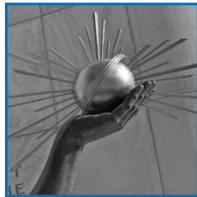




Prosperity Region Report



Telling
the story
of Michigan's
moms
and
babies.



Maternal Mental Health

Birth Years 2012-2014



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Introduction to the 2012-2014 regional PRAMS data set

Michigan's Pregnancy Risk Assessment Monitoring System (MI PRAMS) is an annual population-based survey of new mothers, assessing behaviors and experiences around the time of pregnancy. MI PRAMS is a collaboration between the Centers for Disease Control and Prevention (CDC) and the Michigan Department of Health and Human Services (MDHHS). MI PRAMS operations are housed within the Maternal and Child Health Epidemiology Section, a part of the Division of Lifecourse Epidemiology and Genomics.

MI PRAMS utilizes a mixed-mode methodology to gather information from women selected for the survey. This combination mail and telephone survey methodology is used to maximize response rates. The weighted response rates were 61 percent for 2012, 60 percent for 2013, and 57 percent for 2014. Data collection for the birth years included within this report was conducted by the Michigan State University, Office for Survey Research.

MI PRAMS surveys approximately 1-2 percent of resident mothers who have delivered a live born infant in Michigan within each calendar year. MI PRAMS mothers are selected using a stratified random sample of live birth certificates. In a typical PRAMS year, women are selected from one of five strata:

- Low birth weight (LBW) infants
- Normal birth weight infants (NBW), black mothers, Southeast Michigan
- NBW infants, black mothers, rest of Michigan
- NBW infants, all other mothers, Southeast Michigan
- NBW infants, all other mothers, rest of Michigan

To create regional PRAMS data sets, the different MI PRAMS sampling strata for each birth year were reorganized into the following four new strata:

- LBW infants, black mothers
- LBW infants, all other mothers
- NBW infants, black mothers
- NBW infants, all other mothers

Mothers who completed MI PRAMS were reassigned into one of these four new strata. Their responses were re-weighted to reflect the experience of other mothers in their prosperity region for a given birth year. To obtain the necessary precision to make comparisons between regions, three years of survey data were aggregated together to form a single data set. Because of their smaller number of births and PRAMS respondents, this report groups prosperity Regions 1, 2, and 3 together to allow for comparison between Northern Michigan and other prosperity regions within the state.

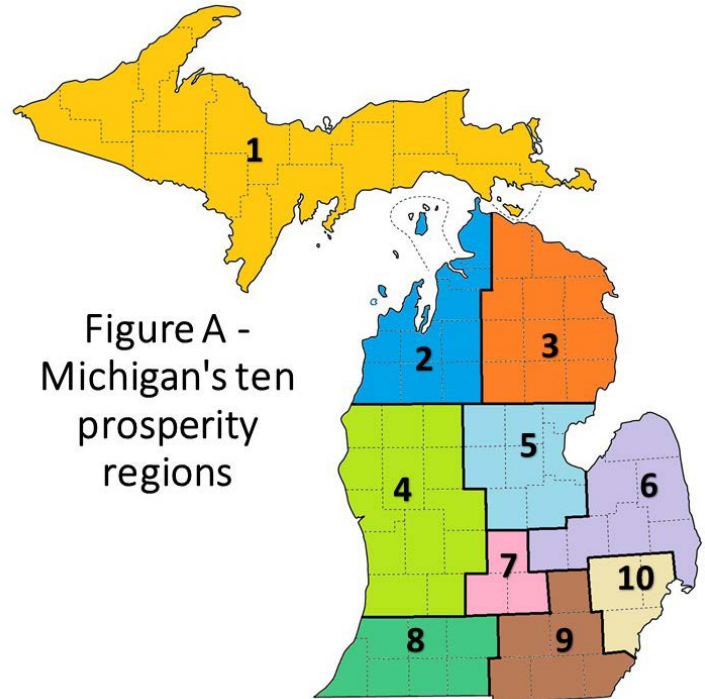
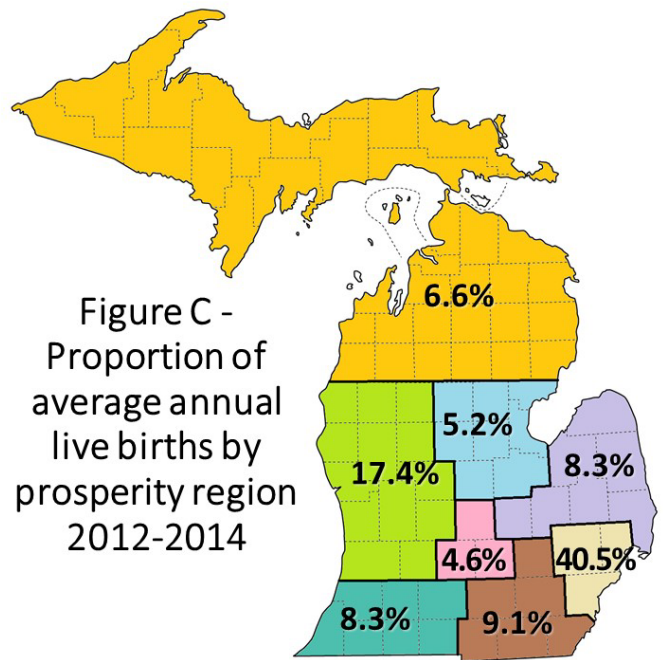
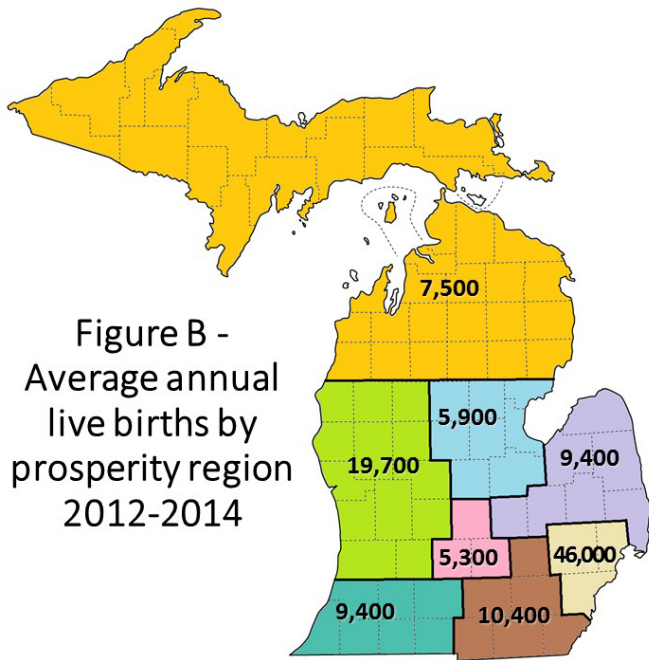


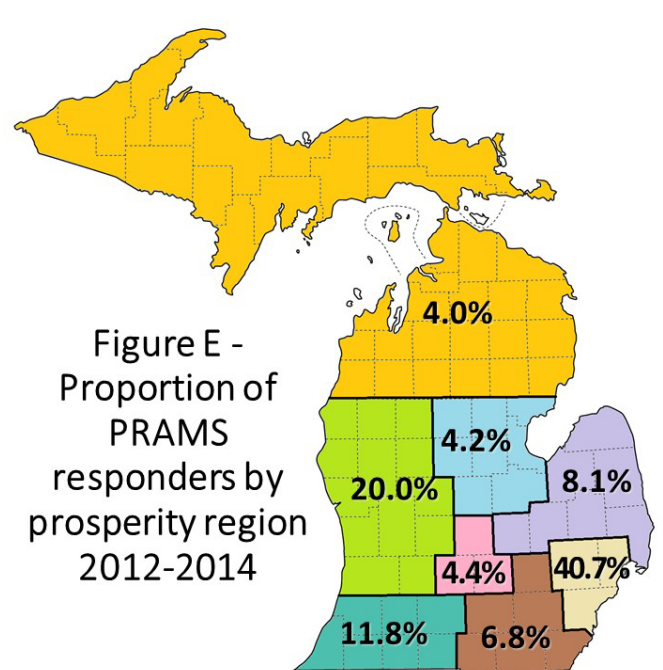
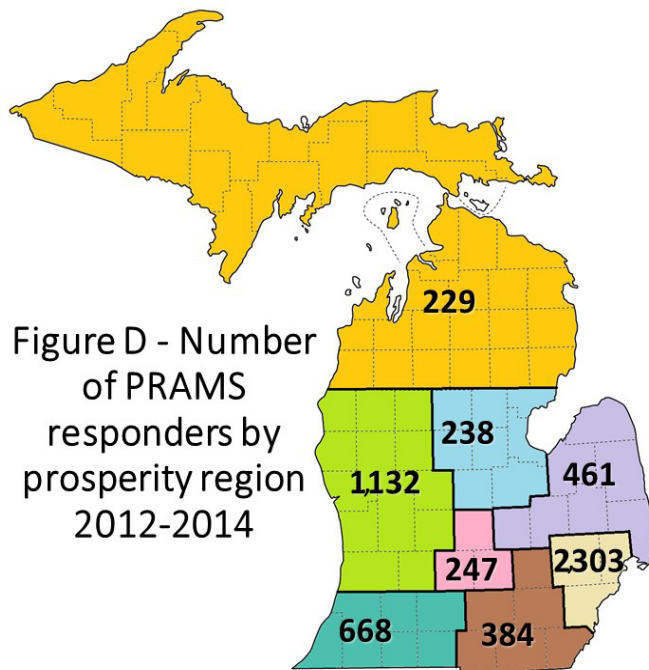
Figure A -
Michigan's ten
prosperity
regions

Descriptive statistics - average annual live births and PRAMS responders by prosperity region

On average, between 2012 and 2014 there were 113,600 live births per year in Michigan. The average number of live births by prosperity region are included within Figure B. The average annual proportion of live births by prosperity region are included within Figure C.



The total number of PRAMS responders by region across the 2012-2014 birth years varies between 229 [Northern Michigan Regions 1-2-3 combined] and 2,303 [Detroit Metropolitan Area]. Areas with more PRAMS responders have more precise estimates.



Analytic notes: interpretation of tables and graphs, confidence intervals, relative standard error, and comparisons between groups

PRAMS results are most often reported as a weighted percentage. Individual respondents are given an analytic weight so that the sum of all respondents is approximately equal to the total number of live births for the region and time specified. Thus, the graphs and tables included here report the weighted proportion of mothers of live births. The numbers reported are cumulative across birth years 2012-2014.

Each table within this report contains the following statistics. The **sample frequency** represents the number of respondents who answered (unweighted). The **weighted frequency** is the number of mothers of live births those responders represent, across the whole 2012-2014 period. To obtain an estimate for mothers reporting an experience in one birth year, one would need to divide this weighted frequency by three. The **weighted percent** is the approximate proportion of all mothers of live births for the state or region. The weighted frequency and weighted percent are estimates of what is truly happening at the population level.

PRAMS employs a stratified, randomly selected sample to describe the experiences of Michigan mothers. When using a subset of randomly selected women to represent an entire population, there will be some statistical uncertainty as to how well the estimate represents the population of interest. Two columns quantify this uncertainty - the 95% confidence interval and the relative standard error.

The **95% confidence interval (95% CI)** describes the range in which the actual population value is most likely to be found. A narrow confidence interval indicates a high degree of statistical precision in an estimate; a broad confidence interval indicates more statistical uncertainty in an estimate. The number of respondents has a direct effect on confidence intervals - data at the state-level will have more respondents and narrower confidence intervals. Sub-state regions and demographic subgroups that have fewer respondents and will have wider confidence intervals. Confidence interval inference is an imperfect substitute for tests of statistical significance; results for any desired statistical comparison tests can be shared upon request.

The **relative standard error (RSE)** is another important indicator of the reliability around an estimate. The RSE is calculated by dividing the standard error for an estimate by the estimate itself and then multiplying it by 100. Estimates with a smaller RSE are more reliable than estimates with a large RSE. RSE values below 30% are ideal; RSE values between 30% and 50% should be interpreted with more caution. Estimates with an RSE above 50% will be suppressed.

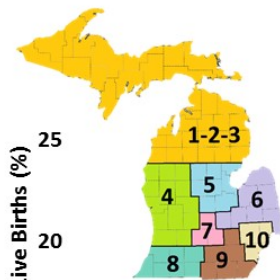
Within each graph a horizontal dashed line indicates the **state-level estimate** and allows for an informal visual comparison **between state and regional estimates**. These are not meant for significance testing between any sub-state regions and the state-level estimates. Results of significance testing for individual regions versus all other combined regions are reported in the discussion.

Survey question: Before you got pregnant with your new baby, did a doctor, nurse, or other health care worker tell you that you had any of the following health conditions?

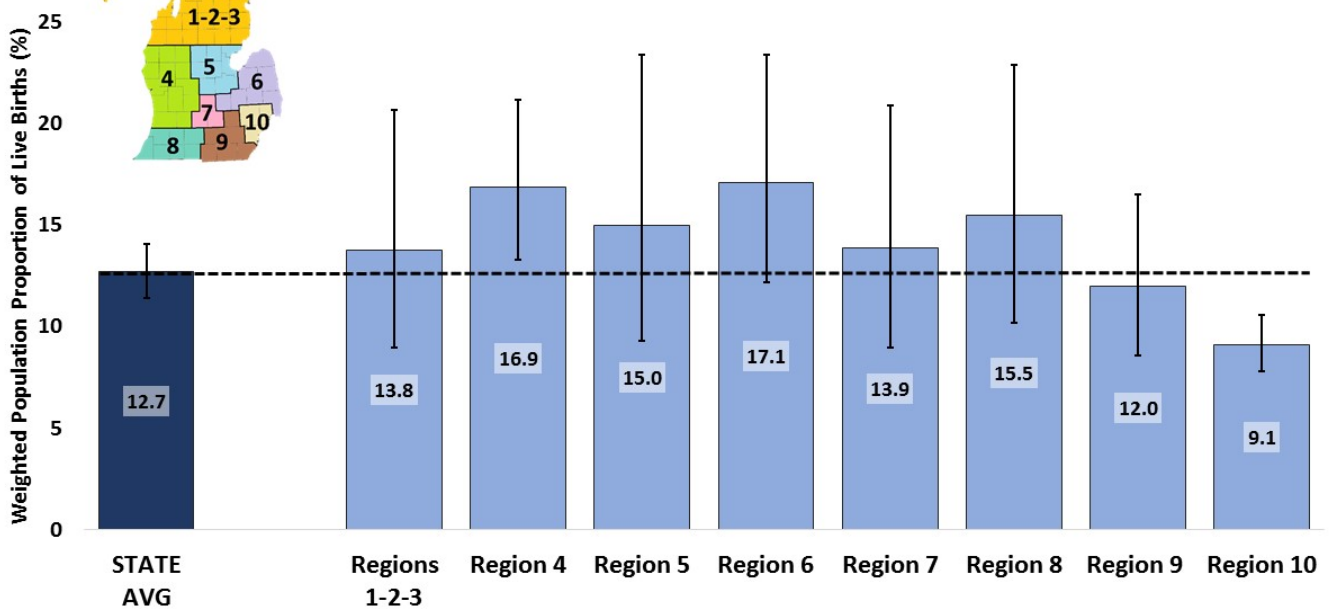
Response: Depression

**Table 1. Prepregnancy depression by prosperity region
MI PRAMS - 2012-2014**

	Sample Frequency	Weighted Frequency	Weighted Percent	95% Confidence Interval	Relative Standard Error
STATE TOTAL	698	42,352	12.7	(11.5-14.1)	5.4
Prosperity Region					
1-2-3	40	2,971	13.8	(8.9-20.7)	21.3
4	163	9,801	16.9	(13.3-21.2)	12.0
5	31	2,624	15.0	(9.3-23.4)	23.6
6	65	4,709	17.1	(12.2-23.4)	16.6
7	36	2,120	13.9	(9.0-20.8)	21.4
8	116	4,296	15.5	(10.2-23.0)	20.8
9	46	3,626	12.0	(8.6-16.4)	16.5
10	201	12,207	9.1	(7.7-10.6)	8.0



**Figure 1: Prepregnancy depression by prosperity region
MI PRAMS - 2012-2014**

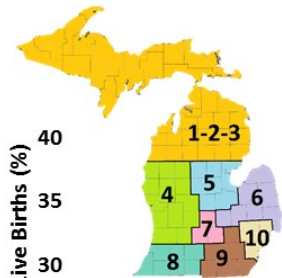


Survey question: During the 3 months before you got pregnant with your new baby, did you have any of the following health conditions?

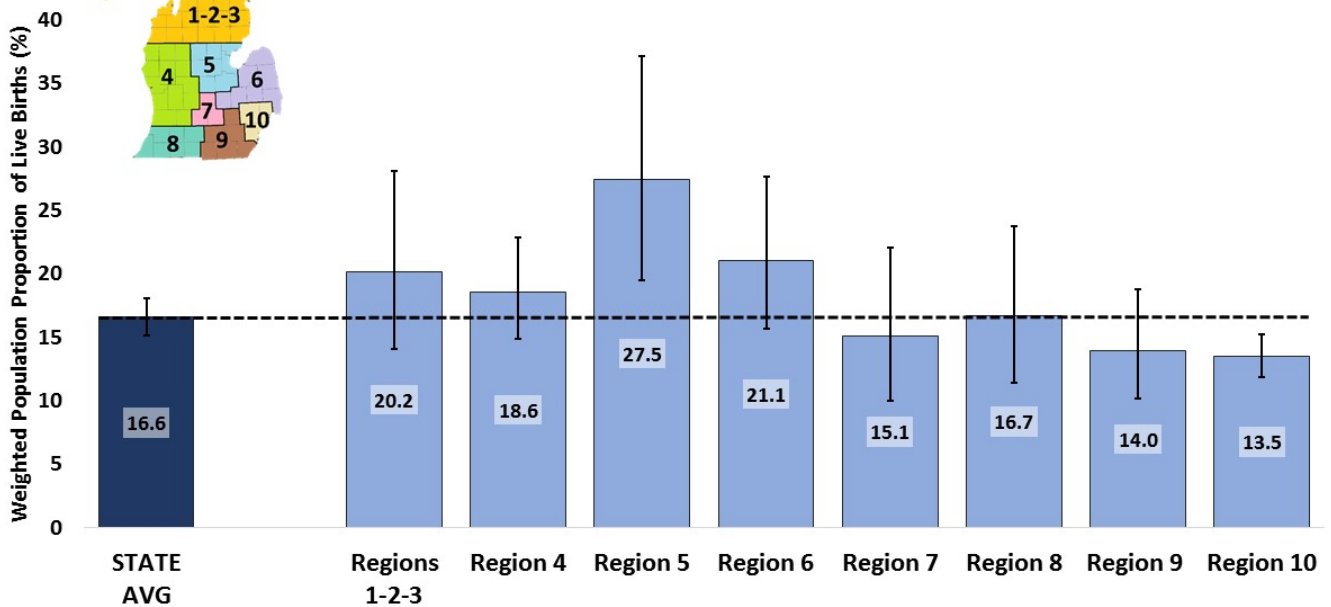
Response: Anxiety

**Table 2. Prepregnancy anxiety by prosperity region
MI PRAMS - 2012-2014**

	Sample Frequency	Weighted Frequency	Weighted Percent	95% Confidence Interval	Relative Standard Error
STATE TOTAL	807	55,058	16.6	(15.2-18.1)	4.5
Prosperity Region					
1-2-3	52	4,349	20.2	(14.0-28.1)	17.7
4	173	10,739	18.6	(15.0-22.9)	10.9
5	43	4,794	27.5	(19.5-37.2)	16.4
6	77	5,825	21.1	(15.7-27.7)	14.5
7	42	2,323	15.1	(10.0-22.1)	20.1
8	96	4,632	16.7	(11.4-23.9)	18.9
9	54	4,257	14.0	(10.2-18.8)	15.5
10	270	18,138	13.5	(11.9-15.3)	6.5



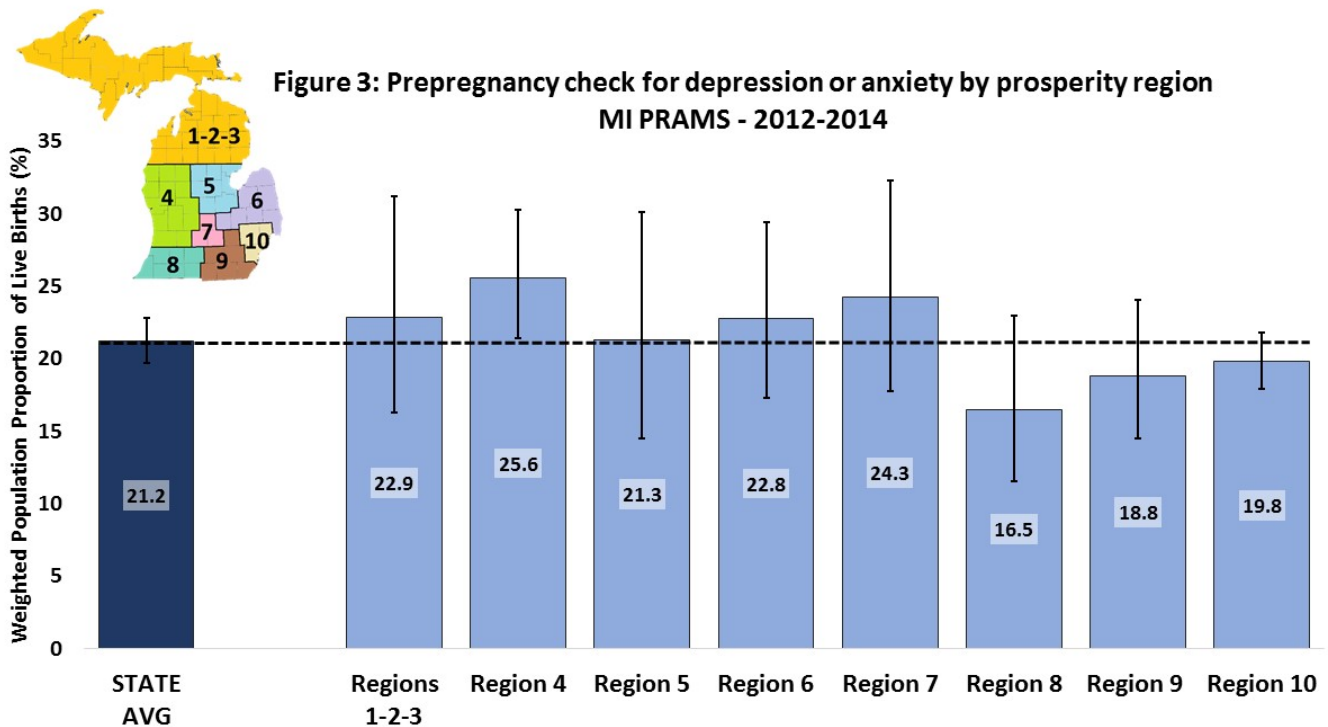
**Figure 2: Prepregnancy anxiety by prosperity region
MI PRAMS - 2012-2014**



Survey Question: At any time during the 12 months before you got pregnant with your new baby, did you do any of the following things?

Response: I visited a health care worker and was checked for depression or anxiety

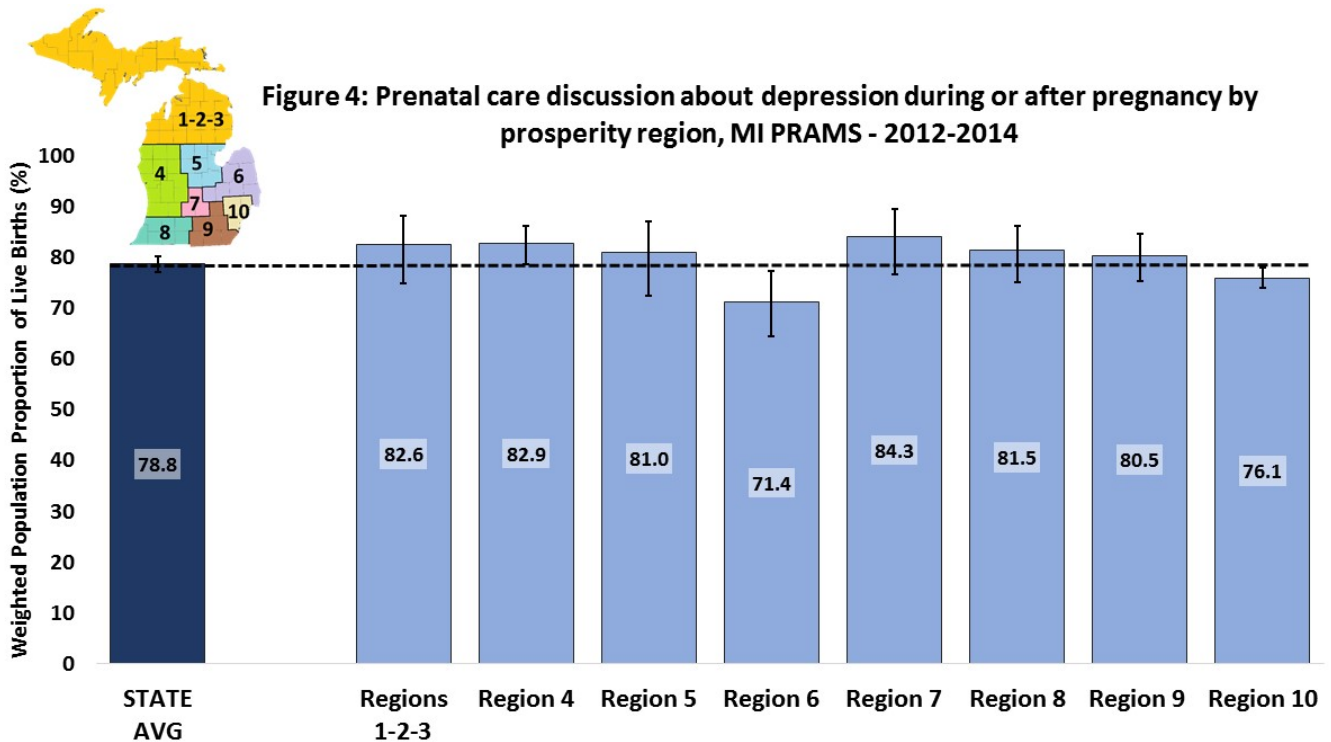
Table 3. Prepregnancy check for depression or anxiety by prosperity region					
MI PRAMS - 2012-2014					
	Sample Frequency	Weighted Frequency	Weighted Percent	95% Confidence Interval	Relative Standard Error
STATE TOTAL	1,196	70,167	21.2	(19.7-22.8)	3.7
Prosperity Region					
1-2-3	56	5,053	22.9	(16.3-31.2)	16.6
4	277	14,820	25.6	(21.4-30.3)	8.9
5	46	3,696	21.3	(14.5-30.1)	18.6
6	102	6,222	22.8	(17.4-29.4)	13.4
7	56	3,751	24.3	(17.7-32.3)	15.2
8	136	4,512	16.5	(11.5-22.9)	17.5
9	75	5,628	18.8	(14.4-24.0)	12.9
10	448	26,485	19.8	(17.9-21.8)	5.0



Survey Question: During any of your prenatal care visits, did a doctor, nurse, or other health care worker talk with you about any of the things listed below?

Response: What to do if I feel depressed during my pregnancy or after my baby is born.

Table 4. Prenatal care discussion about depression during or after pregnancy by prosperity region, MI PRAMS - 2012-2014					
	Sample Frequency	Weighted Frequency	Weighted Percent	95% Confidence Interval	Relative Standard Error
STATE TOTAL	4,428	259,626	78.8	(77.3-80.3)	3.6
Prosperity Region					
1-2-3	170	17,359	82.6	(74.9-88.2)	19.3
4	939	47,981	82.9	(78.7-86.4)	11.4
5	190	14,092	81.0	(72.5-87.3)	19.7
6	342	19,634	71.4	(64.5-77.5)	11.5
7	203	12,564	84.3	(76.8-89.7)	20.7
8	555	22,485	81.5	(75.4-86.4)	15.2
9	304	24,383	80.5	(75.4-84.8)	12.2
10	1,725	101,128	76.1	(73.9-78.1)	4.4



Survey Question: During your most recent pregnancy, did you receive any of the following services?

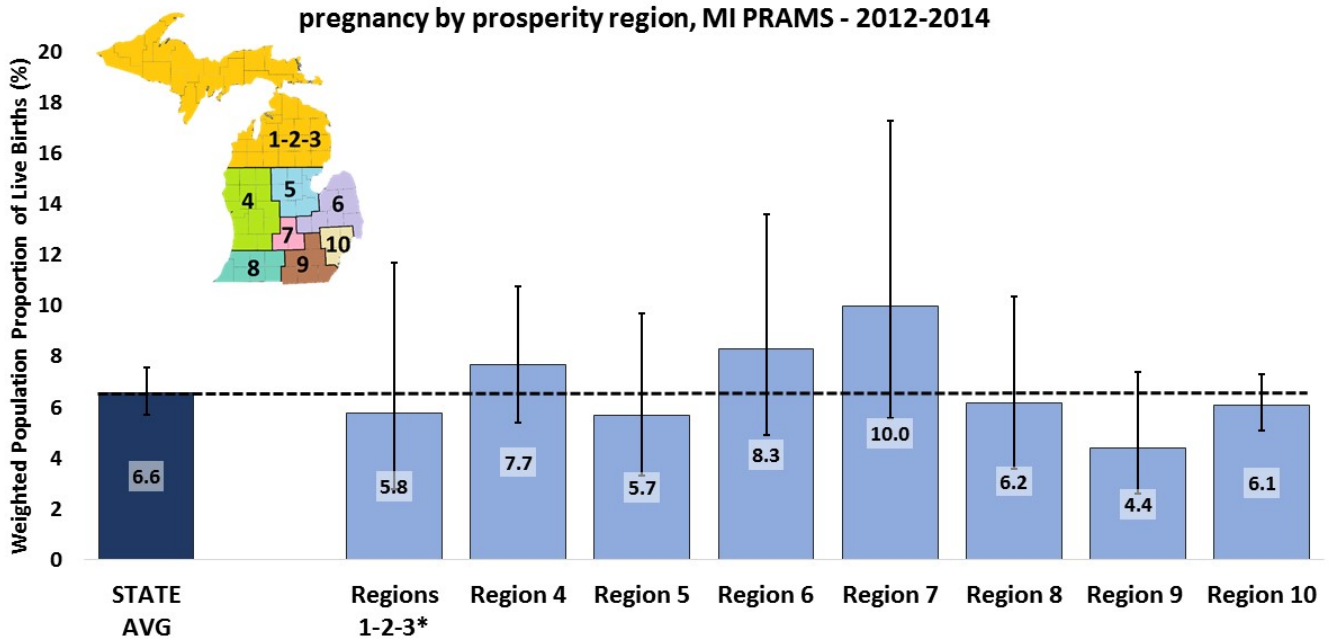
Response: Counseling or a support group for depression.

Table 5. Received counseling or attended support group for depression during pregnancy by prosperity region, MI PRAMS - 2012-2014

	Sample Frequency	Weighted Frequency	Weighted Percent	95% Confidence Interval	Relative Standard Error
STATE TOTAL	455	21,530	6.6	(5.7-7.5)	7.0
Prosperity Region					
1-2-3	16	1,254	5.8*	(2.8-11.7)	36.6*
4	108	4,440	7.7	(5.4-10.8)	17.7
5	26	980	5.7	(3.3-9.7)	27.4
6	35	2,236	8.3	(4.9-13.6)	25.9
7	18	1,461	10.0	(5.5-17.2)	28.8
8	81	1,716	6.2	(3.7-10.5)	27.0
9	20	1,336	4.4	(2.6-7.4)	26.8
10	151	8,108	6.1	(5.1-7.3)	9.3

*Relative standard error is between 30% and 50% Interpret with caution.

Figure 5: Received counseling or attended support group for depression during pregnancy by prosperity region, MI PRAMS - 2012-2014



*Relative standard error is between 30% and 50%. Interpret with caution.

Survey Question 1: Since your new baby was born, how often have you felt down, depressed, or hopeless?

Survey Question 2: Since your new baby was born, how often have you had little interest or little pleasure in doing things?

Response: If mother answers "always" or "often" to either question, she is considered to suffer from postpartum depression

Table 6. Postpartum depression indicator by prosperity region, MI PRAMS 2012-2014

	Sample Frequency	Weighted Frequency	Weighted Percent	95% Confidence Interval	Relative Standard Error
STATE TOTAL	876	42,965	13.1	(11.9-14.4)	4.8
Prosperity Region					
1-2-3	35	2,720	12.6	(8.0-19.4)	22.7
4	181	6,319	11.0	(8.2-14.5)	14.5
5	33	1,803	10.5	(6.4-16.8)	24.8
6	76	3,673	13.7	(9.7-19.0)	17.1
7	42	2,315	15.4	(10.0-23.0)	21.4
8	131	4,295	15.7	(11.2-21.6)	16.7
9	33	2,623	8.7	(5.7-12.9)	20.6
10	345	19,216	14.5	(12.9-16.3)	6.0

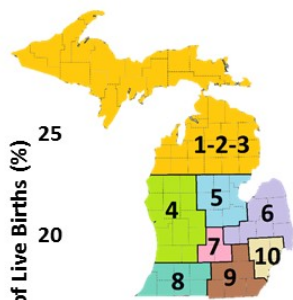
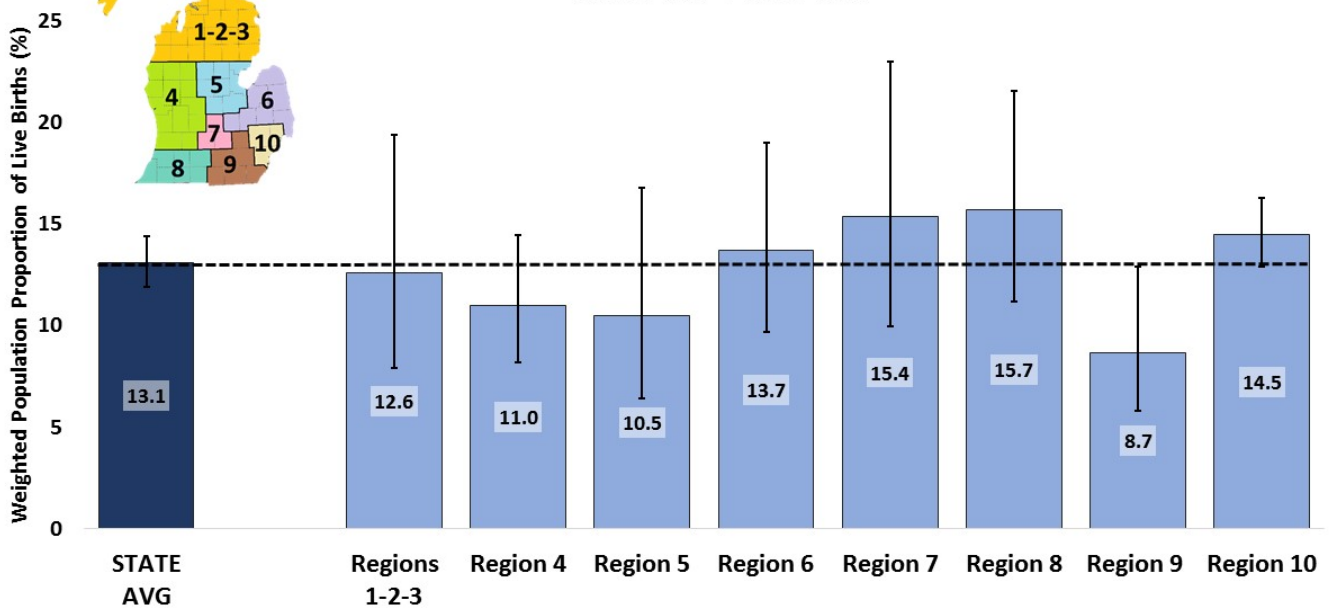


Figure 6: Postpartum depression indicator by prosperity region MI PRAMS - 2012-2014



Timing of depression - prepregnancy, postpartum, or both

Because PRAMS asks the same mothers about whether they were depressed before pregnancy and whether they have symptoms of postpartum depression, it is possible to combine these two measures. We provide estimates here for three different groups of mothers:

- Mothers who report prepregnancy depression but not postpartum depression
- Mothers who report both prepregnancy depression and postpartum depression
- Mothers who report postpartum depression symptoms but no prepregnancy depression

Taken together, these three numbers provide a summary for the burden of depression among Michigan mothers.

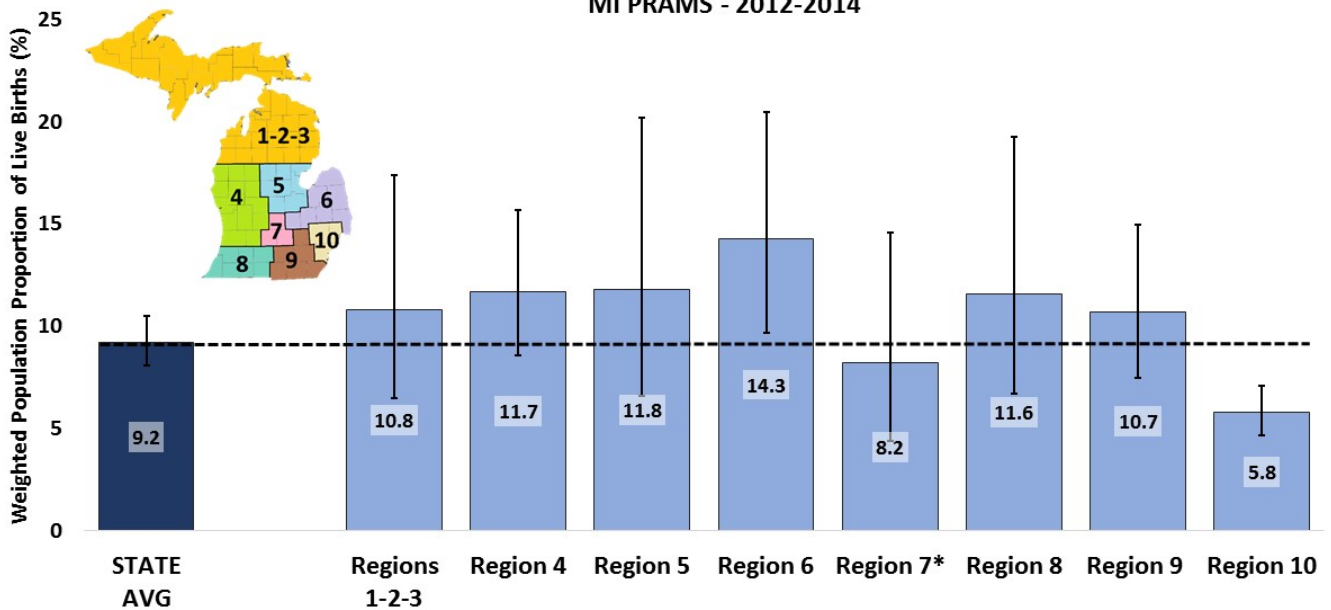
Of the three groups, the group of women reporting both prepregnancy depression and postpartum depression is the smallest group. As a result, the estimated population proportions for these mothers is the smallest and is the most prone to error. Relative standard errors for these measurements may fall in the range between 30% and 50% and should be interpreted with caution.

**Table 7. Timing of depression - pre-pregnancy only, no postpartum by prosperity region
MI PRAMS - 2012-2014**

	Sample Frequency	Weighted Frequency	Weighted Percent	95% Confidence Interval	Relative Standard Error
STATE TOTAL	443	30,025	9.2	(8.1-10.5)	6.7
Prosperity Region					
1-2-3	26	2,328	10.8	(6.5-17.4)	25.0
4	101	6,710	11.7	(8.6-15.7)	15.2
5	21	2,027	11.8	(6.6-20.2)	28.6
6	49	3,815	14.3	(9.7-20.5)	19.0
7	18	1,218	8.2*	(4.5-14.7)	30.4*
8	65	3,160	11.6	(6.7-19.3)	26.9
9	40	3,208	10.7	(7.5-15.0)	17.7
10	123	7,559	5.8	(4.7-7.1)	10.4

*Relative standard error is between 30% and 50% Interpret with caution.

**Figure 7: Timing of depression - pre-pregnancy only, no postpartum by prosperity region,
MI PRAMS - 2012-2014**



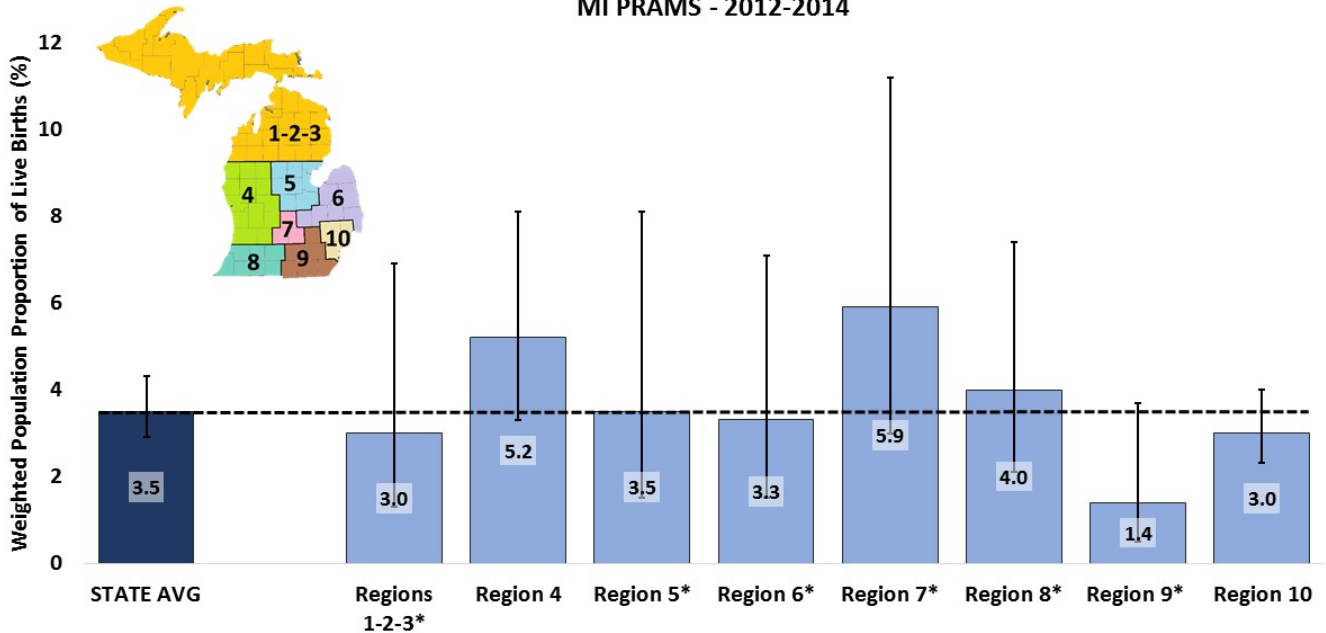
*Relative standard error is between 30% and 50%. Interpret with caution.

**Table 8. Timing of depression - both prepregnancy AND postpartum by prosperity region
MI PRAMS - 2012-2014**

	Sample Frequency	Weighted Frequency	Weighted Percent	95% Confidence Interval	Relative Standard Error
STATE TOTAL	237	11,458	3.5	(2.9-4.3)	10.0
Prosperity Region					
1-2-3	14	643	3.0*	(1.3-6.9)	43.2*
4	58	2,999	5.2	(3.3-8.1)	22.8*
5	10	597	3.5*	(1.4-8.1)	43.7*
6	15	881	3.3*	(1.5-7.1)	39.6*
7	17	880	5.9*	(3.1-11.2)	33.2*
8	48	1,089	4.0*	(2.1-7.4)	31.9*
9	6	417	1.4*	(0.5-3.7)	49.9*
10	69	3,953	3.0	(2.3-4.0)	14.3

*Relative standard error is between 30% and 50% Interpret with caution.

**Figure 8: Timing of depression - both prepregnancy AND postpartum by prosperity region,
MI PRAMS - 2012-2014**



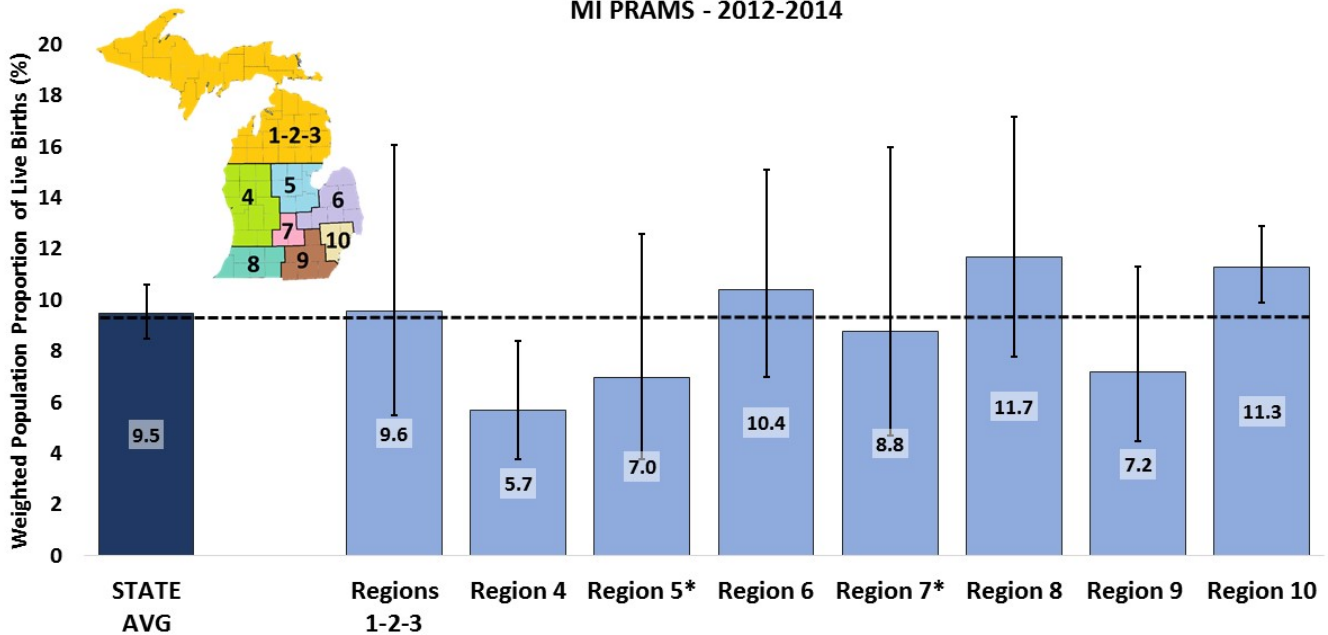
*Relative standard error is between 30% and 50%. Interpret with caution.

**Table 9. Timing of depression - postpartum only, no prepregnancy by prosperity region
MI PRAMS - 2012-2014**

	Sample Frequency	Weighted Frequency	Weighted Percent	95% Confidence Interval	Relative Standard Error
STATE TOTAL	623	30,825	9.5	(8.5-10.6)	5.7
Prosperity Region					
1-2-3	21	2,078	9.6	(5.6-16.1)	27.1
4	120	3,290	5.7	(3.9-8.4)	19.9
5	23	1,206	7.0*	(3.8-12.7)	30.9*
6	60	2,778	10.4	(7.0-15.1)	19.5
7	23	1,296	8.8*	(4.6-16.0)	31.5*
8	82	3,189	11.7	(7.8-17.2)	20.3
9	26	2,175	7.2	(4.5-11.3)	23.4
10	268	14,813	11.3	(9.8-12.9)	6.9

*Relative standard error is between 30% and 50% Interpret with caution.

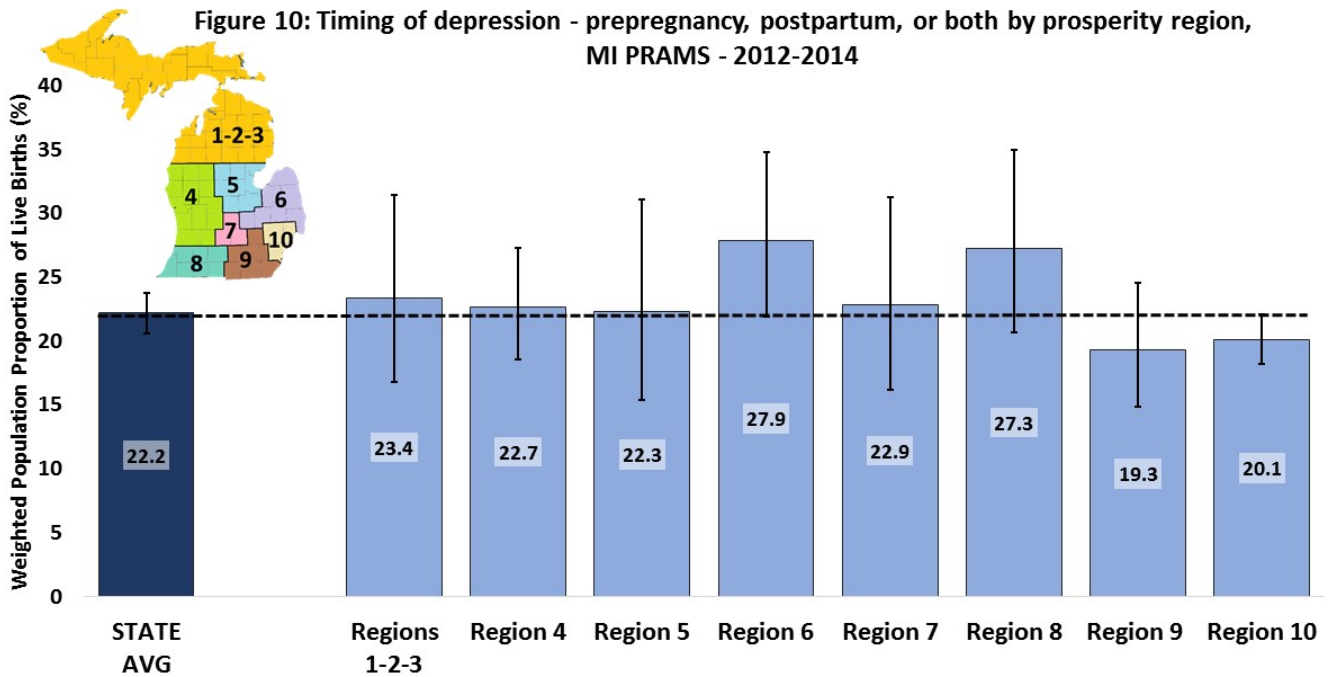
**Figure 9: Timing of depression - postpartum only, no prepregnancy by prosperity region,
MI PRAMS - 2012-2014**



*Relative standard error is between 30% and 50%. Interpret with caution.

**Table 10. Timing of depression - pre-pregnancy, postpartum, or both by prosperity region
MI PRAMS - 2012-2014**

	Sample Frequency	Weighted Frequency	Weighted Percent	95% Confidence Interval	Relative Standard Error
STATE TOTAL	1,303	72,308	22.2	(20.6-23.8)	3.7
Prosperity Region					
1-2-3	61	5,048	23.4	(16.9-31.5)	16.0
4	279	12,999	22.7	(18.6-27.3)	9.8
5	54	3,830	22.3	(15.4-31.2)	17.9
6	124	7,474	27.9	(21.9-34.8)	11.8
7	58	3,395	22.9	(16.2-31.3)	16.8
8	195	7,438	27.3	(20.7-35.0)	13.4
9	72	5,801	19.3	(14.9-24.6)	12.8
10	460	26,324	20.1	(18.2-22.1)	5.0



Regional PRAMS mental health report - observations and discussion

There is considerable variation across the state in measures of maternal mental health. Despite the smaller sample sizes of regional PRAMS, there are still some regional differences that rise to the level of statistical significance. Any regions named here as differing above or below the state average were determined using significance testing with p values below 0.05.

About one in eight Michigan mothers (12.7%, 95% CI: 11.5% - 14.1%) report being told by a health care provider that they were depressed at some point before pregnancy [Table 1]. There are two sub-state regions where prepregnancy depression differs significantly. Region 10 has a relatively lower proportion of mothers reporting prepregnancy depression (9.1%, 95% CI: 7.7% - 10.6%), and Region 4 has a relatively higher proportion (16.9%, 95% CI: 13.3% - 21.2%).

One in every six Michigan mothers (16.6%, 95% CI: 15.2% - 18.1%) report they had anxiety in the three months before they became pregnant [Table 2]. More than one in four mothers in Region 5 reported prepregnancy anxiety (27.5%, 95% CI: 19.6% - 37.1%). Fewer Region 10 mothers report prepregnancy anxiety (13.5%, 95% CI: 11.9% - 15.3%).

Across the state only one in five mothers (21.2%, 95% CI: 19.7% - 22.8%) report being checked for depression or anxiety in the year before pregnancy [Table 3]. Women from Region 4 were slightly more likely to report being checked for depression and anxiety (25.6%, 95% CI: 21.4% - 30.3%).

During prenatal care, about four of five Michigan mothers (78.8%, 95% CI: 77.3% - 80.3%) report that they had a conversation with their health care provider about what to do if they felt depressed during pregnancy or after their baby was born [Table 4]. Mothers in Region 6 were less likely to report that their care providers discussed depression (71.4%, 95% CI: 64.5% - 77.5%) as were mothers in Region 10 (76.1%, 95% CI: 73.9% - 78.1%). Mothers in Region 4 were more likely to report discussing depression during prenatal care (82.9%, 95% CI: 78.7% - 86.4%).

Resources to help mothers cope with depression are available but are infrequently used during pregnancy [Table 5]. Only one in fifteen mothers (6.6%, 95% CI: 5.7% - 7.5%) report they received counseling or attended a support group for depression during their pregnancy. Although there is some variation by region, no regions differ significantly from the state average.

As with prepregnancy depression, postpartum depression [Table 6] affects about one in eight Michigan mothers (13.1%, 95% CI: 11.9% - 14.4%). Postpartum depression is less prevalent among mothers in Region 9 (8.7%, 95% CI: 5.7% - 12.9%). Women in Region 10 report more postpartum depression than women in the rest of the state (14.5%, 95% CI: 12.9% - 16.3%). Sub-region analysis shows that this is driven by more postpartum depression among mothers in Wayne County (15.8%, 95% CI: 13.6% - 18.4%).

Although a similar proportion of women report prepregnancy (12.7%) and postpartum (13.1%) depression, the overlap between these two groups is small. Among women reporting postpartum depression, 73.3% of them did not report depression before pregnancy [Tables 8-9]. For the state as a whole, just over one quarter [27.6%] of women who report pregnancy depression go on to report symptoms of postpartum depression too [Tables 7-8]. This means that the total burden of women affected by depression around the time of pregnancy [Table 10] is sizable (22.2%, 95% CI: 20.6% - 23.8%). Regions 6 and 8 have the highest total depression burden as measured by PRAMS, although the differences are not statistically significant. While Region 10 has a slightly lower total depression burden compared to the state average (20.1%, 95% CI: 18.2% - 22.1%), the Region has a significantly higher proportion of women reporting new-onset postpartum depression [Table 9].

Summary: Anxiety and depression around the time of pregnancy are not uncommon in Michigan. Although some measures vary across the state, this is an important issue within all regions.

Most women who report postpartum depression had not reported depression before pregnancy; these women especially may not be equipped to deal with a new mental health challenge while taking care of a newborn.

Both prepregnancy screens for depression and utilization of counseling or support groups for depression during pregnancy are relatively uncommon. Given the large number of women affected by depression around the time of pregnancy, increased screening and referrals both *before* and *during* pregnancy are of great importance.

PRAMS data requests and contact information

The mission of Michigan PRAMS is to collect high-quality data and provide analytic products that help facilitate positive changes for Michigan mothers and babies. If these results have been useful for you or your organization, please let us know! Your reports of how PRAMS data has been useful to your organization are vital to keeping PRAMS running.

If you need different analyses to help make positive changes for the mothers and babies that you serve, please contact the PRAMS project coordinator:

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