

**National Health and Nutrition Examination Survey (NHANES 1999-2004)  
Linked Mortality Files**

**Public-use File Layout**

<b>Variable</b>	<b>Data Type</b>	<b>Position</b>	<b>Length</b>	<b>Field Description</b>
<i>SEQN</i>	numeric	1	5	NHANES Respondent Sequence Number – <a href="#">See Detailed Notes</a>
<i>ELIGSTAT</i>	numeric	6	1	Eligibility Status for Mortality Follow-up <a href="#">See Detailed Notes</a>
			1	Eligible
			2	Under age 18, not available for public release <sup>1</sup>
			3	Ineligible
<b>Death Information</b>				
<i>MORTSTAT</i>	numeric	7	1	Final Mortality Status – <a href="#">See Detailed Notes</a>
			0	Assumed alive
			1	Assumed deceased
			Blank	Ineligible for mortality follow-up or under age 18
<i>MORTSRCE_NDI</i>	numeric	8	1	Mortality Source: NDI Match – <a href="#">See Detailed Notes</a>
			0	No
			1	Yes
			Blank	Ineligible for mortality follow-up, under age 18, or assumed alive
<i>MORTSRCE_SSA</i>	numeric	9	1	Mortality Source: SSA Information – <a href="#">See Detailed Notes</a>
			0	No
			1	Yes
			Blank	Ineligible for mortality follow-up, under age 18, or assumed alive

<sup>1</sup> Data for survey participants under age 18 at the time of the NHANES surveys can be accessed via the NHANES restricted-use linked mortality files in the NCHS Research Data Center (RDC).

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<i>PERMTH_INT</i>	numeric	10	3	Person Months of Follow-up from Interview Date <a href="#">See Detailed Notes</a>  0 – 93 Blank      Ineligible for mortality follow-up or under age 18
<i>PERMTH_EXM</i>	numeric	13	3	Person Months of Follow-up from MEC Exam Date <a href="#">See Detailed Notes</a>  0 – 92 Blank      Ineligible for mortality follow-up, under age 18, or participant was not examined
<i>CAUSEAVL</i>	numeric	16	1	Cause of Death Data Available – <a href="#">See Detailed Notes</a>  0      No 1      Yes Blank      Ineligible for mortality follow-up, under age 18, or assumed alive
<i>UCOD_113</i>	character	17	3	ICD-10 (1999-2006) Underlying Cause of Death 113 Groups Recode – <a href="#">See Detailed Notes</a>  001 – 135      Code range Blank      Ineligible for mortality follow-up, under age 18, assumed alive, or cause of death code not available
<b>Multiple Cause of Death Flags</b>				
<i>DIABETES</i>	numeric	20	1	Diabetes Flag from Multiple Cause of Death (MCOB) <a href="#">See Detailed Notes</a>  0      No 1      Yes – Diabetes listed as a multiple cause of death Blank      Ineligible for mortality follow-up, under age 18, assumed alive, or cause of death not available

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<b>Variable</b>	<b>Data Type</b>	<b>Position</b>	<b>Length</b>	<b>Field Description</b>
<i>HYPERTEN</i>	numeric	21	1	Hypertension Flag from Multiple Cause of Death (MCOD) <a href="#">See Detailed Notes</a>
			0	No
			1	Yes – Hypertension listed as a multiple cause of death
			Blank	Ineligible for mortality follow-up, under age 18, assumed alive, or cause of death not available
<i>HIPFRACT</i>	numeric	22	1	Hip Fracture Flag from Multiple Cause of Death (MCOD) <a href="#">See Detailed Notes</a>
			0	No
			1	Yes – Hip Fracture listed as a multiple cause of death
			Blank	Ineligible for mortality follow-up, under age 18, assumed alive, or cause of death not available

# National Health and Nutrition Examination Survey (NHANES 1999-2004) Linked Mortality Files Public-use Detailed Notes for Selected Variables

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## **SEQN** – NHANES Sequence Number

The NHANES Linked Mortality Public-use Files can be linked to other public-use NHANES data files using the numeric variable, SEQN. Using this variable will ensure the appropriate information for each survey participant is merged correctly.

## **ELIGSTAT** – Eligibility Status for Mortality Follow-Up

NHANES participants are defined as ineligible for mortality linkage if they had insufficient identifying data to create a National Death Index submission record ([See Mortality Linkage Eligibility, Tables 1 and 2](#)). Researchers interested in analyzing the linked mortality data for NHANES participants under age 18 should review the guidelines for accessing the [restricted-use versions](#) of the NHANES Linked Mortality Files.

## **MORTSTAT** – Final Mortality Status

The MORTSTAT variable is NCHS's final determination of vital status and should be used as an outcome variable and to calculate survival. Each NHANES participant who is eligible for mortality follow-up is assigned a vital status code (0 = assumed alive; 1 = assumed deceased).

**MORTALITY SOURCE.** NCHS has multiple sources of information to determine the final mortality status of a NHANES survey participant. Variables indicating which source or sources were used to determine vital status are available on the linked mortality files and are described below. Any combination of these mortality sources was used to identify NHANES decedents.

## **MORTSRCE\_NDI** - Mortality Source: NDI Match

A code 1 indicates that mortality status was ascertained through a probabilistic match to a National Death Index (NDI) record.

## **MORTSRCE\_SSA** - Mortality Source: SSA Information

A code 1 indicates that mortality status was obtained from the Social Security Administration (SSA).

## **PERMTH\_INT**—Person Months of Follow-up from Interview Date

## **PERMTH\_EXM**—Person Months of Follow-up from MEC/Exam Date

The public-use versions of the NHANES 1999-2004 Linked Mortality Files do not contain exact date of NHANES interview or examination nor exact date of death. Rather, information regarding number of person months of follow-up from the date of interview and/or examination

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has been provided to allow data users to conduct survival analyses. For decedents, person months of follow-up were calculated from interview date/examination date through the date of death, using the perturbed date of death where applicable. For respondents assumed alive, person months of follow-up were calculated from interview date/examination date through the end of the mortality follow-up period, December 31, 2006.

**CAUSEAVL** – Cause of Death Data Available

Death certificate data is available only for cases where the variable MORTSTAT=1 and MORTSRCE\_NDI = 1. Users should note that it is possible to have an NDI match but no cause of death data available.

**DIABETES, HYPERTENS, & HIPFRACT**—Multiple cause of death flags

Certain contributing causes of death are only coded in the multiple causes of death codes according to ICD coding rules. The current NHANES 1999-2004 Linked Mortality Public-use Files do not include the 20 entity-axis multiple causes of death codes. The multiple causes of death codes are only available on the [restricted-use versions](#) of the NHANES Linked Mortality Files. However, in an effort to increase the utility of the public datasets, NCHS selected the three most commonly reported conditions found in the multiple causes of death codes (diabetes, hypertension, and hip fracture) and included a flag variable for each condition on the public-use versions of the NHANES Linked Mortality Files. The flag variables were coded a 1 if specific ICD codes were found in any one of the 20 contributing or multiple causes of death fields as follows:

**DIABETES** = ‘1’ if ICD-9 code ‘250’ or ICD-10 codes ‘E10 thru E14’ was coded in entity-axis or record-axis multiple cause of death codes

**HYPERTENS** = ‘1’ if ICD-9 codes ‘401’ or ‘403’ or ICD-10 codes ‘I10’ or ‘I12’ was coded in entity-axis or record-axis multiple cause of death codes

**HIPFRACT** = ‘1’ ICD-9 code ‘E820’ or ICD-10 codes ‘S720 thru S722’ were coded in entity-axis or record-axis multiple cause of death codes

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Tenth Revision 113 Selected Causes of Death

ST: 1 = Subtotal

Limited: Sex: 1 = Males; 2 = Females

Age: 1 = 5 and over; 2 = 10-54; 3 = 28 days and over;

4 = Under 1 year; 5 = 1-4 years; 6 = 1 year and over;

7 = 10 years and over

\*\*\*Cause Subtotals are not identified in this file\*\*\*

113 Recode	S T	Limited Sex Age	Cause Title and ICD-10 Codes Included
001			Salmonella infections (A01-A02)
002			Shigellosis and amebiasis (A03,A06)
003			Certain other intestinal infections (A04,A07-A09)
004	1		Tuberculosis (A16-A19)
005			Respiratory tuberculosis (A16)
006			Other tuberculosis (A17-A19)
007			Whooping cough (A37)
008			Scarlet fever and erysipelas (A38,A46)
009			Meningococcal infection (A39)
010		3	Septicemia (A40-A41)
011			Syphilis (A50-A53)
012			Acute poliomyelitis (A80)
013			Arthropod-borne viral encephalitis (A83-A84,A85.2)
014			Measles (B05)
015			Viral hepatitis (B15-B19)
016			Human immunodeficiency virus (HIV) disease (B20-B24)
017			Malaria (B50-B54)
018			Other and unspecified infectious and parasitic diseases and their sequelae (A00,A05,A20-A36,A42-A44,A48-A49, A54-79,A81-A82,A85.0-A85.1,A85.8, A86-B04,B06-B09,B25-B49,B55-99)
019	1		Malignant neoplasms (C00-C97)
020			Malignant neoplasms of lip, oral cavity and pharynx (C00-C14)
021			Malignant neoplasm of esophagus (C15)
022			Malignant neoplasm of stomach (C16)
023			Malignant neoplasms of colon, rectum and anus (C18-C21)
024			Malignant neoplasms of liver and intrahepatic bile ducts (C22)
025			Malignant neoplasm of pancreas (C25)
026			Malignant neoplasm of larynx (C32)
027			Malignant neoplasms of trachea, bronchus and lung (C33-C34)
028			Malignant melanoma of skin (C43)
029			Malignant neoplasm of breast (C50)
030		2	Malignant neoplasm of cervix uteri (C53)
031		2	Malignant neoplasms of corpus uteri and uterus, part unspecified (C54-C55)
032		2	Malignant neoplasm of ovary (C56)
033		1	Malignant neoplasm of prostate (C61)
034			Malignant neoplasms of kidney and renal pelvis (C64-C65)
035			Malignant neoplasm of bladder (C67)
036			Malignant neoplasms of meninges, brain and other parts of central nervous system (C70-C72)
037		1	Malignant neoplasms of lymphoid, hematopoietic and related tissue (C81-C96)

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113 Recode	S T	Limited Sex Age	Cause Title and ICD-10 Codes Included
038			Hodgkin's disease (C81)
039			Non-Hodgkin's lymphoma (C82-C85)
040			Leukemia (C91-C95)
041			Multiple myeloma and immunoproliferative neoplasms (C88,C90)
042			Other and unspecified malignant neoplasms of lymphoid, hematopoietic and related tissue (C96)
043			All other and unspecified malignant neoplasms (C17,C23-C24,C26-C31,C37-C41, C44-C49,C51-C52,C57-C60,C62-C63,C66,C68-C69,C73-C80,C97)
044			In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00-D48)
045			Anemias (D50-D64)
046		3	Diabetes mellitus (E10-E14)
047			Nutritional deficiencies (E40-E64)
048			Malnutrition (E40-E46)
049			Other nutritional deficiencies (E50-E64)
050			Meningitis (G00,G03)
051			Parkinson's disease (G20-G21)
052			Alzheimer's disease (G30)
053		1	Major cardiovascular diseases (I00-I78)
054		1	Diseases of heart (I00-I09,I11,I13,I20-I51)
055			Acute rheumatic fever and chronic rheumatic heart diseases (I00-I09)
056			Hypertensive heart disease (I11)
057			Hypertensive heart and renal disease (I13)
058		1	Ischemic heart diseases (I20-I25)
059			Acute myocardial infarction (I21-I22)
060			Other acute ischemic heart diseases (I24)
061		1	Other forms of chronic ischemic heart disease (I20,I25)
062			Atherosclerotic cardiovascular disease, so described (I25.0)
063			All other forms of chronic ischemic heart disease (I20,I25.1-I25.9)
064		1	Other heart diseases (I26-I51)
065			Acute and subacute endocarditis (I33)
066			Diseases of pericardium and acute myocarditis (I30-I31,I40)
067			Heart failure (I50)
068			All other forms of heart disease (I26-I28,I34-I38,I42-I49,I51)
069			Essential (primary) hypertension and hypertensive renal disease (I10,I12)
070			Cerebrovascular diseases (I60-I69)
071			Atherosclerosis (I70)
072		1	Other diseases of circulatory system (I71-I78)

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113 Recode	S T	Limited Sex	Age	Cause Title and ICD-10 Codes Included
073				Aortic aneurysm and dissection (I71)
074				Other diseases of arteries, arterioles and capillaries (I72-I78)
075				Other disorders of circulatory system (I80-I99)
076	1			Influenza and pneumonia (J10-J18)
077				Influenza (J10-J11)
078				Pneumonia (J12-J18)
079	1			Other acute lower respiratory infections (J20-J22)
080				Acute bronchitis and bronchiolitis (J20-J21)
081				Unspecified acute lower respiratory infection (J22)
082	1			Chronic lower respiratory diseases (J40-J47)
083				Bronchitis, chronic and unspecified (J40-J42)
084			3	Emphysema (J43)
085				Asthma (J45-J46)
086				Other chronic lower respiratory diseases (J44,J47)
087				Pneumoconioses and chemical effects (J60-J66,J68)
088				Pneumonitis due to solids and liquids (J69)
089				Other diseases of respiratory system (J00-J06,J30-J39,J67,J70-J98)
090				Peptic ulcer (K25-K28)
091				Diseases of appendix (K35-K38)
092				Hernia (K40-K46)
093	1			Chronic liver disease and cirrhosis (K70,K73-K74)
094				Alcoholic liver disease (K70)
095				Other chronic liver disease and cirrhosis (K73-K74)
096				Cholelithiasis and other disorders of gallbladder (K80-K82)
097	1			Nephritis, nephrotic syndrome and nephrosis (N00-N07,N17-N19,N25-N27)
098				Acute and rapidly progressive nephritic and nephrotic syndrome (N00-N01,N04)
099				Chronic glomerulonephritis, nephritis and nephropathy not specified as acute or chronic, and renal sclerosis unspecified (N02-N03,N05-N07,N26)
100				Renal failure (N17-N19)
101				Other disorders of kidney (N25,N27)
102				Infections of kidney (N10-N12,N13.6,N15.1)
103	1			Hyperplasia of prostate (N40)
104		2		Inflammatory diseases of female pelvic organs (N70-N76)
105	1	2	7	Pregnancy, childbirth and the puerperium (O00-O99)
106		2	7	Pregnancy with abortive outcome (O00-O07)
107		2	7	Other complications of pregnancy, childbirth and the puerperium (O10-O99)
108				Certain conditions originating in the perinatal period (P00-P96)
109				Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)



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113 Recode	S T	Limited Sex Age	Cause Title and ICD-10 Codes Included
110			Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)
111			All other diseases (Residual) (D65-E07,E15-E34,E65-F99,G04-G12,G23-G25,G31-H93, K00-K22,K29-K31,K50-K66,K71-K72,K75-K76,K83-M99, N13.0-N13.5,N13.7-N13.9, N14,N15.0,N15.8-N15.9,N20-N23,N28-N39,N41-N64,N80-N98)
112	1		Accidents (unintentional injuries) (V01-X59,Y85-Y86)
113	1		Transport accidents (V01-V99,Y85)
114			Motor vehicle accidents (V02-V04,V09.0,V09.2,V12-V14,V19.0-V19.2, V19.4-V19.6,V20-V79,V80.3-V80.5,V81.0-V81.1,V82.0-V82.1,V83-V86, V87.0-V87.8,V88.0 V88.8,V89.0,V89.2)
115			Other land transport accidents (V01,V05-V06,V09.1,V09.3-V09.9, V10-V11, V15-V18,V19.3,V19.8-V19.9,V80.0-V80.2,V80.6-V80.9,V81.2-V81.9, V82.2-V82.9,V87.9,V88.9,V89.1,V89.3,V89.9)
116			Water, air and space, and other and unspecified transport accidents and their sequelae (V90-V99,Y85)
117	1		Nontransport accidents (W00-X59,Y86)
118			Falls (W00-W19)
119			Accidental discharge of firearms (W32-W34)
120			Accidental drowning and submersion (W65-W74)
121			Accidental exposure to smoke, fire and flames (X00-X09)
122			Accidental poisoning and exposure to noxious substances (X40-X49)
123			Other and unspecified nontransport accidents and their sequelae (W20-W31,W35-W64,W75-W99,X10-X39,X50-X59,Y86)
124	1	1	Intentional self-harm (suicide) (*U03,X60-X84,Y87.0)
125		1	Intentional self-harm (suicide) by discharge of firearms (X72-X74)
126		1	Intentional self-harm (suicide) by other and unspecified means and their sequelae (*U03,X60-X71,X75-X84,Y87.0)
127	1		Assault (homicide) (*U01-*U02,X85-Y09,Y87.1)
128			Assault (homicide) by discharge of firearms (*U01.4,X93-X95)
129			Assault (homicide) by other and unspecified means and their sequelae (*U01.0-*U01.3,*U01.5-*U01.9,*U02,X85-X92,X96-Y09,Y87.1)
130			Legal intervention (Y35,Y89.0)
131	1		Events of undetermined intent (Y10-Y34,Y87.2,Y89.9)
132			Discharge of firearms, undetermined intent (Y22-Y24)
133			Other and unspecified events of undetermined intent and their sequelae (Y10-Y21,Y25-Y34,Y87.2,Y89.9)
134			Operations of war and their sequelae (Y36,Y89.1)
135			Complications of medical and surgical care (Y40-Y84,Y88)