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Medical Causes of Death in State Prisons, 2001-2004

by Christopher J. Mumola
BJS Policy Analyst

Between 2001 and 2004, State prison authorities nationwide reported a total of 12,129 State prisoner deaths to the Deaths in Custody Reporting Program (DCRP).* Nearly 9 in 10 of these deaths (89%) were attributed to medical conditions. Fewer than 1 in 10 were the result of suicide (6%) and homicide (2%), while alcohol/drug intoxication and accidental injury accounted for another 1% each. A definitive cause could not be determined for 1% of these deaths.

This information was obtained from individual death records collected under the *Death in Custody Reporting Act of 2000* (PL 106-297). These records provide the first national data on personal characteristics of inmates who died in custody and the circumstances of the deaths. Detailed data tables on the topics covered in this report are available as appendix tables on the BJS website at <www.ojp.usdoj.gov/bjs/abstract/mcdsp04.htm>.

Among State prisoner deaths —

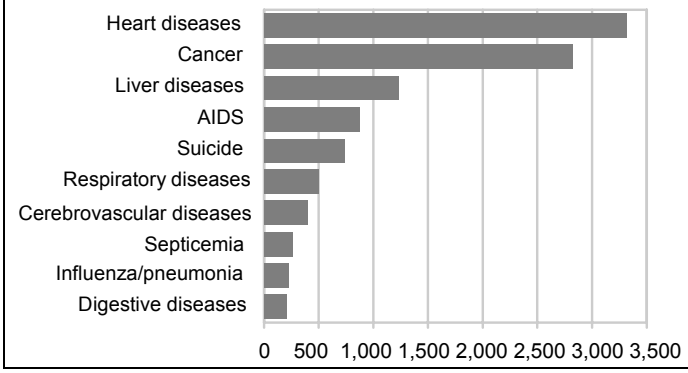
- Half were the result of heart diseases and cancer
- Two-thirds involved inmates age 45 or older
- Two-thirds were the result of medical problems which were present at the time of admission
- 40% occurred in 5 States (Texas, California, Florida, New York, and Pennsylvania)
- Over 90% were evaluated by medical staff for the fatal illness; 93% received medications for the illness.

Comparative mortality rates showed —

- Male State prisoners had a death rate 72% higher than female State prisoners
- State prisoners had a 19% lower death rate than the adult U.S. resident population; among blacks, the mortality rate was 57% lower among prisoners.

*Total number of deaths excludes 258 State prison executions during 2001-2004. See *Capital Punishment, 2005* <http://www.ojp.usdoj.gov/bjs/abstract/cp05.htm>.

10 leading causes of State prisoner deaths, 2001-04



Heart diseases and cancer accounted for half of all State prison deaths

Correctional authorities reported over 60 different fatal medical conditions, but prisoner deaths were heavily concentrated among a small number of diseases. Heart diseases (27%), including heart attacks, and cancer (23%) caused half of all State prisoner deaths from 2001 to 2004. When combined with liver diseases (10%) and AIDS-related causes (7%), two-thirds of all State prisoner deaths were caused by these four medical conditions.

Death rates higher among men than women in 9 of the 10 leading causes of death

While the leading causes of death were the same for both men and women in State prisons, men died at a much higher rate than women. The mortality rate of men for all causes of death (257 deaths per 100,000 inmates) was 72% higher than that of women (149 deaths per 100,000 inmates). For the top three causes of death (heart diseases, cancer, and liver diseases), the male death rate was twice the female rate. Septicemia (for example, streptococcal and staphylococcal infection) was the lone cause of death that was higher among female State prisoners (10 deaths per 100,000) than male State prisoners (5 per 100,000).

Black and Hispanic inmate mortality rates identical; white inmates 67% higher

Between 2001 and 2004 the mortality rates of black and Hispanic State prisoners were identical (206 deaths per 100,000 inmates), while the rate for white inmates (343 per 100,000) was 67% higher. For heart diseases and cancer, the mortality rate of whites was nearly twice that of blacks and Hispanics. Despite higher mortality rates for most leading causes of death, white inmates had a lower AIDS-related death rate (10 per 100,000) than black (26 per 100,000) and Hispanic (18 per 100,000) State prisoners.

Two-thirds of State prison deaths involved inmates age 45 or older

Mortality rates rose dramatically with age. The death rate of inmates age 55 and older (1,973 per 100,000) was over 3 times higher than that of inmates age 45-54 (566 per 100,000), and 11 times higher than those age 35-44 (177 per 100,000). Inmates age 45 or older comprised 14% of State prisoners from 2001 to 2004, but accounted for 67% of all inmate deaths over the same period.

Unlike the leading fatal illnesses, suicide rates were stable across all adult age groups. While suicide was the leading cause of death for inmates under the age of 35, it fell far behind several illnesses as a cause of death for older inmates. Among inmates age 55 or older, there were 46 heart disease deaths and 42 cancer deaths for each suicide.

	Average annual mortality rate, per 100,000 State prisoners, by age			
Cause of death	25-34	35-44	45-54	55 or older
Leading illnesses				
Heart diseases	11	41	144	689
Cancer	5	28	135	635
Liver diseases	2	19	96	126
Respiratory diseases	2	5	18	107
Suicide	16	14	15	15

Note: Respiratory diseases exclude influenza and pneumonia.

Among deaths of elderly State prisoners, 85% were 45 or older when admitted

Among older inmates, the mortality rate of those age 65 or older was particularly high. Though these elderly inmates made up 1% of prisoners, they accounted for 15% of prisoner deaths. The mortality rate of elderly prisoners was nearly 3 times higher than that of inmates age 55-64. The death rate for aortic aneurysm was 6 times higher among elderly inmates than those age 55-64; for respiratory diseases, the rate was 5 times higher.

Deaths of elderly inmates typically did not involve offenders who had been incarcerated as young adults on lengthy (or "life") sentences. A majority (59%) of the elderly State prisoners who died during this period were 55 or older when admitted, and 85% were at least 45 years old at time of admission.

Death from illness increased with time served in prison

The death rate from illness rose sharply for prisoners serving lengthy terms. For inmates who had served at least 10 years in State prison, the mortality rate due to illness (503 deaths per 100,000 inmates) was triple that of inmates who had served less than 5 years in prison (162 per 100,000). Long-serving inmates showed similar increases in death rates for many of the leading fatal illnesses. AIDS-related causes had the smallest increase in mortality for long-serving inmates.

	Average annual mortality rate per 100,000 State prisoners, by time served		
Cause of death	Less than 60 mos.	60-119 mos.	120 mos. or longer
Heart diseases	47	84	160
Cancer	38	70	151
Liver diseases	20	31	48
AIDS-related	16	21	24
Respiratory diseases	7	13	38

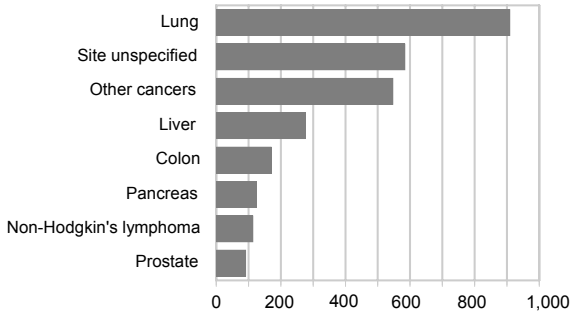
Lung cancer accounted for 1 in 3 cancer deaths in State prison, more than the next 6 leading cancer sites combined

A specific cancer site was named in 79% of the cancer deaths. Lung cancer alone accounted for 8% of all State prisoner deaths. More State prisoner deaths were caused by lung cancer (910) than the next 6 leading sites of cancer deaths (864) combined (i.e., liver, colon, pancreas, non-Hodgkins lymphoma, prostate, and leukemia).

Men in State prison died from cancer at twice the rate of women (60 deaths per 100,000 inmates compared to 27 per 100,000). This gender difference in cancer death rates was particularly evident for the most common fatal cancer sites. Men died from lung, liver and colon cancer at a rate nearly triple that of women. Regardless of gender, lung cancer caused twice as many deaths as any other site.

Deaths due to gender-specific cancer sites varied. Breast, ovarian, cervical and uterine cancer accounted for 24% of female cancer deaths. By comparison, prostate and testicular cancer accounted for 4% of male cancer deaths. Breast cancer was also the second most common site of female cancer deaths.

Cancer deaths in State prisons, 2001-04



Time served in prison played little role in the death rate due to communicable diseases

Death rates from communicable diseases (other than AIDS) were much lower than those for the leading fatal illnesses, and did not show the same increases among long-serving inmates. There were no deaths in State prisons nationwide from syphilis, meningitis, or meningococcal infection. The death rate from tuberculosis was lower than 0.5 per 100,000 for all inmates, regardless of time served. The death rate for viral hepatitis (all types) was 1 per 100,000 for inmates who served less than 5 years and rose to 3 per 100,000 for inmates who served longer than 5 years.

Two-thirds of illness deaths resulted from pre-existing conditions — including 94% of AIDS deaths

In 68% of the illness deaths, State prison authorities reported that the fatal medical condition was present at the time of admission. AIDS (94%)* and liver diseases (88%) were most commonly present at the time of admission. Cancer was present at admission in 54% of all cancer fatalities. Among leading causes of death, influenza or pneumonia was least likely to be present at time of admission (39%).

In 93% of deaths from illness, medical staff had provided medications for the fatal condition

Among illness fatalities, 94% were evaluated by medical staff prior to death. Diagnostic tests, such as an x-ray, MRI, or blood test, were performed in 89% of these cases. For 93% of illness fatalities, medications had been administered for the fatal medical condition.

Surgery had been performed on 1 in 5 inmates who died from illness. Among deaths from leading causes, prisoners who died from septicemia were most likely to have received surgical treatments (35%), followed by those who had cancer and digestive diseases (31% each). Fatalities from AIDS (11%) and heart diseases (15%) were least likely to have had surgery.

*It is not known how many of the remaining 6% of AIDS-related deaths involved inmates whose HIV-positive status was undetected at time of admission and how many contracted HIV during their prison term.

Over 40% of prisoner deaths took place in 5 States; mortality rates varied widely across States

Five States each recorded over 500 prisoner deaths from 2001 to 2004. Texas led all States with 1,582 deaths, followed by California (1,306), Florida (813), New York (712), and Pennsylvania (558). These five States accounted for 41% of all State prisoner deaths during the 4-year period.

Illness mortality rates varied widely across States. Five States had more than 300 illness deaths per 100,000 inmates, while 10 States had fewer than 150 illness deaths per 100,000 inmates.

Illness mortality rate per 100,000 State inmates, 2001-2004

Five highest		Five lowest	
Louisiana	388	Vermont	108
Tennessee	344	Alaska	111
Pennsylvania	328	Iowa	111
West Virginia	326	North Dakota	116
Kentucky	323	Utah	116

Specific medical causes of death also varied widely across States:

- Heart disease death rates varied from 10 per 100,000 in New Hampshire to 189 per 100,000 in West Virginia
- Cancer death rates ranged from 0 in Vermont to 103 per 100,000 in Louisiana
- Liver disease death rates varied from 0 in Rhode Island to 58 per 100,000 in Colorado.

Mortality rate in State prisons nearly 20% lower than in U.S. resident population

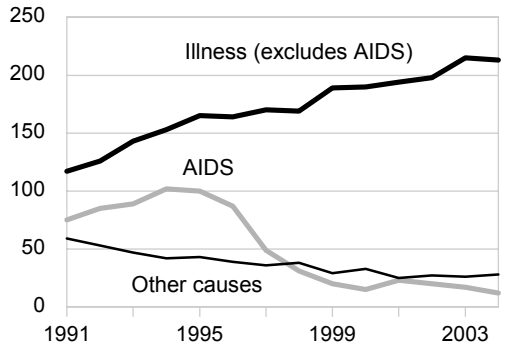
From 2001 to 2004, 99% of State prisoners were between ages 15 and 64. When compared to mortality rates for U.S. residents in this age group, the overall mortality rate of State prisoners was 19% lower during this period. White and Hispanic prisoners had death rates slightly above their counterparts in the resident population, while blacks were 57% less likely to die in State prisons. For all age groups under the age of 45, the death rate in State prisons was lower than in the U.S. resident population. For the 55 to 64 age group, prison death rates were 56% higher.

Since 1991, AIDS-related death rate dropped 84%; death rate for all other illnesses rose 82%

Prior to the enactment of the *Death in Custody Reporting Act of 2000*, the only national statistics on prisoner deaths from specific illnesses were annual counts of AIDS-related deaths begun in 1991. Between 1991 and 2004, sharply different trends emerged for the major causes of State prison deaths. While the death rate for AIDS dropped by over 80%, the death rate from all other illnesses rose by 82%. Over the same period, the suicide rate was nearly stable and homicide rates dropped by one-half.*

*See *Suicide and Homicide in State Prisons and Local Jails* <http://www.ojp.usdoj.gov/bjs/abstract/shsplj.htm>.

Mortality rate per 100,000 State prisoners, 1991-2004



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Methodology

In 2001 BJS began collecting individual records of all State prisoner deaths pursuant to PL 106-297. Prior to the collection of these records, BJS collected aggregate death counts in the National Prisoners Statistics (NPS) program. Since 1978 NPS counts have used a single category of "illness/natural causes," with AIDS-related deaths collected as a separate count from all other illnesses starting in 1991.

Records collected under the Deaths in Custody Reporting Program (DCRP) were submitted by correctional authorities in all 50 States for each year from 2001 to 2004. For each death marked as illness/natural cause, respondents were directed to specify a medical cause of death based on an autopsy review, if available.

These text entries were later coded by clinical data specialists according to the World Health Organization's *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* (ICD-10). BJS analysis of causes of death used categories of disease published by the National Center for Health Statistics (NCHS). See the NCHS website for mortality data for the U.S. resident population at <http://www.cdc.gov/nchs/deaths.htm>.

In compiling their DCRP records, States are instructed to include deaths of any inmates held in private prisons, medical facilities, substance abuse or mental health treatment centers, or any deaths at a work release site. Deaths of State prisoners held in local jails are excluded, but covered by a separate collection. Also excluded are executions and escaped inmates.

This report in portable document format and in ASCII and its related statistical data and tables are available at the BJS World Wide Web Internet site: <http://www.ojp.usdoj.gov/bjs/abstract/mcdsp04.htm>.

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The Bureau of Justice Statistics is the statistical agency of the U.S. Department of Justice. Jeffrey L. Sedgwick is director.

This Data Brief was written by Christopher J. Mumola, under the supervision of Allen J. Beck. Margaret E. Noonan verified the report.

Data collection and processing of 2001-2002 death records were carried out by Lara E. Allen; data collection and processing of 2003-2004 death records were carried out by Greta B. Clark and Pamela Butler, under the supervision of Charlene Sebold, Governments Division, Census Bureau, U.S. Department of Commerce. Greg Wolfe, of GW Services, converted all death causes from text to ICD-10 codes.

Carolyn C. Williams and Tina Dorsey of BJS produced and edited the report and Jayne Robinson prepared the report for final printing, under the supervision of Doris J. James.

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Appendix table 1. Causes of death in State prisons, with average annual mortality rate per 100,000 inmates, 2001-2004

Cause of death	Number of State prisoner deaths 2001	2002	2003	2004	Percent, 2001-04	Average annual mortality rate, per 100,000 inmates, 2001-04
All causes	2,878	2,946	3,167	3,138	100.0%	250
Heart diseases	788	828	836	862	27.3%	68
Cancer	655	660	786	719	23.3	58
Liver diseases	320	301	315	294	10.1	25
Chronic liver disease/cirrhosis	89	88	78	84	2.8	7
Other liver diseases	231	213	237	210	7.3	18
AIDS	270	245	210	145	7.2	18
Suicide	169	168	200	200	6.1	15
Respiratory diseases[a]	97	125	130	143	4.1	10
Chronic lower respiratory diseases	31	35	39	57	1.3	3
Lung diseases due to external agents	2	2	2	2	0.1	0
Other/unspecified respiratory diseases	64	88	89	84	2.7	7
Cerebrovascular diseases	93	90	122	89	3.2	8
Septicemia	50	64	67	81	2.2	5
Influenza/pneumonia	47	47	74	57	1.9	5
Digestive diseases[b]	40	61	56	49	1.7	4
Disorders of the gall bladder, biliary tract & pancreas	7	5	8	5	0.2	1
Diseases of the esophagus, stomach and duodenum	4	7	7	4	0.2	0
Diseases of the peritoneum	5	3	4	5	0.1	0
Noninfective enteritis and colitis	1	1	2	1	0.0	0
Other diseases of the intestines	4	8	7	6	0.2	1
Other/unspecified digestive diseases	19	37	28	28	0.9	2
Kidney diseases	39	47	57	57	1.6	4
Nephritis, nephrosis, nephrotic syndrome	39	44	55	55	1.6	4
Renal tubulo-interstitial diseases	0	1	1	1	0.0	0
Other disorders of the kidney and ureter	0	2	1	1	0.0	0
Homicide	39	48	50	51	1.6	4
Alcohol/drug intoxication	36	37	23	23	1.0	2
Accidental injury	23	31	26	37	1.0	2
Viral hepatitis (all types)	9	16	17	40	0.7	2
Aortic aneurysm	18	15	17	28	0.6	2
Diabetes mellitus	21	11	11	16	0.5	1
Other disorders of the nervous system	12	4	8	10	0.3	1
Anemias	5	8	8	5	0.2	1
Benign neoplasms, in situ neoplasms	6	9	4	7	0.2	1
Unspecified illness deaths —	74	59	71	110	2.6	6
Illness — specific medical cause unknown	64	48	56	101	2.2	6
Illness — multiple medical causes, unresolved[c]	10	11	15	9	0.4	1
All other illnesses	29	34	54	78	1.6	4
Deaths without a known cause —	38	38	25	37	1.1	3
Unknown cause of death	33	36	16	30	0.9	2
Multiple causes, unresolved[d]	5	2	9	7	0.2	0

Note: Detail may not add to total due to rounding. The 20 leading causes of death listed in the table account for 94.7% of all State prison deaths during 2001-2004. Executions are not included; for data on executions, see *Capital Punishment, 2005*, <http://www.ojp.usdoj.gov/bjs/abstract/cp05.htm>.

[a]Excludes influenza and pneumonia.

[b]Excludes liver diseases.

[c]In all such cases, none of the causes of death matched the 63 medical causes of death cited in any record for which a single illness was identified as the cause of death.

[d]Such cases were checked "other causes of death," with a text description of events, but the information was insufficient to classify the death to a single cause.

Appendix table 2. Profile of cancer deaths in State prisons, 2001-2004

Site of cancer	Number of State prison inmate deaths, 2001-04											
		Gender		Race/Hispanic origin			Age					
	All inmates	Male	Female	White	Black	Hispanic	Under 18	18-24	25-34	35-44	45-54	55 or older
All causes of death	12,129	11,645	482	5,898	4,714	1,285	7	292	1,041	2,616	3,758	4,402
Cancer, all sites	2,820	2,731	88	1,461	843	218	0	15	75	415	894	1,418
Lung[a]	910	885	25	505	351	44	0	2	4	114	279	511
Liver[b]	276	273	3	111	96	65	0	1	1	22	128	124
Colon[c]	171	166	5	85	60	21	0	1	2	30	59	79
Pancreas	124	123	1	55	52	13	0	0	2	18	37	67
Non-Hodgkin's lymphoma	114	112	2	65	34	14	0	2	7	24	43	38
Prostate	92	92	0	45	38	9	0	0	0	0	9	83
Leukemia	87	84	3	42	36	8	0	2	11	26	21	27
Lip, oral cavity, and pharynx	68	67	1	39	24	3	0	0	0	7	26	35
Stomach	61	59	2	21	35	5	0	1	2	12	19	26
Kidney and renal pelvis	61	60	1	25	33	3	0	0	2	11	25	23
Esophagus	51	50	1	35	12	3	0	0	0	4	12	35
Other lymphoid, hematopoietic and related tissue[d]	44	43	1	17	23	3	0	1	1	7	14	21
Bladder	32	31	1	24	7	0	0	0	0	1	7	24
Skin	29	28	1	24	3	1	0	0	2	11	8	8
Larynx	29	28	1	16	12	1	0	0	0	0	8	21
Breast	17	4	13	4	12	0	0	0	2	6	6	3
Testicles	14	14	0	5	5	4	0	1	5	7	1	0
Ovary	5	0	4	4	0	1	0	0	0	2	2	1
Cervix uteri	3	0	3	1	2	0	0	0	1	1	1	0
Meninges, brain, and central nervous system	3	0	3	1	2	0	0	0	1	1	1	0
Corpus uteri and uterus, part unspecificed	1	0	1	0	1	0	0	0	0	0	0	1
Hodgkin's disease	0	0	0	0	0	0	0	0	0	0	0	0
All other types of cancer	72	71	1	31	27	10	0	2	15	20	14	21
Cancer, type unspecified	585	568	17	323	211	37	0	3	22	99	180	279

Note: Detail does not sum to total because multiple sites of cancer were identified for some cases.

[a]Includes the trachea and bronchus.

[b]Includes the bile ducts.

[c]Includes the rectum and anus.

[d]Excludes Hodgkin's disease, non-Hodgkin's lymphoma, and leukemia.

Appendix table 3. Average annual mortality rate, per 100,000 State prison inmates, from leading causes of death, by selected characteristics, 2001-2004

	Average annual mortality rate, per 100,000 State prison inmates, 2001-04											
		Gender		Race/Hispanic origin			Age					
Cause of death	All inmates	Male	Female	White	Black	Hispanic	Under 18	18-24	25-34	35-44	45-54	55 or older
All causes	250	257	149	343	206	206	107	34	64	177	566	1,973
Heart diseases	68	71	35	102	56	38	0	4	11	41	144	689
Cancer	58	60	27	85	47	39	0	2	5	28	135	635
Liver diseases	25	26	14	37	14	40	0	0	2	19	96	126
AIDS	18	18	12	10	26	18	0	1	8	28	40	25
Suicide	15	15	12	24	8	17	46	14	16	14	15	15
Respiratory diseases[a]	10	10	7	15	9	5	0	2	2	5	18	107
Cerebrovascular diseases	8	8	7	10	8	6	0	1	2	4	21	70
Septicemia	5	5	10	7	5	4	0	0	1	3	15	46
Influenza/pneumonia	5	5	4	7	3	4	0	0	1	3	9	43
Digestive diseases[b]	4	4	2	5	4	6	0	0	1	3	11	32
Number of deaths, 2001-04	12,129	11,645	482	5,898	4,714	1,285	7	292	1,041	2,616	3,758	4,402

Note: The 10 leading causes of death accounted for 90% of all deaths in State prisons during 2001-2004 with a reported cause. Records on 2 deaths did not indicate the gender of the deceased and 13 records were missing the age of the deceased.

[a]Excludes influenza and pneumonia.

[b]Excludes liver diseases.

Appendix table 4. Average annual mortality rate of State prisoners age 55 or older, by cause of death, 2001-2004

	Average annual mortality rate, per 100,000 State inmates, 2001-04	
Cause of death	Age 55-64	Age 65 or older
All causes	1,481	3,758
Illness/natural cause*	1,434	3,705
Heart diseases	457	1,528
Cancer	522	1,052
Respiratory diseases	57	288
Cerebrovascular diseases	46	153
Influenza/pneumonia	25	111
Liver diseases	132	103
Septicemia	33	88
Digestive diseases	22	70
Aortic aneurysm	10	62
Kidney diseases	24	58
Accidental injury	5	10
Suicide	17	10
Homicide	8	4
Other	1	4
Intoxication	4	2
Unknown	12	23
Average annual custody population	43,790	12,133
Number of deaths, 2001-04	2,576	1,826

*Includes the 10 leading causes of illness deaths among inmates age 65 or older.

Appendix table 5. Time served since admission for deaths in State prison, age 65 or older, 2001-2004

Time served since admission	Percent of State prisoner deaths, age 65 or older, 2001-04
Less than 1 month	0.7%
1-5 months	4.0
6-11 months	4.4
12-23 months	8.9
24-59 months	17.9
60-119 months	23.1
120-239 months	26.0
240 months or more	15.0

Appendix table 6. Average annual mortality rate for leading causes of illness deaths in State prison, by time served, 2001-2004

Cause of death	Average annual mortality rate, per 100,000 inmates, 2001-04					
		Time served after admission (in months)				
	All inmates	Less than 12	12-23	24-59	60-119	120 or more
All illnesses	223	140	164	184	264	503
Heart diseases	69	44	47	52	84	160
Cancer	58	30	41	46	70	151
Liver diseases	25	14	21	25	31	48
AIDS	18	16	16	16	21	24
Respiratory diseases[a]	10	7	6	8	13	38
Cerebrovascular diseases	8	5	6	6	11	16
Septicemia	5	4	3	5	5	12
Influenza/pneumonia	5	3	4	4	5	10
Digestive diseases[b]	4	3	3	4	4	9
Kidney diseases	4	2	3	3	5	11
Number of illness deaths, 2001-04[c]	10,830	1,908	1,362	2,317	2,106	3,038

Note: Estimates of the number of State prisoners in each category of time served are drawn from the 2004 Survey of Inmates in State Correctional Facilities.

[a]Excludes influenza and pneumonia.

[b]Excludes liver diseases.

[c]Total includes 29 illness deaths in 2001, 23 illness deaths in 2002, 2 illness deaths in 2003, and 45 illness deaths in 2004 missing information on time served.

Appendix table 7. Average annual mortality rate for selected communicable diseases in State prisons, by time served, 2001-2004

Selected communicable diseases	Average annual mortality rate, per 100,000 inmates, 2001-04, by time served (in months)		
	0-11	12-59	60 or more
Viral hepatitis	1	1	3
Tuberculosis	<0.5	<0.5	<0.5
Meningitis	0	0	0
Meningococcal infection	0	0	0
Syphilis	0	0	0

Note: Estimates of the number of State prisoners in each category of time served were drawn from the 2004 Survey of Inmates in State Correctional Facilities.

Appendix table 8. Leading causes of illness deaths in State prisons, by pre-existing status at time of admission and medical treatment provided, 2001-2004

Cause of death	Pre-existing condition at time of admission	Medical treatment provided for the fatal medical condition					
		Evaluated by physician/ medical staff	Diagnostic test (e.g., x-rays, MRI, blood test,)	Medications	Treatments other than medication	Surgery	Housed in a special medical unit
All illnesses	68.3%	94.1%	89.3%	93.3%	70.7%	20.1%	68.2%
Heart diseases	68.4%	90.1%	82.7%	86.8%	57.9%	14.6%	48.3
Cancer	54.4	96.5	94.5	97.8	82.6	30.7	84.7
Liver diseases	88.5	96.7	92.4	97.1	70.7	15.5	74.3
AIDS	93.5	96.2	93.3	96.4	72.8	11.5	72.1
Respiratory diseases[a]	71.9	95.9	63.9	96.7	73.2	12.2	70.8
Cerebrovascular diseases	52.4	89.2	80.9	85.7	64.0	22.8	61.8
Septicemia	68.7	95.5	90.3	95.6	81.4	35.4	82.4
Influenza/pneumonia	38.6	96.2	90.5	96.0	76.4	19.0	70.6
Digestive diseases[b]	67.7	95.6	87.5	93.3	75.3	31.5	71.9
Kidney diseases	77.4	97.1	95.9	97.5	83.8	23.5	77.4

Note: Percentages are based on cases in which provision of specific medical treatments was known.

[a]Excludes influenza and pneumonia.

[b]Excludes liver diseases.

Appendix table 9. Average annual mortality rate of State prison inmates, per 100,000 inmates, from leading causes of illness deaths, by State, 2001-2004

Region and jurisdiction	Total number of deaths, 2001-04	Average annual mortality rate, per 100,000 State prison inmates, 2001-04					
		All illnesses	Heart diseases	Cancer	Liver diseases	AIDS	Respiratory diseases[a]
U.S. total[b]	12,120	223	68	58	25	18	10
Northeast	1,832	237	74	53	29	26	10
Connecticut[c]	130	141	47	15	32		9
Maine	19	233	81	65	41	15	0
Massachusetts	104	226	86	64	20	10	0
New Hampshire	23	163	10	92	30	10	10
New Jersey	248	201	67	37	12	39	10
New York	712	240	63	59	30	45	10
Pennsylvania	558	328	115	70	41	...	15
Rhode Island[c]	26	121	49	36	0	14	0
Vermont[c]	12	108	36	0	36	36	0
Midwest	2,195	203	79	53	19	8	10
Illinois	337	166	63	42	14	19	3
Indiana	209	219	70	52	21	7	12
Iowa	48	111	30	51	9	0	9
Kansas	105	258	84	65	22	3	6
Michigan	492	231	94	68	24	8	10
Minnesota	47	143	44	41	29	0	4
Missouri	265	207	87	47	19	7	9
Nebraska	29	156	44	37	38	6	6
North Dakota	6	116	71	20	25	0	0
Ohio	446	232	99	60	15	7	18
South Dakota	31	184	75	16	42	0	25
Wisconsin	180	180	74	49	17	4	11
South	5,710	251	75	67	25	25	12
Alabama	329	291	91	71	32	25	13
Arkansas	146	268	92	79	17	21	4
Delaware[c]	63	178	29	33	26	43	11
Florida	813	249	59	78	17	41	8
Georgia	415	201	68	57	14	24	10
Kentucky	164	323	119	94	22	23	14
Louisiana	314	388	117	103	42	53	6
Maryland	287	246	65	63	26	55	13
Mississippi	180	273	80	77	13	13	3
North Carolina	297	199	61	56	19	22	6
Oklahoma	239	234	75	60	29	11	16
South Carolina	229	239	108	39	18	15	13
Tennessee	280	344	116	75	51	22	20
Texas	1,582	241	65	63	30	14	14
Virginia	319	240	73	65	31	24	12
West Virginia	53	326	189	82	7	0	14
West	2,383	181	43	50	29	9	8
Alaska[c]	34	111	53	17	6	0	6
Arizona	289	225	63	67	41	8	8
California	1,306	170	34	49	26	12	8
Colorado	180	202	39	34	58	...	17
Hawaii[c]	36	124	33	19	38	5	5
Idaho	50	182	41	73	23	0	5
Montana	35	272	56	83	47	0	10
Nevada	107	227	75	65	12	12	5
New Mexico	53	181	53	53	25	0	17
Oregon	116	217	82	61	29	2	5
Utah	35	116	35	23	6	0	0
Washington	130	175	61	36	25	9	5
Wyoming	12	142	33	48	14	16	0

Note: All mortality rates were calculated based on custody populations for June 30 in each year.
... Data not reported due to State law prohibiting the release of named records related to AIDS-related deaths. For information on AIDS deaths in these States, see *HIV in Prisons, 2004*, <http://www.ojp.usdoj.gov/bjs/abstract/hivp04.htm>.

[a]Excludes influenza and pneumonia.

[b]Excludes nine total prisoner deaths reported by the District of Columbia in 2001. Two of these deaths were from heart disease; liver disease, AIDS, respiratory disease, and digestive disease each accounted for one death. The District of Columbia transferred all prisoner custody operations to the Federal Bureau of Prisons during 2001.

[c]Prisons and jails form one integrated system.

Appendix table 10. Average annual mortality rate from leading causes of illness deaths, per 100,000 State prison inmates, among the States, 2001-2004

	Average annual mortality rate, per 100,000 State prison inmates, 2001-04									
	All illnesses		Heart diseases		Cancer		Liver diseases		Respiratory diseases*	
Five highest										
	Louisiana	388	West Virginia	189	Louisiana	103	Colorado	58	South Dakota	25
	Tennessee	344	Kentucky	119	Kentucky	94	Tennessee	51	Tennessee	20
	Pennsylvania	328	Louisiana	117	New Hampshire	92	Montana	47	Ohio	18
	West Virginia	326	Tennessee	116	Montana	83	Louisiana	42	Colorado	17
	Kentucky	323	Pennsylvania	115	West Virginia	82	South Dakota	42	New Mexico	17
Five lowest										
	Vermont	108	New Hampshire	10	Vermont	0	Rhode Island	0	Seven Sates	0
	Alaska	111	Delaware	29	Connecticut	15	Alaska	6	(Maine, Massachusetts,	
	Iowa	111	Iowa	30	South Dakota	16	Utah	6	North Dakota, Rhode	
	North Dakota	116	Hawaii	33	Alaska	17	West Virginia	7	Island, Utah, Vermont,	
	Utah	116	Wyoming	33	Hawaii	19	Iowa	9	Wyoming)	

Note: AIDS death rates are not listed because all States did not report AIDS deaths. For information on AIDS deaths by State, see *HIV in Prisons, 2004*, <http://www.ojp.usdoj.gov/bjs/abstract/hivp04.htm>.
*Excludes influenza and pneumonia.

Appendix table 11. Average annual mortality rate, per 100,000 residents, of State prisoners and U.S. residents, by selected characteristics

	Average annual mortality rate, per 100,000 U.S. residents, age 15-64, 2001-03	Average annual mortality rate, per 100,000 State prisoners, 2001-04
All U.S. residents		
All causes	308	250
All, excluding transportation deaths	289	~
Gender		
Male	387	257
Female	231	149
Race/Hispanic origin		
White, non-Hispanic	312	343
Black, non-Hispanic	484	206
Hispanic	180	206
Age		
15-24	81	34
25-34	105	64
35-44	203	179
45-54	430	560
55-64	952	1,481

Note: During the period 2001-2004, inmates age 15 to 64 made up 99% of the State prison population. Mortality data on U.S. residents are from the National Center for Health Statistics at the Centers for Disease Control and Prevention. See "Deaths: Final Data for 2003," *National Vital Statistics Reports,* Volume 54, Number 13, April 19, 2006, <http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_13.pdf>.
~ Not applicable.

Appendix table 12. Causes of death in State prisons, with International Classification of Disease, 10th revision (ICD-10) codes and average annual mortality rate per 100,000 inmates, 2001-2004

Cause of death (ICD-10 code range)	Number of deaths in State prisons 2001-04	Average annual mortality rate, per 100,000 inmates 2001-04
All causes	12,129	250
Heart diseases (I00-I09, I11, I13, I20, or I51)	3,314	68
Cancer (C00-C97)	2,820	58
Other liver diseases, excluding cirrhosis (K71-K72, K75-K77)	891	18
AIDS[a]	870	18
Suicide[a]	737	15
Cerebrovascular diseases (I60-I69)	394	8
Chronic liver disease (K70, K73-K74)	339	7
Other respiratory diseases (J00-J06, J30-J39, J67, J70-J98)	325	7
Illness — specific medical cause unknown (R00-R99)	269	6
Septicemia (A40-A41)	262	5
Influenza/pneumonia (J10-J18)	225	5
Nephritis, nephrosis, nephrotic syndrome (N00-N07, N17-N19, N25-N27)	193	4
Homicide[a]	188	4
Chronic lower respiratory diseases (J40-J47)	162	3
Alcohol/drug intoxication [a]	119	2
Accidental injury[a]	117	2
Unknown cause of death[b]	115	2
Other diseases of the digestive system (K90-K93)	112	2
Viral hepatitis, all types (B15-B19)	82	2
Aortic aneurysm (I71-I78)	78	2
Diabetes mellitus (E10-E14)	59	1
Illness — multiple medical causes, unresolved[c]	45	1
Other disorders of the nervous system (G90-G99)	34	1
Anemias (D50-D64)	26	1
Benign neoplasms, in-situ neoplasms (D00-D48)	26	1
Disorders of the gall bladder, biliary tract & pancreas (K80-K87)	25	1
Other diseases of the intestines (K55-K63)	25	1
Other causes/manners of death not listed[a]	23	<0.5
Diseases of the esophagus, stomach & duodenum (K20-K31)	22	<0.5
Atherosclerosis (I70)	17	<0.5
Mycoses (B35-B49)	17	<0.5
Diseases of the peritoneum (K65-K67)	17	<0.5
Metabolic disorders (E70-E90)	17	<0.5
Inflammatory diseases of the central nervous system (G00-G09)	17	<0.5
Episodic and paroxysmal disorders (G40-G47)	11	<0.5
Hypertension, hypertensive renal failure (I10-I12)	9	<0.5
Diseases of the veins, lymphatic vessels, lymph nodes (I80-I89)	9	<0.5
Lung diseases due to external agents (J60-J70)	8	<0.5
Systemic atrophies, primarily affecting the central nervous system (G10-G13)	8	<0.5
Congenital malformations, deformations (Q00-Q99)	8	<0.5
Systemic connective tissue disorders (M30-M36)	8	<0.5
Coagulation defects, purpura, other haemorrhagic conditions (D65-D69)	8	<0.5
Other/unspecified infectious diseases (B99)	7	<0.5
Tuberculosis (A16-A19)	6	<0.5
Noninfective enteritis and colitis (K50-K52)	5	<0.5
Protozoal diseases (B50-B64)	5	<0.5
Other bacterial diseases (A30-A39, A42-A49)	4	<0.5
Other disorders of the kidney and ureter (N28-N29)	4	<0.5
Alzheimer's disease (G30)	4	<0.5
Sequelae of infectious & parasitic diseases (B90-B94)	4	<0.5
Other diseases of the blood, blood-forming organs (D70-D77)	3	<0.5
Renal tubulo-interstitial diseases (N10-N16)	3	<0.5
Other disorders of the skin and subcutaneous tissue (L80-L99)	3	<0.5
Certain disorders involving the immune mechanism (D80-D89)	3	<0.5
Organic mental disorders (F00-F09)	3	<0.5
Hypotension & other/unspecified circulatory disorders (I95-I99)	3	<0.5
Obesity and other hyperalimentation (E65-E68)	2	<0.5
Demyelinating diseases of the central nervous system, multiple sclerosis (G35-G37)	2	<0.5
Other disorders of glucose regulation & pancreatic internal secretion (E15-E16)	2	<0.5
Mental & behavioral disorders due to psychoactive substance use (F10-F19)	2	<0.5

Appendix table 12. continued

Cause of death (ICD-10 code range)	Number of deaths in State prisons 2001-04	Average annual mortality rate, per 100,000 inmates 2001-04
All causes	12,129	250
Parkinson's disease (G20-G21)	2	<0.5
Unspecified mental disorders (F99)	2	<0.5
Infections of the skin and subcutaneous tissue (L00-L08)	1	<0.5
Osteopathies and chondropathies (M80-M94)	1	<0.5
Arthritis — inflammatory polyarthropathies (M05-M14)	1	<0.5
Viral infections of the central nervous system (A80-A89)	1	<0.5
Helminthiases (B65-B83)	1	<0.5
Other disorders of the endocrine glands (E20-E35)	1	<0.5
Diseases of the appendix (K35-K38)	1	<0.5
Polyneuropathies & other disorders of the peripheral nervous system (G60-G64)	1	<0.5
Muscle disorders (M60-M63)	1	<0.5

Note: For the entire 4-year period, 66% of the illness death records specified a single medical cause of death. The medical causes listed in these cases were ranked by frequency for both male and female inmates. The medical cause of death for the remaining illness deaths was selected by choosing the most common cause listed, within gender.

[a]ICD-10 codes were only used for deaths attributed to “illness/natural causes.” AIDS was a separate category under "cause of death." Any “illness/natural causes” which listed AIDS or HIV among the causes of death were recoded to “AIDS-related” deaths.

[b]Cases were checked "other causes of death" with a text description of events, but the information was insufficient to classify the case to any single cause.

[c]In all such cases, none of the causes of death matched the 63 medical causes of death cited in the single-cause cases of illness deaths.