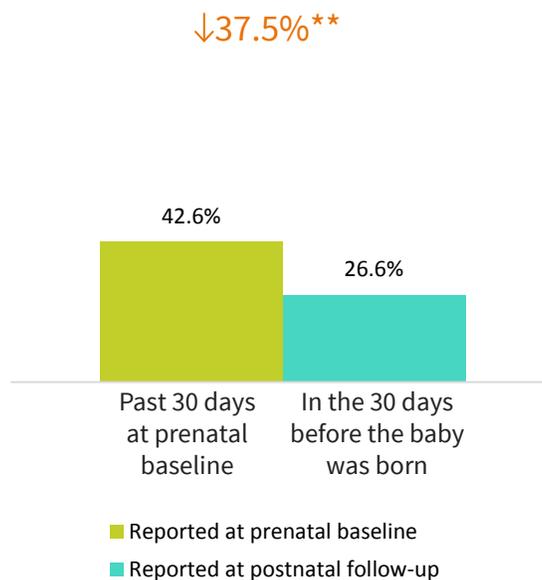


\*\*\* p < .001

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

In the past 30 days at prenatal baseline, 42.6% of clients met study criteria for either depression or anxiety (or both) and in the 30 days before the baby was born, 26.6% of the women met study criteria for depression and/or anxiety (a significant decrease of 37.5% from the past 30 days at prenatal baseline).

FIGURE 7.10. MEETING STUDY CRITERIA FOR DEPRESSION AND/OR ANXIETY IN THE 30 DAYS BEFORE PRENATAL BASELINE AND 30 DAYS BEFORE THE BABY WAS BORN (N = 169)

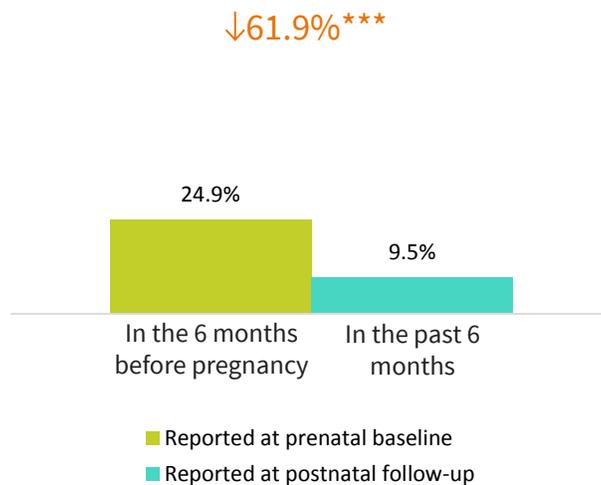


\*\* p < .01

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

One-quarter of clients met criteria for both anxiety and depression in the past 6 months before they became pregnant and at postnatal follow-up, 9.5% of clients reported both anxiety and depression (a significant decrease of 61.9%; see Figure 7.11).

FIGURE 7.11. MEETING STUDY CRITERIA FOR BOTH DEPRESSION AND GENERALIZED ANXIETY IN THE PAST 6 MONTHS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 169)

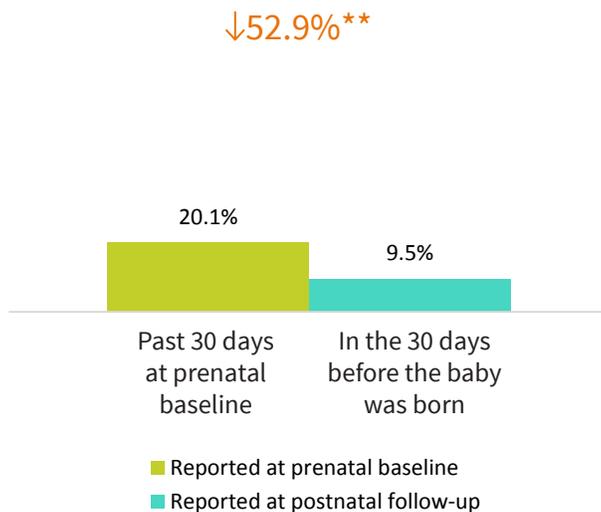


\*\*\* p < .001

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

In the past 30 days at prenatal baseline, 20.1% of clients met study criteria for both depression and anxiety and in the 30 days before the baby was born, 9.5% of the women met study criteria for both depression and anxiety (a significant decrease of 52.9%).

FIGURE 7.12. MEETING STUDY CRITERIA FOR BOTH DEPRESSION AND GENERALIZED ANXIETY IN THE 30 DAYS BEFORE PRENATAL BASELINE AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 169)



\*\* p < .01

### EXPOSURE TO TRAUMATIC EVENTS

In addition to depression and anxiety, at prenatal baseline, 33.1% of clients indicated they had, in the past 12 months, experienced or witnessed a traumatic event. At postnatal follow-up, 18.9% of clients reported having experienced or witnessed a new traumatic event in the past 12 months.

## PERCEPTIONS OF POOR PHYSICAL OR MENTAL HEALTH LIMITING ACTIVITIES

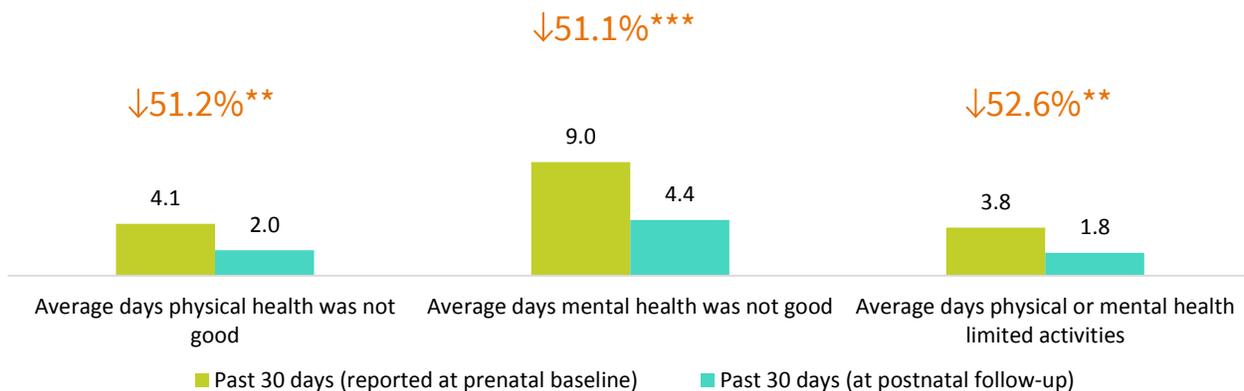
Clients were asked how many days in the past 30 days their physical and mental health were not good at prenatal baseline and postnatal follow-up (see Figure 7.13). There was a 51.2% significant decrease from baseline to follow-up in the number of days clients reported their physical health was not good (from 4.1 days to 2.0 days). In comparison, America’s Health Rankings indicate people in Kentucky report an average of 4.9 days of poor physical health in the past 30 days.<sup>53</sup> KIDS NOW Plus clients report fewer days of poor physical health at both prenatal baseline and postnatal follow-up compared to the general population surveyed in Kentucky.

The number of days clients’ mental health was not good decreased significantly by 51.1% from 9.0 days at prenatal baseline to 4.4 days at postnatal follow-up. America’s Health Rankings indicate people in Kentucky report an average of 4.5 days of poor mental health in the past 30 days.

The number of days clients reported their physical or mental health kept them from doing their usual activities decreased significantly by 52.6% from 3.8 days at baseline to 1.8 days at follow-up

“KIDS NOW Plus offers so many things that new moms can benefit from.”  
-KIDS NOW Plus Follow-up Client

FIGURE 7.13. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS AT BASELINE AND FOLLOW-UP<sup>a</sup>



\*\*\* p > .001, \*\* p < .01

Significance tested with paired sample t-test

a— Physical health question skipped for one client at follow-up (n = 167) and mental health question was skipped for 2 clients at follow-up (n = 166). Physical or mental health limiting activities also skipped for two clients (n = 166).

<sup>53</sup> America’s Health Rankings: A Call to Action for Individuals and Their Communities. Retrieved from <http://www.americashealthrankings.org/KY>.

## SUMMARY

The number of clients who met study criteria for depression and the number of clients who met study criteria for anxiety decreased significantly from prenatal baseline to postnatal follow-up. In addition, of those clients who met criteria for depression and/or anxiety in the 6 months before they were pregnant, the average number of depression and anxiety symptoms decreased significantly from before pregnancy to while they were pregnant and involved in KIDS NOW Plus case management services. Furthermore, the average number of symptoms remained lower 6 months after the birth of the baby. However, over one-quarter of clients still met criteria for depression and/or anxiety at follow-up and about 10% struggle with both depression and anxiety at follow-up.

Clients also reported a significant decrease in the average number of days their physical and mental health were not good and the average number of days their physical or mental health limited their activities.

## Section 8.

# Partner Abuse and Sexual Assault

*This section examines changes in intimate partner abuse and violence such as: (1) any abuse, (2) psychological abuse, (3) coercive control, (4) physical abuse, and (5) sexual violence by any type of perpetrator, from prenatal baseline to postnatal follow-up. Past 6-month and past 30-day partner abuse measures are examined separately where applicable.*

### FELT UNSAFE IN CURRENT OR PAST RELATIONSHIP

Including fear of a current or ex-partner, 3.6% of clients reported they felt unsafe at baseline, and 5.4% reported feeling unsafe at follow-up.

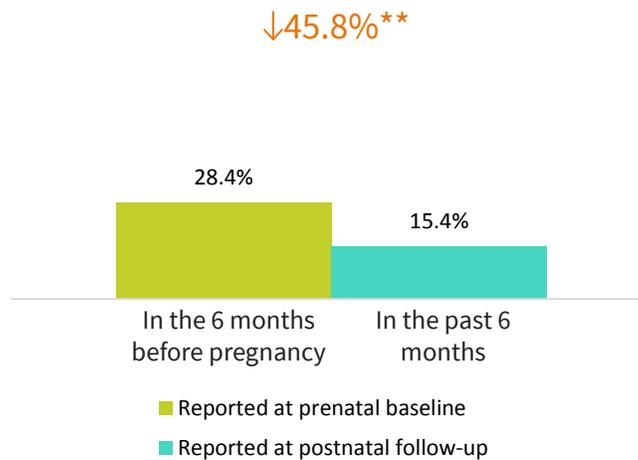
### ANY ABUSE

#### ANY ABUSE IN THE PAST 6 MONTHS

Figure 8.1 shows that in the 6 months before pregnancy, 28.4% of clients reported experiencing any type of abuse<sup>54</sup> (including psychological abuse, control, physical abuse, and sexual abuse) perpetrated by a current or ex-partner and 15.4% of clients reported experiencing abuse in the past 6 months at postnatal follow-up (significant decrease of 45.8%).

**46% decrease** in the number of clients who reported **any type of intimate partner abuse** at postnatal follow-up

FIGURE 8.1. ANY TYPE OF ABUSE IN THE 6 MONTHS BEFORE PREGNANCY AND THE PAST 6 MONTHS AT POSTNATAL FOLLOW-UP (N = 169)



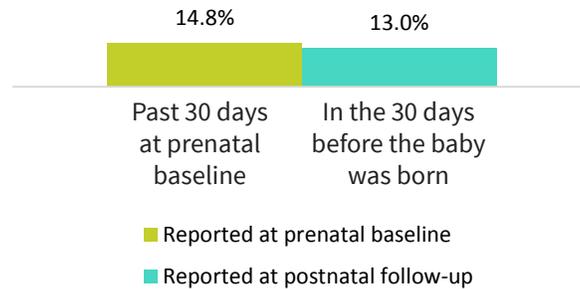
\*\*p < .01

#### ANY ABUSE IN THE PAST 30 DAYS

In the past 30 days at prenatal baseline, 14.8% of KIDS NOW Plus clients reported experiencing any type of abuse. In the 30 days before the baby was born, 13.0% of clients reported any type of partner abuse (see Figure 8.2).

<sup>54</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.

FIGURE 8.2. ANY TYPE OF ABUSE IN THE 30 DAYS BEFORE PRENATAL BASELINE AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 169)



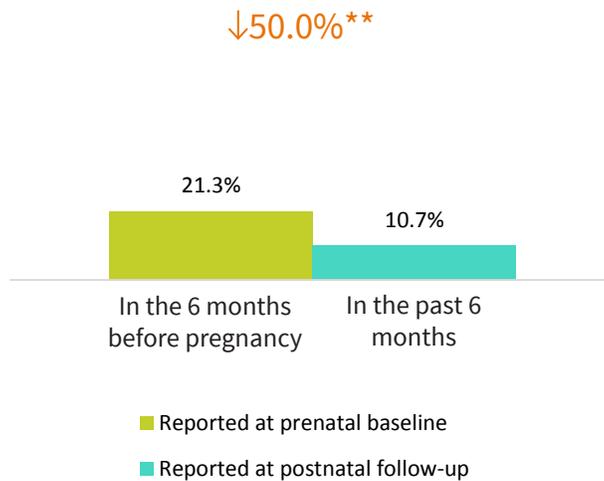
## PSYCHOLOGICAL ABUSE

### PSYCHOLOGICAL ABUSE IN THE PAST 6 MONTHS

A little more than one-fifth of clients (21.3%) 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 10.7% 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 a significant 50.0% decrease in reports of psychological abuse in the 6 months after clients had their baby (see Figure 8.3).

“The lady I worked with was always available for me, no matter the time or what I needed.”  
-KIDS NOW Plus Follow-up Client

FIGURE 8.3. PSYCHOLOGICAL ABUSE IN THE 6 MONTHS BEFORE PREGNANCY AND THE PAST 6 MONTHS AT POSTNATAL FOLLOW-UP (N = 169)

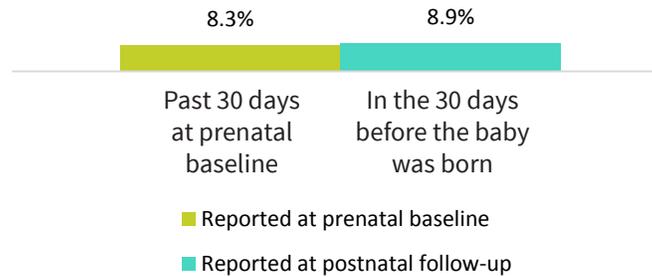


\*\*p < .01

## PSYCHOLOGICAL ABUSE IN THE PAST 30 DAYS

In the past 30 days at prenatal baseline, 8.3% of clients reported psychological abuse by a partner. This percentage remained similar with 8.9% of clients reporting psychological abuse in the 30 days before the baby was born.

FIGURE 8.4. PSYCHOLOGICAL ABUSE IN THE 30 DAYS BEFORE PRENATAL BASELINE AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 169)

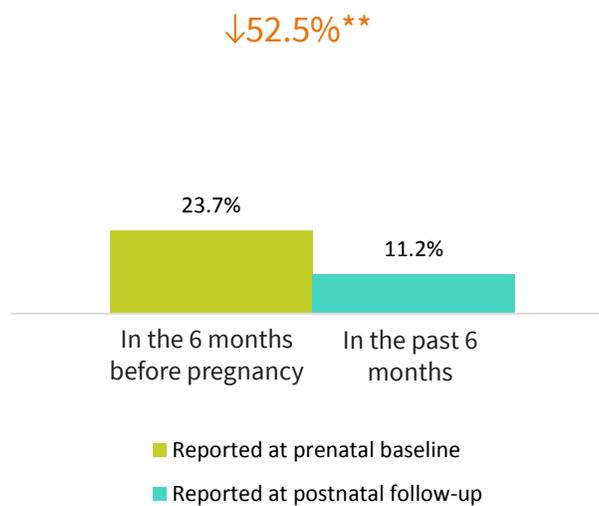


## COERCIVE CONTROL

### COERCIVE CONTROL IN THE 6 MONTHS

For this study, coercive control is described as abuse by a partner wherein the partner 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, 23.7% of clients reported being a victim of coercive control and 11.2% of clients in the past 6 months at postnatal follow-up reported experiencing coercive control from their partner (a significant decrease of 52.5%; see Figure 8.5).

FIGURE 8.5. COERCIVE CONTROL BY A PARTNER IN THE 6 MONTHS BEFORE PREGNANCY AND THE 6 MONTHS BEFORE POSTNATAL FOLLOW-UP (N = 169)

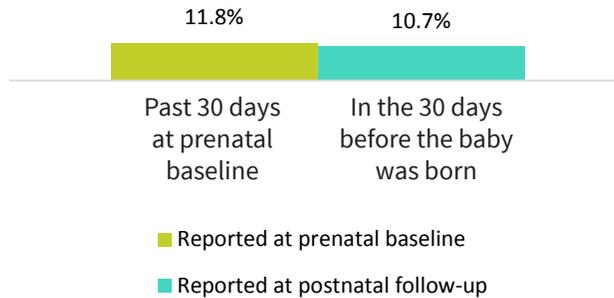


\*\*p < .01

## COERCIVE CONTROL IN THE PAST 30 DAYS

In the past 30 days at prenatal baseline, 11.8% reported coercive control occurred while they were pregnant and involved in KIDS NOW Plus. Almost 11% reported experiencing coercive control from their partner in the 30 days before the baby was born (see Figure 8.6).

FIGURE 8.6. COERCIVE CONTROL BY A PARTNER IN THE 30 DAYS BEFORE PRENATAL BASELINE AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 169)

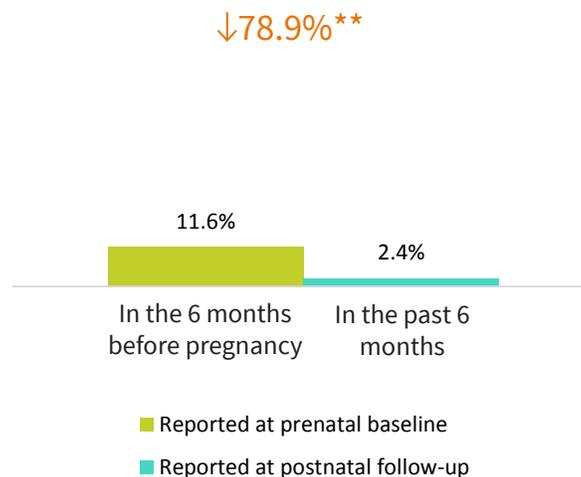


## PHYSICAL ABUSE

### PHYSICAL ABUSE IN THE 6 MONTHS

Over 11% of women reported that a partner physically abused them (e.g., pushing, shoving, kicking, beating up, choking, burning, attacking with a weapon) in the 6 months before they became pregnant (see Figure 8.7). In the past 6 months at postnatal follow-up, 2.4% of clients reported physical abuse by a partner (a significant decrease of 78.9%).

FIGURE 8.7. PHYSICAL ABUSE IN THE 6 MONTHS BEFORE PREGNANCY AND THE PAST 6 MONTHS AT POSTNATAL FOLLOW-UP<sup>a</sup>



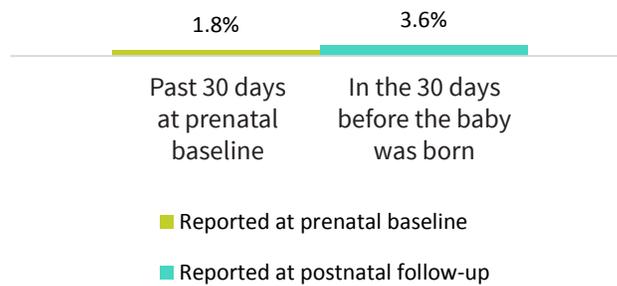
\*\* p < .01

a— Question regarding the past 6 months at follow-up skipped for 5 clients (n = 164).

## PHYSICAL ABUSE IN THE PAST 30 DAYS

Less than 2% of clients reported a partner physically abused them in the past 30 days at prenatal baseline. In the 30 days before the birth of the baby, 3.6% reported a partner physically abused them (see Figure 8.8).

FIGURE 8.8. PHYSICAL ABUSE IN THE 30 DAYS BEFORE PRENATAL BASELINE AND THE 30 DAYS BEFORE THE BABY WAS BORN<sup>a</sup>



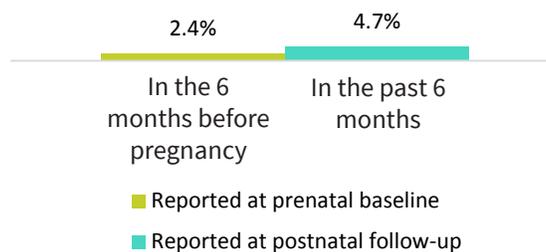
a— Question regarding 30 days before the baby was born skipped for 4 clients (n = 165) at follow-up.

## SEXUAL ASSAULT

### SEXUAL ASSAULT IN THE PAST 6 MONTHS

Very few clients (2.4%, n = 4) 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 six months at postnatal follow-up, 4.7% of clients indicated they had been sexually assaulted by a partner (see Figure 8.9).

FIGURE 8.9. PARTNER SEXUALLY ASSAULTED CLIENT IN THE 6 MONTHS BEFORE PREGNANCY AND THE 6 MONTHS BEFORE POSTNATAL FOLLOW-UP (N = 169)

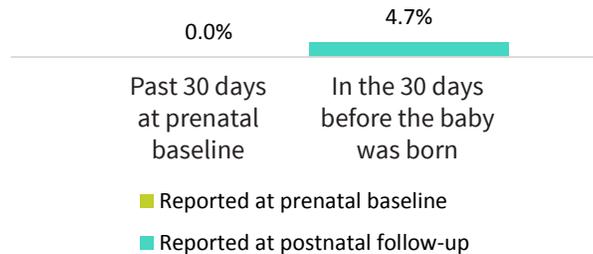


About 6% of clients reported being forced to have sex by someone other than a partner in the 6 months before pregnancy and 1.8% in the past 6 months at postnatal follow-up. Only 1.2% of clients in the past 30 days at prenatal baseline and in the 30 days before the baby was born reported being forced to have sex by someone other than a partner (not depicted in a figure).

## SEXUAL ASSAULT IN THE PAST 30 DAYS

In the past 30 days at prenatal baseline, no client reported being a victim of sexual assault and in the 30 days before the baby was born, 4.7% of clients reported sexual assault.

FIGURE 8.10. PARTNER SEXUALLY ASSAULTED CLIENT IN THE 30 DAYS BEFORE PREGNANCY AND THE 30 DAYS BEFORE THE BABY WAS BORN (N = 169)



## SUMMARY

Several forms of partner violence were examined from prenatal baseline to postnatal follow-up. Almost 15% of clients reported experiencing at least one of the types of abuse asked about on the survey in the past 30 days at prenatal baseline and 13% of clients reported some type of abuse from an intimate partner in the 30 days before the baby was born. What this means is about 1 in 8 clients were experiencing some type of abuse while they were pregnant. Similarly, over one-quarter of KIDS NOW Plus clients reported experiencing some type of abuse in the 6 months before pregnancy. At postnatal follow-up, about 15% of clients reported experiencing some type of abuse in the past 6 months. While this is a significant decrease in the number of women experiencing some type of abuse, it also means that there are a little more than 1 in 7 clients still experiencing some type of abuse while also caring for their baby. The number of clients reporting psychological abuse, coercive control and physical abuse decreased significantly from before pregnancy to the past 6 months at postnatal follow-up. Very few clients reported experiencing a sexual assault by a partner or other type of perpetrator at any period.

## Section 9.

# Physical Health

Section 9 describes chronic health problems reported at prenatal baseline and change in physical health status of clients from prenatal baseline to postnatal follow-up including: (1) current health; (2) chronic pain; and (3) emergency room usage.

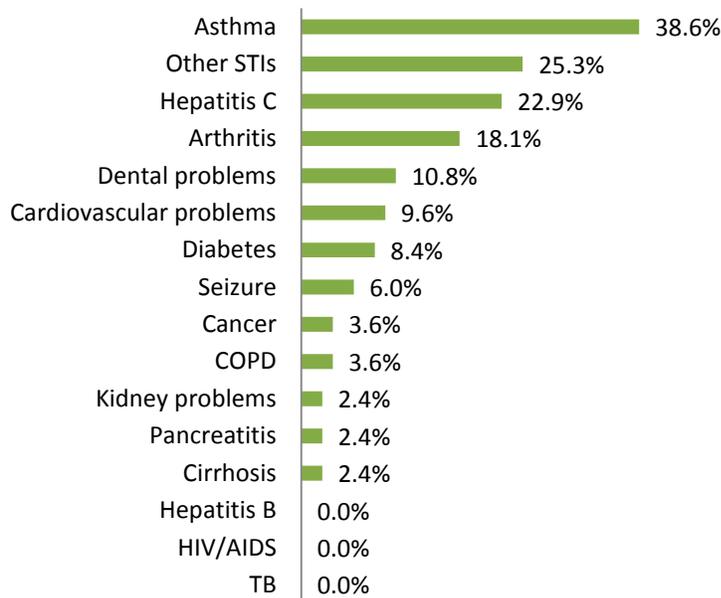
### CHRONIC HEALTH PROBLEMS REPORTED AT PRENATAL BASELINE

At prenatal baseline, 50.9% reported no health problems, 28.4% reported having one chronic health problem, and 20.8% of clients had two or more chronic health problems.

**51% had no chronic health problems, 28% had one chronic health problem, 17% had 2 health problems, and 4% had 3 health problems or more**

As Figure 9.1 shows, among the clients who reported at least one physical health problem at prenatal baseline (n = 83), 38.6% of KIDS NOW Plus clients reported asthma, 25.3% reported a sexually transmitted infection, and another 22.9% reported Hepatitis C. In addition, 18.1% reported arthritis and 10.8% reported severe dental problems.

FIGURE 9.1. CHRONIC HEALTH PROBLEMS REPORTED BY CLIENTS AT PRENATAL BASELINE (N= 83)



Overall, at prenatal baseline, 11.8% reported they had any major health problems that were not currently being treated. Of those clients who indicated they had major health problems that were not being treated, about 40% reported their anxiety and/or depression was not being treated.<sup>55</sup> Other clients mentioned Hepatitis C, dental problems, and joint pains.

In addition, at prenatal baseline, 10.7% of clients reported they had a sexually transmitted infection (STI). Of those with an STI during their pregnancy (n = 18), the most common STIs were chlamydia, genital herpes, and trichomoniasis.

<sup>55</sup> While this is a mental health problem rather than a physical health problem, several clients felt it was a health concern that it was not being treated.

Four clients reported having a serious fall or accident during pregnancy that caused bodily injury. In addition, 28.4% of clients reported they had a virus or serious infection while pregnant at prenatal baseline. Of these clients (n = 48), 87.5% received medical treatment.

### CURRENT HEALTH STATUS

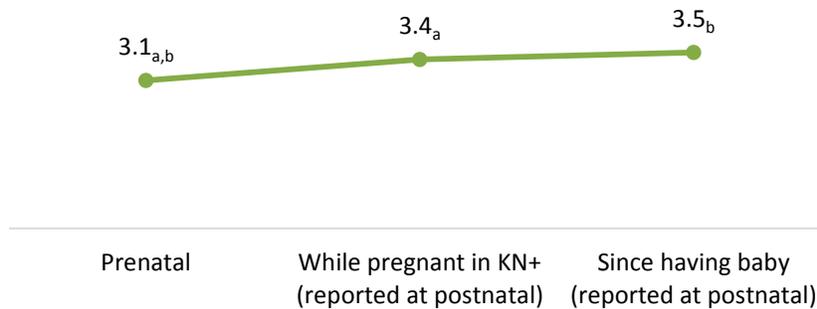
At prenatal baseline, clients reported their current health as an average of 3.1 on a scale of 1 being “poor” and 5 being “excellent”. At postnatal follow-up, clients reported that, while pregnant and in KIDS NOW Plus case management services, their health was an average of 3.4, which is significantly higher compared to prenatal baseline.

Also at postnatal follow-up, clients were asked about their current health (about 6 months after having the baby) and reported an average current health rating of 3.5, which is significantly higher than it was at prenatal baseline (3.1). Figure 9.2 shows the average health ratings at all three points.

**“I learned things I didn’t know before. My case manager was amazing. I could tell she really cared about me.”**

-KIDS NOW Plus Follow-up Client

FIGURE 9.2. AVERAGE OVERALL HEALTH RATING FROM PRENATAL BASELINE TO POSTNATAL FOLLOW-UP (N = 168)

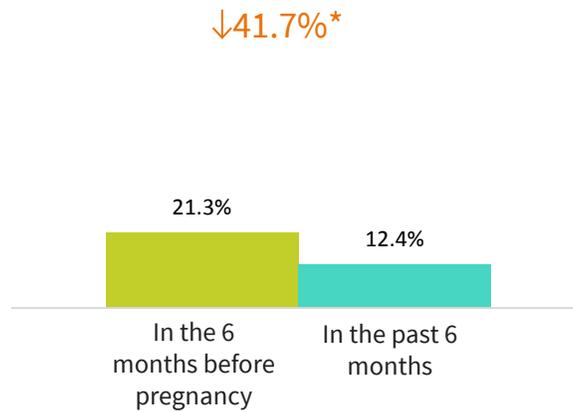


a, b – Values sharing the same subscript differ at p < .01  
 Significance tested with paired sample t-tests; Interviewer skipped “while pregnant and in KIDS NOW Plus” question for one client at follow-up.

### CHRONIC PAIN

At prenatal baseline, 21.3% of women reported experiencing chronic pain in the 6 months before pregnancy and, of those clients (n = 36), clients reported experiencing pain an average of 20 days in the 30 days before pregnancy. Almost 90% of these clients reported that this chronic pain continued into their pregnancy with those clients (n = 32) reporting experiencing an average of 22.3 days of chronic pain. Approximately 12% of clients reported experiencing chronic pain in the past 6 months at postnatal follow-up (a significant decrease of 41.7% compared to the 6 months before pregnancy). Of those clients (n = 21), clients reported an average of 25.9 days experiencing chronic pain.

FIGURE 9.3. CHRONIC PAIN IN THE 6 MONTHS BEFORE PREGNANCY AND THE 6 MONTHS BEFORE POSTNATAL FOLLOW-UP (N = 169)



\*p<.05  
Significance tested with z-test for proportions

## EMERGENCY ROOM VISITS DURING PREGNANCY AND POSTNATAL

At both prenatal baseline and postnatal follow-up, clients were asked if they had been to the emergency room (see Figure 9.4). At prenatal baseline, 57.4% of clients reported they had been to the emergency room while pregnant. At postnatal follow-up, 42.0% of clients reported they had taken their baby to the emergency room (not depicted in a figure).

## SUMMARY

At prenatal baseline, almost half of clients reported having at least one chronic health problem such as asthma, arthritis, dental problems and Hepatitis C. Almost 12% of clients reported they had health problems that were not currently being treated. In addition, 11% of clients reported at prenatal baseline that they had a sexually transmitted infection and four clients had experienced a serious fall or accident while pregnant.

Clients' overall current health status rating improved significantly from prenatal baseline to while they were pregnant and in KIDS NOW Plus. Slightly less than one-quarter of clients reported experiencing chronic pain in the 6 months before pregnancy and this decreased significantly to 12.4% in the past 6 months at postnatal follow-up.

## Section 10: Emotional Support

This section focuses on the number of people the individual said they could count on for emotional support and client satisfaction with the level of emotional support from others.

### EMOTIONAL SUPPORT

There was a significant increase in the average number of people clients reported they could count on for support when needed. In the 30 days before pregnancy, clients reported they could count on an average of 5.2 people and an average of 5.7 people in the past 30 days at prenatal baseline. While pregnant and in the KIDS NOW Plus case management program, clients reported an average of 7.1 people they could count on for support. Since the baby was born, clients reported that they could count on an average of 8.1 people for emotional support.

FIGURE 10.1. AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR EMOTIONAL SUPPORT AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 168)



In the 30 days before pregnancy (reported at prenatal baseline)

In the past 30 days (reported at prenatal baseline)

While pregnant and in KNP (reported at postnatal follow-up)

Since the baby was born (reported at postnatal follow-up)

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

Significance tested with paired sample t-test

Note: One client was missing data on the number of people the client could count on for emotional support at follow-up.

In general, the majority of clients were satisfied with the level of emotional support they received from others. The following percentages of clients reported they were extremely or fairly satisfied with the level of emotional support they received from others at different periods: 72.2% in the 30 days before pregnancy, 78.7% in the past 30 days at prenatal baseline, 90.5% while pregnant and in KIDS NOW Plus, and 89.9% in the period since their baby was born (see Figure 10.2).

FIGURE 10.2. SATISFACTION WITH THE OVERALL LEVEL OF SUPPORT IN LIFE (N = 169)




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In the 30 days before pregnancy (reported at prenatal baseline)	In the past 30 days (reported at prenatal baseline)	While pregnant and in KNP (reported at postnatal follow-up)	Since the baby was born (reported at postnatal follow-up)
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a, b, c, d- Values sharing the same subscript differ at  $p < .01$   
 Significance tested with z-test for proportions

## SUMMARY

Almost 90% of KIDS NOW Plus clients at postnatal follow-up were satisfied with the level of support they received from others, a 24.6% significant increase from before pregnancy. In addition, the average number of people clients felt they could count on for support increased significantly from before pregnancy to postnatal follow-up.

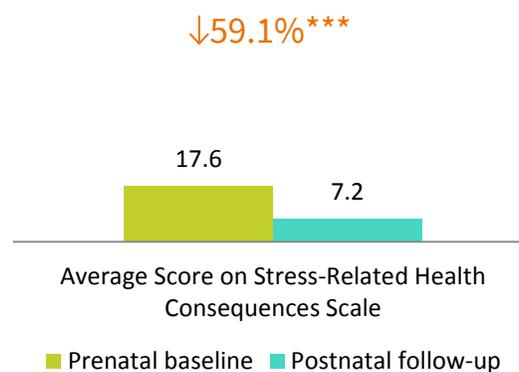
## Section 11: Stress and Quality of Life

*This section examines changes in stress and quality of life including the following factors: (1) health consequences of stress; (2) quality of life ratings; (3) positive and negative experiences; and (4) satisfaction with life.*

### STRESS-RELATED HEALTH CONSEQUENCES

Clients were asked about 15 physiological symptoms often associated with higher stress called the Stress-Related Health Consequences scale.<sup>56</sup> The scale asks clients to indicate how often they have experienced the symptoms in the past 7 days (e.g., unexplained aches and pains, slept poorly, increased heart rate). Higher scores on the scale indicate higher stress and greater health consequences of stress. The minimum score is 0 and the maximum score is 75. For the overall sample, Stress-Related Health Consequences scores decreased significantly from 17.6 at prenatal baseline to 7.2 at postnatal follow-up, representing a significant decrease of 59.1% (see Figure 11.1).

FIGURE 11.1. AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 168)<sup>a</sup>



\*\*\* p > .01

Significance tested with paired sample t-test

<sup>a</sup> Interviewer skipped one client at follow-up.

### QUALITY OF LIFE AND SATISFACTION WITH LIFE

There were three quality of life and satisfaction with life indexes used including: (1) quality of life rating, (2) positive and negative feelings, and (3) satisfaction with life.

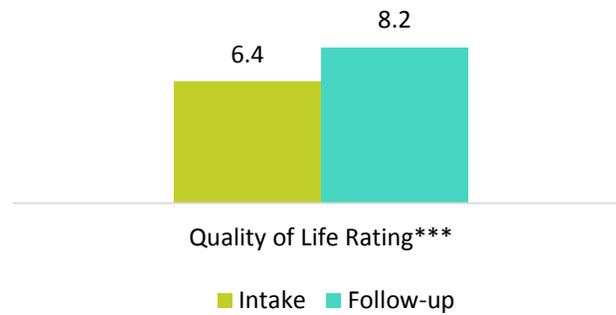
#### QUALITY OF LIFE

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 KIDS NOW Plus case management program as on average 6.4 (see Figure 11.2). The average rating of quality of life significantly increased to 8.2 at postnatal follow-up.

Average rating of **quality of life significantly increased** from 6.4 before at prenatal baseline to 8.2 at postnatal follow-up

<sup>56</sup> Stress Index measure created by Logan, TK and Walker, R. Stress and Allostatic Load.

FIGURE 11.2. PERCEPTION OF QUALITY OF LIFE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (n = 169)



1, worst imaginable; 10, best imaginable

\*\*\* p < .001

### POSITIVE AND NEGATIVE EXPERIENCES

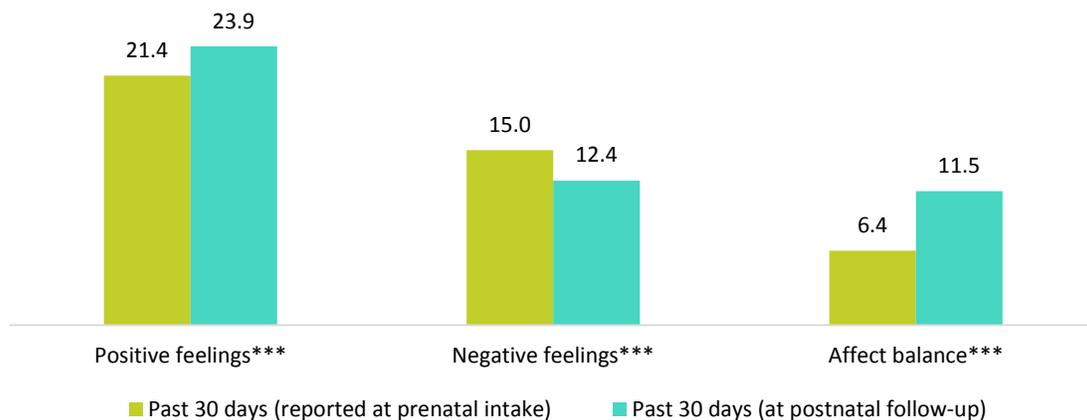
Clients were also asked about their positive or negative experiences on the Scale of Positive and Negative Experience (SPANE).<sup>57</sup> The index contains 12 feelings/experiences and clients indicate how often they have felt this way in the past 30 days (e.g., positive, negative, good, bad, pleasant, unpleasant, happy, sad). Clients answered using a scale with 1 representing “Very rarely or never” to 5 “Very often or always.” The responses are then added for the 6 positive items, yielding a Positive Feelings Score, and the same scoring method is used for the Negative Feelings Score. The minimum score on each scale is 6 and the maximum score is 30. Low scores on the Positive Feelings Scale indicate the client rarely or infrequently experienced the six positive emotions/states. A high score on the Positive Feelings Scale indicates the client very often or frequently experienced the six positive emotions/states. To determine the overall affect balance (or the balance of negative and positive feelings about their life), the score derived from the negative feelings score is subtracted from the positive feelings score (with -24 being the minimum and unhappiest to 24 being the happiest). For example, a client with a high score reports that she more rarely experiences negative feelings and more often has positive feelings.

“I could rely on my case manager to help me and I could be honest with her.”  
-KIDS NOW Plus Follow-up Client

Figure 11.3 shows that clients’ average positive feelings score increased significantly from 21.4 at prenatal baseline to 23.9 at postnatal follow-up. Clients’ average negative feelings score decreased significantly from 15.0 at prenatal baseline to 12.4 at postnatal follow-up. The significantly higher affect balance score at postnatal follow-up (11.5) indicates that clients’ positive feelings were more frequent than their negative feelings compared to prenatal baseline.

<sup>57</sup> Diener, E., Wirtz, D. Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2009). New measures of well-being: Flourishing and positive and negative feelings. *Social Indicators Research*, 39, 247-266.

FIGURE 11.3. CLIENT’S POSITIVE AND NEGATIVE FEELINGS IN THE PAST 30 DAYS AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 168)<sup>a</sup>

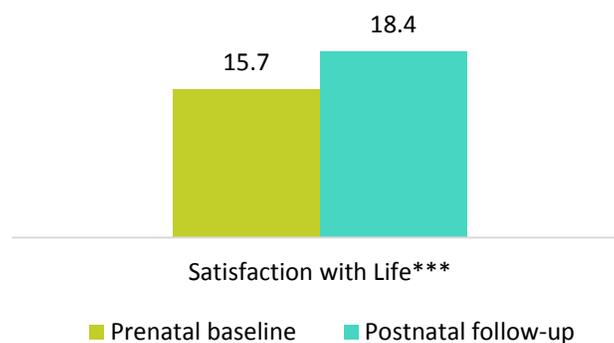


\*\*\* p > .001  
 Significance tested with paired sample t-test  
 a—Question skipped for one client at follow-up.

### SATISFACTION WITH LIFE

In order to measure the clients’ overall satisfaction with their life, clients were asked 5 questions on the Satisfaction With Life Scale (SWLS)<sup>58</sup> at both prenatal baseline and postnatal follow-up, and clients responded to each item with 1 ‘Extremely dissatisfied’ to 5 ‘Extremely satisfied’ (see Figure 11.4). Scale scores were a sum of the five items and ranged from 5 which indicates the client is extremely dissatisfied with her current life to 25 which indicates the client is highly satisfied with her life. At prenatal baseline, clients reported an average well-being score of 15.7 and this significantly increased to 18.4 at postnatal follow-up, indicating that clients were generally happy with their lives at follow-up.

FIGURE 11.4. AVERAGE RANKING OF SATISFACTION WITH LIFE AT PRENATAL BASELINE AND POSTNATAL FOLLOW-UP (N = 164)



\*\*\*p < .01  
 a—Question was skipped for five clients at postnatal follow-up.

<sup>58</sup> A modified version of the Satisfaction With Life Scale. Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.

## SUMMARY

Clients reported significantly fewer physiological consequences associated with higher stress at postnatal follow-up compared to prenatal baseline. In addition, clients reported a significantly greater quality of life at postnatal follow-up compared to prenatal baseline. There were also significant improvements in the clients' feelings and experiences with clients reporting feeling significantly more positive and less negative about their lives at postnatal follow-up compared to prenatal baseline. Furthermore, clients reported a significant increase in their satisfaction with their lives at postnatal follow-up.

## Section 12.

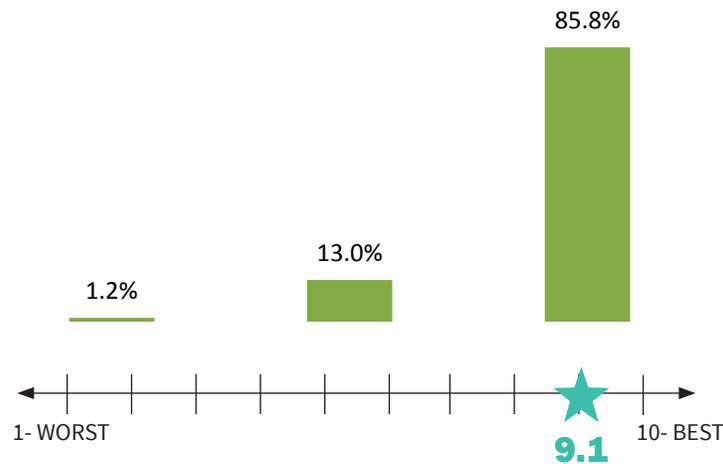
# Client Satisfaction with KIDS NOW Plus Case Management

This section describes four aspects of client satisfaction assessed for clients who completed a postnatal follow-up: (1) overall program satisfaction; (2) ratings of program experiences; (3) if the client would recommend the program to a friend; and (4) what clients found most useful from the program.

### KIDS NOW PLUS CASE MANAGEMENT SERVICES SATISFACTION RATING

At the beginning of the follow-up interview, interviewers asked clients questions about their satisfaction with the treatment programs where 1 represented the worst experience and 10 represented the best experience. Clients rated their KIDS NOW Plus experience, on average, as 9.1 (see Figure 12.1). Overall, 85.8% gave a rating between 8 and 10 and 68.6% of clients gave the highest possible rating, 10.

FIGURE 12.1. RATING OF EXPERIENCE WITH KIDS NOW PLUS (N = 169)<sup>a</sup>

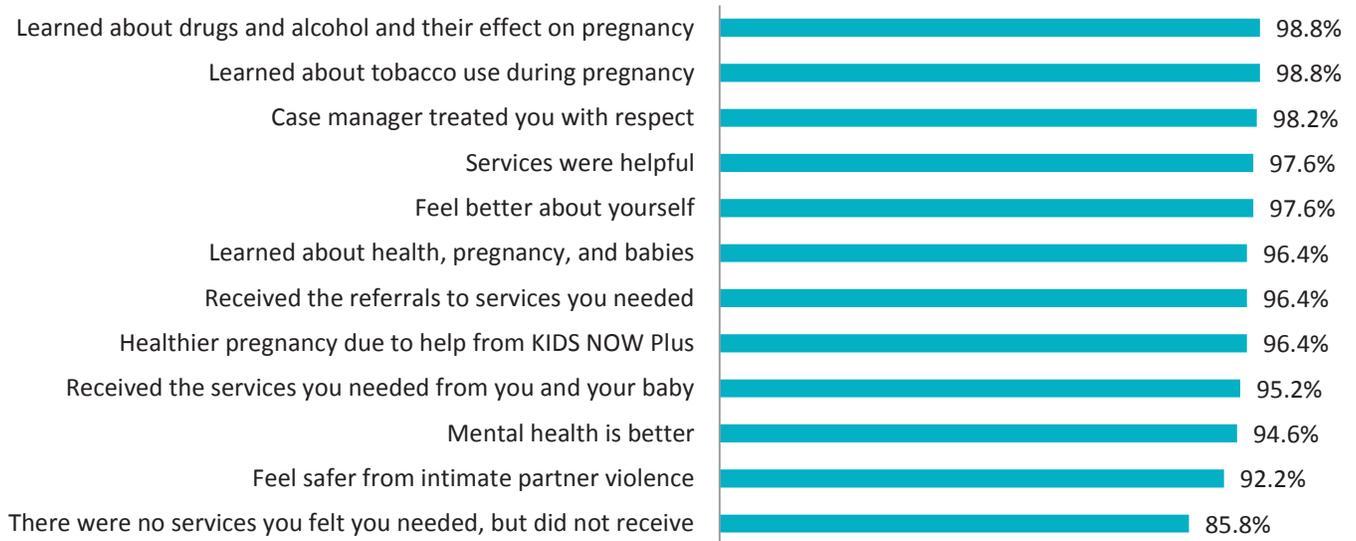


a- Two clients indicated they were not sure about a rating.

### SATISFACTION WITH EXPERIENCE

Figure 12.2 shows that the majority of clients were very positive about every aspect of their KIDS NOW Plus experience that was asked about in the follow-up interview. Most of the pregnant mothers (98.8%) indicated they learned about how drugs, alcohol and tobacco affect pregnancy and baby outcomes. The majority of clients (98.2%) reported their case manager was polite and respectful and 97.6% indicated the services were helpful. Almost all clients (97.6%) felt better about themselves as a result of their experience in KIDS NOW Plus. About 96% of clients reported learning about health, pregnancy and babies, receiving referrals they felt they needed, and believed they had a healthier pregnancy as a result of KIDS NOW Plus case management services. In addition, 94.6% believed their mental health during pregnancy was better due to KIDS NOW Plus and 92.2% felt safer from partner violence.

FIGURE 12.2. SATISFACTION OF KIDS NOW PLUS EXPERIENCE (N = 168)<sup>a</sup>



a- Satisfaction with treatment question skipped for one client at follow-up.

## RECOMMEND KIDS NOW PLUS TO A FRIEND

The majority of clients (98.8%) in the postnatal follow-up sample indicated they would recommend KIDS NOW Plus to a friend. The following are some quotes from clients about why they would recommend KIDS NOW Plus to a friend:

“ I have already recommended it. It’s extremely helpful if you don’t have any [other] support.

“ They help you get your life together. It is life changing.

“ It makes you feel better about yourself.

“ They offer so many things that new moms can benefit from.

## MOST USEFUL PARTS OF PROGRAM

When clients were asked what they found most helpful about KIDS NOW Plus, most responses fell into one of three main categories:

### **1 Information about risks and a healthy baby (45%)**

*“All of my questions were answered about what to expect when my new baby comes.”*

*“They give you things to look for when you’re a new mother.”*

*“Helpful information that I didn’t know, even with 3 kids!”*

*“Overcoming issues with drugs and alcohol.”*

*“Their education is really amazing. They teach you everything you need to know about expecting a baby.”*

### **2 Resources (39%)**

*“They offered me a place to stay and got me into a Hope for Life program.”*

*“They got me referral resources.”*

*“I was struggling financially and they helped get me a car seat and clothes. My baby was addicted to methadone and they helped me with that.”*

### **3 Emotional support (34%)**

*“I could talk to my case manager about anything. Really good support system.”*

*“I was able to get things off my chest without feeling judged.”*

*“I could talk to the counselor like she was my best friend. That was really helpful.”*

*“It was helpful knowing you had a support system and a cheerleader.”*

## Section 13:

# Conclusion

### OVERVIEW

KIDS NOW Plus is part of the overall KIDS NOW initiative in Kentucky (Kentucky Invests in Developing Success NOW), coordinated and funded by the Governor's Office of Early Childhood, which provides numerous health and educational services for young children. The program is administered by the Kentucky Department for Behavioral Health, Developmental and Intellectual Disabilities and its Division of Behavioral Health. Services are provided by eight of the Commonwealth's fourteen Community Mental Health Centers and are free for pregnant women living in those regions.

The overall goal of KIDS NOW Plus is to increase positive birth outcomes for high risk pregnant women in Kentucky by reducing maternal substance use as well as mental health symptoms and partner abuse and violence. These three interrelated risk factors all impact the health of the pregnant mother, fetal development, and birth outcomes. Clearly alcohol, tobacco, and illicit drug use during pregnancy have been shown to negatively influence fetal development and women's health.<sup>59, 60, 61, 62, 63</sup> Risks of negative birth outcomes are doubly increased when women using alcohol and illegal drugs avoid obtaining prenatal care due to fear of losing custody of their babies or fear of being arrested.<sup>64, 65</sup> Further, substance use is related to poor mental health as well as interpersonal victimization such as partner abuse and violence.<sup>66, 67</sup> Thus, it is critical to target all three of these risk factors to have the best success in reducing substance abuse and the related negative pregnancy outcomes.

KIDS NOW Plus case management clients received both traditional case management assistance to meet basic needs such as safe housing, food, and childcare, as well as referrals to treatment services. Referrals to clinical services are facilitated using the evidence-based practice of Motivational Interviewing aimed at increasing readiness to follow through on referrals, linkage with peer support groups, support to maintain abstinence throughout pregnancy, and finally, support and transportation to attend prenatal appointments. Clients also receive information and support to facilitate a healthy pregnancy and fetal development as well as to meet needs after the baby is born. Services provided by KIDS NOW Plus case managers are client-centered which means they are based on individual needs which change over time with risk, situation, and pregnancy development.

<sup>59</sup> Chiriboga, CA. (2003). Fetal alcohol and drug effects. *Neurologist*, 9(6), 267-279.

<sup>60</sup> Bandstra, E. S., Morrow, C. E., Mansoor, E., & Accornero, V. H. (2010). Prenatal drug exposure: infant and toddler outcomes. *Journal of Addictive Diseases*, 29(2), 245-258.

<sup>61</sup> Agrawal, A., Scherrer, J. F., Grant, J. D., Sartor, C. E., Pergadia, M. L., Duncan, A. E., et al. (2010). The effects of maternal smoking during pregnancy on offspring outcomes. *Preventive Medicine*, 50(1), 13-18.

<sup>62</sup> Salisbury, A. L., Ponder, K. L., Padbury, J. F., & Lester, B. M. (2009). Fetal effects of psychoactive drugs. *Clinics in Perinatology*, 36(3), 595-619.

<sup>63</sup> Stroud, L. R., Paster, R. L., Goodwin, M. S., Shenassa, E., Buka, S., Niaura, R., et al. (2009). Maternal smoking during pregnancy and neonatal behavior: a large-scale community study. *Pediatrics*, 123(5), e842-e848.

<sup>64</sup> Poland, M. L., Dombrowski, M. P., Ager, J. W., & Sokol, R. J. (1993). Punishing pregnant drug users: enhancing the flight from care. *Drug and Alcohol Dependence*, 31(3), 199-203.

<sup>65</sup> Roberts, S., & Nuru-Jeter, A. (2010). Women's perspectives on screening for alcohol and drug use in prenatal care. *Women's Health Issues*, 20(3), 193-200.

<sup>66</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>67</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.

The KIDS NOW Plus outcome evaluation includes a face-to-face baseline interview by program staff upon entering the program. Clients who consent to complete a follow-up assessment are contacted approximately 6 months after the birth of their baby. The follow-up assessment includes their satisfaction with the program, the health and well-being of their baby, the impact KIDS NOW Plus case management services had on them during pregnancy, as well as change in risk factors.

The pregnant women involved with KIDS NOW Plus case management services are high risk across a number of general and targeted factors. The majority of clients who enter the program are about halfway through their pregnancies, are young (in their mid-20s), do not have a college education, and are unemployed. Additionally, many of these young women used cigarettes, alcohol and/or drugs before knowing about their pregnancy. A sizable number of these pregnant women also experienced depression, anxiety, and intimate partner abuse and violence.

However, in spite of these significant risk factors, the KIDS NOW Plus mothers had very positive birth outcomes that were similar to the general population of mothers in Kentucky who had babies during the same period. Specifically, the two groups of mothers had similar birth outcomes, such as babies' birth weight, babies' highest APGAR score, premature births, birthing problems, babies taken to the NICU, and breastfeeding. In fact, KIDS NOW Plus clients reported more prenatal visits with a health care provider than mothers in the general population.

Reported illegal drug use was higher for the KIDS NOW Plus clients when compared to a national sample of pregnant women. Specifically, 42% of clients reported illegal drug use in the 30 days before becoming pregnant, compared to 11.4% of non-pregnant women reporting illegal drug use in the past month in a national survey. In the past 30 days at prenatal baseline, 9.5% of clients reported illegal drug use and in the 30 days before the baby was born only 3.0% of clients reported illegal drug use. In comparison, a national survey of women reported 5.4% of pregnant women aged 15-44 used illegal drugs in the past month. Illegal drug use decreased significantly at postnatal follow-up compared to the period before clients found out about the pregnancy.

A similar pattern was seen with reduction in alcohol use with clients reporting significantly less use while pregnant and in KIDS NOW Plus with a sustained decrease after the birth of the baby. A little over one-third of clients reported using alcohol in the 30 days before pregnancy compared to 55.4% of non-pregnant women aged 15-44 in a national sample reporting drinking alcohol in the past 30 days. Further, only 1.8% of KIDS NOW Plus clients reported any alcohol use in the past 30 days at prenatal baseline and 0.6% of clients reported alcohol use in the 30 days before the baby was born, compared to 9.4% of pregnant women nationally. Although there was an increase in the number of clients who reported any alcohol use at postnatal follow-up (in the six months after the birth of the baby) compared to during pregnancy, there were still significantly fewer clients reporting alcohol use compared to the 6 months before pregnancy.

In addition, the number of clients who reported smoking decreased significantly from the 30 days before the client became pregnant to the 30 days before the baby was born. This decrease was sustained in the 30 days before postnatal follow-up. In addition, the average number of cigarettes clients smoked decreased 47% from before the client found out about their pregnancy to the past 30 days at prenatal baseline. The number of cigarettes decreased further in the 30 days before the baby was born and remained low in the past 30 days at postnatal follow-up.

Clients' mental health also showed significant improvements. Specifically, significant reductions in depression and anxiety symptoms were found in the past 6 months at postnatal follow-up compared to before pregnancy. Moreover, individuals reported significantly fewer days in the past 30 days their

mental health was not good at follow-up compared to baseline. Clients also reported more positive feelings and fewer stress-related health consequences at postnatal follow-up.

Reported incidences of intimate partner abuse such as psychological abuse, physical abuse, and coercive control all decreased from the period before they found out they were pregnant to postnatal follow-up.

In addition to these risk factors, there were improvements in other general areas of the mothers' lives after becoming involved in the KIDS NOW Plus program including a reduction in chronic pain and improved overall health. Women reported improved economic conditions with significantly fewer clients reporting they had difficulty meeting basic living or health care needs as a result of financial problems.

Clients reported significantly higher quality of life after the program, having significantly more positive feelings and significantly less negative feelings, and an overall greater satisfaction with life at postnatal follow-up compared to prenatal baseline. The vast majority of clients were satisfied with KIDS NOW Plus case management services and believed they and their baby were better off due to their participation.

However, there was a minority of new mothers who continued to struggle with targeted risks such as substance use, mental health problems, intimate partner violence, and economic hardship at follow-up.

**Substance use and smoking.** Overall, 10% reported using illegal drugs in the 6 months after the baby was born and 6.5% reported using illegal drugs in the 30 days before the follow-up interview. In addition, 18.5% felt treatment for their drug or alcohol problems was extremely or considerably important during the 6 months after the baby was born. Additionally, 12.4% of new mothers reported they were experiencing ongoing chronic pain during the 6 months after baby was born. Chronic pain may increase risk of substance use. Further, two-thirds of clients smoked during pregnancy and during the 6 months after the baby was born. This is considerably higher than the number of both pregnant and non-pregnant women who smoke in the U.S. While it is well-known that smoking can cause negative birth outcomes, many mothers may not consider the impact that cigarette smoke has on a baby's health once the baby has been born. In fact, several studies have shown that childhood exposure to cigarette smoke contributes to the incidence of sudden infant death syndrome,<sup>68,69</sup> respiratory infections,<sup>70</sup> middle ear disease and adenotonsillectomy,<sup>71</sup>

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<sup>68</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>69</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>70</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>71</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.

poor lung function and asthma,<sup>72, 73, 74</sup> neurodevelopmental and behavioral problems,<sup>75</sup> and childhood cancer.<sup>76, 77, 78</sup> As a result, there may be a need to increase postpartum support services for substance use and smoking cessation support in the KIDS NOW Plus program.

**Mental health problems and trauma.** Over one-quarter of KIDS NOW Plus clients reported meeting study criteria for depression or anxiety (or both) in the six months after the baby was born. In addition, one-third of women indicated they had experienced or witnessed a traumatic event in the 12 months before the baseline interview and 18.9% of the new mothers reported having experienced or witnessed a new traumatic event in the past 12 months before the follow-up. Dealing with a newborn and the typical new mother sleep deprivation may be especially difficult for women experiencing trauma, depression, and/or anxiety. Additionally, 11.4% of new mothers reported they were struggling to manage life with a new baby at follow up. 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>79</sup> it can continue for as long as 14 months.<sup>80</sup> While it is mostly caused by the swing of hormones that occur after birth, a study by the Centers for Disease Control found that postpartum depression was significantly associated with tobacco use in the last trimester, intimate partner abuse, and financial stress (including the use of Medicaid).<sup>81, 82</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>83, 84</sup> For these women who have experienced mental health problems and/or trauma, targeted or adapted mental health services may be critical.

**Intimate partner abuse and sexual assault.** At follow-up, 13.0% of KIDS NOW Plus mothers experienced intimate partner abuse in the 30 days before their baby was born and 15.4% reported experiencing intimate partner abuse in the past 6 months. Overall, 15% of the women experienced intimate partner violence in the 30 days before the baseline suggesting that the intimate partner

<sup>72</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>73</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>74</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>75</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>76</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>77</sup> Sasco, A.J., & 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>78</sup> Hofhuis, W., Jongste, J.C., & Merkus, P. (2003). Adverse health effects of prenatal and postnatal tobacco smoke exposure on children. *Archives of Disease in Childhood*, 88, 1086-1090.

<sup>79</sup> American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

<sup>80</sup> Wolkind S, Zajicek E, & Ghodsian J. (1990). Continuities in maternal depression. *International Journal of Family Psychiatry*, 1, 167-182.

<sup>81</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>82</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>83</sup> O'Hara, M. & McCabe, J. (2013). *Annual Review of Clinical Psychology*, 9, 379-407.

<sup>84</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.

violence is an ongoing concern through the pregnancy and after the baby is born. Further, about 5% of the clients reported sexual abuse both in the 30 days before the baby was born and in the 6 months after the baby was born. A small proportion of women were raped by someone other than a partner both before the baby was born and 6 months after the baby was born. Partner abuse, rape, and trauma can contribute to mental health symptoms and can interfere with the parenting relationship.<sup>85</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 violence.<sup>86</sup> Thus, support and resources for trauma and partner violence is an issue that should be targeted during the pregnancy and postnatal period.

**Financial issues.** With over three-quarters of women reporting being currently unemployed and around one-quarter of women reporting difficulty meeting basic needs for financial reasons at follow-up, economic hardship is a continuing problem for many new mothers in KIDS NOW Plus. 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>87</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 in more basic needs (i.e., food, shelter, utilities, and medical needs).<sup>88</sup> Therefore, providing referrals and support to help new mothers with financial difficulties help improve basic living situations for many mothers and support continued long-term positive results for both mother and infant.

## LIMITATIONS

There are several limitations to this outcome study including the lack of random assignment to the KIDS NOW Plus program. Although it would be ethically and procedurally difficult to conduct a random assignment of pregnant women at risk for substance use to a program such as KIDS NOW Plus, random assignment can provide more confidence that the birth outcomes of these mothers are directly due to interventions provided by KIDS NOW Plus. Also, this study has no control group with which to compare KIDS NOW Plus clients. While the matched comparison group matches mothers on several key factors (age, race, education, marital status, community residence, and smoking status), there is no information on drug use, mental health problems or intimate partner violence for the comparison group. However, given the small number of cases that had negative birth outcomes against significant odds (i.e., multiple risk factors), it is reasonable to assume that the services provided by KIDS NOW Plus play an important role in the health and safety of these mothers and their children. Further, in order to better understand the results of the KIDS NOW Plus case management program, the analysis was done in several ways. As presented in this report, a multivariate analysis of birth outcomes was conducted to control for several key factors that may be associated with birth outcomes. Additionally, a group of mothers matched on selected factors<sup>89</sup> along with a randomly selected comparison group from the general population were compared to the KIDS NOW Plus case management group on

<sup>85</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>86</sup> Bogat, G. A., DeJonghe, E., Levendosky, A. A., Davidson, W. S., & von Eye, A. (2006). Trauma symptoms among infants exposed to intimate partner violence. *Child Abuse & Neglect*, *30*(2), 109-125.

<sup>87</sup> Kiernan, K. E., & Huerta, M. C. (2008). Economic deprivation, maternal depression, parenting and children's cognitive and emotional development in early childhood. *The British Journal of Sociology*, *59*(4), 783-806.

<sup>88</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.

<sup>89</sup> Mothers were matched on age, education, metropolitan/non-metropolitan residence, marital status and smoking status.

birth outcomes (see Appendix B). Results were similar findings of the multivariate analysis on birth outcomes. Specifically, there were no significant differences for the average number of prenatal care visits (unlike in the multivariate regression analysis), average number of gestational weeks, highest APGAR score, birth weight, the percentage of babies who were born premature, or the percentage of babies with birthing problems.

Second, most of the data for this report is self-reported by KIDS NOW Plus clients. Recent research has supported findings about the reliability and accuracy of individuals' reports of their substance use.<sup>90, 91, 92, 93</sup> Earlier studies found that the context of the interview influences reliability.<sup>94</sup> During the informed consent process at the beginning of the follow-up survey, interviewers tell participants that the research team operates independently from the KIDS NOW Plus 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 use.<sup>95, 96</sup>

Third, clients are self-selected and voluntarily agree to participate in KIDS NOW Plus 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 KIDS NOW Plus. 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>97</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.

<sup>90</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>91</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>92</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>93</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>94</sup> Babor, T.F., Stephens, R.S., & Marlatt, A. (1987). Verbal report methods in clinical research on alcoholism: Response bias and its minimization. *Journal of Studies on Alcoholism, 48*, 410-424.

<sup>95</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>96</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>97</sup> Tuchman, E. (2010). Women and addiction: The importance of gender issues in substance abuse research. *Journal of Addictive Diseases, 29*(2), 127-138.

## 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 KIDS NOW Plus 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 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.

Given these positive outcomes, there is every reason to see a rationale for maintaining these services in the eight participating regions and expanding these services to the remaining six regions of the state. This is especially critical when comparing the level of tobacco and drug use in the pregnant women served by the KIDS NOW Plus program to the national level data which shows significantly higher rates of substance use at prenatal baseline for Kentucky women.

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. The KIDS NOW Plus program ends 60 days after the end of the month in which the child is born, due to Medicaid eligibility limits<sup>98</sup> and two months postpartum is far too early to fully secure changes toward abstinence or reduced substance use. Those mothers who persist in or return to drug-using lifestyles are at great risk for child neglect and other forms of child maltreatment,<sup>99, 100</sup> as well as for setting the stage for their children to use and misuse alcohol and illegal drug as adolescents and adults.<sup>101, 102</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 utilization of all possible resources will be important both for these mothers and their newborns. The KIDS NOW Plus program plays a critical role toward this end.

<sup>98</sup> Data for the postnatal follow-up was completed prior to Kentucky's Medicaid coverage expansion which was effective January 1, 2014. As of this date, these eligibility limits are no longer in effect.

<sup>99</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>100</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>101</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>102</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:

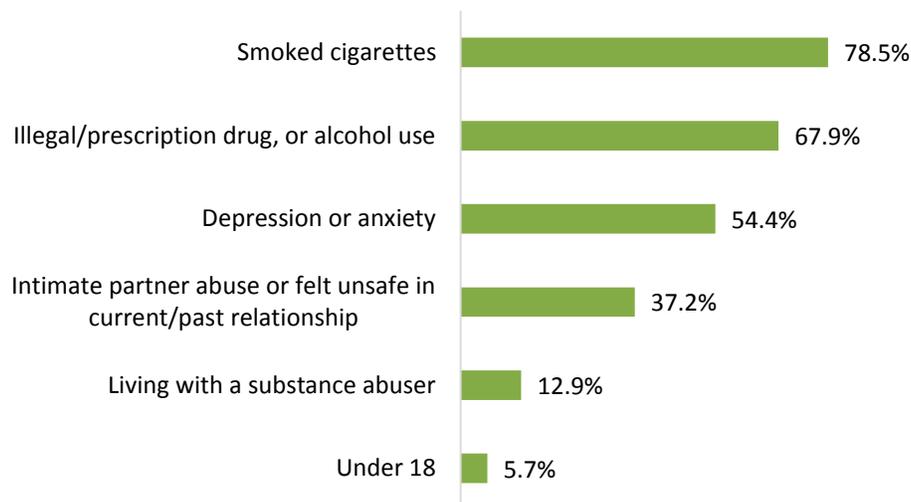
# Description of KIDS NOW Plus Case Management Clients at Prenatal Baseline

The KIDS NOW Plus 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 violence, and other factors such as education, employment status, and living situation prior to pregnancy and while involved in the program. Between May 2013 and January 2015, 349 pregnant women completed a prenatal baseline interview and were eligible for a six-month postnatal follow-up within FY 15.<sup>103</sup>

## RISK STATUS

Figure AA.1 shows that of the 349 clients who completed a KIDS NOW Plus prenatal baseline, 96.3% (n = 336 clients), fit into at least one of the major risk factor categories assessed in the baseline interview. Overall, 78.5% of clients reported cigarette use, 67.9% reported drug or alcohol use at baseline, 54.4% reported depression or anxiety, 37.2% reported intimate partner abuse and/or feeling unsafe in either their current relationship or because of a partner from a previous relationship, 12.9% of clients reported currently living with someone who has drug or alcohol problems, and 5.7% were under the age of 18.

FIGURE AA.1. PERCENTAGE OF CLIENTS FALLING INTO AT LEAST ONE TARGETED RISK FACTOR (N = 349)



## PREGNANCY STATUS

Almost 40% of KIDS NOW Plus clients were either referred to the case management program by their counselor (20.9%) or by the local health department (18.6%). Almost 17% were referred by HANDS and 9.7% just decided on their own to participate in the program. Well over one-third of clients (38.7%) reported that receiving information about pregnancy and fetal development from KIDS NOW Plus was important, 12.6% wanted information about services for after the baby was born. About 10.3% wanted help with stress or for mental health issues and 8.6% wanted information about substance use and the effects on pregnancy.

<sup>103</sup> Clients who completed a prenatal baseline (n = 349) entered the KIDS NOW Plus case management program between May 2013 and January 2015 and were eligible for follow-up between July 2014 and June 2015.

Overall, at the time clients completed the prenatal baseline, they were an average of 22 weeks pregnant (ranging from women who were 5 weeks pregnant to women who were 41 weeks pregnant). Although 80.5% of the clients indicated their pregnancy was unplanned, only 0.9% reported they were not sure about keeping the baby or were definitely not keeping their baby.

At the time of prenatal baseline, clients had been to an average of 5.9 visits (range of 0-50 visits) with their prenatal health care provider and 44.7% reported they were planning on breastfeeding.

Overall, 74.5% of clients reported they been pregnant before. The majority of clients who entered the KIDS NOW Plus case management program were confident (29.2%) or very confident (56.2%) about caring for a newborn.

Only 2.0% of the women reported the father did not know about the baby. Of those who indicated the father knew about the baby (n = 342), 75.7% indicated the father was excited (15.8%) or extremely excited (59.9%) about the baby.

## SOCIOECONOMIC STATUS

- On average, clients were 25 years old (ranging from 14 years old to 43 years old).<sup>104</sup>
- The majority of women who entered KIDS NOW Plus case management were unemployed (75.9%) at the time of the baseline interview. Less than 10% were employed full-time and 12.9% either worked part-time or had occasional/seasonal work.
- About 56% of clients were either married (26.1%) or cohabiting with a partner (29.5%) at prenatal baseline. Of those clients who were married or cohabiting (n = 194), 94.8% reported that their partner was the father of the baby with whom they were pregnant.
- Around 6% of the KIDS NOW Plus mothers reported at prenatal baseline they were currently homeless. Of those who indicated they were homeless (n = 12), 83.3% were staying temporarily with friends/family, and 16.7% reported they perceived themselves to be homeless for other reasons (i.e., living in a residential treatment center or living in substandard housing conditions).

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<sup>104</sup> One client had an incorrect birthdate entered and, therefore, age could not be calculated.

## Appendix B: Methods

*This evaluation project collects data from pregnant women in Kentucky who are at high risk for substance abuse and participate in KIDS NOW Plus case management services. Eight community mental health centers participate in the program and collect baseline data on each client entering the KIDS NOW Plus case management services program. Data analysis has three main phases: (1) examination of service utilization and change in behavior and risks over time, using the prenatal baseline information and the postnatal follow-up interviews among clients who gave birth; (2) comparisons of KIDS NOW Plus clients and general population birth outcome information from the Vital Statistics birth outcome data set; and (3) comparison of KIDS NOW Plus clients matched to mothers in the general population who did not receive KIDS NOW Plus case management services based upon age, race, education, marital status, smoking status and metropolitan/non-metropolitan residence.*

### BASELINE ASSESSMENT

The baseline assessment is an electronic, structured interview developed by the University of Kentucky Center on Drug and Alcohol Research (UK CDAR) in collaboration with KIDS NOW Plus 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 349 baselines were completed between May 2013 and January 2015 and had due dates that would result in target months for a follow-up interview between July 2014 and June 2015. Overall, women completed a KIDS NOW Plus case management baseline when they were an average of 22 weeks pregnant (minimum = 5 weeks, maximum = 41 weeks).<sup>105</sup>

### METHOD OF DETERMINING FOLLOW-UP SAMPLE

**FOLLOW-UP ASSESSMENT.** KIDS NOW Plus clients are eligible for the follow-up assessment if they consent to be contacted by UK CDAR BHOS staff and provide locator information. The target month for 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 6.1 months between the time the baby was due and the date of the follow-up assessment (with a mode of 6 months). These individuals are then included in the sample of women to be followed up.

Follow-up interviews are conducted on the telephone by the UK CDAR BHOS research team and are independent of KIDS NOW Plus 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

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<sup>105</sup> The average number of days between when the client was admitted to the KIDS NOW Plus case management program and when the baseline was completed was 7.2 days with a minimum of 0 days and a maximum of 121 days.

federal, state, or local civil, criminal administrative, legislative, or other proceedings.<sup>106</sup> The follow-up interviews examine program satisfaction, current substance use, intimate partner violence, 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 continues 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 follow-up interview. First, women who have not given birth to their babies or who do not have the baby living with them are not eligible for the follow-up interview. Second, women who are living in a controlled environment (e.g., jail, prison, residential treatment) are not eligible for completing the follow-up interview. Third, prenatal baselines must be submitted to UK CDAR within 30 days of completion. Finally, adequate contact information must be provided so that the follow-up staff can locate the client to conduct the interview. As mentioned previously, 349 baselines were completed between May 2013 and January 2015 and had a targeted month for follow-up in FY 2015 (July 2014 – July 2015). Of these clients who were in the targeted window to complete a postnatal follow-up, 80 did not consent to be contacted by follow-up staff (see Table AB.1). Of the remaining 269 women, an additional 30 clients were ineligible for follow-up staff to begin locating as a result of prenatal baseline date (16 clients were in the program less than 30 days or their baseline date was after their due date, 10 clients had their baseline assessment submitted more than 30 days after it was completed, 2 clients indicated at prenatal baseline that they may not keep their baby, and 2 clients had invalid contact data).

In addition, 21 were not eligible because they were in jail or another controlled environment (n = 11), because their baby was not living with them (n = 6), client passed away (n = 2), or the client did not remember being in the KIDS NOW Plus case management program (n = 2).

Of the remaining eligible clients (n = 218), 37 clients (17.0%) 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 181 clients, representing a follow-up rate of 83.0%.

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<sup>106</sup> The exception to this is if harm to the client, harm to others, or child abuse is disclosed to the researchers.

TABLE AB.1. FOLLOW-UP SAMPLE AND EFFORTS

	Number of baselines (n = 349)
<b>Did not consent to follow-up</b>	<b>80</b>
	n = 269
<b>Not eligible for follow-up</b>	<b>51</b>
Other reasons based upon prenatal baseline (i.e., invalid data, not in program long enough, baseline submission more than 30 days after completion)	30
In jail or controlled environment (i.e, residential treatment)	11
Baby not living with them	6
Other reasons (i.e., death, did not remember KIDS NOW Plus program)	4
<b>Total number of baseline surveys eligible for follow-up</b>	<b>218</b>
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period)	37
Expired rate ((the number of expired cases/eligible cases)*100)	17.0%
Refused	0
Refusal rate ((the number of refusal cases/eligible cases)*100)	0.0%
Completed follow-up interviews	181
Follow-up rate	83.0%

Because the follow-up sample is based upon the women who have had their babies and had a follow-up interview, the next step in determining the follow-up sample was to match to the birth event data set.

**OBTAINING THE BIRTH EVENT DATA.** The Vital Statistics birth data is used to compare mothers in KIDS NOW Plus case management and their babies to mothers who had babies during the same time period but who did not participate in KIDS NOW Plus Case Management. 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.

As a first step in merging Vital Statistics data with KIDS NOW Plus baseline data, birth event data for 2013 and 2014 (up to the date of analysis on August 3, 2015) were combined (n=111,354; 57,172 for 2013 and 54,182 for 2014). Only mothers in the birth data set that had their babies during the same time period as KIDS NOW Plus clients were kept in the data set (December 2013-December 2014); thus, 52,500 cases were removed leaving a sample of n = 58,854. Seven cases were then removed because they were duplicate records (the earliest record for the child was kept in the file). Next, KIDS NOW Plus

clients in the birth event data set were identified based upon social security number. In addition, 153 cases were removed from the whole birth event data set because they matched mothers involved in KIDS NOW Plus but who were not involved in the current follow-up sample analysis and, therefore, should not be included in the general population of mothers. Also, because follow-up analysis years regarding the birth data often overlap, cases were removed from the birth data file if they had been analyzed in the previous year's report ( $n = 18$ ). Finally, two cases were removed from the birth data set corresponding to two clients from KIDS NOW Plus who did not give permission to access their birth event data. This left a sample of 58,674.

The next step to preparing the data was that all cases in which the mother was not a Kentucky resident were eliminated ( $n=2,115$ ) which was 3.6% of the birth data sample and left a sample of 56,559 cases in Kentucky. Finally, 2 cases for KIDS NOW Plus clients were removed because the client had the baby before they were admitted to the program which left a final sample of 56,557 cases.

**FOLLOW-UP SAMPLE.** In order to be included in the analysis of this report, there were other criteria clients needed to meet before being included in the report and therefore:

- 2 clients were not included in the analysis because the baseline information was submitted to UK CDAR less than 30 days before the baby was born.
- Because only clients who had data in the birth event data set were included in the analysis, 8 clients were not included in the follow-up analysis because they did not have a match to data in the Vital Statistics data set.<sup>107</sup>
- In addition, as previously mentioned, 2 clients did not give permission to access their birth data and were, therefore, their data was not included in the follow-up analysis.

This left a follow-up sample of 169 KIDS NOW Plus mothers for the birth event analysis.

**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 z-test for proportions, while percent-of-change calculations were performed in Microsoft Excel. The statistical results were then placed in tables for review by the research team.

**SERVICE EVENT DATA.** Information on clinical services and mental health diagnosis codes for KIDS NOW Plus baseline clients receiving treatment at community mental health centers is submitted into the Treatment Event Dataset (TEDS) and is managed by the University of Kentucky Institute for Pharmaceutical Outcomes and Policy (IPOP). Clinical services include billed case management, outpatient counseling, residential treatment, and other services as reported monthly by the CMHCs to the Department for Behavioral Health, Development and Intellectual Disabilities as service event data in TEDS. Service events and mental health diagnosis codes were matched to KIDS NOW Plus client baseline data using encrypted social security numbers and based upon the timeframe from the date the baseline interview was submitted to two months after the date the baby was born which varied for each client (average days 201; Minimum = 38, Maximum = 322 days). Of the 169 postnatal follow-up women included in the analysis, 70.4% ( $n = 119$ ) received clinical services other than clinical case management services<sup>108</sup> provided by the KIDS NOW Plus program staff. Services that were categorized by TEDS as “unknown/not collected” or “miscellaneous” were not included in the analysis.

<sup>107</sup> This could be due to an incorrect social security number, name or birthdate, or the client could have given birth out of state.

<sup>108</sup> An additional 37 clients received only clinical case management services including substance abuse, adult mental health, child mental health and intellectual disabilities, but were not included in the analysis.

## ANALYSIS OF BIRTH EVENTS AND OUTCOME DATA

**BIRTH DATA SAMPLE.** As described in the section regarding obtaining the birth event data, based upon the range of dates that the KIDS NOW Plus clients gave birth, which were from December 2013 to December 2014, the final sample for the general population of mothers is 55,351 mothers and 56,385 babies who were not involved in KIDS NOW Plus.

The KIDS NOW Plus Case Management study focuses on two units of analysis depending on the outcome being examined: (1) some outcomes use the mother as the unit of analysis and in those cases the mother will be represented only one time in the data set to avoid violating the assumption of independence; and (2) some outcomes use the birth and baby characteristics as the unit of analysis and those outcomes can include all of the babies in the Vital Statistics data set.

While the Vital Statistics data set has a variable which identified those mothers that had multiple births at one birth event (e.g., twins, triplets or quadruplets), it does not capture mothers who may have had two pregnancies and deliveries within the period analyzed (i.e., December 2013 – December 2014).

In addition, the Vital Statistics data set counts each child as a multiple. For example, Child A will have a value indicating he or she is a twin and Child B will also have a value indicating he or she is a twin. When the unit of analysis is the baby (or births), all children should be included in the analysis. When the unit of analysis is the mother, only one child (the one with the first child identification number) will be included in the analysis to avoid violating the assumption of independence of cases. Thus, a variable is created in the data set which identifies whether the baby is a twin, triplet or quadruplet, or if there is a sibling in the file that was born in the approximate 12 months that were analyzed for this report.

Table AB.2 displays the number of children born at the same birth event as well as the number of children with a sibling in the data set. For the entire data set (56,557 babies) there were 1,736 twins, 54 triplets, 0 quadruplets (totaling 1,790 multiple births, or 3.2% of the sample) and 132 children that had siblings born during the time frame but their siblings were not twins or triplets. Thus, when analyzing outcomes of the birth and baby characteristics the total sample size is 56,557 in order to include all babies.

TABLE AB.2. MULTIPLE BIRTHS AT ONE BIRTH EVENT BETWEEN DECEMBER 2013 AND DECEMBER 2014

<i>Out of a total of 56,557 babies:</i>	
Twins	1,736
Triplets	54
Quadruplets	0
<b>Total multiple births</b>	<b>1,790 or 3.2%</b>
Siblings born in separate deliveries within the time frame	132

Note: 6 babies in the KIDS NOW Plus sample were twins; the remaining babies of multiple births were in the general population

Using mothers' social security numbers and children's dates of birth, mothers with multiple and multiparous births were identified as shown in Table AA.3. This shows there were 55,520 mothers total and 1,037 events with the same mother were excluded from the analysis. The mother data that remained for analysis was based upon the first child identification number (as determined by the birth data set), or in the case of multiparous births, the child with the earlier birth date. A total of 868 mothers had twins, 18 had triplets, none had quadruplets and 66 had children in separate deliveries

but within the selected timeframe. When analyzing characteristics of the mother the sample size will be 55,520 so that these mothers are not counted more than once.

TABLE AB.3. MOTHERS WITH MORE THAN ONE BABY IN THE BIRTH DATA SET BETWEEN DECEMBER 2013 AND DECEMBER 2014

<i>Out of a total of 55,520 mothers:</i>	
Mothers who had twins	868
Mothers who had triplets	18
Mothers who had quadruplets	0
<b>Total mothers with multiple births</b>	<b>886</b>
Mothers with two separate single deliveries within the selected timeframe (siblings)	66
Total mothers with more than one child in the data set	952 or 1.7%

Note: Of the 868 mothers, 3 mothers from KIDS NOW Plus had twins. In the general population, 1 women had a single child and then had twins later in the same year. Only the first child is counted in the analysis on the mother's data.

**ANALYSIS.** Using the statistical software IBM SPSS, analysis included Chi-square tests and one-way ANOVAS comparing clients that were in KIDS NOW Plus to the general population of mothers. Demographics, socio-economic indicators, physical health status, smoking, prenatal visits, and birth outcomes (i.e., average weeks gestation, prematurity, birth weight and birthing problems) were included in the analysis. All analyses were done using a  $p < .01$  alpha level based on power analysis, including the multivariate analysis and the comparison group analysis. For example, with the comparison group analysis using a Chi-square test, to detect a moderate effect size (0.3) with 8 degrees of freedom (3 groups X 3 category levels) on an overall sample size of 798, the alpha would be set at .00000001 when power is 0.95 using GPower to calculate the power analysis. Thus, alpha was set at  $< .01$  because having a larger alpha would increase the risk of a Type I error. And for the multivariate analysis the sample size was so large GPower could not calculate the required alpha due to extreme parameters. Even reducing the sample size by an order of magnitude to 3,400 would require an alpha of .000000001 to detect a small effect size of .15 with a power of .95 and 7 degrees of freedom. Thus, to control for Type I error alpha was set at .01.

Multivariate regression models were used to examine the association between KIDS NOW Plus participation and birth outcomes while adjusting for key factors. Each birth outcome was entered as the dependent variable in a separate binary logistic regression model with KIDS NOW Plus participation as the predictor variable and the covariates of mother's age, education (i.e., less than a high school diploma or GED vs. high school diploma or higher), area of residence (metropolitan vs. non-metropolitan county), and smoking at the time of the birth (No/Yes).

**MATCHED COMPARISON SAMPLE.** In order to create a similar sample to which the KIDS NOW Plus birth outcomes and service data can be compared, clients were matched to mothers in the general population who did not receive KIDS NOW Plus case management services based upon age, race, education, marital status, smoking status and metropolitan/non-metropolitan residence.

To create these samples, a random number was assigned to the general population of mothers in Excel. Then, the KIDS NOW Plus and general population mothers were placed in separate data files within Access. A query was created from the KIDS NOW Plus file which contained the fields upon which we wanted to base the comparison group. In addition, a count was created to determine how many clients had a certain set of characteristics that needed to be matched.

Next, a table was created in which the comparison characteristics in the above query were linked to the variables in the general population birth data set in order to create a table with only cases that had characteristics matching KIDS NOW Plus clients. A structure only copy of this table was then created and the six fields being matched were set as the primary keys.

Another query was created which included the query from KIDS NOW Plus with the data from the six fields we wanted to match and the birth data table with matching characteristics. The query and the table were linked on the six variables and appended to the table which had the six fields set to primary keys. This created the first sample in which one individual from the general birth data matched on the six characteristics to one case in the KIDS NOW Plus birth event data.

Next, a table of birth event data with characteristics matching KIDS NOW Plus was created, but without cases that were chosen for the first sample in order to pull cases for additional matches. Based upon the count that was created to determine how many clients from KIDS NOW Plus possess each of the six characteristics, the next step was to pull the remaining number of cases from the birth data set that matched KIDS NOW Plus.

If there were KIDS NOW Plus clients that did not have a match to the birth event data set on all characteristics for comparison, the clients were excluded from the analysis because the remaining cases would not result in a complete matched comparison.

Once a matched comparison sample was generated, the remaining birth event data was sorted by the random number assigned and the top cases were chosen for the general population file based upon the sample size of the KIDS NOW Plus client file. This resulted in a sample size of  $n = 161$  mothers for each group. Because some mothers had multiple births, there were 164 babies born to the 161 KIDS NOW Plus mothers, 163 babies born to the 161 mothers in the matched comparison sample and 165 babies born to the 161 mothers in the general population sample.

The three groups were analyzed using Chi-square tests and one-way ANOVAs with Tukey's HSD (honestly significant difference) test in order to determine which groups in the sample differ on birth characteristics and outcomes.

**MATCHED COMPARISON SAMPLE SERVICE EVENT DATA AND MENTAL HEALTH DIAGNOSIS.** Because KIDS NOW Plus strives to get women into necessary services, service event data and mental health diagnoses for KIDS NOW Plus postnatal follow-up clients and the matched comparison sample were analyzed. Service event data was matched to KIDS NOW Plus clients and the matched comparison group using encrypted social security numbers from one year prior to the child's date of birth to the child's date of birth (dates range from December 2012 to December 2014). Of the 161 women in each group,<sup>109</sup> 124 KIDS NOW Plus clients<sup>110</sup> and 10 mothers in the matched comparison group had service data. Services that were categorized by TEDS as "unknown/not collected" and "miscellaneous" were not included in the analysis; however, none of the clients had only unknown/not collected services.

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<sup>109</sup> One woman in the matched comparison sample had an invalid social security number and was not able to be matched up to service data.

<sup>110</sup> 7 additional KIDS NOW Plus clients and 1 mother in the comparison group received only additional case management services (substance abuse or mental health) but were not included in this analysis.

## Appendix C:

## Client Characteristics at Baseline for Those with Completed Follow-up Interviews and Those Without Completed Follow-up Interviews

Between May 2013 and January 2015, 349 mothers completed a prenatal baseline and were eligible for a six-month follow-up between July 2014 and June 2015. Individuals who completed a postnatal follow-up assessment during this time ( $n = 181$ ) are compared in this section with 168 individuals who did not complete a postnatal follow-up interview but were in their 6-month follow-up window in FY 2015 (e.g., did not consent to follow-up [ $n = 80$ ], ineligible for follow-up due to incarceration [ $n = 11$ ], ineligible for follow-up because baby was not living with them [ $n = 6$ ], other reasons such as death and not remembering being involved in the program [ $n = 4$ ], other reasons including invalid contact data, more than 30 days between prenatal baseline survey completion and submission, or fewer than 30 days in the program [ $n = 30$ ], or interviewers were unable to locate the client for the follow-up survey [ $n = 37$ ]).

### DEMOGRAPHIC CHARACTERISTICS

There were no significant demographic differences between clients who were followed-up and clients who were not followed-up (see Table AC.1). The average client age was 25 years old for both groups of clients. Clients in both groups came into the KIDS NOW Plus program when they were over halfway into their pregnancies (22.8 weeks and 21.1 weeks). More than half of clients in both groups were either married or cohabiting at prenatal baseline. Of those who were married or cohabiting, over 90% of clients in both groups reported this partner was the father of the baby. The majority of clients in both groups was White.

TABLE AC.1. 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 = 168	YES n = 181
AVERAGE AGE <sup>a</sup>	24.9 years	24.9 years
AVERAGE WEEKS PREGNANT	22.8 weeks	21.1 weeks
RELATIONSHIP STATUS		
Married	26.2%	26.0%
Cohabiting	28.6%	30.4%
Separated, divorced, or widowed	10.7%	13.3%
Never married	34.5%	30.4%
Of those married or cohabiting, percentage that reported the partner is the father	(n = 92) 95.7%	(n = 102) 94.1%
RACE		
White	88.1%	91.7%
Black	6.0%	6.1%
Other or multiracial	6.0%	2.2%

a- Date of birth was entered incorrectly at prenatal baseline for one client in the group that was not followed up and, therefore, age could not be calculated for this woman.

Of those who completed a postnatal follow-up, 75.7% were currently unemployed compared to 76.2% of the clients who did not complete a follow-up. About three-quarters of clients in both groups expected to be employed in the next 12 months (see Table AC.2).

TABLE AC.2. CURRENT EMPLOYMENT STATUS AT PRENATAL BASELINE

	FOLLOWED UP	
	NO n = 168	YES n = 181
EMPLOYMENT		
Not currently employed	76.2%	75.7%
Fulltime	7.1%	8.8%
Part-time	12.5%	11.6%
Occasional, from time to time seasonal work	0.6%	1.1%
On leave from a job for pregnancy related reasons	3.6%	2.8%
Expect to be employed in the next 12 months	71.4%	75.7%

There was no significant difference in usual living arrangement between those who completed a follow-up assessment and those who did not. The majority of clients 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 AC.3). Small numbers of individuals were living in a correctional facility (i.e., jail or prison) before entering case management services. Ten percent of clients who did not complete a follow-up and 5.0% of clients who did complete a follow-up were living in a residential facility, hospital, recovery center, or sober living home. A small number of individuals reported their usual living arrangement had been in a shelter or on the street.

At baseline, significantly more clients who did not complete a follow-up assessment considered themselves to be homeless (15.5%) compared to clients who did complete a follow-up (6.1%). The majority of clients who considered themselves homeless in either group stated that they were temporarily staying with friends or family (see Table AC.3).

TABLE AC.3 LIVING SITUATION OF CLIENTS BEFORE ENTERING THE KIDS NOW PLUS PROGRAM

	FOLLOWED UP	
	NO n = 168	YES n = 181
USUAL LIVING ARRANGEMENT IN THE PAST 30 DAYS		
Own or someone else's home or apartment	85.7%	92.8%
Jail or prison	1.8%	0.6%
Residential program, hospital, recovery center, or sober living home	10.1%	5.0%
Shelter or on the street	1.8%	1.1%
Other	0.6%	0.6%
CONSIDERS SELF TO BE CURRENTLY HOMELESS**	15.5%	6.1%
Why the individual considers himself/herself to be homeless	(n = 26)	(n = 11)
Staying in a shelter	11.5%	18.2%
Staying temporarily with friends or family	73.1%	81.8%
Staying on the street or living in your car	3.8%	0.0%
Other	11.5%	0.0%

\*\*p &lt; .01

## PHYSICAL HEALTH

Clients who completed a follow-up were very similar on several physical health measures to clients who did not complete a follow-up (see Table AC.4). On a scale of 1 - 5, clients rated their health an average of 3.1. About half of clients in both groups reported they had no health problems and 30.4% in both groups reported one health problem. A little over 17% of clients who did not complete a follow-up and 19.9% of clients who did complete a follow-up reported two or more health problems. There were no significant differences between the groups on chronic pain in the 6 months before pregnancy or with the number of clients who reported currently having a sexually transmitted infection. Significantly more clients who completed a follow-up assessment reported having a virus during their pregnancy and significantly more clients who did not complete a follow-up reported experiencing a serious fall while pregnant. The average number of doctor visits reported by clients was very similar with 5.8 visits for clients not followed up and 6.1 visits for clients who completed a follow-up.

TABLE AC.4. PHYSICAL HEALTH ISSUES OF CLIENTS BEFORE ENTERING THE KIDS NOW PLUS PROGRAM

	FOLLOWED UP	
	NO n = 168	YES n = 181
NUMBER OF HEALTH PROBLEMS		
None	52.4%	49.7%
One health problem	30.4%	30.4%
Two or more health problems	17.3%	19.9%
OVERALL HEALTH RATING (1 – Poor, 5 – Excellent)	3.1	3.1
CHRONIC PAIN IN THE 6 MONTHS BEFORE PREGNANCY		
Of those experiencing chronic pain	n = 40	n = 39
Average level of pain over the past 30 days	6.0	6.2
Pain continued into pregnancy	82.5%	87.2%
CURRENTLY HAVE SEXUALLY TRANSMITTED INFECTION	9.5%	11.6%
DURING PREGNANCY		
Viruses*	17.9%	28.2%
Serious falls*	8.3%	2.8%
Been to the emergency room	50.6%	56.9%
AVERAGE NUMBER OF DOCTOR VISITS ABOUT PREGNANCY	5.8	6.1

\* p < .05

## TARGETED RISK FACTORS

### SUBSTANCE USE

There were a few significant differences for substance use at prenatal baseline between clients who did and clients who did not complete a postnatal follow-up. The majority of clients reported illegal drug and/or alcohol use in the 6 months prior to pregnancy and over half of clients in both groups reported substance use in the 30 days before pregnancy. Significantly more clients who did not complete a follow-up interview reported using illegal drugs and/or alcohol in the past 30 days. In addition, significantly more clients who completed a follow-up reported drinking alcohol in the 6 months prior to pregnancy. There were no differences in cigarette use between the groups.

TABLE AC.5 SUBSTANCE USE OF CLIENTS AT PRENATAL BASELINE

	FOLLOWED UP	
	NO n = 168	YES n = 181
<b>SUBSTANCE USE IN THE 6 MONTH PRIOR TO PREGNANCY</b>		
Illegal drugs and/or alcohol	63.1%	71.3%
Illegal drugs	48.8%	49.7%
Alcohol*	41.1%	53.6%
Cigarettes	76.8%	78.5%
<b>SUBSTANCE USE IN THE 30 DAYS PRIOR TO PREGNANCY</b>		
Illegal drugs and/or alcohol	53.6%	58.6%
Illegal drugs	41.7%	43.6%
Alcohol	29.2%	36.5%
Cigarettes	75.6%	76.8%
Of clients who smoked	(n = 127)	(n = 139)
Average number of cigarettes per day	16.3	18.2
<b>SUBSTANCE USE IN THE PAST 30 DAYS</b>		
Illegal drugs and/or alcohol*	19.6%	11.6%
Illegal drugs	16.1%	10.5%
Alcohol	4.2%	2.2%
Cigarettes	68.5%	65.2%
Of clients who smoked	(n = 115)	(n = 118)
Average number of cigarettes per day	12.1	11.4

\* p < .05

## MENTAL HEALTH

There were no significant differences between the two groups for self-reported mental health problems (see Table AC.6). Among those clients who reported depression and those clients who reported anxiety, there were no significant differences between the clients on the average number of symptoms reported for either depression or anxiety.

TABLE AC.6 SELF-REPORTED MENTAL HEALTH SYMPTOMS OF CLIENTS AT PRENATAL BASELINE

	FOLLOWED UP	
	NO n = 168	YES n = 181
EXPERIENCED SYMPTOMS OF DEPRESSION IN THE PAST 6 MONTHS BEFORE PREGNANCY	28.6%	37.0%
Average number of symptoms	(n = 48) 6.6	(n = 67) 6.3
EXPERIENCED SYMPTOMS OF DEPRESSION IN THE PAST 30 DAYS AT PRENATAL BASELINE	33.3%	28.7%
Average number of symptoms	(n = 56) 6.3	(n = 52) 5.9
EXPERIENCED SYMPTOMS OF ANXIETY IN THE PAST 6 MONTHS BEFORE PREGNANCY	37.5%	32.0%
Average number of symptoms	(n = 63) 4.8	(n = 58) 4.8
EXPERIENCED SYMPTOMS OF ANXIETY IN THE PAST 30 DAYS AT PRENATAL BASELINE	39.9%	32.6%
Average number of symptoms	(n = 67) 5.0	(n = 59) 4.8
EVER EXPERIENCED OR WITNESSED AN EXTREMELY TRAUMATIC EVENT	28.0%	32.6%

### INTIMATE PARTNER ABUSE AND VIOLENCE

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. Around 3 in 10 clients in both groups reported some type of partner abuse or violence in the 6 months before pregnancy (see Table AC.7).

TABLE AC.7 INTIMATE PARTNER VIOLENCE AND SEXUAL VIOLENCE BY ANY TYPE OF PERPETRATOR REPORTED BY CLIENTS AT PRENATAL BASELINE

	FOLLOWED UP	
	NO n = 168	YES n = 181
ANY PARTNER ABUSE		
6 Months before pregnancy	33.9%	29.8%
Past 30 days	19.6%	15.5%
VERBAL ABUSE		
6 Months before pregnancy	29.2%	22.1%
Past 30 days	16.1%	9.4%
COERCIVE CONTROL		
6 Months before pregnancy	26.8%	25.4%
Past 30 days	12.5%	12.2%
PHYSICAL ABUSE		
6 Months before pregnancy	13.7%	11.6%
Past 30 days	4.2%	1.7%
SEXUAL ABUSE		
6 Months before pregnancy	6.0%	2.2%
Past 30 days	1.8%	0.0%

## Appendix D:

# KIDS NOW Plus Birth Outcome Data Comparison

This section compares (A) general risk factors; (B) targeted risk factors; and (C) birth events and outcomes from the Kentucky Vital Statistics data for three mutually exclusive groups including: (1) high risk pregnant mothers involved in KIDS NOW Plus case management services who gave birth between December 2013 and December 2014 (n = 161)<sup>111</sup>; (2) a comparison group of mothers (n = 161) matched on selected characteristics (race, age, education, metropolitan/non-metropolitan residence, marital status and smoking status); and (3) a randomly selected group of mothers (n = 161) from the general population. Only mothers who reside in regions served by KIDS NOW Plus were analyzed.

There are two units of analysis depending on the outcome being examined: (1) some outcomes use the mother as the unit of analysis and in those cases the mother will only be represented one time in the data set (although the Vital Statistics data set can include the mother multiple times if she has had multiple births [e.g., twins or siblings] during the time frame examined); and, (2) some outcomes use the birth and baby characteristics as the unit of analysis and those outcomes can include all of the babies in the Vital Statistics data set.

Overall, three KIDS NOW Plus mothers, two mothers from the comparison group, and four mothers from the general population had more than one child in the sample. This means there were 164 babies in the KIDS NOW Plus sample, 163 babies in the comparison group and 165 babies in the general population sample.

## GENERAL RISK FACTORS

The general risk factors compared in this section are from the Kentucky Vital Statistics data set. This section describes demographic information (e.g., age, race, and type of community in which the mother resided), socioeconomic status indicators (e.g., education and source of payment for birth of the baby), and physical health status (e.g., maternal health problems).

## DEMOGRAPHICS

Table AD.1 shows that there are significant demographic differences between the KIDS NOW Plus clients and matched comparison sample compared to the general population of mothers in the KIDS NOW Plus regions. A significantly greater percentage of the general population of mothers are minority races and have metropolitan residence compared to the KIDS NOW Plus and matched comparison group. In addition, a greater percentage of clients in the general population (62.7%) were married compared to the KIDS NOW Plus and comparison group (35.4%). The general population of mothers were also significantly older than the KIDS NOW Plus and matched comparison sample.

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<sup>111</sup> While analysis on postnatal follow-up data includes 169 pregnant women involved in KIDS NOW Plus, a match on all characteristics for 8 KIDS NOW Plus clients could not be found in the sample of other mothers in the KIDS NOW Plus regions. Thus, clients who did not have a matched comparison were excluded from the sample leaving a sample size of 161.

TABLE AD.1. DEMOGRAPHIC DIFFERENCES BETWEEN BIRTH EVENT DATA GROUPS

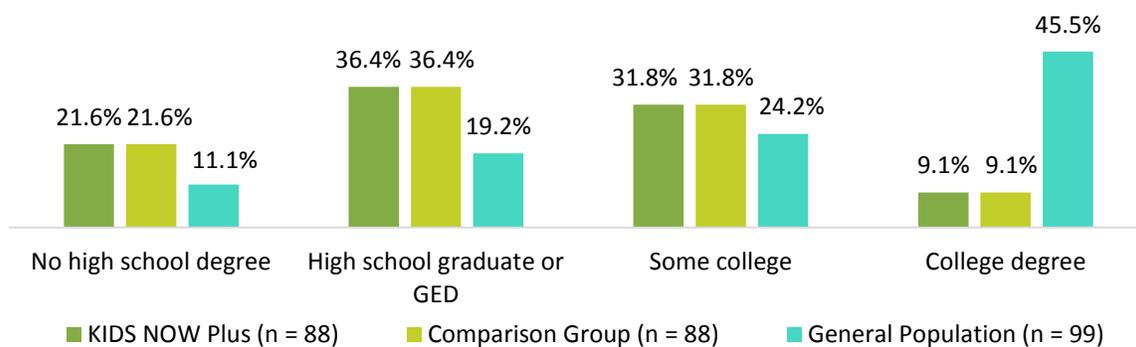
	KIDS NOW Plus (n = 161)	Comparison Group (n = 161)	General Population (n = 161)
<b>Race***</b>			
White	95.0%	95.0%	82.0%
Minority	5.0%	5.0%	17.4%
Average age*	25.3	25.3	26.6
<b>Metropolitan/non-metropolitan status***</b>			
Metropolitan	39.1%	39.1%	61.5%
Non-metropolitan	46.0%	46.0%	31.1%
Very rural	14.9%	14.9%	7.5%
<b>Marital status***</b>			
Not married	64.6%	64.6%	37.3%
Married	35.4%	35.4%	62.7%

\*\*\* p < .001, \* p < .05

### SOCIOECONOMIC STATUS INDICATORS

Because the KIDS NOW Plus mothers were younger than the general population it is important to compare education rates only for those who had sufficient time to finish high school. The 2013 census indicates that of Kentuckians ages 25 and older, 83% had high school degrees. When groups of women ages 25 and older are compared, 77.3% of KIDS NOW Plus mothers and 88.9% of mothers in the general population have at least a high school diploma or GED (see Figure AD.1). Therefore, when looking at women 25 years old or older, 21.6% of KIDS NOW Plus and the matched comparison group mothers and 11.1% of mothers in the general population had less than a high school degree. Further, 45.5% of mothers in the general population received a college degree compared to 9.1% of mothers in KIDS NOW Plus and the matched comparison sample.

FIGURE AD.1. LEVEL OF EDUCATION BETWEEN BIRTH EVENT DATA GROUPS<sup>112</sup>\*\*\*

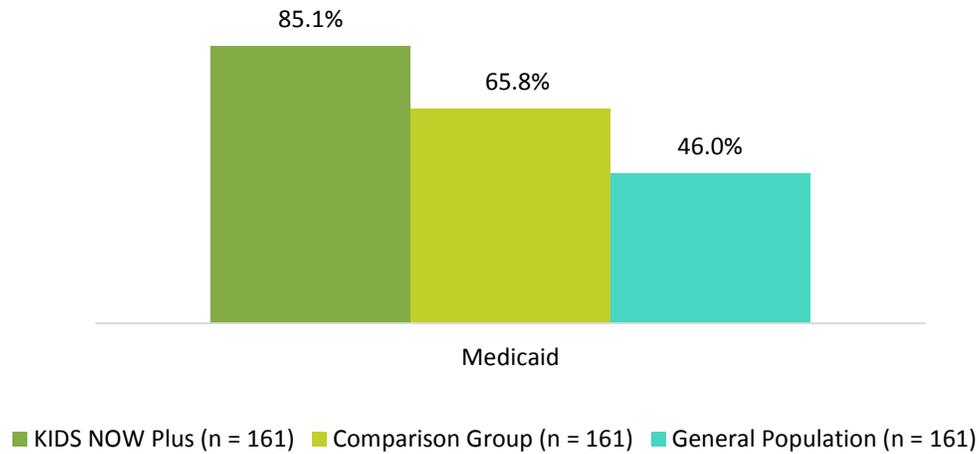


\*\*\*p < .001

<sup>112</sup> Education was unknown for one mother (1.1%) in the KIDS NOW Plus group and, therefore one mother in the comparison group as well.

KIDS NOW Plus mothers were more likely to use Medicaid as their source of payment for the birth of the baby compared to either the matched comparison sample or the general population as Figure AD.2 shows.

FIGURE AD.2. MOTHERS WITH MEDICAID AS THE SOURCE OF PAYMENT BETWEEN BIRTH DATA GROUPS\*\*\*

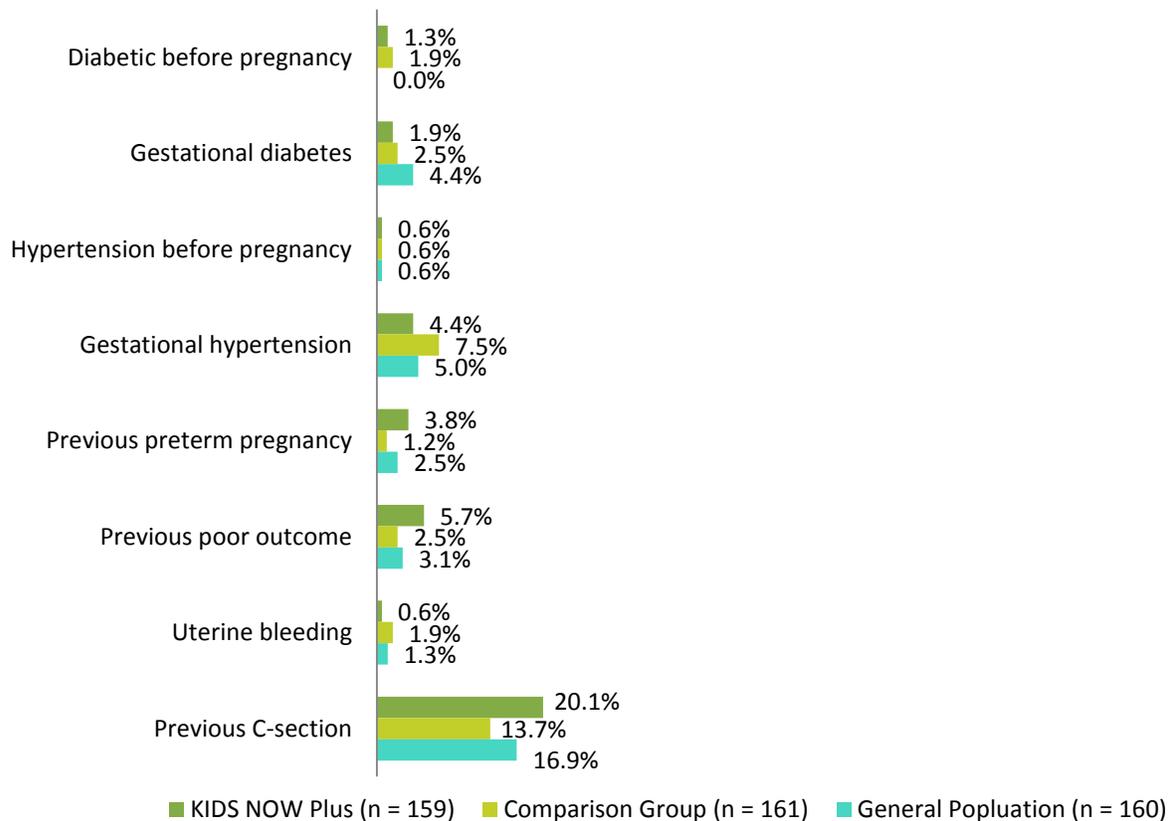


\*\*\*p < .001

### PHYSICAL HEALTH STATUS

General health conditions of pregnancy were examined from the Vital Statistics data set as well (see Figure AD.3). There were no significant differences between the groups on health conditions such as gestational diabetes, gestational hypertension or previous poor birth outcomes.

FIGURE AD.3. OTHER MATERNAL RISK FACTORS BETWEEN BIRTH DATA GROUPS<sup>a</sup>



a- Maternal health risk factors were unknown for 2 mothers in the KIDS NOW Plus group and one mother in the general population.

KIDS NOW Plus mothers were not significantly more likely to have a sexually transmitted infection such as gonorrhea, syphilis, herpes, or chlamydia (9.3%) compared to the matched comparison group (7.5%) or the general population sample (5.6%; not depicted in a figure).

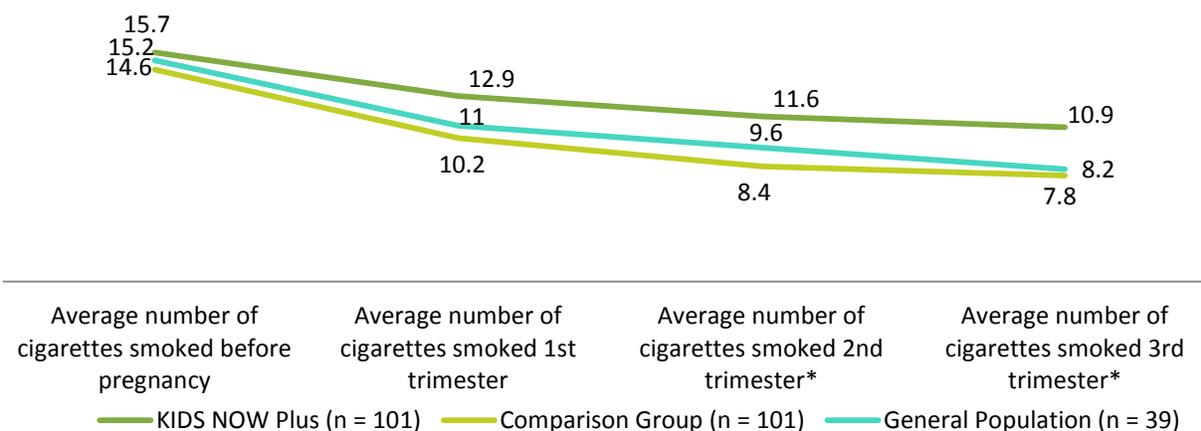
When only hepatitis B and C are examined, KIDS NOW Plus mothers were significantly more likely to be infected (10.6%) compared to the matched comparison group (1.3%) and the general population sample (1.2%).

## TARGETED RISK FACTORS

### SMOKING PATTERNS

Significantly more KIDS NOW Plus clients and the matched comparison mothers reported being a smoker (62.7%) compared to the general population (24.2%) (not depicted in a figure). Of those who smoked, however, KIDS NOW Plus clients reported smoking significantly more cigarettes in their second and third trimesters compared to mothers in the matched comparison sample.

FIGURE AD.4. AVERAGE NUMBER OF CIGARETTES SMOKED PER TRIMESTER



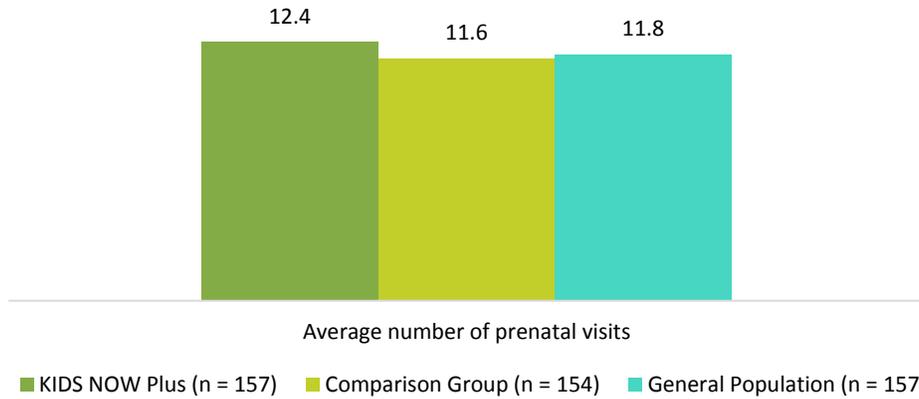
\* p < .05

## BIRTH EVENTS AND OUTCOMES

### PRENATAL VISITS

As mentioned previously, one of the goals of the KIDS NOW Plus case management program is to engage clients in services that will improve their health and the health of the fetus. Besides referrals to substance abuse or mental health services, KIDS NOW Plus providers also engage clients in prenatal care and assist them in attending all their prenatal care visits. As a result, KIDS NOW Plus mothers had slightly more prenatal visits compared to the matched comparison sample and the general population (see Figure AD.5). KIDS NOW Plus clients had an average of 12.4 prenatal visits, the matched comparison group had an average of 11.6 prenatal visits and the general population had an average of 11.8 prenatal visits.

FIGURE AD.5. AVERAGE NUMBER OF PRENATAL CARE VISITS WITH A HEALTH CARE PROVIDER ACROSS GROUPS<sup>a</sup>

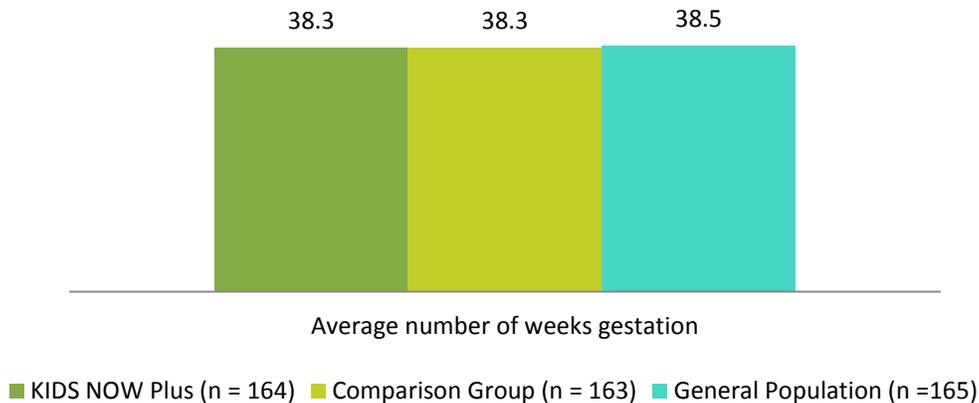


a- Four KIDS NOW Plus mothers, 7 mothers in the comparison group and 4 mothers in the general population were missing information on the number of prenatal visits.

### WEEKS GESTATION

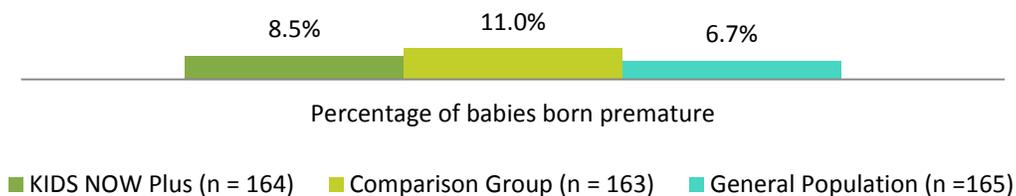
There was no significant difference in average weeks of gestation of babies born to KIDS NOW Plus mothers compared to the matched comparison sample or to the general population of births as Figure AD.6 shows. KIDS NOW Plus babies were born at an average of 38.3 weeks, babies born to mothers in the matched comparison group were born at 38.3 weeks and babies born to mothers in the general population were 38.5 weeks.

FIGURE AD.6. AVERAGE NUMBER OF GESTATIONAL WEEKS ACROSS GROUPS



Comparing all three groups, there were no significant differences in the percentage of babies that were born prematurely (i.e., before 37 weeks gestation; see Figure AD.7).

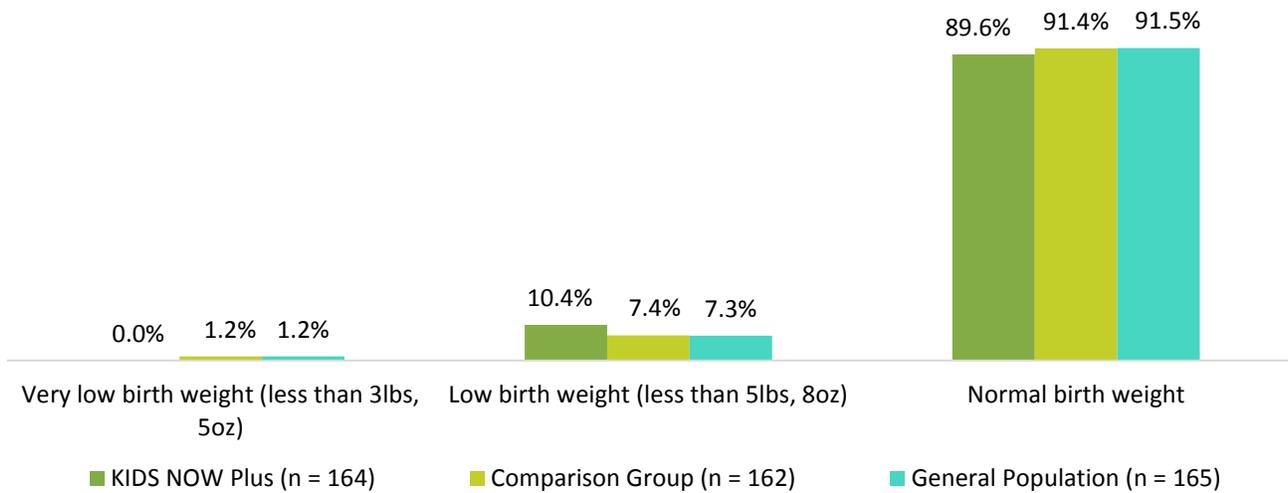
FIGURE AD.7. BABIES BORN PREMATURELY ACROSS BIRTH DATA GROUPS



## BIRTH WEIGHT

There was no significant difference in birth weight between babies in the three groups. Babies born to KIDS NOW Plus mothers weighed an average of 6lbs, 15oz, babies born to mothers in the matched comparison sample weighed an average of 7lbs, 1oz, and babies born to mothers in the general population weighed an average of 7lbs, 4oz. Further, there were no significant differences in rates of low birth weight babies between the three groups. Figure AD.8 shows that among KIDS NOW Plus babies, 10.4% were less than 5lbs, 8oz and no babies were under 3lbs, 5oz, which is considered “very low birth weight.” For the matched comparison group, 7.4% were considered low birth weight and 1.2% were very low birth weight.

FIGURE AD.8. BIRTH WEIGHT STATUS ACROSS GROUPS<sup>a</sup>

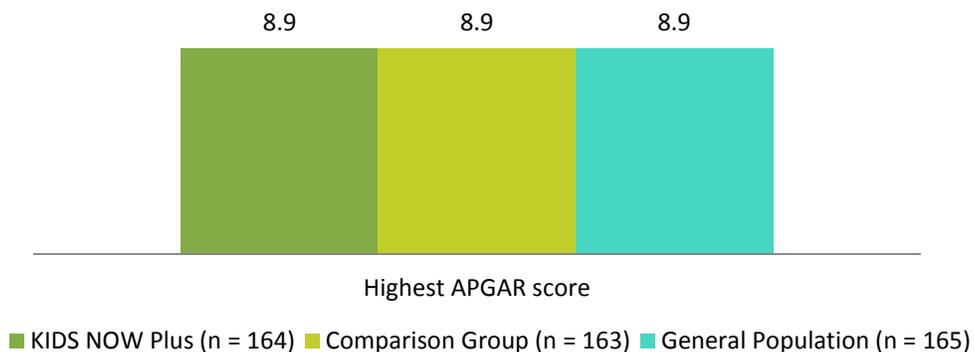


a- Weight was missing for one baby in the comparison group.

## APGAR

The final APGAR scores recorded may be taken at either five minutes or ten minutes after the birth. The highest score of the 5-minute and 10-minute APGARs for each group is displayed in Figure AD.9 and shows no significant differences between the groups on average APGAR scores. Babies born to mothers in all three groups had an average APGAR score of 8.9.

FIGURE AD.9. AVERAGE HIGHEST APGAR SCORES ACROSS GROUPS

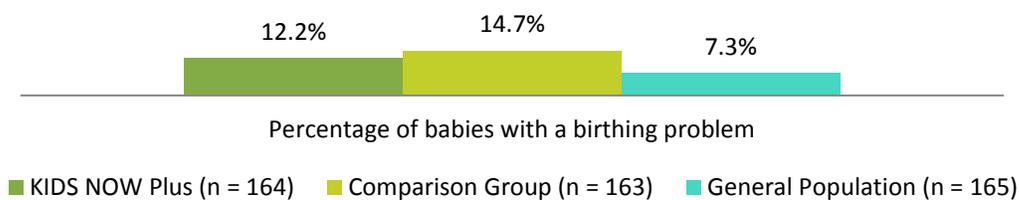


## BIRTH PROBLEMS

There were no significant differences between the groups (two babies in KIDS NOW Plus, none for the babies in the matched comparison sample or in the general population sample) for birth defects or anomalies (such as Down’s syndrome, cleft palates, anencephaly, congenital heart failure, spina bifida, etc.).

Overall, there were no differences in the percentage of babies born with a birthing problem as Figure AD.10 shows (not including being admitted to the neonatal intensive care unit).<sup>113</sup> In addition, among those babies with birthing problems, there were no differences in the average number of birthing problems between babies in the KIDS NOW Plus group (an average of 1.2 problems) and the babies in the matched comparison sample (an average of 1.6 problems) or the general population (an average of 1.3 problems).

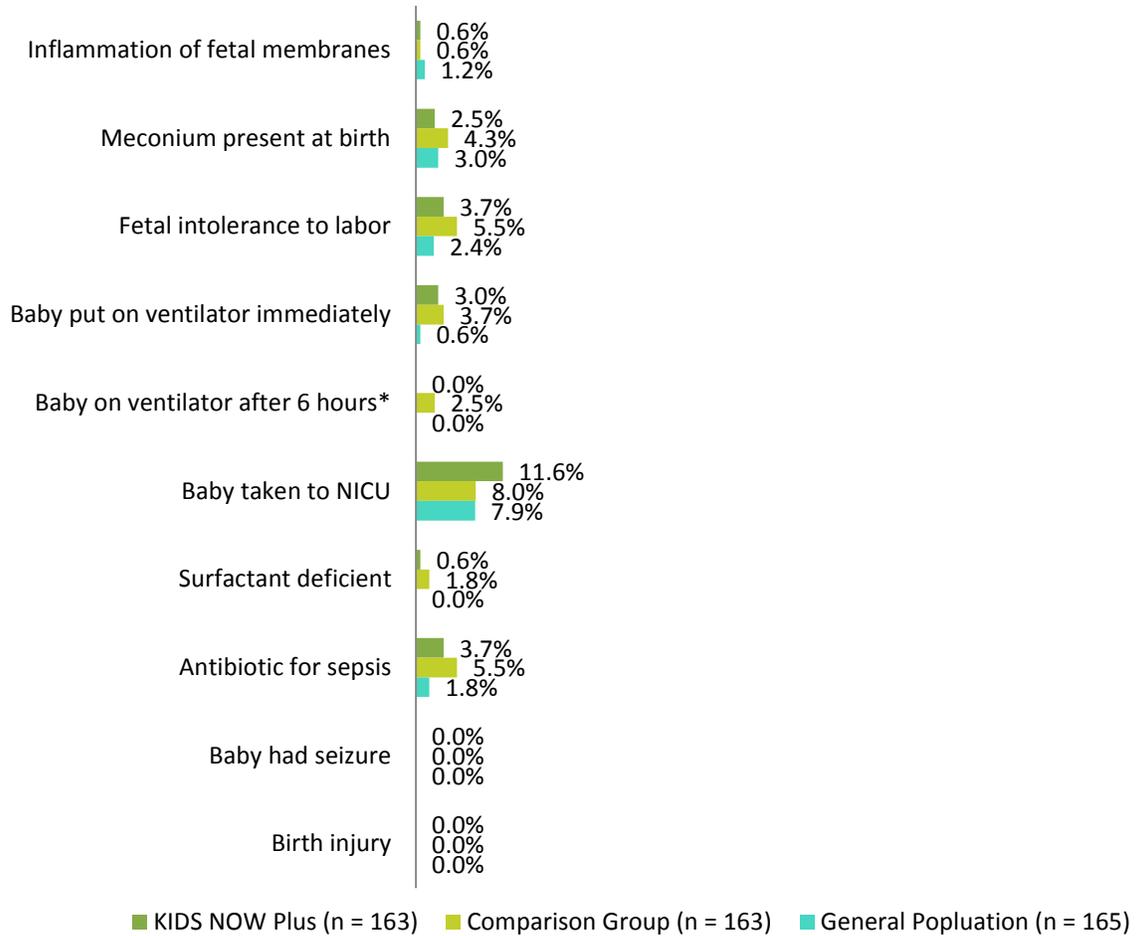
FIGURE AD.10. BABIES BORN WITH BIRTHING PROBLEMS (NOT INCLUDING NICU) ACROSS BIRTH DATA GROUPS



Specifically, KIDS NOW Plus babies were not significantly more likely to have particular birthing problems such as inflammation of fetal membranes, intolerance to labor, or being placed on a ventilator (see Figure AD.11).

<sup>113</sup> Birthing problem index was created by looking at the proportion of births in each group that had any of the following problems: inflammation of fetal membranes, meconium present, fetal intolerance, baby put on ventilator, surfactant deficient, antibiotic for sepsis, baby had seizure, and birth injury.

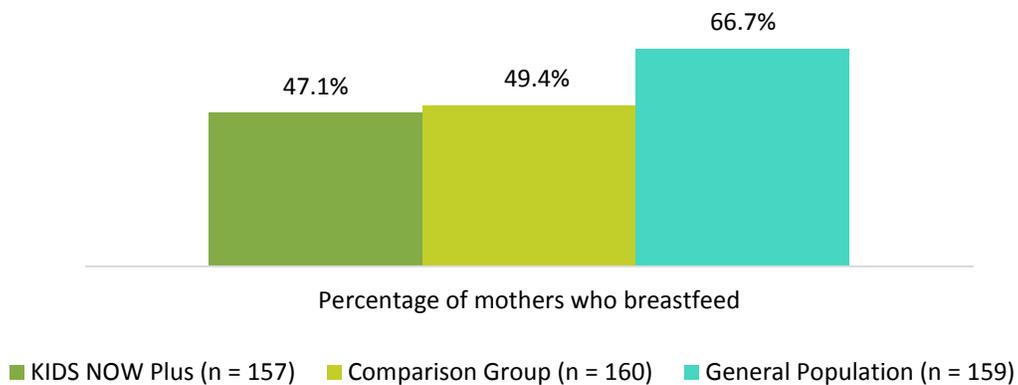
FIGURE AD.11. BABIES WITH A BIRTHING PROBLEM ACROSS GROUPS<sup>a</sup>



a- Birthing problems were missing for one baby in the KIDS NOW Plus sample.

KIDS NOW Plus clients and the matched comparison group were significantly less likely to breastfeed their babies (47.1% and 49.4% respectively) compared to the general population sample of mothers (66.7%) as shown in Figure AD.12.

FIGURE AD.12. PERCENTAGE OF CLIENTS WHO BREASTFED<sup>a\*\*</sup>



a- Breastfeeding information was missing for 4 women in the KIDS NOW Plus sample, one mother in the matched comparison group, and 2 mothers for the general population.

## CONCLUSION

In general, results of this analysis parallel the results of the multivariate analysis on birth events and outcomes. Compared to the general population of mothers giving birth in the regions served by KIDS NOW Plus case management, KIDS NOW Plus clients and mothers in the matched comparison sample were more likely to have Medicaid as their source of payment for the birth of the baby. More KIDS NOW Plus mothers smoked cigarettes before becoming pregnant than mothers in the general population. At the same time, birth events and outcomes were very similar across the three groups. Specifically, there were no significant differences for the average number of gestational weeks, the percentage of babies who were born premature, highest APGAR score, birth weight, the percentage of babies with birthing problems, or the percentage of babies being taken to the neonatal intensive care unit. In addition, KIDS NOW Plus mothers reported a similar number of prenatal care visits with a health care provider, but KIDS NOW Plus mothers and the matched comparison group of mothers were less likely to breastfeed compared to the general population.