

## Leading Causes of Death, New York State, 2012

Mark J. Sharp, PhD, Larry D. Schoen, MBA, Tong Wang, MA, MS, Thomas A. Melnik, DrPH

An understanding of the relative burden of cause-specific mortality can provide valuable insight into a population's health for purposes of public health planning and policy. Toward this end, this report presents data on the ten leading causes of death in New York State during 2012 by age, sex, race, region, and Medicaid enrollment status. Additionally, the 10 leading causes of death in the years 2002, 2007, and 2012 are compared to illustrate changes in cause-specific mortality in 5-year intervals over a ten year period.

### Methods

New York State Vital Statistics mortality data were used as the data source for this report. Leading causes of death for those aged 1 and older are identified on the basis of underlying cause, which is determined from all causes documented on the death certificate using the Automated Classification of Medical Entities (ACME) software.<sup>1</sup> Using NCHS methodology, which is based on recommendations from the 1951 Public Health Conference on Records and Statistics, causes of death are ranked according to the number of deaths attributed to each in a list of 50 rankable causes. These 50 rankable causes were identified from the NCHS "List of 113 Selected Causes of Death and Enterocolitis due to *Clostridium difficile*" on the basis of being clearly defined, mutually exclusive, and having significant public health importance.<sup>2,3</sup>

### Results

In 2012, the 10 leading causes of death accounted for 75.7% of all deaths that occurred in New York State, with the top two causes, diseases of the heart and malignant neoplasms (cancer), together accounting for 54%. Ranked in order from third through tenth were chronic lower respiratory disease (CLRD), cerebrovascular disease, accidents, pneumonia, Alzheimer's disease, septicemia, kidney disease (nephritis, nephrotic syndrome, & nephrosis), and hypertension. With the exception of kidney disease moving from 8<sup>th</sup> to 9<sup>th</sup> and septicemia moving from 9<sup>th</sup> to 8<sup>th</sup>, the leading causes of death were unchanged from 2011 to 2012 (Table 1).

Table 2 shows considerable differences in the ten leading causes of death by age group for 2012. In all age groups younger than 45-64, accidents are the leading cause of death, accounting for between 20% and 29% of all deaths among persons between 1 and 44 years of age. Suicide and homicide appear among the ten leading causes of death among in the younger age groups, dropping off the list with the 45-64 and older age groups. Also, among those between the ages of 20 and 64, conditions associated with risk taking (AIDS, chronic liver disease, and viral hepatitis), appear among the 10 leading causes. Though malignant neoplasms and heart disease are among the ten leading causes of death across all age groups, they comprise the leading two causes in the 45-64, 65-84, and 85+ age groups. Heart disease, though the leading cause of death over all, is ranked as the top leading cause of death only among those 85 years and older, when causes of death are ranked by age group.

Ranking the causes of death by sex (Table 3) reveals that heart disease and cancer are, respectively, the first and second leading causes of death among both men and women in New York State. Notable differences include accidents ranking higher among men than among women (3<sup>rd</sup> vs. 6<sup>th</sup>), suicide being among the 10 leading causes of death among men (7<sup>th</sup>)

but not among women, and Alzheimer's disease and hypertension ranked among the 10 leading causes for women (7<sup>th</sup> and 9<sup>th</sup>, respectively), but not for men.

Table 4 shows the leading causes of death by race. Heart disease and cancer are the first and second leading causes of death among Whites, Blacks, and Hispanics. Among decedents in the Other racial/ethnic category, cancer is ranked first in leading causes of death, followed by heart disease. Suicide appears among the 10 leading causes of death for Whites, Hispanics, and those in the Other category (10<sup>th</sup>, 10<sup>th</sup>, and 7<sup>th</sup>, respectively), while homicide/legal intervention is among the leading causes of death among Blacks (9<sup>th</sup>). Hypertension is among the ten leading causes of death for all racial/ethnic categories with the exception of Whites.

Consistent with the 10 leading causes of death in New York State over all, comparison of New York City to the Rest of State (Table 5) shows heart disease and cancer as the first and second leading causes. The most notable differences are the presence of AIDS and hypertension among the 10 leading causes in New York City, and kidney disease and septicemia present among the leading causes in Rest of State.

The ten leading causes of death were also compared between those decedents in New York State who were enrolled in Medicaid some time during the year of death and those who were not (Table 6). The four leading causes of death are the same for both decedents enrolled or not enrolled in Medicaid: heart disease, cancer, CLRD, and cerebrovascular disease. Alzheimer's disease ranks higher on the list among Medicaid enrollees than non-enrollees (7<sup>th</sup> vs. 9<sup>th</sup>). Hypertension is ranked among the ten leading causes among Medicaid enrollees (9<sup>th</sup>) but is not ranked among non-enrollees. Suicide is ranked among the ten leading causes of death for non-Medicaid enrollees (10<sup>th</sup>), and is not ranked among enrollees. Differences in causes of mortality between Medicaid and non-Medicaid decedents may be due, in part, to differences in age, sex, or race/ethnicity, but this is not explored in depth in this report.

To examine how cause-specific mortality has changed in 5-year intervals over a 10-year period, the ten leading causes of death in the years 2002, 2007, and 2012 are compared (Table 7). Heart disease remained the leading cause of death from 2002 through 2012, though it accounted for a decreasing percentage of all deaths over this period, from 36.5% in 2002 to 29.6% in 2012. Cancer remained as the second leading cause of death across all years, slightly increasing as a percentage of all deaths over this time period, and septicemia remained as the 8<sup>th</sup> leading cause across the three years compared. Alzheimer's disease moved up in rank, from the 10<sup>th</sup> leading cause of death in 2002 to 9<sup>th</sup> in 2007, and 7<sup>th</sup> in 2012. AIDS, the 9<sup>th</sup> leading cause of death in New York State in 2002, was no longer ranked among the ten leading causes of death by 2007.

## Summary

The ten leading causes of death in New York State are similar to those reported nationally by the National Center for Health Statistics, a notable difference being the absence of diabetes mellitus among the ten leading causes in New York State, though appearing 7<sup>th</sup> on a recent national ranking.<sup>2</sup> The two leading causes of death in New York State for 2012 are heart disease and cancer, together accounting for 54% of all deaths. These two conditions have remained the leading causes of death from 2002, the first year used in this report for comparison to 2012. After these two leading causes, other causes of death ranking among the 10 leading causes each account for much lower percentages of total deaths.

The most pronounced differences in leading causes of death in 2012 are seen in comparison by age group. Accidents, suicide, homicide, and AIDS tend to be higher ranked as causes among younger decedents, with chronic disease (e.g., heart disease, cancer, and hypertension) ranking higher among older decedents.

Comparison of the ten leading causes of death in 2002, 2007, and 2012 consistently shows heart disease to be the leading cause of death over this period, though it accounts for a decreasing percentage of total deaths. The disappearance of AIDS from the ten leading causes of death from 2002 to 2007 is likely associated with the increased

use of antiretroviral medications to treat the condition, while the movement of Alzheimer's disease up in rank may reflect the aging of the population.

While ranking deaths based on the number of deaths attributable to specific causes (among causes eligible to be ranked) provides insight into the relative burden of cause-specific mortality, it should be noted that it does not reflect cause-specific risk of death as would be the case with mortality rates. Furthermore, causes of death of particular public health importance may be subsumed under the broader categories defined using this methodology (e.g., lung cancer falling into the category of malignant neoplasms), and, consequently, would not be ranked on a list of causes of death. Also, causes of death not ranked among the leading 10 may also be of significant public health importance as emergent or for other reasons. Additionally, due to underreporting of Hispanic ethnicity on death certificates, an unknown number of decedents in the White and Black racial categories are Hispanic, which could affect comparison of cause of death ranking across racial categories. Finally, variation in cause of death determination and/or reporting could influence rankings and thus affect comparisons by demographics, geography, or calendar year. Factors such as modifications in the coding of particular causes of death, or increasing awareness of certain conditions leading to a greater likelihood of those conditions being documented on the death certificate, may contribute to such variation.

**Table 1. Ten Leading Causes of Death In New York State, 2011-2012**

Rank	2011			2012		
	Underlying Cause of Death	Deaths	% of All Deaths	Underlying Cause of Death	Deaths	% of All Deaths
1	Diseases of the Heart	43,935	30.1	Diseases of the Heart	43,237	29.6
2	Malignant Neoplasms	35,027	24.0	Malignant Neoplasms	35,598	24.4
3	Chronic Lower Respiratory Disease	6,900	4.7	Chronic Lower Respiratory Disease	6,986	4.8
4	Cerebrovascular Disease	6,151	4.2	Cerebrovascular Disease	6,023	4.1
5	Accidents	5,215	3.6	Accidents	5,416	3.7
6	Pneumonia	4,801	3.3	Pneumonia	4,325	3.0
7	Alzheimer's	2,530	1.7	Alzheimer's	2,623	1.8
8	Nephritis, Nephrotic Syndrome, & Nephrosis Syndrome et al	2,187	1.5	Septicemia	2,308	1.6
9	Septicemia	2,157	1.5	Nephritis, Nephrotic Syndrome, & Nephrosis	2,184	1.5
10	Hypertension	2,006	1.4	Hypertension	1,980	1.4
	Total from 10 Leading Causes	110,909	76.0	Total from 10 Leading Causes	110,680	75.7
	<b>All Causes</b>	145,875	100	<b>All Causes</b>	<b>146,180</b>	100.0

**Table 2. Ten Leading Causes of Death in New York State by Age Group, 2012**

	1-9 Years		10-19 Years		20-24 Years		25-44 Years	
Rank	Underlying Cause of Death	Deaths	Underlying Cause of Death	Deaths	Underlying Cause of Death	Deaths	Underlying Cause of Death	Deaths
1	Accidents	59	Accidents	165	Accidents	341	Accidents	1,245
2	Malignant Neoplasms	55	Suicide	89	Homicide and Legal Intervention	164	Malignant Neoplasms	893
3	Congenital Anomalies	29	Homicide and Legal Intervention	79	Suicide	121	Diseases of the Heart	598
4	Homicide and Legal Intervention	22	Malignant Neoplasms	54	Malignant Neoplasms	59	Suicide	492
5	Diseases of the Heart	15	Congenital Anomalies	24	Diseases of the Heart	28	Homicide and Legal Intervention	285
6	Pneumonia	7	Diseases of the Heart	18	AIDS	13	AIDS	151
7	Chronic Lower Respiratory Disease	6	Chronic Lower Respiratory Disease	16	Congenital Anomalies	11	Chronic Liver Disease & Cirrhosis	119
8	Cerebrovascular Disease	6	Septicemia	5	Chronic Lower Respiratory Disease	9	Cerebrovascular Disease	102
9	Conditions Originating in Perinatal Period	5	Anemias	4	Cerebrovascular Disease	9	Other Disorders of the Circulatory System	58
10	In situ, Benign Neoplasms, & Neoplasms of Unknown or Uncertain Behavior	5	Cerebrovascular Disease	4	Pneumonia	8	Chronic Lower Respiratory Disease	56
	45-64 Years		65-84 Years		85+ Years			
Rank	Underlying Cause of Death	Deaths	Underlying Cause of Death	Deaths	Underlying Cause of Death	Deaths		
1	Malignant Neoplasms	9,248	Malignant Neoplasms	18,656	Diseases of the Heart	20,402		
2	Diseases of the Heart	5,844	Diseases of the Heart	16,332	Malignant Neoplasms	6,632		
3	Accidents	1,543	Chronic Lower Respiratory Disease	3,757	Cerebrovascular Disease	2,686		
4	Chronic Lower Respiratory Disease	834	Cerebrovascular Disease	2,484	Chronic Lower Respiratory Disease	2,308		
5	Chronic Liver Disease & Cirrhosis	827	Pneumonia	1,646	Pneumonia	2,167		
6	Cerebrovascular Disease	732	Accidents	1,125	Alzheimer's	1,820		
7	Suicide	682	Septicemia	1,063	Accidents	937		
8	AIDS	479	Nephritis, Nephrotic Syndrome, & Nephrosis	979	Hypertension	935		
9	Pneumonia	438	Alzheimer's	771	Nephritis, Nephrotic Syndrome, & Nephrosis	902		
10	Viral Hepatitis	368	Hypertension	767	Septicemia	837		

**Table 3. Leading Causes of Death by Sex, New York State, 2012**

<b>Table 3. Leading Causes of Death by Sex, New York State, 2012</b>				
	<b>Males</b>		<b>Females</b>	
<b>Rank</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>
<b>1</b>	Diseases of the Heart	20,821	Diseases of the Heart	22,416
<b>2</b>	Malignant Neoplasms	17,802	Malignant Neoplasms	17,796
<b>3</b>	Accidents	3,533	Chronic Lower Respiratory Disease	3,928
<b>4</b>	Chronic Lower Respiratory Disease	3,058	Cerebrovascular Disease	3,630
<b>5</b>	Cerebrovascular Disease	2,393	Pneumonia	2,249
<b>6</b>	Pneumonia	2,076	Accidents	1,883
<b>7</b>	Suicide	1,266	Alzheimer's	1,875
<b>8</b>	Nephritis, Nephrotic Syndrome, & Nephrosis	1,105	Septicemia	1,237
<b>9</b>	Septicemia	1,071	Hypertension	1,189
<b>10</b>	Chronic Liver Disease & Cirrhosis	984	Nephritis, Nephrotic Syndrome, & Nephrosis	1,079

**Table 4. Leading Causes of Death by Race, New York State, 2012**

<b>Table 4. Leading Causes of Death by Race, New York State, 2012</b>								
	<b>White</b>		<b>Hispanic</b>		<b>Black</b>		<b>Other</b>	
<b>Rank</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>
<b>1</b>	Diseases of the Heart	32,861	Diseases of the Heart	3,139	Diseases of the Heart	5,806	Malignant Neoplasms	1,520
<b>2</b>	Malignant Neoplasms	26,307	Malignant Neoplasms	2,847	Malignant Neoplasms	4,924	Diseases of the Heart	1,431
<b>3</b>	Chronic Lower Respiratory Disease	5,885	Accidents	645	Cerebrovascular Disease	748	Cerebrovascular Disease	277
<b>4</b>	Cerebrovascular Disease	4,561	Pneumonia	472	Pneumonia	647	Pneumonia	194
<b>5</b>	Accidents	4,018	Cerebrovascular Disease	437	Chronic Lower Respiratory Disease	591	Accidents	188
<b>6</b>	Pneumonia	3,012	Chronic Lower Respiratory Disease	365	Accidents	565	Chronic Lower Respiratory Disease	145
<b>7</b>	Alzheimer's	2,154	Chronic Liver Disease & Cirrhosis	262	Hypertension	448	Suicide	106
<b>8</b>	Septicemia	1,791	Alzheimer's	210	AIDS	427	Hypertension	94
<b>9</b>	Nephritis, Nephrotic Syndrome, & Nephrosis	1,698	Hypertension	202	Homicide and Legal Intervention	383	Nephritis, Nephrotic Syndrome, & Nephrosis	64
<b>10</b>	Suicide	1,263	Suicide	180	Nephritis, Nephrotic Syndrome, & Nephrosis	295	Septicemia	61

**Table 5. Leading Causes of Death by Region, New York State, 2012**

<b>Table 5. Leading Causes of Death by Region, New York State, 2012</b>				
	<b>New York City</b>		<b>Rest of State</b>	
<b>Rank</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>
<b>1</b>	Diseases of the Heart	16,518	Diseases of the Heart	26,719
<b>2</b>	Malignant Neoplasms	12,595	Malignant Neoplasms	23,003
<b>3</b>	Pneumonia	2,255	Chronic Lower Respiratory Disease	5,323
<b>4</b>	Chronic Lower Respiratory Disease	1,663	Cerebrovascular Disease	4,370
<b>5</b>	Cerebrovascular Disease	1,653	Accidents	3,816
<b>6</b>	Accidents	1,600	Pneumonia	2,070
<b>7</b>	Hypertension	956	Alzheimer's	1,928
<b>8</b>	Alzheimer's	695	Septicemia	1,821
<b>9</b>	AIDS	583	Nephritis, Nephrotic Syndrome, & Nephrosis	1,721
<b>10</b>	Suicide	514	Suicide	1,139

**Table 6. Ten Leading Causes of Death by Medicaid Status, New York State, 2012**

<b>Table 6. Ten Leading Causes of Death by Medicaid Status, New York State, 2012</b>				
	<b>Non-Medicaid</b>		<b>Medicaid*</b>	
<b>Rank</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>
<b>1</b>	Diseases of the Heart	25,887	Diseases of the Heart	17,350
<b>2</b>	Malignant Neoplasms	24,753	Malignant Neoplasms	10,845
<b>3</b>	Chronic Lower Respiratory Disease	4,211	Chronic Lower Respiratory Disease	2,775
<b>4</b>	Cerebrovascular Disease	3,666	Cerebrovascular Disease	2,357
<b>5</b>	Accidents	3,457	Pneumonia	2,168
<b>6</b>	Pneumonia	2,157	Accidents	1,959
<b>7</b>	Septicemia	1,331	Alzheimer's	1,423
<b>8</b>	Nephritis, Nephrotic Syndrome, & Nephrosis	1,311	Septicemia	977
<b>9</b>	Alzheimer's	1,200	Hypertension	947
<b>10</b>	Suicide	1,196	Nephritis, Nephrotic Syndrome, & Nephrosis	873

\*Determined on the basis of Medicaid enrollment sometime during the year of death.

**Table 7. Leading Causes of Death, New York State, 2002, 2007, & 2012**

<b>Table 7. Leading Causes of Death, New York State, 2002, 2007, &amp; 2012</b>									
	<b>2002</b>			<b>2007</b>			<b>2012</b>		
<b>Rank</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>	<b>% of All Deaths</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>	<b>% of All Deaths</b>	<b>Underlying Cause of Death</b>	<b>Deaths</b>	<b>% of All Deaths</b>
<b>1</b>	Diseases of the Heart	56,638	36.5	Diseases of the Heart	49,398	34.0	Diseases of the Heart	43,237	29.6
<b>2</b>	Malignant Neoplasms	36,489	23.5	Malignant Neoplasms	35,249	24.3	Malignant Neoplasms	35,598	24.4
<b>3</b>	Cerebrovascular Disease	7,517	4.8	Chronic Lower Respiratory Disease	6,479	4.5	Chronic Lower Respiratory Disease	6,986	4.8
<b>4</b>	Chronic Lower Respiratory Disease	6,996	4.5	Cerebrovascular Disease	5,897	4.1	Cerebrovascular Disease	6,023	4.1
<b>5</b>	Pneumonia	5,413	3.5	Accidents	4,927	3.4	Accidents	5,416	3.7
<b>6</b>	Accidents	4,290	2.8	Pneumonia	4,502	3.1	Pneumonia	4,325	3.0
<b>7</b>	Nephritis, Nephrotic Syndrome, & Nephrosis	2,449	1.6	Nephritis, Nephrotic Syndrome, & Nephrosis	2,369	1.6	Alzheimer's	2,623	1.8
<b>8</b>	Septicemia	2,211	1.4	Septicemia	2,271	1.6	Septicemia	2,308	1.6
<b>9</b>	AIDS	1,997	1.3	Alzheimer's	1,978	1.4	Nephritis, Nephrotic Syndrome, & Nephrosis	2,184	1.5
<b>10</b>	Alzheimer's	1,786	1.2	Hypertension	1,648	1.1	Hypertension	1,980	1.4

## References

1. National Center for Health Statistics. NCHS instruction manual, part 2c: ICD–10 ACME decision tables for classifying underlying causes of death. Hyattsville, MD: Public Health Service. Published annually. Available from: [http://www.cdc.gov/nchs/nvss/instruction\\_manuals.htm](http://www.cdc.gov/nchs/nvss/instruction_manuals.htm).
2. National Center for Health Statistics (2009). NCHS Instruction Manual, Part 9: ICD-10 cause-of-death lists for tabulating mortality statistics. Hyattsville, MD. Available from: <http://www.cdc.gov/nchs/data/dvs/Part9InstructionManual2009.pdf>.
3. Heron, M. (2013). Deaths: Leading causes for 2010. *National Vital Statistics Reports*, 62(6). Hyattsville, MD: National Center for Health Statistics.