

Special Research Files on Maternal Mortality

Documentation on variables and notes on how to analyze the data

List of variables, brief description, and valid codes

NCHS produced special research files on maternal mortality for 2003–2017 cause-of-death codes. These restricted files are available in the NCHS Research Data Center. To the extent possible, the data in these files include cause-of-death codes using alternate coding methods to provide maximum flexibility for analysis using different methods and assumptions. Most variables are taken directly from Mortality Multiple Cause Files for the corresponding year. Exceptions to this general rule are the cause-of-death variables that were produced using a method other than the original (2003-2017) method for coding and classifying maternal deaths. NCHS started using the current method of coding maternal mortality data in 2018.

Variable name	Description	Notes and valid values
rec_type	Record Type	1 ... RESIDENTS State and County of Occurrence and Residence are the same. 2 ... NONRESIDENTS State and/or County of Occurrence and Residence are different.
resstat	Resident Status	1 ... RESIDENTS, State and County of Occurrence and Residence are the same. 2 ... INTRASTATE NONRESIDENTS State of Occurrence and Residence are the same, but County is different. 3 ... INTERSTATE NONRESIDENTS State of Occurrence and Residence are different, but both are in the U.S. 4 ... FOREIGN RESIDENTS State of Occurrence is one of the 50 States or the District of Columbia, but Place of Residence is outside of the U.S.
stocfips	State of Occurrence (FIPS)	See Appendix Table I.
cnocfips	County of Occurrence (FIPS)	See Appendix Table I.
exstocc	Expanded State of Occurrence Code	This item is designed to separately identify New York City records (“YC”) from other New York State records. (“YC” is not an official FIPS code.) See Appendix Table I.
popcnoc	Population Size of County of Occurrence	Based on the results of prior Census year 0 ... County of 1,000,000 or more 1 ... County of 500,000 to 1,000,000 2 ... County of 250,000 to 500,000 3 ... County of 100,000 to 250,000 4 ... County of 50,000 to 100,000 5 ... County of 25,000 to 50,000 6 ... County of 10,000 to 25,000 9 ... County less than 10,000
strsfips	State of Residence (FIPS)	See Appendix Table I.

Variable name	Description	Notes and valid values
scresrec	Recode of State/Country of Residence	Canada (CC) and Remainder of world (YY) are not official FIPS codes. See Appendix Table I.
cnrsfips	County of Residence (FIPS)	See Appendix Table I.
citrifips	City of Residence (FIPS)	A complete list of cities is shown in Instruction Manual Part 8: Vital Records, Geographic Classification, 2014. Effective with the 2014 data year, the FIPS place code has been added to the Mortality record. See Appendix Table I.
popcitr	Population Size of City of Residence	Based on the results of prior Census year 0 ...Place of 1,000,000 or more 1 ...Place of 500,000 to 1,000,000 2 ...Place of 250,000 to 500,000 3 ...Place of 100,000 to 250,000 4 ...Place of 50,000 to 100,000 5 ...Place of 25,000 to 50,000 6 ...Place of 10,000 to 25,000 9 ...Place of less than 10,000 Z ...Foreign residents
metrocnt	Metropolitan - Nonmetropolitan County of Residence	1 ... Metropolitan county 2 ... Nonmetropolitan county Z ... Foreign residents (This variable is NOT available after 2013.)
exstres	Expanded State of Residence Code	This item is designed to separately identify New York City records ("YC") from other New York State records. ("YC," "CC," and "YY" are not official FIPS codes.) See Appendix Table I.
stat_bir	State of Birth (FIPS)	See Appendix Table I.
plcbrec	Recode of State/Country of Birth	See Appendix Table I.
educ89	Education (1989 revision)	Field is blank for registration areas that are using the 2003 revision format of the item. 00 ... No formal education 01-08 ... Years of elementary school 09 ... 1 year of high school 10 ... 2 years of high school 11 ... 3 years of high school 12 ... 4 years of high school 13 ... 1 year of college 14 ... 2 years of college 15 ... 3 years of college 16 ... 4 years of college 17 ... 5 or more years of college 99 ... Not stated
educ03	Education (2003 revision)	Field is blank for registration areas that are using the 1989 revision format of the item. 1 ... 8th grade or less 2 ... 9 - 12th grade, no diploma 3 ... high school graduate or GED completed 4 ... some college credit, but no degree 5 ... Associate degree 6 ... Bachelor's degree 7 ... Master's degree 8 ... Doctorate or professional degree 9 ... Unknown

Variable name	Description	Notes and valid values
educflag	Education reporting flag	0 ... 1989 revision of education item on certificate 1 ... 2003 revision of education item on certificate 2 ... no education item on certificate
monthdth	Month of Death	01 ... January 02 ... February 03 ... March 04 ... April 05 ... May 06 ... June 07 ... July 08 ... August 09 ... September 10 ... October 11 ... November 12 ... December
sex	Sex	M ... Male F ... Female
detage	Detail Age	Four characters are used to code detail age. First character identifies age in years, months, days, etc. The remaining three characters are the number of years, months, days, etc. 1 001-135,999 ... Years 2 001-011,999 ... Months 4 001-027,999 ... Days 5 001-023,999 ... Hours 6 001-059,999 ... Minutes 9 999 ... Age not stated
agesubst	Age Substitution Flag	If reported age is unknown but a valid age is calculated using dates of birth and death, the calculated age is substituted for the unknown reported age. Blank ... Calculated age is not substituted for reported age 1 ... Calculated age is substituted for reported age
ager52	Age Recode 52 age groups	See mortality record layout documentation for corresponding data year at https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
ager27	Age Recode 27 age groups	See mortality record layout documentation for corresponding data year at https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
ager12	Age Recode 12 age groups	01 ... Under 1 year (includes not stated infant ages) 02 ... 1 - 4 years 03 ... 5 - 14 years 04 ... 15 - 24 years 05 ... 25 - 34 years 06 ... 35 - 44 years 07 ... 45 - 54 years 08 ... 55 - 64 years 09 ... 65 - 74 years 10 ... 75 - 84 years 11 ... 85 years and over 12 ... Age not stated
iager22	Age Recode 22 infant age groups	This variable should be null in all records on this file.

Variable name	Description	Notes and valid values
placedth	Place of Death (facility) and Decedent's Status	1 ... Hospital, Clinic or Medical Center - Inpatient 2 ... Hospital, Clinic or Medical Center - Outpatient or admitted to Emergency Room 3 ... Hospital, Clinic or Medical Center - Dead on Arrival 4 ... Decedent's home 5 ... Hospice facility 6 ... Nursing home/long term care 7 ... Other 9 ... Place of death unknown
marital	Marital Status	S ... Never married, single M ... Married (Includes married, but separated) W ... Widowed D ... Divorced U ... Marital Status unknown
dayweek	Day of Week of Death	1 ... Sunday 2 ... Monday 3 ... Tuesday 4 ... Wednesday 5 ... Thursday 6 ... Friday 7 ... Saturday 9 ... Unknown
year	Year (of death)	Given data file's year
manndth	Manner of Death	1 ... Accident 2 ... Suicide 3 ... Homicide 4 ... Pending investigation 5 ... Could not determine 6 ... Self-Inflicted 7 ... Natural Blank ... Not specified
autopsy	Autopsy	Y ... Yes N ... No U ... Unknown
tobacco	Tobacco use contributed to death	Y ... Yes N ... No P ... Probably U ... Unknown Blank ... Not on certificate
pregstat	Pregnancy Status (checkbox)	1 ... Not pregnant within the past year 2 ... Pregnant at time of death 3 ... Not pregnant, but pregnant within 42 days of death 4 ... Not pregnant, but pregnant 43 days to 1 year before death 7 ... Not on certificate 8 ... Not applicable 9 ... Unknown if pregnant within last year
activity	Activity Code	0 ... While engaged in sports activity

Variable name	Description	Notes and valid values
		1 ... While engaged in leisure activity 2 ... While working for income 3 ... While engaged in other types of work 4 ... While resting, sleeping, eating (vital activities) 8 ... While engaged in other specified activities 9 ... During unspecified activity Blank ... Not applicable
plac_inj	Place of Injury for selected external causes of death	0 ... Home 1 ... Residential institution 2 ... School, other institution and public administrative area 3 ... Sports and athletics area 4 ... Street and highway 5 ... Trade and service area 6 ... Industrial and construction area 7 ... Farm 8 ... Other Specified Places 9 ... Unspecified place Blank ... Causes other than W00-Y34, except Y06.- and Y07.-
cause	ICD-10 code for underlying cause of death as originally coded	Based on the 2003–2017 method for classifying maternal deaths; see Instruction Manual Part 2a and Part 2e https://www.cdc.gov/nchs/nvss/instruction-manuals.htm
cause358	Cause of death recode into 358 selected causes	Based on the 2003–2017 method for classifying maternal deaths; see Instruction Manual Part 9 https://www.cdc.gov/nchs/nvss/instruction-manuals.htm
cause113	Cause of death recode into 113 selected causes	Based on the 2003–2017 method for classifying maternal deaths; see Instruction Manual Part 9 https://www.cdc.gov/nchs/nvss/instruction-manuals.htm
cause130	Cause of death recode into 130 selected causes of infant death	This variable should be null in all records on this file
cause39	Cause of death recode into 39 selected causes	Based on the 2003–2017 method for classifying maternal deaths; see Instruction Manual Part 9 https://www.cdc.gov/nchs/nvss/instruction-manuals.htm
nenaxcon	Number of Entity-Axis Conditions; based on the 2003–2017 method for classifying maternal deaths	Code range is 0-20.
ENTAX1	Entity axis # 1	Based on the 2003–2017 method for classifying maternal deaths; see mortality record layout documentation for more

Variable name	Description	Notes and valid values
		detail about entity axis multiple causes: https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
ENTAX2	Entity axis # 2	Ibid.
ENTAX3	Entity axis # 3	
ENTAX4	Entity axis # 4	
ENTAX5	Entity axis # 5	
ENTAX6	Entity axis # 6	
ENTAX7	Entity axis # 7	
ENTAX8	Entity axis # 8	
ENTAX9	Entity axis # 9	
ENTAX10	Entity axis # 10	
ENTAX11	Entity axis # 11	
ENTAX12	Entity axis # 12	
ENTAX13	Entity axis # 13	
ENTAX14	Entity axis # 14	
ENTAX15	Entity axis # 15	
ENTAX16	Entity axis # 16	
ENTAX17	Entity axis # 17	
ENTAX18	Entity axis # 18	
ENTAX19	Entity axis # 19	
ENTAX20	Entity axis # 20	
nrcaxcon	Number of Record-Axis Conditions; based on the 2003–2017 method for classifying maternal deaths	Code range is 0-20.
RECAx1	Record axis # 1	Based on the 2003–2017 method for classifying maternal deaths; see mortality record layout documentation for more detail about record axis multiple causes: https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
RECAx2	Record axis # 2	Ibid.
RECAx3	Record axis # 3	
RECAx4	Record axis # 4	
RECAx5	Record axis # 5	
RECAx6	Record axis # 6	
RECAx7	Record axis # 7	
RECAx8	Record axis # 8	
RECAx9	Record axis # 9	
RECAx10	Record axis # 10	
RECAx11	Record axis # 11	
RECAx12	Record axis # 12	
RECAx13	Record axis # 13	

Variable name	Description	Notes and valid values
RECAX14	Record axis # 14	
RECAX15	Record axis # 15	
RECAX16	Record axis # 16	
RECAX17	Record axis # 17	
RECAX18	Record axis # 18	
RECAX19	Record axis # 19	
RECAX20	Record axis # 20	
detrace	Reported race for States that are reporting single race; or the bridged race for States that are reporting multiple race.	See mortality record layout documentation for corresponding data year at https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
RACER5	Reported single race or bridged race recoded into five categories	0 ... Other (Puerto Rico only) 1 ... White 2 ... Black 3 ... American Indian (includes Aleuts and Eskimos) 4 ... Asian or Pacific Islander
HISPANIC	Hispanic origin	100 ... Non – Hispanic 200-209 ... Spaniard 210-219 ... Mexican 260-269 ... Puerto Rican 270-274 ... Cuban 275-279 ... Dominican 220 ... Central and South American 221-230 ... Central American 231-249 ... South American 250-259 ... Latin American 280-299 ... Other Hispanic 996-999 ... Unknown
HSPANICR	Recode of Hispanic origin and reported single race or bridged race	1 ... Mexican 2 ... Puerto Rican 3 ... Cuban 4 ... Central or South American 5 ... Other or unknown Hispanic 6 ... Non - Hispanic white 7 ... Non - Hispanic black 8 ... Non - Hispanic other races 9 ... Hispanic origin unknown
mrac1	Multiple Race field # 1 (only 2012-2017)	See mortality record layout documentation for corresponding data year at https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm

Variable name	Description	Notes and valid values
mrac2	Multiple Race field # 2 (only 2012-2017)	Ibid.
mrac3	Multiple Race field # 3 (only 2012-2017)	
mrac4	Multiple Race field # 4 (only 2012-2017)	
omb97recod	Recode of singleton and multiple races into 40 categories (only 2012-2017)	See mortality record layout documentation for corresponding data year at https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
trx_ucod	ICD-10 code for underlying cause of death recoded without using the checkbox item (pre-2003 method)	See Instruction Manual Part 2e https://www.cdc.gov/nchs/nvss/instruction-manuals.htm
trx_ea01	Pre-2003 method entity axis # 1	Based on the pre-2003 method for classifying maternal deaths (i.e., without using the checkbox); see mortality record layout documentation for more detail about entity axis multiple causes: https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
trx_ea02	Pre-2003 method entity axis # 2	Ibid.
trx_ea03	Pre-2003 method entity axis # 3	
trx_ea04	Pre-2003 method entity axis # 4	
trx_ea05	Pre-2003 method entity axis # 5	
trx_ea06	Pre-2003 method entity axis # 6	
trx_ea07	Pre-2003 method entity axis # 7	

Variable name	Description	Notes and valid values
trx_ea08	Pre-2003 method entity axis # 8	
trx_ea09	Pre-2003 method entity axis # 9	
trx_ea10	Pre-2003 method entity axis # 10	
trx_ea11	Pre-2003 method entity axis # 11	
trx_ea12	Pre-2003 method entity axis # 12	
trx_ea13	Pre-2003 method entity axis # 13	
trx_ea14	Pre-2003 method entity axis # 14	
trx_ea15	Pre-2003 method entity axis # 15	
trx_ea16	Pre-2003 method entity axis # 16	
trx_ea17	Pre-2003 method entity axis # 17	
trx_ea18	Pre-2003 method entity axis # 18	
trx_ea19	Pre-2003 method entity axis # 19	
trx_ea20	Pre-2003 method entity axis # 20	
trx_ra01	Pre-2003 method record axis # 1	Based on the pre-2003 method for classifying maternal deaths (i.e., without using the checkbox); see mortality record layout documentation for more detail about record axis multiple causes: https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm

Variable name	Description	Notes and valid values
trx_ra02	Pre-2003 method record axis # 2	lbid.
trx_ra03	Pre-2003 method record axis # 3	
trx_ra04	Pre-2003 method record axis # 4	
trx_ra05	Pre-2003 method record axis # 5	
trx_ra06	Pre-2003 method record axis # 6	
trx_ra07	Pre-2003 method record axis # 7	
trx_ra08	Pre-2003 method record axis # 8	
trx_ra09	Pre-2003 method record axis # 9	
trx_ra10	Pre-2003 method record axis # 10	
trx_ra11	Pre-2003 method record axis # 11	
trx_ra12	Pre-2003 method record axis # 12	
trx_ra13	Pre-2003 method record axis # 13	
trx_ra14	Pre-2003 method record axis # 14	
trx_ra15	Pre-2003 method record axis # 15	
trx_ra16	Pre-2003 method record axis # 16	

Variable name	Description	Notes and valid values
trx_ra17	Pre-2003 method record axis # 17	
trx_ra18	Pre-2003 method record axis # 18	
trx_ra19	Pre-2003 method record axis # 19	
trx_ra20	Pre-2003 method record axis # 20	
new_ucod	ICD-10 code for underlying cause of death recoded using the 2018 method	To understand the 2018 method for classifying maternal deaths see: https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-02-508.pdf See also Instruction Manual Part 2a and Part 2e https://www.cdc.gov/nchs/nvss/instruction-manuals.htm
new_ea_01	2018 method entity axis # 1	Based on the 2018 method for classifying maternal deaths; see mortality record layout documentation for more detail about entity axis multiple causes: https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
new_ea_02	2018 method entity axis # 2	Ibid.
new_ea_03	2018 method entity axis # 3	
new_ea_04	2018 method entity axis # 4	
new_ea_05	2018 method entity axis # 5	
new_ea_06	2018 method entity axis # 6	
new_ea_07	2018 method entity axis # 7	
new_ea_08	2018 method entity axis # 8	
new_ea_09	2018 method entity axis # 9	
new_ea_10	2018 method entity axis # 10	
new_ea_11	2018 method entity axis # 11	
new_ea_12	2018 method entity axis # 12	
new_ea_13	2018 method entity axis # 13	

Variable name	Description	Notes and valid values
new_ea_14	2018 method entity axis # 14	
new_ea_15	2018 method entity axis # 15	
new_ea_16	2018 method entity axis # 16	
new_ea_17	2018 method entity axis # 17	
new_ea_18	2018 method entity axis # 18	
new_ea_19	2018 method entity axis # 19	
new_ea_20	2018 method entity axis # 20	
new_ra_1	2018 method record axis # 1	Based on the 2018 method for classifying maternal deaths; see mortality record layout documentation for more detail about record axis multiple causes: https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
new_ra_2	2018 method record axis # 2	For selected decedents aged < 45 years and classified using the 2018 method, a flag value "1" will appear as the 5 th character in this field. The preceding four characters represent the ICD-10 code of the underlying cause of death for this record as classified via the pre-2003 method i.e. without use of the pregnancy checkbox information.
new_ra_3	2018 method record axis # 3	Based on the 2018 method for classifying maternal deaths; see mortality record layout documentation for more detail about record axis multiple causes: https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
new_ra_4	2018 method record axis # 4	Ibid.
new_ra_5	2018 method record axis # 5	
new_ra_6	2018 method record axis # 6	
new_ra_7	2018 method record axis # 7	
new_ra_8	2018 method record axis # 8	
new_ra_9	2018 method record axis # 9	
new_ra_10	2018 method record axis # 10	
new_ra_11	2018 method record axis # 11	
new_ra_12	2018 method record axis # 12	

Variable name	Description	Notes and valid values
new_ra_13	2018 method record axis # 13	
new_ra_14	2018 method record axis # 14	
new_ra_15	2018 method record axis # 15	
new_ra_16	2018 method record axis # 16	
new_ra_17	2018 method record axis # 17	
new_ra_18	2018 method record axis # 18	
new_ra_19	2018 method record axis # 19	
new_ra_20	2018 method record axis # 20	

Notes on how to analyze the data to produce output according to the three methods for classifying maternal deaths

Method used for years 2003-2017

ICD-10 codes for the method used years 2003 – 2017 can be found in variables “cause” (underlying cause of death); ENTAX1 – ENTAX20 (multiple causes of death, Entity axis); RECAX1 – RECAX20 (multiple causes of death, Record axis). These values are as they appear in the public-use, downloadable data files for years 2003-2017 and tabulating data using such variables will yield results as currently found in publications and in CDC WONDER.

Pre-2003 method without use of the checkbox item

Selected records were recoded unaided by checkbox (“if female... pregnant”) values. ICD-10 codes for such records are captured in variables “trx_ucod” (underlying cause of death); trx_ea01 – trx_ea20 (multiple causes of death, Entity axis); trx_ra01 – trx_ra20 (multiple causes of death, Record axis). Because not all records were re-processed to produce these values, analysts must use cause of death values from the 2003-2007 method described above for those records that lack data (empty, null) in the “trx” variables described here. A sample script (using SAS) below describes how to create a new variable named “noboxucod” that is populated with “trx_ucod” if available, and with “cause” where “trx_ucod” is null:

```
length noboxucod $4;  
if trx_ucod ne ' ' then noboxucod = trx_ucod;  
else if trx_ucod eq ' ' then noboxucod = cause;
```

Use “noboxucod” to generate underlying cause of death output for the Pre-2003 method.

The 2018 method with conditional use of the checkbox item

Selected records for decedents aged 45 and over were coded using the Pre-2003 method (without aid of the checkbox). Selected records for decedents aged less than 45 years were coded using the 2003-2017 method aided by the “if female... pregnant” checkbox. ICD-10 codes for such records are captured in variables “new_ucod” (underlying cause of death); new_ea_01 – new_ea_20 (multiple causes of death, Entity axis); new_ra_1 – new_ra_20 (multiple causes of death, Record axis). Because not all records were re-processed to produce these values, analysts must use cause of death values from the 2003-2007 method described earlier in this section for those records that lack data (empty, null) in the “new” variables described here. A sample script (using SAS) below describes how to create a new variable named “eighteencod” that is populated with “new_ucod” if available, and with “cause” where “new_ucod” is null:

```
length eighteencod $4;  
if new_ucod ne ' ' then eighteencod = new_ucod;  
else if new_ucod eq ' ' then eighteencod = cause;
```

Use "eighteencod" to generate underlying cause of death output for the 2018 method. Public-use NVSS mortality data files for years 2018 and after use this method to populate the medical, or cause-of-death variables for records counted as "maternal deaths."

Appendix

Table I. Codes for Geographic Variables

AL	Alabama
AK	Alaska
AZ	Arizona
AR	Arkansas
CA	California
CO	Colorado
CT	Connecticut
DE	Delaware
DC	District of Columbia
FL	Florida
GA	Georgia
HI	Hawaii
ID	Idaho
IL	Illinois
IN	Indiana
IA	Iowa
KS	Kansas
KY	Kentucky
LA	Louisiana
ME	Maine
MD	Maryland
MA	Massachusetts
MI	Michigan
MN	Minnesota
MS	Mississippi
MO	Missouri
MT	Montana
NE	Nebraska
NV	Nevada
NH	New Hampshire
NJ	New Jersey
NM	New Mexico
NY	New York
NC	North Carolina
ND	North Dakota
OH	Ohio
OK	Oklahoma
OR	Oregon
PA	Pennsylvania

RI	Rhode Island
SC	South Carolina
SD	South Dakota
TN	Tennessee
TX	Texas
UT	Utah
VT	Vermont
VA	Virginia
WA	Washington
WV	West Virginia
WI	Wisconsin
WY	Wyoming
ZZ	Foreign residents
For exstoccc and exstres:	
YC	New York City
For scresrec:	
PR	Puerto Rico
VI	Virgin Islands
GU	Guam
AS	American Samoa
MP	Northern Marianas
CC	Canada
MX	Mexico
CU	Cuba
YY	Remainder of the world

Note: For all other geographic identifiers not shown above, please visit “Instruction Manual Part 8: Vital Records, Geographic Classification, 2014”

https://www.cdc.gov/nchs/data/dvs/IMP8_2014.pdf