



## Pregnancy Risk Assessment Monitoring System (PRAMS) Information and Analysis Guidance

### Background

PRAMS was established in 1987 as part of a CDC initiative to reduce infant mortality and low birth weight. It is a joint surveillance project of the Centers for Disease Control and Prevention (CDC) and participating states. Currently 47 states, New York City, Puerto Rico, the District of Columbia and the Great Plains Tribal Chairmen's Health Board participate in the project, which means the data represent about 83% of all live births in the United States. Ohio participated from 1999 through 2015. The survey contains questions about the time before, during, and shortly after pregnancy. A variety of topics are covered, including insurance status, pregnancy intention, alcohol and tobacco use, and infant sleep position, among many others. The questionnaire is made up of core questions that are asked by all PRAMS states and state-specific questions that states choose from a pool of options. The questionnaire is revised periodically.

### Helpful PRAMS Web sites

Ohio PRAMS reports and fact sheets: <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/pregnancy-risk-assessment-survey-prams/data/>

To request an Ohio PRAMS data set and view code books: <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/pregnancy-risk-assessment-survey-prams/data-requests/>

Ohio PRAMS survey questionnaires: <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/pregnancy-risk-assessment-survey-prams/questionnaires/>

Information about PRAMS methodology and weighting: <http://www.cdc.gov/prams/Methodology.htm>

Examples of how PRAMS data are used and data to action success stories: <http://www.cdc.gov/prams/DTA-SuccessStories.html>

CDC MMWR publications using data from PRAMS: <http://www.cdc.gov/prams/MMWRs.htm>

The PRAMS Data Portal, CDC's online query system, can be used to access PRAMS data from all states meeting the required response rate for the years 2000 through 2011: <http://www.cdc.gov/prams/prams-data/work-directly-PRAMS-data.html>

### PRAMS Methodology and Survey Design

A sample of mothers with a recent live birth was drawn every month from birth certificate records. Mothers were sampled between 2 and 6 months after delivery. Questionnaires were mailed to approximately 200 Ohio mothers each month. If there was no response to repeated mailings, mothers were contacted by telephone to complete the survey. All aspects of data collection were managed using the PRAMS Integrated Data Collection System (PIDS), a web-based system developed by CDC.

PRAMS is a population-based survey, meaning results can be generalized to Ohio resident women with a live birth that occurred in Ohio. The sample drawn each month is stratified to provide adequate data for smaller or higher risk populations. The Ohio survey was stratified by race (black, non-black) and birth weight (low birth weight, normal birth weight) from 2000 through 2010. For 2011 through 2015, stratification was by geographic area (Cuyahoga, Franklin, Hamilton, all other combined counties). This stratification provides county-level data for Ohio's three largest metropolitan counties.

CDC requires states to meet a minimum overall response rate in order to publish data. For the years 2006 and earlier, the threshold was 70%. From 2007 through 2011, the threshold was 65%. From 2012 forward, the threshold is 60%. For a detailed explanation of PRAMS methodology and the weighting process, visit the CDC PRAMS Web site: <http://www.cdc.gov/prams/methodology.htm>.

## Basic Terminology

This document uses several terms with specific meanings when discussing the PRAMS survey and results. Descriptions of these terms are included below.

A person who requests PRAMS data receives a data set. A data set is raw data, usually containing one row for each person (i.e., survey respondent), with many columns of information about that person and her baby.

Users of the data sets write programs in statistical software, such as SAS, that summarize information in the data set. Resulting data summaries are usually percentages or means or similar such measures that aggregate the information about the group of interest. In such summaries, it is no longer possible to view information about any one person.

## PRAMS Variables and Codebook

The PRAMS data set includes variables in five categories:

**Birth Certificate variables** – PRAMS respondents are sampled from live birth records. Thus, many variables found in the PRAMS data set come directly from the birth certificate.

**Questionnaire variables** – These include self-reported information collected from the survey instrument, either by mail or phone interview.

**Analytic variables** – These are pre-calculated variables that combine different information from a variety of questionnaire and/or birth certificate variables in the data set. For example, the mother's weight and height are combined to create a variable for BMI. These are very useful and can save analysts a lot of time, so be sure to check these before creating new variables in your program.

**Operational variables** – These come from the data collection process and are used for monitoring survey quality. Many operational variables are removed from the PRAMS data set that is supplied to researchers since they are rarely used for epidemiologic analyses.

**Weighting variables** – These account for the complex survey design. Correct specification of the survey design and use of weighting variables in software for this purpose is imperative to arrive at appropriate estimates of summary measures and their associated standard errors.

Codebooks for Ohio PRAMS can be accessed on the Ohio Department of Health Web Site

(<https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/pregnancy-risk-assessment-survey-prams/questionnaires/>) or by contacting the PRAMS Director.

## Analyzing PRAMS Data

Because PRAMS has a complex stratified design, specialized survey analysis software (such as SUDAAN, SAS, or STATA) is needed to calculate weighted summary measures, standard errors and confidence intervals. Most standard spreadsheets (such as Excel) and some statistical software packages will yield inaccurate results since they assume the sample has a simple random design. CDC has posted guidance about how to specify the PRAMS sample design using SUDAAN, SAS Complex Survey, SPSS Complex Samples, and STATA. Follow the instructions at the following

link: [http://www.cdc.gov/prams/PDF/SUDAAN\\_SAS\\_SPSS\\_STATA\\_2013.pdf](http://www.cdc.gov/prams/PDF/SUDAAN_SAS_SPSS_STATA_2013.pdf).

Step 1 in this document is shown in SAS code below. Part A in Step 1 has already been completed for the data set you received.

```
Data Phase6;
Set prams09.oh2009
    prams10.oh2010
    prams11.oh2011;
/* ^-- create one data set with 2009 through 2011 PRAMS data */
If INQX;
/* ^-- Includes only mothers who responded to the survey
    - this has already been done in the data set given to researchers */
If NEST_YR=99 Then NEST_YR=1999;
SUD_NEST = (STRATUMC*10000) + NEST_YR;
/* ^-- Necessary to create SUD_NEST variable when combining more than one year of data
    - combines the stratification scheme and sample year */
run;
/* Sort the data set by the new SUD_NEST variable */
Proc Sort Data=Phase6;
    By SUD_NEST;
Run;
```

An adequate sample size is important to ensure stable estimates. The general rule for PRAMS is that all analyses of subgroups should include at least 30 mothers, although some analyses may require 50 women to produce stable estimates. One way to increase cell size among these sub-populations is to combine years of data. Using two or three years of data will increase the number of mothers in the sample and result in more stable estimates.

## Sub State Analyses

The survey is designed to provide statewide estimates, as well as estimates for the specific groups that have been oversampled for this purpose. For 2011 through 2015, analysis of county data is possible for the three large metropolitan counties that have been oversampled for this purpose (Cuyahoga, Franklin, and Hamilton), provided cell sizes are adequate. Combining years of data may be necessary to examine subpopulations within these counties, such as maternal age or race. Other county-level analysis is not advisable since the survey has not been designed for this purpose. Using PRAMS data to look at subpopulations that have not been oversampled can produce biased results. Please refer to page 33 of the Guidelines for State Analysis of PRAMS Data document that is attached for more detail about subpopulation analyses. Results from analyses of smaller geographic areas in Ohio should be carried out with caution since the extent of bias is not well understood.

Other options for looking at smaller geographic areas in Ohio exist, but should be carried out with caution. The first is county type, where mothers are placed into one of four categories according to county of residence: Appalachian, Metropolitan, Rural, and Suburban. The chart below details the Ohio counties included in each type.

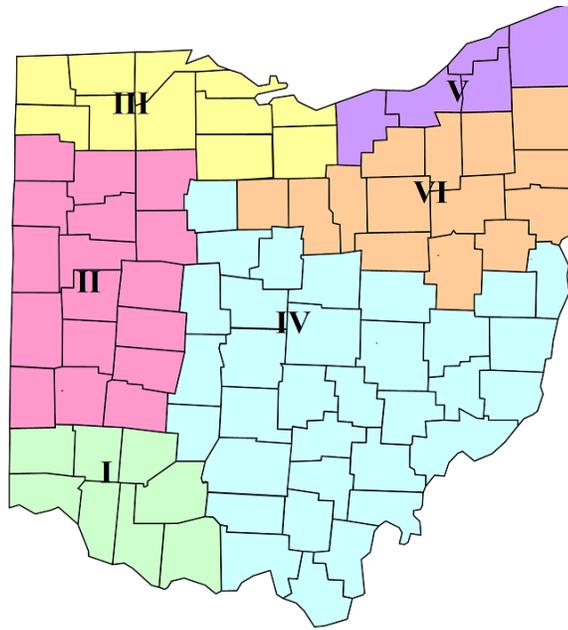
County Type	Counties
Metropolitan	Allen, Butler, Cuyahoga, Franklin, Hamilton, Lorain, Lucas, Montgomery, Richland, Summit, Stark
Suburban	Auglaize, Clark, Delaware, Fairfield, Fulton, Geauga, Greene, Madison, Medina, Miami, Lake, Licking, Pickaway, Portage, Union, Wood
Rural, non-Appalachian	Ashland, Champaign, Clinton, Crawford, Darke, Defiance, Erie, Fayette, Hancock, Hardin, Henry, Huron, Knox, Logan, Marion, Mercer, Morrow, Ottawa, Paulding, Preble, Putnam, Sandusky, Seneca, Shelby, Van Wert, Warren, Wayne, Williams, Wyandot
Appalachian	Adams, Ashtabula, Athens, Brown, Belmont, Carroll, Clermont, Columbiana, Coshocton, Gallia, Guernsey, Harrison, Highland, Hocking, Holmes, Jackson, Jefferson, Lawrence, Mahoning, Meigs, Monroe, Morgan, Muskingum, Noble, Perry, Pike, Ross, Scioto, Trumbull, Tuscarawas, Vinton, Washington

```

/*The SAS code below can be used to group mothers by county type. */
Proc Format;
  Value RegionFmt
    1='Appalachian'
    2='Metropolitan'
    3='Rural'
    4='Suburban';
Run;
Data Phase6;
Set Phase6;
Region=.;
If Mom_Res In (001, 007, 009, 013, 015, 019, 025, 029, 031, 053, 059, 067, 071, 073, 075, 079,
    081, 087, 099, 105, 111, 115, 119, 121, 127, 131, 141, 145, 155, 157, 163, 167)
  Then Region=1;
Else If Mom_Res In (003, 017, 035, 049, 061, 093, 095, 113, 139, 151, 153)
  Then Region=2;
Else If Mom_Res In(005, 021, 027, 033, 037, 039, 043, 047, 063, 065, 069, 077, 083, 091, 101,
    107, 117, 123, 125, 135, 137, 143, 147, 149, 161, 165, 169, 171, 175)
  then Region=3;
Else If Mom_Res In (011, 023, 041, 045, 051, 055, 057, 085, 089, 097, 103, 109, 129, 133, 159, 173)
  Then Region=4;
Format Region RegionFmt.;
Run;

```

Another option for using PRAMS to look at smaller geographic areas is to look at mothers by perinatal region. Ohio is divided into six perinatal regions designed to promote adequate access to care for women and infants. This map shows Ohio's six perinatal regions.



```

/* SAS code to define each perinatal Region is below. */
Data Phase6;
Set Phase6;
PerinatalRegion=.;
If Mom_Res In (001, 015, 025, 071, 017, 061, 027, 165)
    Then PerinatalRegion=1;
Else If Mom_Res In (003, 113, 021, 037, 063, 065, 091, 107, 125,
    135, 137, 149, 161, 011, 023, 057, 109)
    Then PerinatalRegion=2;
Else If Mom_Res In (095, 039, 043, 069, 077, 123, 143, 147, 171, 051, 173)
    Then PerinatalRegion=3;
Else If Mom_Res In (009, 013, 031, 053, 059, 067, 073, 079, 081, 087, 105, 111, 115, 119, 121, 127, 131,
    141, 145, 163, 167, 049, 047, 83, 101, 117, 175, 041, 045, 089, 097, 129, 159)
    Then PerinatalRegion=4;
Else If Mom_Res In (007, 085, 055, 035, 093)
    Then PerinatalRegion = 5;
Else If Mom_Res In (019, 029, 075, 155, 157, 099, 139, 151, 153, 005, 033, 169, 103, 133)
    Then PerinatalRegion=6;
Run;

```

## Reporting PRAMS Data

Information in data sets is confidential since it is possible to examine specific information for each person. Raw data users internal to ODH are required to sign a confidentiality agreement; those external to ODH must obtain IRB approval to access the data. All data users are bound to protect confidentiality by not sharing this raw data set with anyone else. (see <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/pregnancy-risk-assessment-survey-prams/data-requests/>) They also must destroy the dataset when they have completed their analysis. Aggregated summary information is not confidential and can be shared with anyone without concern for violating confidentiality. Point estimates of summary measures from PRAMS should be reported with confidence intervals or standard errors, which are indicators of statistical variability. Also, please be cautious with wording and interpretation of results. For example, differences between populations should not be assumed without testing for statistical significance. Ohio PRAMS did not meet the minimum response rate of 65% in 2011 or the minimum of 60% in 2013. CDC will not include Ohio PRAMS data in any reports for those years. We recommend that users of 2011 and 2013 Ohio PRAMS data use caution in interpreting the data due to potentially compromised dependability of results. Information in data sets is confidential since it is possible to examine specific information for each person. Raw data users internal to ODH are required to sign a confidentiality agreement; those external to ODH must obtain IRB approval to access the data. All data users are bound to protect confidentiality by not sharing this raw data set with anyone else. (see <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/pregnancy-risk-assessment-survey-prams/data-requests/>)

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Please include the following acknowledgement and disclaimer on all publications and presentations produced using data from PRAMS:

**“Ohio Department of Health data used in this project were obtained from the Pregnancy Risk Assessment Monitoring System (PRAMS), Ohio Department of Health (ODH). Use of these data does not imply ODH agrees or disagrees with any presentations, analyses, interpretations, or conclusions.”**

## Recommendations and Other Considerations

The PRAMS program experienced a multitude of challenges during 2012 while CDC was developing and implementing the new web-based system. As a result, a complete year of data was not collected. Therefore, 2012 data may not be comparable to other years, especially for indicators known to be seasonal. After 2015 Ohio discontinued PRAMS participation and implemented a PRAMS-like survey called the Ohio Pregnancy Assessment Survey (OPAS). Guidance on OPAS data and its use is available from the Ohio Department of Health web page.

For analysis using multiple years, be mindful that questions and variable names often change between phases. However, it is acceptable to combine years from different phases when you have confirmed that questions are consistent during the years you are reporting.

Phase IV	–	2000-2003
Phase V	–	2004-2008
Phase VI	–	2009-2011
Phase VII	–	2012-2015

Please feel free to contact staff at the Ohio Department of Health with any questions or concerns:



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