



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

Background

PRAMS was established in 1987 as part of a Centers for Disease Control and Prevention (CDC) initiative to reduce infant mortality and low birth weight. It is a joint surveillance project of the CDC and participating states. Currently 40 states and New York City participate in the project, which means the data represent about 78 percent of all live births in the U.S. Ohio has participated since 1999.

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. The most recent revision, the phase VII questionnaire, began with 2012 births.

Helpful PRAMS Web sites

Ohio PRAMS reports and fact sheets: <http://www.odh.ohio.gov/healthstats/pramshs/pramsdata.aspx>

To request an Ohio PRAMS data set and view code books:
<http://www.odh.ohio.gov/healthstats/pramshs/Data%20Requests.aspx>

Ohio PRAMS survey questionnaire: http://www.odh.ohio.gov/healthstats/pramshs/prams_questionnaire.aspx

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>

CPONDER (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 2010: <http://www.cdc.gov/prams/CPONDER.htm>

PRAMS Methodology and Survey Design

A sample of mothers with a recent live birth is drawn every month from birth certificate records. Mothers are sampled between two and six months after delivery. Questionnaires are mailed to approximately 200 Ohio mothers each month. If there is no response to repeated mailings, mothers are contacted by telephone to complete the survey. All aspects of

data collection are 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 and beyond, stratification has been 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 percent. From 2007 forward, the threshold is 65 percent.

For a detailed explanation of PRAMS methodology and the weighting process, visit the CDC PRAMS website: <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, 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:

1. 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.
2. Questionnaire variables – These include self-reported information collected from the survey instrument, either by mail or phone interview.
3. 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 the analyst a lot of time, so be sure to check these before creating new variables in your program.
4. 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.

5. 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 Web (<http://www.odh.ohio.gov/healthstats/pramshs/Data%20Requests.aspx>) or by contacting the PRAMS coordinator.

Analyzing PRAMS Data

As 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. 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; /*creates 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;

/*Now sort data set by 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 forward, 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. Results from analyses of smaller geographic areas in Ohio should be carried out with caution since the extent of bias is not well understood. For more detail about subpopulation analysis, please contact the PRAMS coordinator to request a copy of the *Guidelines for State Analysis of PRAMS Data* document and refer to page 33.

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;

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. The map below shows Ohio's six perinatal regions.



SAS code to define each perinatal region is below.

```
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;
```

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. 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 percent in 2011. CDC will not include Ohio PRAMS data in any reports for this year, and the Ohio Department of Health has chosen not to publish 2011 PRAMS data. ODH will analyze and use data from 2011 only internally. We recommend that users of 2011 Ohio PRAMS data refrain from publishing it. This is not an issue of confidentiality but of data quality and dependability of results.

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 in 2012 while CDC was developing and implementing the new Web-based system. As a result of these challenges, 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. Data entry and weighting for this year will be significantly delayed. ODH and CDC are uncertain when 2012 data will be available and do not yet know how it should be used.
- 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

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

PRAMS Coordinator: Missy VonderBrink, MPH
(614) 644-0190
Missy.vonderbrink@odh.ohio.gov

PRAMS Project Director: Connie Geidenberger, PhD
(614) 466-4604
Connie.geidenberger@odh.ohio.gov

