

BRFSS Statistical Brief on Breast Cancer Screening

Updated September 2019

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Objective

To provide the rationale and procedures for analyzing breast cancer screening measures that align with Healthy People 2020 screening objectives.

Background

Cancer remains a leading cause of death in the United States, second to heart disease, and one of the top areas of public health focus.¹⁻⁴ Because evidence-based cancer screening tools have contributed to a decline in the number of new cancer cases and prevented deaths from some cancers,⁵ cancer screening measures have been included since the inception of the Healthy People national health objectives (Appendix 1). Previous Healthy People objectives for cancer screening focused on screening tests with or without a time interval. [Healthy People 2020 objectives](#) focus on the timeliness of receiving an evidence-based screening test recommended by the United States Preventive Services Task Force (USPSTF).⁶

Healthy People screening measures have been adapted for state use in different settings, including comprehensive cancer control plans and chronic disease indicators, with the Behavioral Risk Factor Surveillance System (BRFSS) as the data source.⁷⁻⁹ CDC's Division of Cancer Prevention and Control (DCPC) has analyzed BRFSS data for several publications in the *Morbidity and Mortality Weekly Report (MMWR)* (full list is available at [this citation search tool](#)). These publications usually report age-adjusted screening prevalence estimates for specific cancers by age groups (Appendix 2).

History

BRFSS surveys have asked questions related to breast cancer screening in two ways:

- (1) Have you ever had the test?
- (2) If "Yes" to (1), then, "When was your last test"?

The BRFSS does not include questions to distinguish between a diagnostic test and a screening test. A diagnostic test is used to determine the presence or absence of cancer when a patient shows signs or symptoms. For example, if a patient's primary care physician finds a mass in a breast on exam, then a mammogram for diagnostic purposes may be ordered. A screening test is performed on people who do not show any symptoms of cancer.

More detailed information about the 2018 BRFSS questionnaire used by the states is available in Appendix 4. (Note: CATI instructions were omitted for ease in presenting the questions and their corresponding response categories. For more information, see www.cdc.gov/brfss/questionnaires/pdf-ques/2018_BRFSS_English_Questionnaire.pdf)

Analytic Code for Breast Cancer Screening Variable

Meets Healthy People 2020 Objective C-17

The USPSTF recommends breast cancer screening with a mammogram every 2 years for women aged 50–74 years.

MAM2YR is a calculated variable for respondents who have had a mammogram in the past 2 years. It is derived from HADMAM and HOWLONG. The variables SEX1 and _AGE80 are used to define the appropriate subpopulation.

1	Met recommendation	Received a mammogram within the past 2 years. (HADMAM=1 and HOWLONG=1,2)
2	Did not meet recommendation	Did not receive a mammogram within the past 2 years. [HADMAM=2 or (HADMAM=1 and HOWLONG=3,4,5)]
.	Missing	Don't know, not sure, or refused responses for HADMAM or Don't know, not sure, refused, or missing responses for HOWLONG

Subsetting statement: SEX1=2 AND 50<=_AGE80<=74;

SAS Code:

```
IF HADMAM=2 THEN MAM2YR=2;
ELSE IF HADMAM=1 THEN DO;
  IF HOWLONG IN (1,2) THEN MAM2YR=1;
  ELSE IF HOWLONG IN (3,4,5) THEN MAM2YR=2;
END;
```

R Code:

```
mam2yr<-ifelse(hadmam==2, 2, NA)
mam2yr<-ifelse(hadmam==1 & howlong %in% c(1,2), 1, mam2yr)
mam2yr<-ifelse(hadmam==1 & howlong %in% c(3,4,5), 2, mam2yr)
```

Stata Code:

```
gen mam2yr=.
replace mam2yr=2 if hadmam==2
replace mam2yr=1 if hadmam==1 & (howlong==1 | howlong==2)
replace mam2yr=2 if hadmam==1 & howlong>=3 & howlong<=5
```

Analytic Note

The 2018 BRFSS dataset contains the variable “_mam5022” which defines women ages 50–74 who report a mammogram within the last 2 years, using the reported age variable rather than the imputed variable (_age80). Reported age is only available to users in 5-year age groups (or a variable that splits all ages into 2 categories: <65 years and ≥65 years) and cannot create all of the screening measures used by DCPC. For this reason, DCPC defines this screening variable using imputed age. There are small differences in counts and percentages between the DCPC method and the BRFSS-created variable.

References

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9. Pelletier AR, Siegel PZ, Baptiste MS, Maylahn C. Revisions to chronic disease surveillance indicators, United States, 2004. *Prev Chronic Dis.* 2005;2(3). www.cdc.gov/pcd/issues/2005/jul/05_0003.htm. Accessed June 30 2014.

Appendix 1. Healthy People: Breast Cancer Screening Objectives

Healthy People 2000

16.11 Breast exam/mammogram: Women aged 50 years and over

Healthy People 2010

3-13 Women receiving a mammogram within past 2 years (age adjusted, 40+ years)

Healthy People 2020

C-17 Increase the proportion of women who receive a breast cancer screening based on the most recent guidelines

Appendix 2. Age Categories for Age Adjustment

Healthy People 2020

Cancer Screening Type	Sex/Age Group	Age Categories
Breast Cancer Screening	Women Aged 50–74 Years	if sex1=2; if 50<=_AGE80<=64 then ageadj=1; else if 65<=_AGE80<=74 then ageadj=2;

Other suggested age groups

Cancer Screening Type	Sex/Age Group	Age Categories
Breast Cancer Screening	Women Aged 50–74 Years	if sex1=2; if 50<=_AGE80<=59 then ageadj=1; else if 60<=_AGE80<=69 then ageadj=2; else if 70<=_AGE80<=74 then ageadj=3;

Appendix 4. Questions from the BRFSS Breast and Cervical Cancer Screening Module (Breast Cancer Questions Only)

14.01 The next questions are about breast and cervical cancer. Have you ever had a mammogram?

- 1 Yes
- 2 No [Go to Q14.03]
- 7 Don't know / Not sure [Go to Q14.03]
- 9 Refused [Go to Q14.03]

14.02 How long has it been since you had your last mammogram?

- 1 Within the past year (anytime less than 12 months ago)
- 2 Within the past 2 years (1 year but less than 2 years ago)
- 3 Within the past 3 years (2 years but less than 3 years ago)
- 4 Within the past 5 years (3 years but less than 5 years ago)
- 5 5 or more years ago
- 7 Don't know / Not sure
- 9 Refused