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Timeliness of Death Certificate Data by Jurisdiction and Selected Causes of Death: United States and Puerto Rico, 2023

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Abstract

Objective—This report evaluates the timeliness of death certificate information by jurisdiction and selected causes of death using provisional and final mortality data from the National Vital Statistics System.

Methods—The percentage of provisional death certificate records for deaths occurring from January 1, 2023, through December 31, 2023, that were available for analysis in the National Vital Statistics System database each week were compared with final data. Timeliness, as measured by mean percentage of available records in the database, was analyzed for overall deaths and selected causes of death (such as injury related or drug overdose) and by jurisdiction of occurrence.

Results—This study included death certificate records for 3,135,301 deaths occurring between January 1, 2023, and December 31, 2023, in the United States and Puerto Rico. Overall, an average of 53.6% of all death certificate records in the United States were available by 2 weeks, 85.3% by 4 weeks, and 97.3% by 8 weeks. Similar patterns were found for Puerto Rico and for natural causes of deaths (such as pneumonia, influenza, and COVID-19). Injury-related causes of death had a longer time between the week of death and the week the information on the death certificate was available for analysis. Timeliness varied by jurisdiction, though death data for most jurisdictions were more than 90% complete by 8 weeks.

Conclusion—Timeliness varied by the cause of death and the jurisdiction in which the death occurred. Injury-related deaths had longer lag times. The time between when the death occurs and when information from the death certificate is available for analysis should be considered when interpreting provisional data.

Keywords: mortality surveillance • timeliness • National Vital Statistics System (NVSS)

Introduction

The National Center for Health Statistics (NCHS) collects and disseminates official vital statistics through the National Vital Statistics System (NVSS) (1). Through NVSS, 57 jurisdictions (the 50 states, the District of Columbia [D.C.], New York City, and 5 U.S. territories) send birth and death data to NCHS, where data are processed, coded, reviewed, and disseminated in annual data files and reports. In the last decade, improvements to the timeliness of NCHS's receipt of birth and death data through NVSS, combined with enhancements to the ongoing processing and coding of these data, have made it possible to conduct more timely public health surveillance using NVSS.

Since 2014, provisional mortality data have been published on a quarterly or monthly basis through the Vital Statistics Rapid Release (VSRR) program for public health surveillance of mortality and specific causes of death (such as drug overdose) (2,3). Depending on the cause of death, provisional data have historically been published with a 3- to 9-month lag (that is, the time between the date of death and the date the data are available for analysis) to ensure that data are sufficiently complete for purposes of surveillance. Provisional mortality data from NVSS are also used for near-real time pneumonia and influenza mortality surveillance, where data are published with a 1-week lag after the week of death (4).

Previous reports have described timeliness of provisional mortality data, and how timeliness varies by cause of death and jurisdiction of occurrence (where the death occurred) (5–9). In 2017, provisional data were more than 90% complete (that is, 90% of death records were available for analysis) within 13 weeks from the time of death for deaths overall (all causes of deaths) at the national level (9). Though substantial variation by jurisdiction of occurrence was seen, by 13 weeks most jurisdictions

had over 95% completeness. Deaths from external causes of injury, such as suicide and drug overdose, took 6–9 months to reach similar levels of completeness (9).

In recent years, the VSRR program began releasing weekly (rather than monthly) provisional mortality data updates on CDC's WONDER online database and expanded to include additional surveillance activities (10). These activities include NCHS's weekly COVID-19 deaths surveillance dashboard, a quarterly maternal mortality surveillance dashboard, and expanded drug overdose surveillance (11–14). This report provides an update on the timeliness of mortality data by selected causes of death and the jurisdiction of occurrence, including Puerto Rico. Due to recent improvements, this report presents timeliness using shorter lag times: 2, 4, 8, and 16 weeks.

Methods

Since 2014, NCHS has created a data file set at the end of each week, including all death certificate records received from the jurisdictions (all 50 states, New York City, D.C., and Puerto Rico) processed and coded by NCHS as of the creation date. These weekly data files (referred to as snapshots) include provisional data for deaths occurring in the previous 24 months from the jurisdictions described above. These snapshots help NCHS evaluate how long it takes for records to become available for analysis after a death occurred, and to describe the timeliness of data measured by its completeness at specified time intervals (lag times) following the date of death. In this report, death certificates from the provisional data files were compared with those in the final mortality file to determine the timeliness for overall and selected causes of death (pneumonia, influenza, and COVID-19; injury-related causes; and suicide, homicide, drug overdose, and firearm-related injuries) by the jurisdiction where the death occurred.

Timeliness is the average length of time between the week the death occurred and the week that the information on the death certificate was available for analysis by NCHS. Previous analyses of the timeliness of provisional mortality data have included natural causes of death (such as heart disease and cancer), which have high completion rates at shorter lag times (5,9). This report focuses on the timeliness of reporting deaths from pneumonia, influenza, and COVID-19, measures more commonly monitored for surveillance, but which have similar completion rates by time as other natural causes of death (11).

Deaths occurring in the United States and Puerto Rico in 2023 were aggregated by the week the death occurred and the week the death certificate was received (reference week). Completeness was tabulated for each reference week and for the 52 weeks following each reference week by comparing the provisional death counts available for analysis to the final death counts for each week of deaths. For example, if the snapshot from the first reference week contained 53 deaths, and the final death file for the same period contained 100 deaths, the completeness for the first reference week would be 53%. Results are presented as the mean percentage of the available death certificates by lag time. Mean percentage refers to the sum of the percentages of available death records (death records in a given snapshot divided by the death records in the final data file) aggregated across the 52 weeks in a year and divided by the number of reference weeks. Provisional counts were further broken down by the jurisdiction where the death occurred and selected causes of death.

Results

Overall deaths

Analyses included death certificate records for 3,101,011 deaths occurring in the United States between January 1 and December 31, 2023. Table 1 shows the mean percentage of available death certificate records by lag time for 52 weeks. In the United States, an average of 53.6% of records were available by 2 weeks, 85.3% by 4 weeks, 97.3% by 8 weeks, and 99.4% by 16 weeks (Table 1, Figure 1).

Timeliness by cause-of-death data

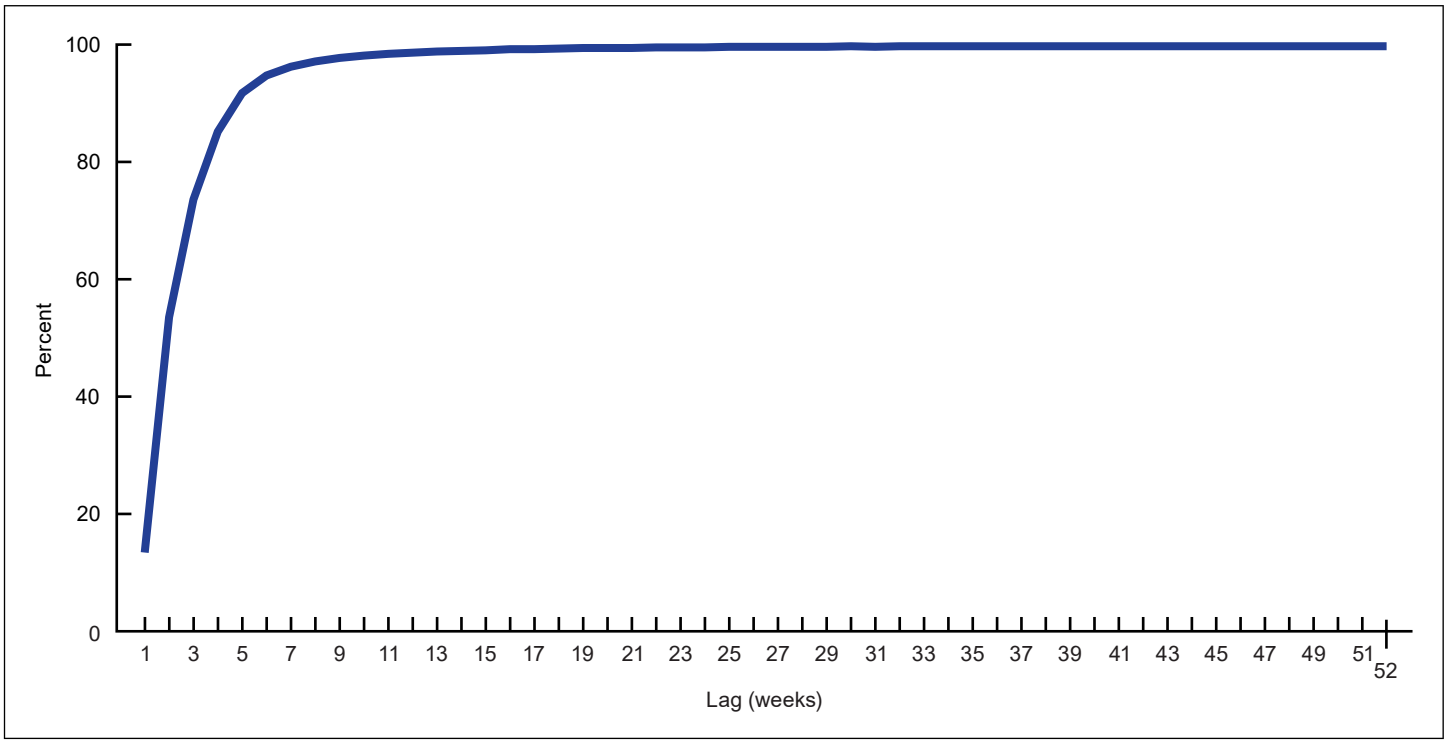
Pneumonia, influenza, or COVID-19

Analyses included death certificate records for 219,028 pneumonia, influenza, or COVID-19 deaths occurring in the United States between January 1 and December 31, 2023. Figure 2 shows the mean percentage of death certificate records available for analysis by lag time and cause of death for 52 weeks. For deaths related to pneumonia, influenza, or COVID-19, an average of 52.7% of records were available by 2 weeks, 84.8% by 4 weeks, 96.3% by 8 weeks, and 98.7% by 16 weeks (Table 1, Figure 2). Similar estimates were found for these causes of death when calculated separately for each cause of death (not shown in this report).

Injury-related deaths

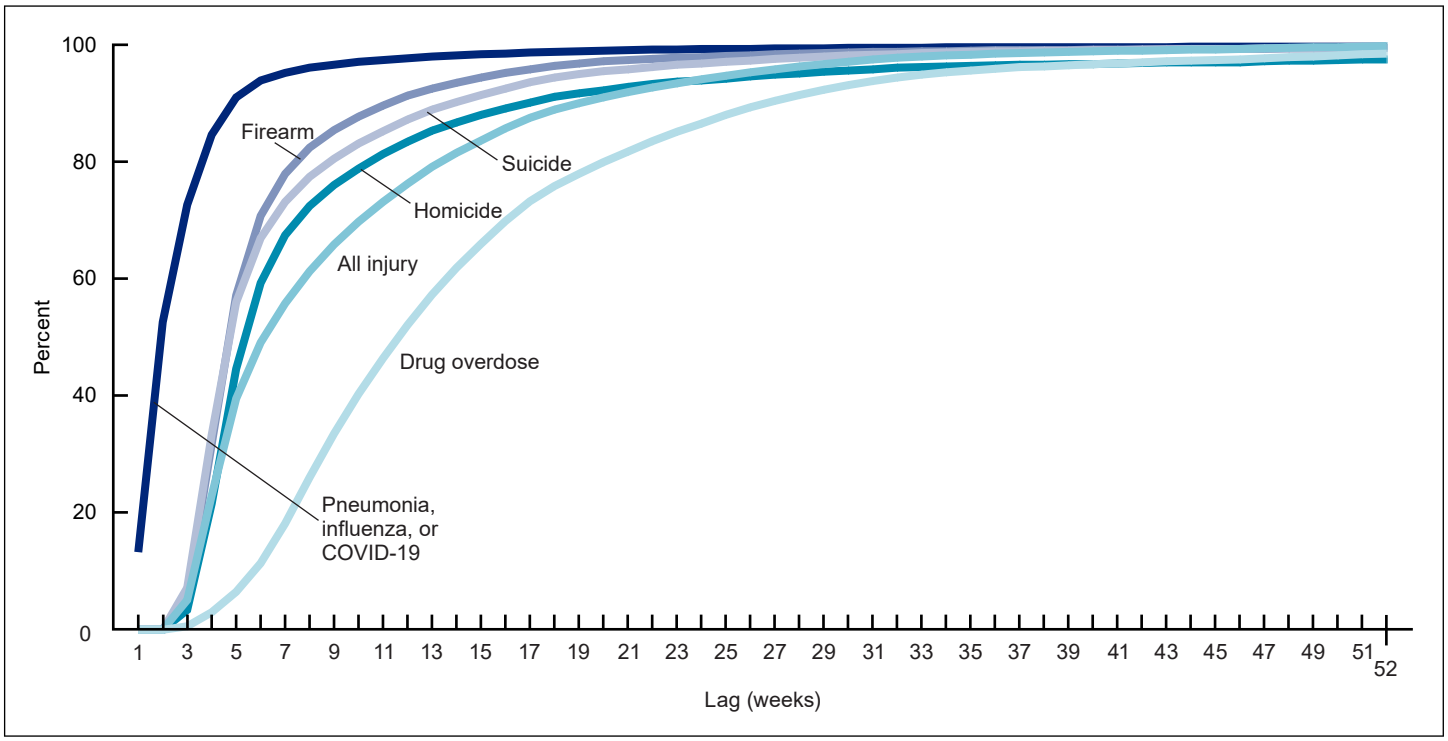
Analyses included death certificate records for 302,478 injury-related deaths occurring in the United States between January 1 and December 31, 2023. For injury-related deaths, on average, less than 0.1% of death records were available for analysis by 2 weeks, 23.0% by 4 weeks, 61.4% by 8 weeks, and 85.9% by 16 weeks (Table 1, Figure 2). For suicides, an average of 33.4% of records were available by 4 weeks, 77.6% by 8 weeks, and 92.7% by 16 weeks. For homicides, an average of 21.6% of records were available by 4 weeks, 72.6% by 8 weeks, and 89.3% by 16 weeks. For drug overdose deaths, an average of 3.0% of records were available by 4 weeks, 26.1% by 8 weeks, and 70.0% by 16 weeks. For firearm-related deaths, an average of 31.8% of records were available by 4 weeks, 82.6% by 8 weeks, and 95.4% by 16 weeks.

Figure 1. Mean percentage of death certificate records available for analysis for deaths from all causes, by lag time: United States, 2023



NOTE: Mean percentage refers to the sum of the percentages of available death records (for example, death records in a given snapshot divided by the death records in the final data) aggregated across the 52 weeks of the year and divided by the number of reference weeks.
SOURCE: National Center for Health Statistics, National Vital Statistics Systems, mortality, 2023.

Figure 2. Mean percentage of death certificate records available for analysis, by lag time and cause of death: United States, 2023



NOTE: Mean percentage refers to the sum of the percentages of available death records—calculated as the number of death records in a given snapshot divided by the number in the final file—aggregated across the 52 weeks in a year and divided by the number of reference weeks.
SOURCE: National Center for Health Statistics, National Vital Statistics Systems, mortality, 2023.

Timeliness by jurisdiction

Analyses by jurisdiction included death certificate records for deaths in the United States occurring between January 1 and December 31, 2023 (n = 3,101,011 records) and Puerto Rico (n = 34,290). Table 2 shows the mean percentage of death certificate records available for analysis by jurisdiction and lag time for all causes of death. Records available for analysis varied by jurisdiction, but data for most jurisdictions were over 30% complete by 2 weeks. Alaska and D.C. had the lowest completeness, with 24.1% and 26.4% of records received by 2 weeks, respectively. By 4 weeks, data for most jurisdictions were over 70% complete. Data were less than 70% complete for Alaska (54.0%), Louisiana (60.3%), D.C. (66.1%), and Kentucky (69.0%). For Puerto Rico, an average of 48.7% of records were available by 2 weeks, 83.3% by 4 weeks, 96.8% by 8 weeks, and 97.6% by 16 weeks. Data for all jurisdictions were over 82% complete by 8 weeks, and over 97% complete by 16 weeks (Table 2). For detailed information of timeliness by jurisdiction and selected causes of death, see Table 3.

Discussion

Overall death records for the United States were about 99% complete by 13 weeks following the date of death. This is an improvement over previous studies, where provisional death data were 83.9% complete at 13 weeks in 2015 (5) and 94.6% complete at 13 weeks in 2017 (9). Although timeliness varied by the jurisdiction in which the death occurred, most jurisdictions had over 90% completeness by 8 weeks. Similarly, Puerto Rico was about 97% complete by 8 weeks.

Trends in timeliness differed by cause of death. Deaths due to pneumonia, influenza, or COVID-19 followed a similar pattern in timeliness to overall deaths, with completeness reaching 95% by 7 weeks. Injury-related causes of death had longer times between the week of death and the week the information on the death certificate was available for analysis. Data on suicide, homicide, and drug overdose did not reach 95% completeness until 19 weeks, 27 weeks, and 33 weeks, respectively.

The time between the week that the death occurred and the date when the death certificate data are available for analysis involves many different processes, including: the certification and registration of the death certificate with the jurisdictional Vital Records offices, the transmission of data to NCHS, the automatic or manual coding of cause-of-death information, and the processing of data into the surveillance data warehouse for analysis. For some causes of death (such as suicide and drug overdose), there are additional steps within the jurisdictions, such as death scene investigation or postmortem tests like toxicology screening or autopsy.

As provisional mortality data are increasingly made available and used for public health surveillance, it is important to understand how complete the data are for different causes of death and across various jurisdictions. The timeliness of mortality data should be considered when interpreting provisional data. This is especially important for causes of death such as drug overdose, where recent declines may appear to be more pronounced due to incomplete data.

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Detailed Tables

Table 1. Mean percentage of death certificate records available for analysis, by lag time and cause of death: United States, 2023

Lag (weeks)	All causes	Pneumonia, influenza, or COVID-19	All injury	Suicide	Homicide	Drug overdose	Firearm
1	13.4	13.3	0.0	0.0	0.0	0.0	0.0
2	53.6	52.7	0.0	0.0	0.0	0.0	0.0
3	73.7	72.8	5.1	7.2	3.4	0.6	6.1
4	85.3	84.8	23.0	33.4	21.6	3.0	31.8
5	91.9	91.2	39.6	56.1	44.7	6.5	57.3
6	94.9	94.1	49.2	67.1	59.4	11.4	70.9
7	96.4	95.4	55.9	73.3	67.6	18.2	78.1
8	97.3	96.3	61.4	77.6	72.6	26.1	82.6
9	97.9	96.8	66.0	80.7	76.2	33.6	85.6
10	98.3	97.3	69.9	83.3	79.0	40.4	87.9
11	98.6	97.6	73.3	85.4	81.5	46.5	89.8
12	98.8	97.9	76.4	87.4	83.6	52.2	91.5
13	99.0	98.2	79.3	89.1	85.5	57.4	92.7
14	99.1	98.4	81.7	90.4	86.9	62.0	93.7
15	99.2	98.6	83.8	91.6	88.2	66.1	94.6
16	99.4	98.7	85.9	92.7	89.3	70.0	95.4
17	99.4	98.9	87.7	93.8	90.3	73.4	96.0
18	99.5	99.0	89.1	94.6	91.3	76.0	96.6
19	99.6	99.1	90.2	95.2	91.9	78.1	97.0
20	99.6	99.2	91.2	95.7	92.4	80.1	97.4
21	99.6	99.3	92.1	96.0	93.0	81.9	97.6
22	99.7	99.4	92.9	96.4	93.5	83.7	97.8
23	99.7	99.4	93.6	96.8	93.9	85.3	98.0
24	99.7	99.5	94.3	97.0	94.1	86.7	98.1
25	99.8	99.5	94.9	97.3	94.4	88.2	98.3
26	99.8	99.5	95.5	97.5	94.8	89.5	98.4
27	99.8	99.6	96.0	97.8	95.1	90.6	98.6
28	99.8	99.6	96.5	98.0	95.3	91.6	98.7
29	99.8	99.6	96.9	98.2	95.6	92.5	98.8
30	99.9	99.7	97.3	98.4	95.8	93.3	98.9
31	99.8	99.7	97.7	98.5	96.0	94.0	99.0
32	99.9	99.7	98.0	98.6	96.3	94.6	99.0
33	99.9	99.7	98.2	98.8	96.4	95.1	99.1
34	99.9	99.8	98.4	98.9	96.5	95.5	99.1
35	99.9	99.8	98.5	99.0	96.6	95.8	99.2
36	99.9	99.8	98.7	99.1	96.7	96.1	99.3
37	99.9	99.8	98.8	99.1	96.8	96.4	99.3
38	99.9	99.8	98.9	99.2	96.8	96.5	99.3
39	99.9	99.8	99.0	99.2	96.9	96.7	99.3
40	99.9	99.8	99.1	99.3	96.9	96.9	99.4
41	99.9	99.8	99.2	99.3	97.0	97.0	99.4
42	99.9	99.8	99.2	99.4	97.1	97.2	99.4
43	99.9	99.8	99.3	99.4	97.2	97.4	99.5
44	99.9	99.9	99.4	99.5	97.2	97.5	99.5
45	99.9	99.9	99.4	99.5	97.2	97.6	99.5
46	99.9	99.9	99.5	99.5	97.2	97.7	99.5
47	99.9	99.9	99.6	99.6	97.4	97.9	99.5
48	99.9	99.9	99.7	99.6	97.5	98.1	99.6
49	99.9	99.9	99.8	99.6	97.5	98.2	99.6
50	99.9	99.9	99.8	99.6	97.6	98.4	99.6
51	99.9	99.9	99.9	99.6	97.7	98.6	99.6
52	99.9	99.9	100.0	99.7	97.7	98.7	99.7

0.0 Quantity more than zero but less than 0.05.

NOTE: Mean percentage refers to the sum of the percentages of available death records (for example, death records in a given snapshot divided by the death records in the final data) aggregated across the 52 weeks of the year and divided by the number of reference weeks.

SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality, 2023.

Table 2. Mean percentage of death certificate records available for analysis for deaths from all causes, by lag time and reporting jurisdiction: United States and Puerto Rico, 2023

Jurisdiction	All causes			
	Week 2	Week 4	Week 8	Week 16
United States	53.6	85.3	97.3	99.4
Alabama	41.9	79.4	94.6	98.7
Alaska	24.1	54.0	82.1	97.3
Arizona	61.3	90.0	98.8	99.8
Arkansas	60.5	88.9	98.3	99.6
California	41.4	84.6	98.0	99.5
Colorado	56.0	87.8	98.3	99.6
Connecticut	59.9	90.4	98.9	99.8
Delaware	54.2	84.4	97.0	99.0
District of Columbia	26.4	66.1	92.7	98.7
Florida	59.0	90.6	99.4	99.9
Georgia	34.4	71.9	92.0	97.4
Hawaii	56.7	85.5	97.2	98.9
Idaho	55.4	90.2	99.7	100.0
Illinois	74.5	92.9	98.7	99.1
Indiana	53.3	82.3	95.3	99.3
Iowa	56.5	84.6	96.1	99.5
Kansas	61.7	90.8	99.1	99.7
Kentucky	31.5	69.0	93.1	99.2
Louisiana	30.7	60.3	86.2	97.6
Maine	80.2	96.0	99.7	99.9
Maryland	62.2	89.3	98.8	99.7
Massachusetts	70.6	94.1	99.1	99.7
Michigan	65.2	91.6	98.9	99.7
Minnesota	67.6	85.7	95.9	99.5
Mississippi	55.3	85.6	97.3	99.3
Missouri	50.6	79.6	92.4	98.8
Montana	54.0	88.7	99.6	99.9
Nebraska	48.4	84.6	97.3	99.5
Nevada	44.9	73.8	89.1	98.8
New Hampshire	80.2	95.0	99.1	99.6
New Jersey	75.5	94.0	99.0	99.5
New Mexico	39.1	73.8	92.2	98.2
New York[1]	82.5	96.7	99.5	99.8
New York City[2]	79.6	96.9	99.9	100.0
North Carolina	56.4	88.3	98.7	99.6
North Dakota	50.6	85.3	97.3	99.7
Ohio	41.7	81.5	98.5	99.8
Oklahoma	43.9	80.4	96.6	99.3
Oregon	39.6	76.2	96.8	98.8
Pennsylvania	69.5	92.4	98.6	99.6
Rhode Island	69.6	92.0	98.9	99.6
South Carolina	69.5	90.8	97.1	99.0
South Dakota	44.0	81.2	96.6	99.2
Tennessee	55.7	86.0	97.6	99.4
Texas	41.4	79.1	96.6	99.3
Utah	61.5	93.0	98.6	99.7
Vermont	72.1	91.8	99.2	99.8
Virginia	61.6	90.0	99.0	99.7
Washington	50.8	85.5	98.1	99.2
West Virginia	69.3	92.3	98.7	99.5
Wisconsin	59.7	89.5	98.9	99.8
Wyoming	44.4	86.2	99.6	100.0
Puerto Rico[3]	48.7	83.3	96.8	97.6

See footnotes at end of table.

Table 2. Mean percentage of death certificate records available for analysis for deaths from all causes, by lag time and reporting jurisdiction: United States and Puerto Rico, 2023—Con.

	All causes			
Jurisdiction	Week 2	Week 4	Week 8	Week 16

[1]Excludes New York City.
[2]Excludes the rest of the state of New York.
[3]Not included in overall U.S. calculations.

NOTE: Mean percentage refers to the sum of the percentages of available death records (for example, death records in a given snapshot divided by the death records in the final data) aggregated across the 52 weeks of the year and divided by the number of reference weeks.

SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality, 2023.

Table 3. Mean percentage of death certificate records available for analysis, by lag time, reporting jurisdiction, and cause of death: United States and Puerto Rico, 2023

Jurisdiction	Pneumonia, influenza, or COVID-19 (weeks)				All injury (weeks)				Suicide (weeks)				Homicide (weeks)				Drug overdose (weeks)				Firearm (weeks)			
	2	4	8	16	2	4	8	16	2	4	8	16	2	4	8	16	2	4	8	16	2	4	8	16
United States	52.7	84.8	96.3	98.7	0.0	23.0	61.4	85.9	0.0	33.4	77.6	92.7	0.0	21.6	72.6	89.3	0.0	3.0	26.1	70.0	0.0	31.8	82.6	95.4
Alabama	45.0	82.4	95.6	98.7	0.0	19.9	63.5	87.2	0.0	33.3	84.6	93.7	0.0	9.5	68.9	90.1	0.0	6.6	25.1	72.0	0.0	23.5	80.8	95.2
Alaska	30.2	64.6	87.3	97.9	0.6	14.1	56.2	96.2	1.1	28.6	70.2	97.2	0.8	22.9	64.9	97.3	0.2	2.1	40.7	97.4	1.9	31.1	75.5	96.5
Arizona	58.8	87.2	95.8	99.7	0.0	29.7	68.1	96.8	0.0	46.6	85.7	99.3	0.0	39.4	85.2	94.1	0.0	2.5	37.7	94.4	0.0	50.6	93.0	98.9
Arkansas	55.7	86.0	95.9	97.7	0.1	38.9	72.7	88.3	0.5	48.8	84.5	93.7	0.0	26.1	85.1	93.4	0.0	5.4	9.7	55.8	0.3	44.0	92.1	97.7
California	38.4	83.5	95.9	98.3	0.0	14.3	52.9	79.7	0.0	26.1	76.7	89.7	0.0	14.6	79.7	90.0	0.0	1.1	14.2	61.0	0.0	23.7	88.0	96.4
Colorado	49.5	83.5	95.4	99.1	0.0	22.7	64.3	93.7	0.0	24.5	69.8	93.4	0.0	16.9	58.4	90.3	0.0	1.9	33.5	87.7	0.0	27.4	76.0	93.7
Connecticut	65.3	91.0	98.2	99.4	2.0	26.5	65.1	96.8	3.5	40.5	76.4	97.0	1.7	26.7	84.3	96.0	0.1	1.4	38.7	94.9	2.5	44.6	93.1	100.0
Delaware	54.2	85.9	96.6	99.0	0.0	16.8	48.2	74.8	0.0	28.8	79.6	91.2	---	---	---	90.9	0.0	0.9	4.0	53.7	0.0	41.2	92.9	96.9
District of Columbia	30.0	69.3	91.2	98.6	0.1	9.7	41.7	83.8	0.0	14.1	57.8	75.8	0.0	16.3	81.5	93.2	0.0	0.5	4.2	74.3	0.0	16.6	84.4	96.1
Florida	55.9	88.7	97.9	99.4	0.0	32.3	71.4	91.6	0.0	46.8	84.5	95.1	0.0	42.8	89.9	94.4	0.0	2.3	35.4	80.7	0.0	52.1	94.7	98.4
Georgia	34.8	73.9	93.8	98.0	0.0	15.1	60.2	81.8	0.0	23.1	78.4	91.6	0.0	8.7	65.3	87.1	0.0	1.6	19.9	57.0	0.0	17.3	76.2	93.2
Hawaii	43.7	77.7	94.5	97.8	0.0	16.2	55.2	75.6	0.0	31.1	74.9	81.9	0.0	22.2	71.3	77.2	0.0	0.9	30.4	63.9	0.0	35.3	87.6	91.7
Idaho	57.5	90.0	97.6	99.1	0.0	36.0	75.4	92.5	0.0	45.3	86.9	95.8	0.0	32.0	65.7	84.9	0.0	3.5	25.0	79.3	0.0	53.6	92.6	96.8
Illinois	70.8	90.0	96.9	98.4	0.0	18.3	58.0	90.7	0.0	26.6	70.0	94.2	0.0	21.8	77.3	91.0	0.0	1.8	30.8	84.9	0.0	24.9	79.5	94.9
Indiana	54.5	86.9	98.0	99.7	0.0	13.8	65.9	96.5	0.0	23.5	76.1	97.3	0.0	8.4	63.5	91.9	0.0	1.2	49.0	94.4	0.0	20.3	74.6	96.0
Iowa	56.1	86.4	97.5	99.7	0.0	28.4	71.7	97.5	0.0	22.0	67.3	96.9	0.0	12.3	50.7	86.5	0.0	3.8	36.0	94.1	0.0	23.4	71.6	96.5
Kansas	61.7	88.3	96.9	98.6	0.0	18.5	59.0	84.2	0.0	27.3	68.6	90.4	0.0	13.4	52.1	78.1	0.0	2.5	21.1	63.4	0.0	27.1	72.7	92.0
Kentucky	31.1	71.5	95.1	99.3	0.0	11.6	74.0	98.5	0.0	19.3	79.4	97.9	0.0	6.3	51.7	93.8	0.0	2.7	69.4	98.0	0.0	17.0	73.6	98.2
Louisiana	28.7	59.2	89.0	97.7	0.0	10.3	42.4	91.2	0.0	17.3	54.2	94.4	0.0	5.1	27.6	83.3	0.0	3.9	31.2	91.3	0.0	10.7	41.1	88.8
Maine	81.0	97.3	99.1	99.7	0.0	34.9	70.0	97.4	0.0	46.9	87.3	100.0	---	---	50.0	55.6	0.0	1.3	39.2	97.7	0.0	52.5	94.1	96.3
Maryland	64.2	90.9	98.3	99.5	0.0	26.2	78.8	96.4	0.0	45.6	86.7	96.4	0.0	34.3	89.8	94.6	0.0	5.5	64.5	94.4	0.0	43.7	95.2	98.1
Massachusetts	70.0	91.6	96.7	99.1	0.0	17.4	30.5	83.5	0.0	31.7	51.6	85.8	0.0	26.3	73.7	86.1	0.0	0.7	1.6	81.4	0.0	35.2	70.3	90.9
Michigan	62.7	89.4	97.4	99.0	0.0	33.8	68.9	87.2	0.0	50.1	86.1	94.7	0.0	39.6	88.2	93.5	0.0	2.5	30.8	70.2	0.0	51.1	93.3	97.2
Minnesota	69.2	91.2	97.6	99.6	0.0	17.5	72.3	97.7	0.0	10.2	71.4	97.7	0.0	1.6	36.4	84.0	0.0	1.6	54.3	96.3	0.0	8.5	67.0	95.8
Mississippi	55.9	88.1	98.1	99.4	0.1	33.2	79.4	93.5	0.2	46.2	92.4	98.5	0.0	11.9	72.0	90.0	0.0	6.8	48. 0	81.7	0.1	27.4	84.8	95.9
Missouri	55.0	86.5	96.6	99.0	0.0	13.7	52.8	93.6	0.0	18.1	60.7	95.5	0.0	3.0	29.8	86.3	0.0	2.1	32.8	91.8	0.0	12.9	50.5	93.0
Montana	49.0	88.0	98.5	99.2	0.0	37.6	79.8	91.3	0.0	43.5	88.3	96.7	0.0	32.3	73.7	80.1	0.0	6.9	19.3	66.9	0.0	45.1	97.4	99.1
Nebraska	48.5	86.2	97.3	98.9	1.0	27.5	74.7	94.1	0.9	31.0	76.5	92.1	0.0	11.8	58.8	80.8	0.5	4.0	22.5	84.2	0.5	25.2	80.8	91.3
Nevada	42.2	72.3	88.5	97.9	0.1	16.1	50.7	83.1	0.0	24.9	65.4	88.7	0.5	26.8	71.6	90.2	0.0	1.7	26.1	73.1	0.3	28.4	72.3	92.4
New Hampshire	75.9	94.1	98.1	99.1	0.1	39.7	63.5	89.9	0.0	54.2	87.6	93.2	0.0	41.0	65.3	77.8	0.0	1.9	7.2	75.9	0.0	62.9	93.4	96.7
New Jersey	72.7	91.7	96.6	98.1	0.1	33.0	54.2	69.9	0.0	51.7	80.0	87.5	0.0	36.9	87.1	92.2	0.0	9.9	17.2	44.9	0.0	49.0	95.3	97.7
New Mexico	37.7	68.6	86.5	97.5	0.0	10.0	45.4	88.0	0.0	15.7	62.0	91.1	0.0	14.0	70.4	91.6	0.0	0.4	15.0	82.6	0.0	18.1	73.9	93.5
New York[1]	82.2	95.6	98.2	99.1	0.2	42.2	60.7	81.4	0.3	59.2	82.2	90.7	0.0	51.5	85.4	90.9	0.0	4.9	18.3	60.3	0.1	67.4	96.7	98.7
New York City[2]	75.4	94.0	97.2	98.2	0.2	31.0	40.3	47.2	0.2	67.4	78.8	85.0	0.8	68.8	85.8	90.3	0.0	5.1	7.3	15.5	0.7	79.0	97.8	98.3
North Carolina	59.2	89.8	98.4	99.0	1.0	31.2	66.6	69.3	1.6	42.8	87.8	89.5	0.6	21.8	79.3	86.0	0.2	3.3	9.8	12.9	1.4	37.7	91.6	95.1
North Dakota	50.4	87.3	98.4	99.5	0.9	26.5	68.7	93.8	1.0	22.9	65.1	96.7	0.0	25.0	54.2	77.1	0.0	11.2	41.6	86.0	0.9	30.1	70.6	96.5
Ohio	37.0	76.0	96.0	98.9	0.0	20.3	60.4	90.4	0.0	31.2	72.2	92.8	0.0	20.5	65.0	88.5	0.0	3.4	36.2	84.0	0.0	30.8	76.3	95.5
Oklahoma	41.4	75.5	92.1	96.6	0.0	19.2	51.2	65.9	0.0	33.5	76.9	85.4	0.0	11.8	50.5	72.7	0.0	1.7	4.2	8.5	0.0	30.4	78.1	90.4
Oregon	40.9	77.9	96.3	98.2	0.0	23.3	59.9	76.3	0.0	36.5	84.1	91.6	0.0	30.6	88.1	92.8	0.0	2.4	7.0	40.3	0.0	40.0	92.7	98.4

See footnotes at end of table.

Table 3. Mean percentage of death certificate records available for analysis, by lag time, reporting jurisdiction, and cause of death: United States and Puerto Rico, 2023—Con.

Jurisdiction	Pneumonia, influenza, or COVID-19 (weeks)				All injury (weeks)				Suicide (weeks)				Homicide (weeks)				Drug overdose (weeks)				Firearm (weeks)			
	2	4	8	16	2	4	8	16	2	4	8	16	2	4	8	16	2	4	8	16	2	4	8	16
Pennsylvania	69.6	91.8	97.5	99.2	0.3	40.9	72.2	92.4	0.4	55.9	84.4	95.1	0.1	42.5	80.5	90.9	0.1	11.3	42.6	84.9	0.3	59.2	92.0	96.8
Rhode Island	71.8	90.8	97.2	98.1	0.0	27.6	54.8	59.8	0.0	35.6	65.6	73.3	0.0	21.4	73.0	79.4	0.0	5.6	11.5	16.1	0.0	37.1	81.0	89.5
South Carolina	64.0	86.4	93.7	98.2	0.0	28.8	58.6	90.3	0.0	40.4	75.6	94.9	0.0	32.1	71.6	90.7	0.0	3.1	20.8	80.6	0.0	41.1	79.3	95.5
South Dakota	45.8	81.3	98.2	99.9	0.0	27.7	79.3	97.0	0.0	39.2	81.2	97.0	0.0	5.8	39.4	83.3	0.0	8.1	66.0	96.5	0.0	34.3	76.9	95.4
Tennessee	55.0	85.3	96.9	99.2	0.0	23.3	64.1	89.1	0.2	34.3	74.8	93.0	0.0	29.3	82.4	91.9	0.0	1.7	36.5	79.9	0.1	34.0	81.9	94.5
Texas	39.9	77.4	95.1	98.7	0.0	14.4	61.3	88.2	0.0	20.0	75.7	92.0	0.0	11.3	72.8	88.3	0.0	1.2	13.8	73.9	0.0	18.3	81.9	94.3
Utah	58.0	87.3	93.9	98.8	12.1	49.1	74.9	95.8	17.4	64.9	83.3	97.2	9.7	51.7	76.7	85.8	0.1	4.2	39.5	91.1	20.1	78.0	95.7	97.5
Vermont	71.4	88.7	94.7	99.3	0.0	39.3	76.1	95.2	0.0	57.0	90.1	97.8	---	---	---	---	0.0	0.8	42.7	88.9	0.0	65.0	97.5	100.0
Virginia	58.4	88.1	97.9	98.5	0.5	32.8	58.6	66.7	0.9	45.0	82.8	86.3	0.3	43.1	90.5	92.6	0.0	1.3	2.9	20.8	0.8	49.8	97.4	99.0
Washington	49.1	84.1	96.0	98.1	0.0	27.6	70.4	89.2	0.1	37.5	85.7	94.8	0.0	23.7	85.2	91.4	0.0	11.1	42.2	79.2	0.0	38.7	94.1	97.9
West Virginia	69.6	92.1	97.9	98.7	0.0	28.4	56.7	92.8	0.0	49.3	79.8	94.6	0.0	34.0	85.1	90.4	0.0	4.8	28.6	89.2	0.0	48.4	86.7	95.1
Wisconsin	56.4	87.0	96.6	98.2	0.0	28.9	64.3	82.3	0.0	32.6	75.5	88.1	0.0	19.9	67.7	80.2	0.0	1.2	15.9	57.4	0.0	33.1	79.7	90.0
Wyoming	45.9	87.9	98.5	100.0	0.3	19.7	77.0	99.2	0.7	22.2	80.7	97.1	0.0	16.7	55.6	75.0	0.0	0.0	47.5	98.8	2.0	26.8	81.1	99.0
Puerto Rico[3]	68.4	89.6	96.9	97.6	0.0	39.6	64.3	73.7	0.0	49.9	73.7	76.4	0.0	60.6	89.4	91.4	0.0	1.4	2.6	28.5	0.0	64.9	93.2	94.9

0.0 Quantity more than zero but less than 0.05.
--- Data not available.
[1]Excludes New York City.
[2]Excludes the rest of t he state of New York.
[3]Not included in overall U.S. calculations.

NOTE: Mean percentages refers to the sum of the percentages of available death records (for example, death records in a given snapshot divided by the death records in the final data) aggregated across the 52 weeks of the year and divided by the number of reference weeks.

SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality, 2023.

Technical Notes

Nature and sources of data

The National Center for Health Statistics (NCHS) takes weekly snapshots of its mortality data, which include death certificate records from all 50 states, New York City, the District of Columbia, and Puerto Rico. Records that did not include a specific date of death were not analyzed (less than 0.01% of records).

Cause-of-death classification

Mortality statistics are compiled in accordance with World Health Organization (WHO) regulations specifying that WHO member nations classify and code causes of death in accordance with the current revision of the *International Statistical Classification of Diseases and Related Health Problems, 10th Revision* (ICD–10) (15). Causes of death are coded according to ICD guidelines described in annual issues of Part 2a of the NCHS Instruction Manual (16). This report focused on the underlying and multiple causes of death ICD–10 codes. Deaths from pneumonia, influenza, or COVID-19 are identified using multiple cause-of-death codes J09–J18 and U01.7. Injury-related deaths are identified using the underlying cause-of-death codes U01–U03, V01–Y36, Y85–Y87, and Y89. Suicides are identified using the underlying cause-of-death codes U03, X60–X84, and Y87.0. Homicides are identified using the underlying cause-of-death codes U01–U02, X85–Y09, and Y87.1. Drug overdose deaths are identified using the underlying cause-of-death codes X40–X44, X60–X64, X85, and Y10–Y14. Firearm-related deaths are identified using the underlying cause-of-death codes U01.4, W32–W34, X72–X74, X93–X95, Y22–Y24, and Y35.0.

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